



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

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**SCHOOL OF BUILDING AND ENVIRONMENT
DEPARTMENT OF ARCHITECTURE
M. Arch (Building management)**

**PROFESSIONAL TRAINING (S84APT)
JUL 2022 – AUG 2022**

Name of the Student : KIRUTHIKA M

Semester : III

Reg No. : 41840007

Batch : 2021-2023



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VIVA-VOCE EXAMINATION

This is to certify that the Professional Training Report (S84APT) is the work of **KIRUTHIKA M (41840007)** who had undergone training in **CBRE South Asia Pvt Ltd** and has been monitored by the continuous assessment during Jul 2022 to Aug 2022.

Dr. Devyani Gangopadhyay

HOD AND DEAN

Submitted for Viva voce Examination held on **20.12.22**

Internal Examiner
(A. RAMESH KUMAR)

External Examiner
(A. DEVIPRASADH)



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DECLARATION

I **KIRUTHIKA M** hereby declare that this Professional Training Report 30 Days from 11th July 2022 to 13th August 2022 done by me under the guidance of **Ar. VIJAY CHENGALVARAYAN** is submitted in partial fulfillment of the requirements for the completion of practical training session.



DATE : 20.12.2022

PLACE : Chennai

SIGNATURE OF CANDIDATE

ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA INSTITUTE OF SCIENCE & TECHNOLOGY** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr. Devyani Gangopadhyay DEAN, SCHOOL OF BUILDING AND ENVIRONMENT** for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to **Ar. Vijay chengalvarayan** for his valuable guidance, suggestions and constant encouragement paved way for the successful completion of my Training.

I would also like to express my sincere thanks to **Ar. Surya (Internal Co-Ordinator)** for her valuable guidance, during the entire Professional Training period.

I wish to express my thanks to all Teaching and Non-teaching staff members of the Department of Architecture who were helpful in many ways for the completion of the project.

I take this moment to thank **Mr. Christy pinto (Project Co-ordinator), Mr. Parthiban (Project Planner), Mr. Kothandapani (Construction manager), Mr. Ashraf (Project manager)** for all the support during my internship period. I'm grateful for all your kind support, guidance and encouragement throughout my training.

I would also like to express my gratitude towards my parents and family for supporting me as always throughout my training.

BONOFIDE CERTIFICATE

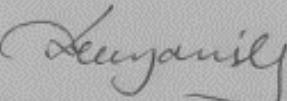

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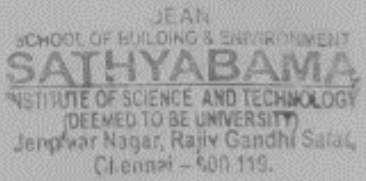
Date: 11.05.2022

TO WHOMSOEVER IT MAY CONCERN

KIRUTHIKA M (Reg No- 41840007) is a bonafide student of our institution pursuing Masters in Architecture in Building Management (Batch 2021-2023). As part of the curriculum the students are required to undergo Professional Training for a minimum period of 30 working days. Kindly grant permission for the same in your esteemed organization. We also assure that information collected about any project will be used for academic purpose only.

Thanking You,


Dr. Devyani Gangopadhyay
Dean, School of Building & Environment


SCHOOL OF BUILDING & ENVIRONMENT
SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
Jeppiaar Nagar, Rajiv Gandhi Salai,
Chennai - 600 119.

JOINING LETTER

CBRE South Asia Pvt. Ltd

CBRE

Module 4A, Block A-10th Floor
Global Infocity Chennai
No. 40, MGR Salai
Kandanchavadi Perungudi
Chennai 600 096, India
T 9144 6680 7000

CIN - U741 40DL1999PTC100244
chennai@cbre.co.in

www.cbre.co.in

To,

The Head of the Department,

Department of Architecture, School of Building & Environment,

Sathyabama Institute of Science and Technology (Deemed to be University),

Rajiv Gandhi Salai, Jeppiaar Nagar,

Chennai-600 119, Tamil Nadu

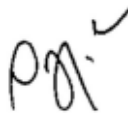
Sub: Confirmation letter for pursuing Practical Training for a period of 30 working days at our office for Ms. Kiruthika.M Reg No 41840007

Respected Sir / Madam,

With respect to the above subject we would like to induct Ms. Kiruthika.M (Reg No 41840007) M.Arch in Building Management, (Sathyabama Institute of Science and Technology) as a Project Management Trainee for a period of 30 working days from July 11, 2022 to August 13, 2022.

Thanking You,

For CBRE South Asia Pvt Ltd,




Vijay Chengalvarayan
Director

EXPERIENCE CERTIFICATE

CBRE South Asia Pvt. Ltd



Module 4A, Block A-10th Floor
Global Infocity Chennai
No. 40, MGR Salai
Kandanchavadi Perungudi
Chennai 600 096, India
T 9144 6680 7000

CIN - U74I 40DL1999PTC100244
chennai@cbre.co.in

www.cbre.co.in

To,
The Head of the Department,
Department of Architecture, School of Building & Environment,
Sathyabama Institute of Science and Technology (Deemed to be University),
Rajiv Gandhi Salai, Jeppiaar Nagar,
Chennai-600 119, Tamil Nadu

Sub: Completion letter for professional training reg.

Respected Sir / Madam,

This is to certify that Kiruthika.M (41840007), student of 3rd Semester Master in Architecture in Building Management at Sathyabama University, has successfully completed her internship (From 11th July, 2022 to 13th August, 2022) at our company.
During the period of training she was found punctual, hardworking, responsible and inquisitive.
We wish her all success in her future endeavours.

Thanking You

For CBRE South Asia Pvt Ltd

Vijay Chengalvarayan
Director

MONTHLY REPORT



SATHYABAMA

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M. Arch (Building management)

Continuous Assessment Report for Professional Training
(Continuous progress report of the trainee architect/Project Manager for the period of 15 working days in the office to be submitted to HOD by the Trainee in Charge of the Organization)

Name of the office / organization :	CBRE South Asia Pvt. Ltd
Address & Contact Number :	Chennai, 0446607000
Name of the student :	Kiruthika M
Duration :	From 11.07.2022 To 28.08.2022
Total No. of days :	15 days of 30 days
Evaluation of Performance criteria shall be on	

* Note: Faculty grade the student as per faculty overall performance in the office during the assessment month.

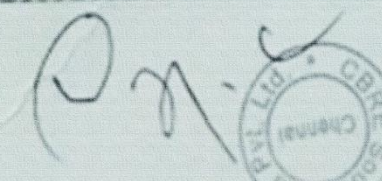
Description of works	Excellent	Good	Fair	Poor	NA
Understanding of office culture	✓				
Skills related to project management	✓				
Design Management	✓				
Understanding the Triple Constraints	✓				
Observation during Site Visits	✓				
Understanding of construction details	✓				
Understanding of Construction sequences	✓				
Site Supervision / Discussion with clients	✓				
Adherence to Time schedule	✓				
Quantitative aptitude	✓				
Documentation skills	✓				
Coordination with other subjects	✓				

Overall Grading* A

(A – 8.0, B – 7.0, C – 6.0, D – 5.5, E – 5.0, F – <5)

7. Any other Remarks: _____

8. Signature of the Head of the Office / Organization (With Seal) _____






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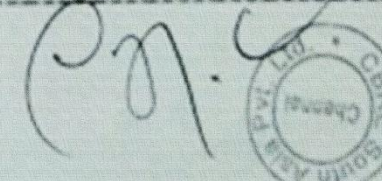
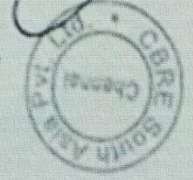
Description of works	Excellent	Good	Fair	Poor	NA
Understanding of office culture	✓				
Skills related to project management	✓				
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Documentation skills	✓				
Coordination with other subjects	✓				

Overall Grading* A

(A – 8.0, B – 7.0, C – 6.0, D – 5.5, E – 5.0, F – <5)

7. Any other Remarks: _____

8. Signature of the Head of the Office / Organization (With Seal) _____

WORK DIARY

DAY	PROJECT NAME	WORK DONE	DAY	PROJECT NAME	WORK DONE
11/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Site Visit – Snag List: First floor Corridor and GF Utility	28/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Cost Management: Cost Control, Site Visit – First Floor
12/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Floor Plans and Project Execution Plan (PEP) Study	29/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Change Order Management Site Visit – Third Floor
13/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Contract Process, Logistics Plan, Site Visit – First Floor	30/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Material Inspection Checklist, List of Approved Brands
14/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Risk Register: NPCI Example, Site Visit – Ground Floor	01/8/2022	NPCI Smart Data Center, Siruseri, Chennai	Roles and Responsibilities, Master List Of Documents
15/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Uptime Certification: Scenarios, Onsite Testing	02/8/2022	NPCI Smart Data Center, Siruseri, Chennai	De-Snagging – First floor corridor and Terrace
16/7/2022	NPCI Smart Data Center, Siruseri, Chennai	GCC Study, Asset Handing Over List	03/8/2022	NPCI Smart Data Center, Siruseri, Chennai	Installation Checklist(False Flooring, False Ceiling)
18/7/2022	NPCI Smart Data Center, Siruseri, Chennai	MEP: Onsite, Drawings, Equipment: VESDA System	04/8/2022	NPCI Smart Data Center, Siruseri, Chennai	Project Completion and Closeout Report, Site Visit – Ground Floor
19/7/2022	NPCI Smart Data Center, Siruseri, Chennai	SCC Study, Project Schedule, Site Visit – Second Floor	05/8/2022	NPCI Smart Data Center, Siruseri, Chennai	HVAC Duct Installation Checklist, Electrical Low-side TDS
20/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Project Quality Plan, OHSE Plan, Site Visit (Electrical study)	06/8/2022	NPCI Smart Data Center, Siruseri, Chennai	Cause and Effect Analysis, Document Collection
21/7/2022	NPCI Smart Data Center, Siruseri, Chennai	RACI and RASI Matrix, Minutes of Meeting, Agenda of Meeting	08/8/2022	Shriram Park 63, Phase 2 Perungalathur, Chennai	Project Introduction, Daily Progress Report
22/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Kick of Meeting, Compliances of Unsafe Stacking	09/8/2022	Shriram Park 63, Phase 2 Perungalathur, Chennai	OHSE, Quality Plan: Onsite Execution
23/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Method Statement for Civil Works Site Visit – Terrace Floor	10/8/2022	Shriram Park 63, Phase 2 Perungalathur, Chennai	Mivan Formwork, DPR, Rain log, Formwork Checklist
25/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Contractor Deliverables: DPR, WPR,MPR	11/8/2022	Shriram Park 63, Phase 2 Perungalathur, Chennai	Floor Plans, Site Logistic Plan, Coordination –MEP, Agenda
26/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Delay Analysis: NPCI, Request for Information(RFI)	12/8/2022	Shriram Park 63, Phase 2 Perungalathur, Chennai	Procurement Schedule, Design Review Meeting
27/7/2022	NPCI Smart Data Center, Siruseri, Chennai	Risk Management, Vendor Pre-Qualification and Selection	13/8/2022	Shriram Park 63, Phase 2 Perungalathur, Chennai	Earned Value Management, Site Visit, Document Collection

Chief Architect Signature:



Office seal:



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CHAPTER 1: ABOUT THE ORGANIZATION

CBRE Group, Inc. is an American commercial real estate services and investment firm. The abbreviation CBRE stands for Coldwell Banker Richard Ellis. Tucker, Lynch & Coldwell, the earliest predecessor to CBRE, was established on August 27, 1906, following the 1906 San Francisco earthquake. In 2011, the company acquired the real estate investment business of ING Group for \$940 million. In 2011, the company changed its name to CBRE Group Inc. In 2013 the company acquired Norland Managed Services, a facilities, energy and project management provider in the United Kingdom and Ireland. In 2020, the group headquarters were relocated from Los Angeles to Dallas, Texas.

The CBRE logo consists of the letters "CBRE" in a bold, white, sans-serif font, set against a dark green rectangular background.

1.1 COMPANY'S VISION

As the world's largest commercial real estate services company, CBRE leverages our global perspectives and 27 years of experience in India to serve our local audience and help them achieve their real estate goals.

Supported by a future-proof working environment and a cohesive corporate culture, we – “the green machine” – are here to unlock our full potential, deliver exceptional value for our clients and give back to the community. Find out more about who we are. The guiding principle at CBRE is to provide strategic solutions that make real estate holdings more productive and economically efficient for its clients across all service lines.

1.2 COMPANY'S MISSION

CBRE's mission is to realize the potential of our clients, professionals and partners by building the real estate solutions of the future. From instilling confidence in today's decisions to re-imagining tomorrow's spaces, we thrive in complex and ever-changing environments

Leading full-service real estate services and investment organization in the world.

1.3 CBRE'S SERVICES

CBRE provides services to both occupiers of and investors in real estate:

- For occupiers, CBRE provide facilities management, project management, transaction (both property sales and leasing) and consulting services and valuation among others.
- For investors, CBRE provide capital markets (property sales, commercial mortgage brokerage, loan origination and servicing), property leasing, investment management, property management, valuation and development services, among others

1.4 PROJECT DONE BY THE FIRM

500

Offices

100+

Countries

105K*

People

90+

of Fortune 100 Clients

The services provided by CBRE Government Practice vertical include economic planning for greenfield cities, privatization of airports, disinvestment of hotels and large landholdings, advisory on dedicated freight corridors, SEZs, industrial and IT offices, logistics and warehousing parks, data center. After having completed more than 250 diverse engagements for over 100 government clients and projects across 100 cities, the company is presently engaged with several government projects including development of a green-field city, large scale beach-front tourism zones, hospitality-related projects.

1.5 AWARDS

CBRE won 2 awards in 2018 and 2 awards in 2017. In 2018, CBRE won for Best CEO 2018 and Best Company Leadership. In 2017, CBRE won for Top Rated CEO and Top-Rated Company Outlook. Based on 5,794 ratings and 579 participants, employees at CBRE are satisfied with their work experience. The overall culture score, 71/100 or B, incorporates employee ratings based on their feedback on the Compensation, Environment, Diversity and more.

1.6 REASON FOR CHOOSING THE FIRM

- Working at CBRE means having the freedom to explore opportunities in every dimension of project management.
- To learn in diverse departments like real estate, cost and contract management in addition to PM
- Working in a reputed firm like CBRE will improve individual growth along with company's growth.
- Providing opportunities to be on site and learn the onsite workings and interacting with the clients.

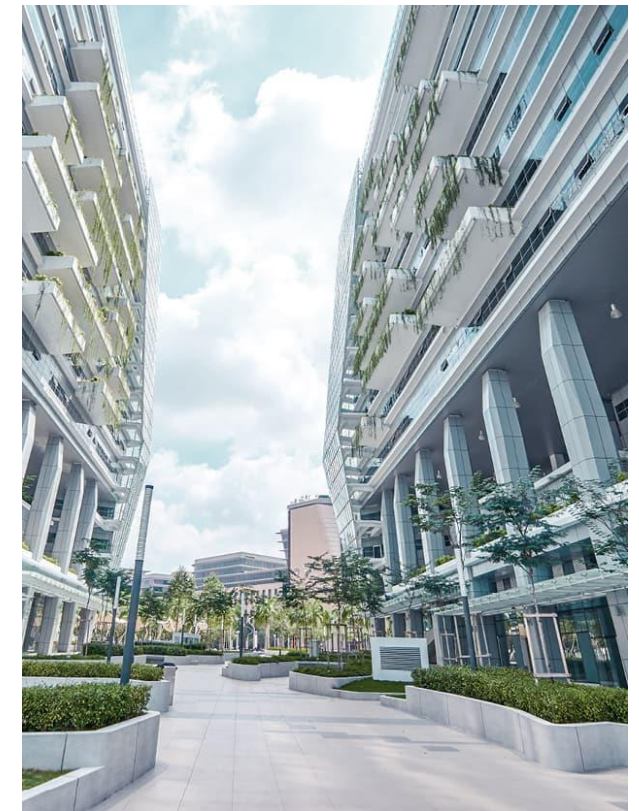


Figure 1 CBRE South Asia Pvt Ltd

CHAPTER 2: PROJECT I – NPCI SMART DATA CENTER, CHENNAI

A Data center is a facility used to house computer systems and associated components such as telecommunications and storage systems.

It generally includes redundant or backup power supplies, redundant data communications connections environment controls (e.g. Air conditioning, Fire suppression) and security devices.

Data center management involves ensuring the reliability of both the connections to the data center as well as the mission-critical information contained within the data center's storage.

2.1 PROJECT INTRODUCTION

Table 1 NPCI Data center Introduction

Name of the project	Smart Data Centre
Location	Siruseri, Chennai – 601103
Typology	Data Centre
Total Built up Area	1,35,000 Sq ft
Land Area	3.07 Acres
Client	National Payment Corporation of India
Contractor	L&T Consortium
Project management consultants	CBRE South Asia Pvt Ltd
Project Completion Period	24 Months (Pre con 6 months + Con & Exec 18 months)
Approved Budget	172.09 Cr incl 1 year O&M 4 years AMC
Architect	Venkat raman associates
Structural, MEP consultant	CRN associates
Green building consultant	Earthanomic
Liasoning consultants	Rohini management consultancy
Tier IV	Uptime tier certification

2.2 DATA CENTER - TYPOLOGY



These are built, owned, operated by companies and are optimised for their end users. Most often they are housed on the corporate campus

Enterprise data centers



These Data centres are managed by third party (or a managed service provider) on behalf of a company. The company leases the equipment and infrastructure instead of buying it.

Managed data center



In colocation ("colo") data centres, a company rents space within a data centre owned by others and located off company premises.

Colocation data center



In this off-premises form of data centre, data and applications are hosted by a cloud services provider

Cloud data center

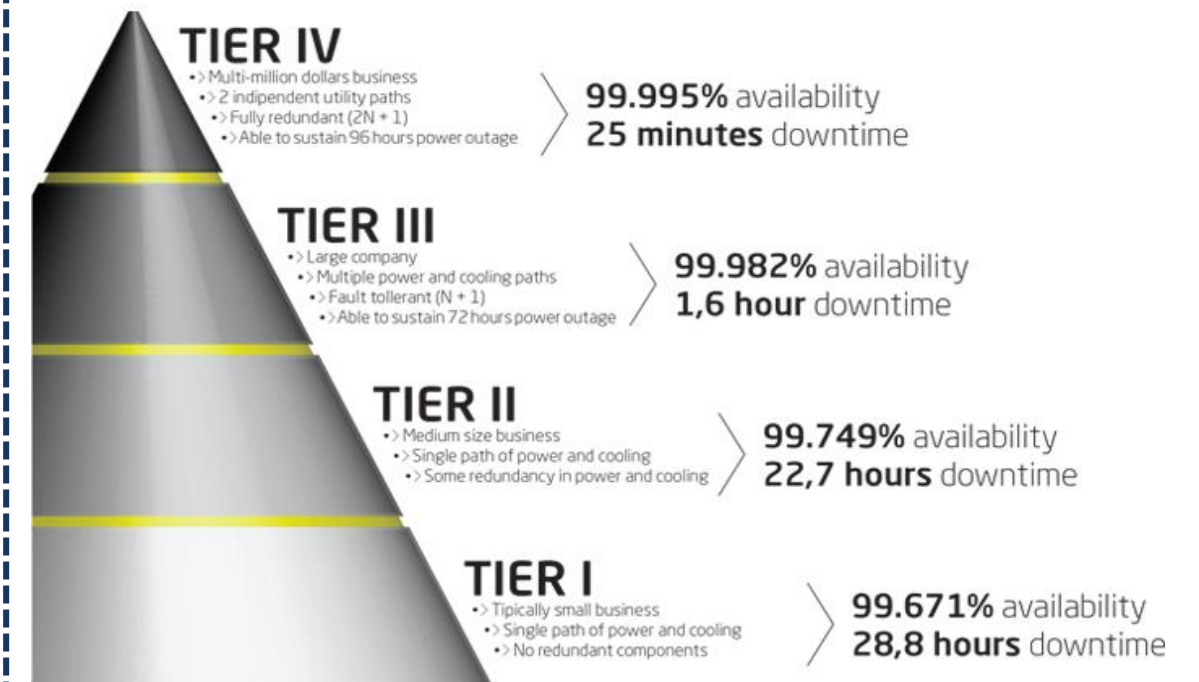
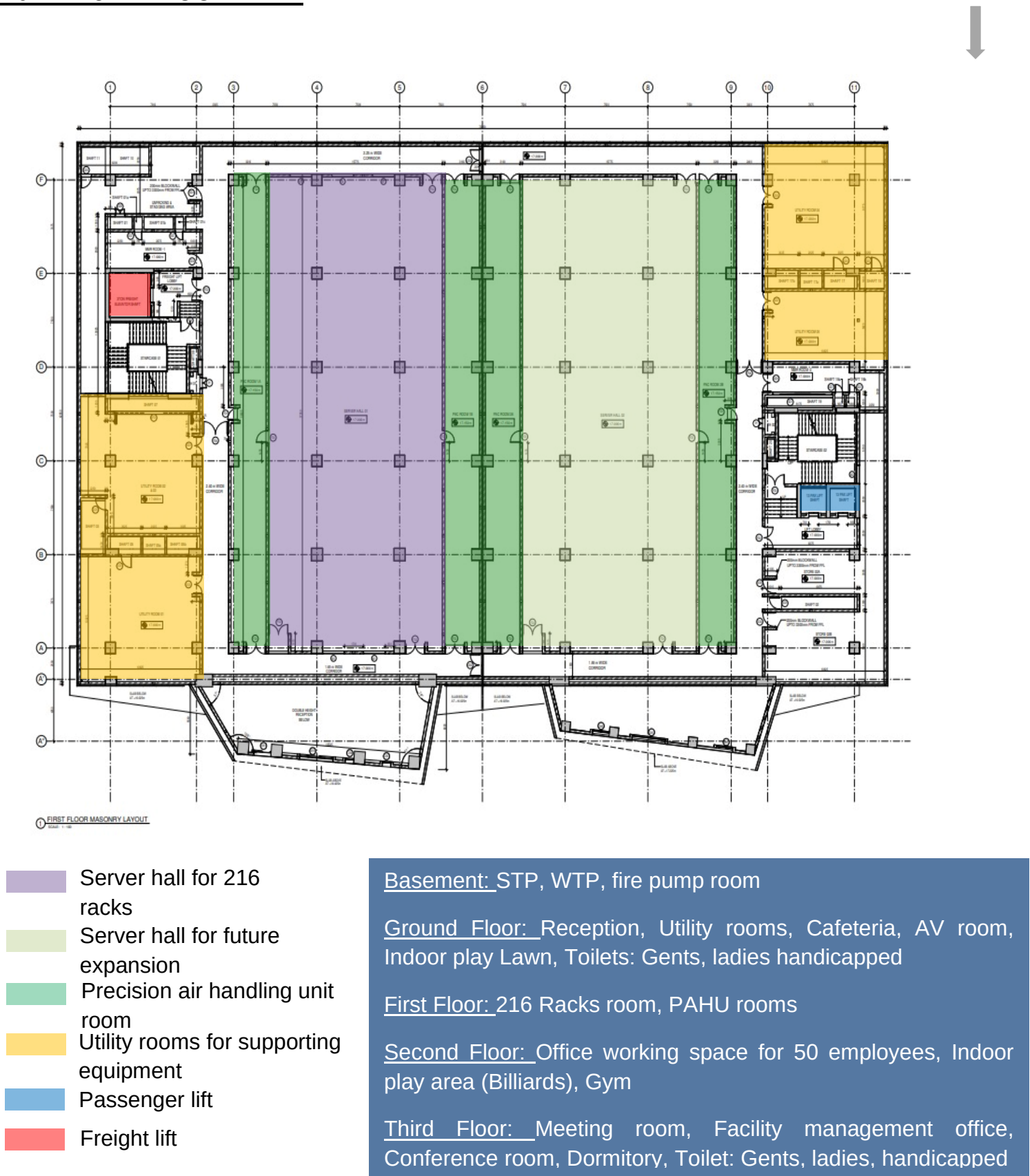


Figure 2 – Tier typology Uptime standards

TIER CONSIDERATIONS

- Service availability and uptime guarantees.
- Redundancy levels (the process of duplicating critical components and keeping them as backups and fail-safes in case of planned or unplanned disruptions).
- The state of cooling and power infrastructure.
- Staff expertise and maintenance protocols (particularly the ability to handle concurrent maintainability).
- Service cost.
- Operational sustainability and the center's ability to meet long-term business goals.
- The time a facility requires to set up a new client.
- Data center security levels.
- Carrier neutrality.

2.3 TYPICAL FLOOR PLAN



1	Type and tier	Enterprise data centre, Tier 4
2	Climate zone	Tropical wet and dry climate: for most of the year, the weather is hot and humid.
3	Site accessibility	Accessed by 60 ft secondary road in North
4	Site surroundings	State Industries Promotion Corporation of Tamil nadu (SIPCOT): Special economic zone
5	Site feasibility	SEZ, Service accessibility, Restricted access
6	Utilities - Water Supply, Electricity, telephone, Sanitary, Storm drainage, Fire, water waste disposal, etc	Electricity: TNEB Siruseri 230/110KV Sub Station Water supply: Chennai Metropolitan Water Supply and Sewerage Board
7	Available of renewable sources of energy	Solar panels, RWH

2.4 SECOND FLOOR PLAN

Table 2 Building materials and finishes

1	<u>Material & Finishes: Walls, roofs, openings</u>	- Block wall: 200MM thick wall – Exterior 150mm thick wall: Server Hall, - RCC: Column
2	<u>Façade materials</u>	Clay tiles – Ground and First floor, Glass curtain walls – Office buildings
3	<u>Flooring materials</u>	Tile flooring, Epoxy resins

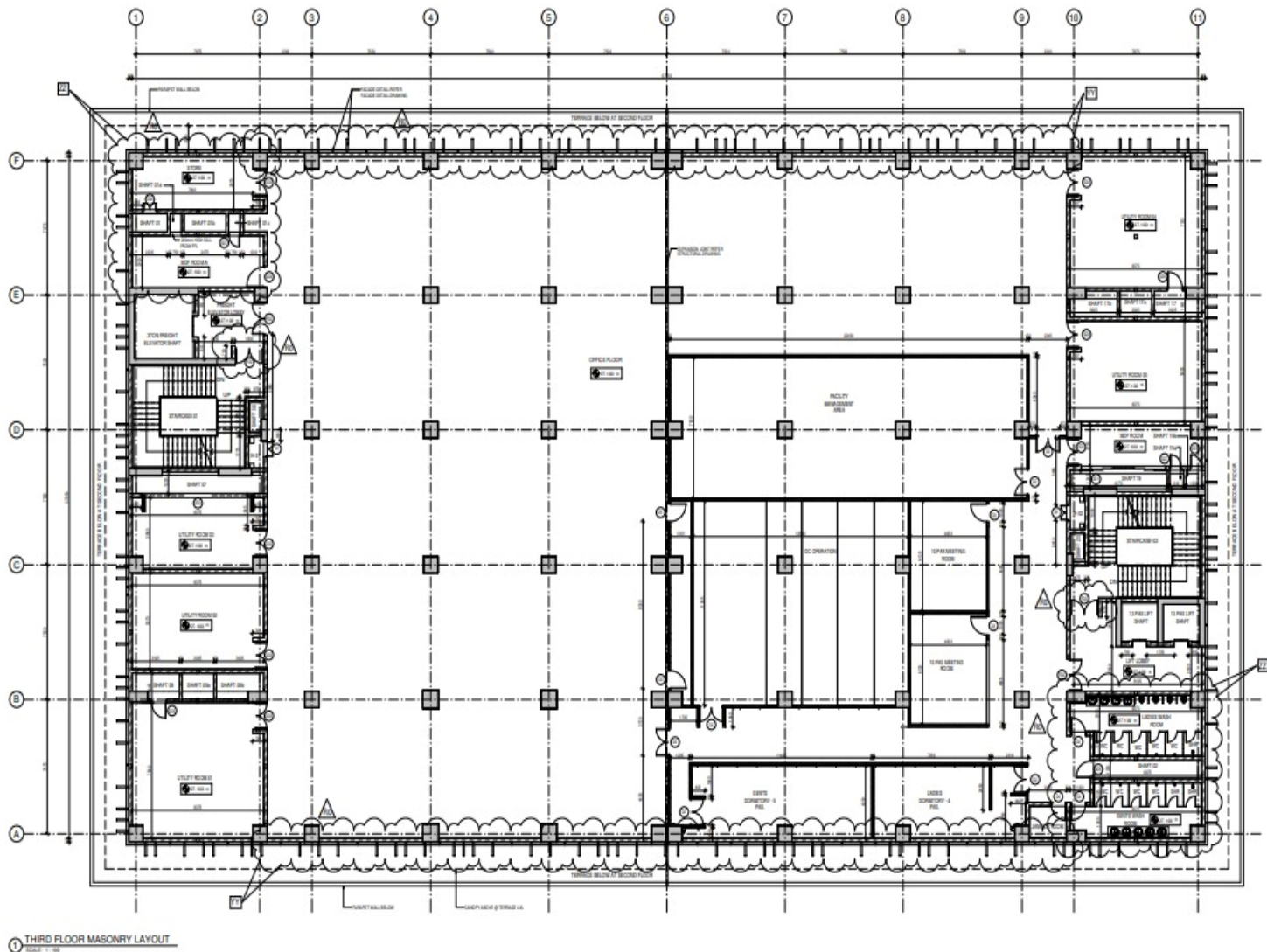


Figure 4 Second floor plan

FLOOR INTERIORS - JLL

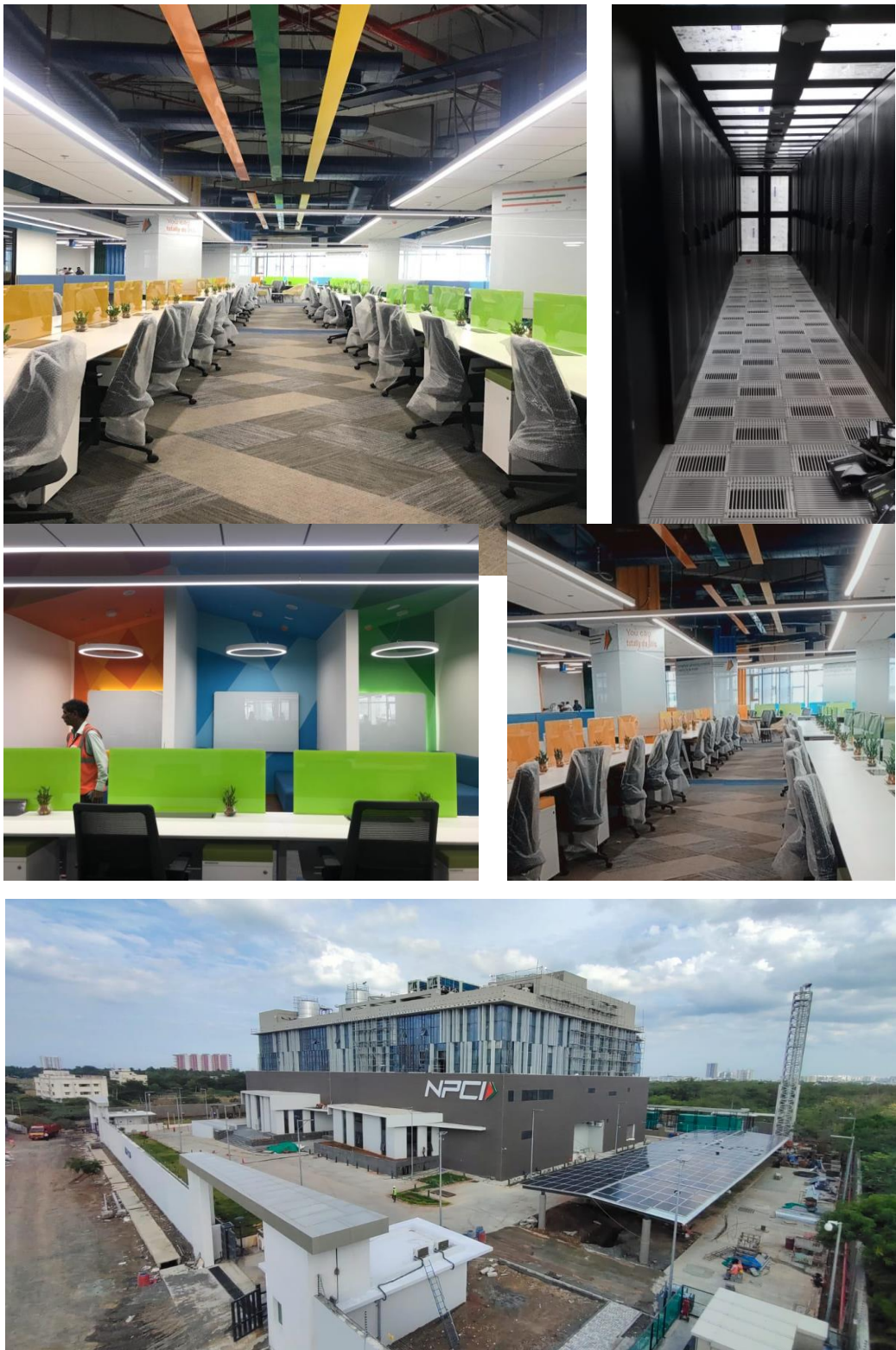


Figure 3 Site photos exterior & Interior

2.5 PROJECT SCHEDULE

ID	Task Name	Duration	Start	Finish
1	NPCI Smart Data Center - Chennai	550 days	Fri 27-03-20	Thu 20-01-22
2	Issue of PO	0 days	Fri 27-03-20	Fri 27-03-20
3	Notice to Proceed (GCC CL.7.1)	0 days	Tue 14-07-20	Tue 14-07-20
4	Project Commencement	0 days	Tue 21-07-20	Tue 21-07-20
5	Part I - Prerequisites for Commencement	335 days	Fri 10-04-20	Thu 20-05-21
6	Engineering Design/ Drawings by Client	332 days	Tue 14-04-20	Thu 20-05-21
Part II - Project Execution		503 days	Fri 22-05-20	Thu 20-01-22
Milestones		326 days	Sat 19-12-20	Thu 20-01-22
Part A - Civil Architectural & External		179 days	Sat 19-12-20	Sat 24-07-21
	Completion of Ground Floor Slab	0 days	Sat 19-12-20	Sat 19-12-20
	Completion of First Floor Slab	0 days	Thu 21-01-21	Thu 21-01-21
	Completion of Second Floor Slab	0 days	Sat 13-02-21	Sat 13-02-21
	Completion of Third Floor Slab	0 days	Mon 08-03-21	Mon 08-03-21
	Completion of Terrace Slab	0 days	Fri 02-04-21	Fri 02-04-21
	Fitouts, Finishing & Glazing	0 days	Wed 07-07-21	Wed 07-07-21
	External Works	0 days	Sat 24-07-21	Sat 24-07-21
Part B - MEP & Data Center Fitouts		165 days	Thu 20-05-21	Fri 03-12-21
	Supply of Material & Equipments	0 days	Thu 20-05-21	Thu 20-05-21
	Installation, Testing & Commissioning	0 days	Fri 03-09-21	Fri 03-09-21
	Integrated Test at Site	0 days	Fri 03-12-21	Fri 03-12-21
	Handing over & Taking over	0 days	Thu 20-01-22	Thu 20-01-22
210	Construction Works	432 days	Fri 29-05-20	Mon 01-11-21
211	Data Center Building	432 days	Fri 29-05-20	Mon 01-11-21
212	Structural Works	310 days	Fri 29-05-20	Tue 08-06-21
213	Sub Structure	171 days	Fri 29-05-20	Sat 19-12-20
996	Testing & Commissioning	143 days	Wed 16-06-21	Fri 03-12-21
997	Independent Testing	69 days	Wed 16-06-21	Fri 03-09-21
998	Data Center Building	66 days	Wed 16-06-21	Tue 31-08-21
999	Basement	10 days	Sat 07-08-21	Wed 18-08-21
1000	Ground floor	30 days	Wed 16-06-21	Tue 20-07-21
1001	First Floor	26 days	Mon 02-08-21	Tue 31-08-21
1002	Second Floor	26 days	Thu 24-06-21	Fri 23-07-21
1003	Third Floor	26 days	Thu 15-07-21	Fri 13-08-21
1004	Terrace	26 days	Mon 02-08-21	Tue 31-08-21
1045	Handing Over & Taking over	68 days	Fri 29-10-21	Thu 20-01-22
1046	Desnagging & Demobilisation	20 days	Sat 04-12-21	Tue 28-12-21
1047	Uptime Certification - Construction	60 days	Fri 29-10-21	Mon 10-01-22
1048	Final Handing over / Taking over and Closeout	30 days	Tue 14-12-21	Thu 20-01-22

Project Start Date: 27/03/2022; Project End Date: 21/01/2022

Part 1. Prerequisite for commencement:

Engineering Drawings by Client: 322 Days- 14/04/2020 to 20/05/2021. Approval: 170 Days- 10/04/2020 to 31/10/2020

Part 2. Execution:

Civil, MEP, Fit outs: 503 days- 22/05/2020 to 20/01/2022. Mobilization: 100 days- 22/05/2020 to 17/09/2020. Procurement: 300 days- 22/05/2020 to 25/05/2021. Construction: 432 days- 29/05/2020 to 01/11/2021. Testing and Commissioning: 143 days 16/06/2021 to 03/12/2021

Part 3. Handing Over- 68 days- 29/10/2021 to 20/1/2022

Occupancy: 150 Nos: Administrative: 50 no's , Facility management 8 no's , Technical staffs : 80 no's , Housekeeping and other : 12 no's

Safety and security details: 8 layers of security: Manual gates , Security cabins , Solar fencing , Boom barriers , Bollards , Biometrics , Face recognitions , Man drops

Height of the structure:

- No of floors: G+3
- Height of the building: 25 m
- Floor slab to slab height: 5.5 m
- Plinth height: 2 m

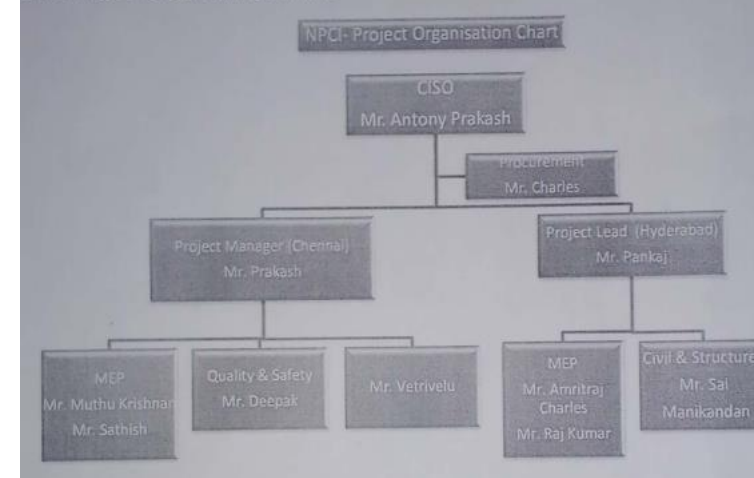
Future expansion of spaces: Server Hall 2 Nos – 1 no in operation, 1 for future expansion

2.6 PROJECT EXECUTION PLAN

NPCL CBRE	
The project to developing an IGBC-LEED Platinum / Gold rated Uptime Tier IV / Rated 4 with certification from National and International organization and meeting all local, National & International codes / norms, Guidelines with Utmost Priority for safety and security.	
As per RFP, Part A consist of Civil, Architectural, structural, finishes, external works including infrastructure and Part B consist of MEP & Data Center Fit outs. Detailed project details are given on Section 1.3	
1.3 PROJECT DATA	
Description	Details of the Project
Name of the Project	Smart Data Center
Location	Siruseri, Chennai - 601 103
Total Built up Area	1,35,000 Sqft.
Land Area	3.07 Acres
Project Completion Period	24 Months (Precon 6 months + Con & Exec 18 months)
Agreed start date as PO	05-Aug-19
Agreed Completion date as per PO	05-Aug-21
Actual Pre-Con Start Date	05-Aug-19
Projected Pre-Con Finish Date	28-Feb-20
Actual Con Start Date	22-May-20
Projected HOTO Finish Date	20-Jan-22
Approved Budget	172.09 Cr incl 1 yr O&M 4 yrs AMC

2.2 COMMUNICATION

2.2.1 PROJECT ORGANIZATION CHART



3.3 CHANGE MANAGEMENT

3.3.1 ROLES AND RESPONSIBILITIES- REFER RACI MATRIX

a) Authority to approve change.

Likely Change in Work order amount will be notified by CBRE to NPCL. NPCL will take the final call to approve the change. Any impact on quality/ design will be notified to Consultant/ Architect by CBRE for approval.

b) Responsibility for communicating change.

Architect / consultant/ NPCL shall be responsible for communicating the approval for the change in terms of

- i) Design Changes
- ii) Changes due to Client requirements
- iii) Changes due to Site Conditions

c) Responsibility for measuring Cost, Time & Risk impact

CBRE shall be responsible for recording and communicating to the concerned stake holders

3.3.2 MEASUREMENT & RECORD

a) Measurement during/after execution of work will be done as per GCC & SCC

b) Record of the Changes

i) Cost impact - Change Order Request via email, Change Order (CO) and Amendment Order (AO) - MOMs, Mail communications, Cost assessment sheets by CBRE, Amendment orders issued by client, Approvals for changes.

ii) Updating Cost and Time- Cost report and MPS will be updated in case of any impact after proper approval of the Change orders.

iii) Risk Impact, updating Risk Register / Risk Management Plan- will be updated after proper approval of the CO

iv) Safety impact- Will be analyzed and recorded by CBRE

3.3.3 DESIGN MANAGEMENT

a) Procurement Schedule - Contractor shall submit the procurement schedule in line with the MPS without altering the overall completion date.

b) Design Review Meetings - Design review meetings shall be conducted in case of requirement for major design clarifications and discussions. Agenda and MOM shall be circulated by CBRE.

c) Value Engineering- Value engineering, any if identified at the construction stage shall be discussed in the design review meetings or CBRE shall convene a meeting with Architects and consultants for discussion and approvals or shall convey the value addition concept to Consultant / Architect through email with the required work sheets. The meeting shall be recorded by CBRE.

Value engineering shall be recorded by CBRE after briefing the NPCL and sign off/ mail approval for the same shall be obtained from NPCL.

3.4 COST MANAGEMENT

CBRE will assist the client in preparing the project budget using the project conceptual cost estimate a cost reporting and coding structure based on the CMIS system. Administer the budget throughout the project life. Provide the client with information on the financial status of the project, actual cost against cost plan, cash flow analyses and forecasts, impact of change order and forecast anticipation Cost to complete the project. CBRE will Organize regular cost meeting and establish a contra- change tracking system. Review and advice on payments to trade contractors.

Figure 5 Project execution plan for NPCL Smart data center, Chennai

A Project Execution Plan (PEP) is a governing document that defines how a project is to be executed, monitored, and controlled. It establishes exactly how the project execution phase of the project will be managed to meet the requirements of the project or contract.

- Part 1: Project definition plan
- Part 2: Project administration
- Part 3: Execution plan
- Part 4: List of documented information
- Part 5: Processes & other deviations

Objective:

Successful delivery of project within budget, quality and time

Scope of PEP:

- To meet the requirements
- Document the process
- Establish ground rules & administer
- Deploy human resources

2.7 RISK REGISTER

Table 3 Risk matrix

Risk identification				Risk assessment				Risk mitigation						
Risk	Date reported	Project phase at identification	Risk description	Impact description	Risk category	Impact scaling	Risk rating	Risk status	Last update	Timeline to impact	Completed actions	Planned future actions	Responsible person	Target date of action
R59	18 Mar 20	Construction	May delay in commencement	Due to covid 19, mobilization will be difficult because of legal rules.	Schedule	4	12	Closed	28 Mar 20	<30 days	As per govt lockdown till 14 th Apr 20	NPCI planned to give letter of commencement from 20 th Apr 20		14 Apr 2020
R61	6 Apr 20	Construction	Form V to be shared to L&T	Form to be shared to LL&T by NPCI to take labor license	Statutory	4	16	Closed	27 Apr 20	<30 days	Form 1 filled	Form issued to L&T		27 Apr 20

Categories of risk:

- Scope
- Cost
- Schedule
- Statutory
- Quality

Severity of the impact

to the project:

- 1 – Very low
- 2 – Low
- 3 – Moderate
- 4 – High
- 5 – Very high

Prioritization of risk assessment:

- 1-4: **Green (Low risk)**
- 5-12: **Yellow (Moderate risk)**

A risk register is a tool in risk management and project management. It is used to identify potential risks in a project or an organization, sometimes to fulfil regulatory compliance but mostly to stay on top of potential issues that can derail intended outcomes.

While the risk register is mostly used during the execution of the project, it's part of your risk management plan, which must be given serious consideration by project managers during the project planning phase

2.9 UPTIME TIER STANDARDS

Typology: Tier IV data center



Table 4 Uptime testing scenarios

Item	Demonstration	Expected outcome	Load Bank power source	Results/ Comments
M1	With the facility supported by engine generators, simulate a fault on the 390-tons of refrigeration (TR) chillers (Chillers 1, 2, 3, and 4), along with their 125-A automatic transfer switch (ATS) via their inbuilt chiller controller or microprocessor, 1 at a time. Once complete, isolate the ATS and chiller for maintenance. Then, re-enable the chiller and its ATS. This will be performed in multiple iterations with multiple types of faults.	The chiller should autonomously shut down along with the associated primary pump to ensure there is no propagation of the fault. The remaining 3 chillers (N=2) should feed both chilled water paths (1 on the failed chiller path and the remaining 2 chillers on the complementary path). With 1 chiller out of service, the remaining 3 units should be able to ramp up and maintain a stable thermal environment in the data hall and other critical areas.	Both sources	☐ Successful ☐ Failed Initially failed; retry ☐ Successful ☐ Omitted ☐ Added Notes:
M2	With the facility supported by engine generators, simulate a fault/clogging of the air/dirt separator line on the A-side CHN-A Air/dirt separator. Once complete, isolate the separator for maintenance. Then, re-enable the separator.	The clogging or fault in Air Separator A should be alarmed on the BMS, and the normally open Motorized Valves A-MV1-AS and A-MV2-AS should close automatically while the normally open Bypass Valve AMV3-AS should open to continue the chilled water supply to the A side. There should be no impact on cooling of the critical areas	Any source	☐ Successful ☐ Failed Initially failed; retry ☐ Successful ☐ Omitted ☐ Added Notes:

The Uptime Institute Tier Standard: Topology is an objective basis for comparing the functionality, capacity and expected availability (or performance) of a particular site infrastructure design topology against other sites or for comparing a group of sites.

This Standard describes criteria to differentiate four classifications of site infrastructure topology based on increasing levels of redundant capacity components and distribution paths

This Standard is predicated on the fact that data centers are dependent upon the successful and integrated operation of several separate site infrastructure subsystems, the number of which is dependent upon the individual technologies (e.g., power generation, refrigeration, uninterruptible power sources) selected to sustain the operation

The purpose of this Standard is to equip design professionals, data center operators, and non-technical managers with an objective and effective means for identifying the anticipated performance of different data center site infrastructure design topologies

2.10 SNAG LIST

A snag list is an itemised checklist of outstanding tasks needing attention. Also called a punch list or deficiency list, a construction snag list includes any work that was not completed according to specifications or any items that need correction, such as incorrect installs or improper building functionality.

Snag list items are usually smaller fixes, and this is because larger issues typically come with urgency and have already been addressed through a variation.

De-snagging is to check if the defects from the original snagging list have been rectified and that nothing has been further damaged during the repairs

Status: C (Closed)

O (Open)

RNP (Repair Not Possible, to be accepted as is)

Status :

Total	448
C	192
O	256
RNP	0

S.No	Package	Vendor	Raised by	Raised on	Building/Floor /Area	Location	Snag Point/ Pending Works	Target Completion	Status	Actual Completion	Remarks
1	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	WLD cable laying	30-Jun-22	C	21-07-2022	
2	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	MMR room to DC room Fibre cable laying	30-Jun-22	O		
3	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	ELV cable dressing and cover fixing	30-Jun-22	C	26-07-2022	
4	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	Ceiling socket fixing for CHW pipe motorized actuator	30-Jun-22	C	18-07-2022	
5	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	BMS cable termination for ceiling mount AHU	30-Jun-22	C	21-07-2022	
6	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	BMS cable termination for CHW pipe motorized valve	30-Jun-22	C	21-07-2022	
7	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	East side passage area 1 no motorized actuator to be fixed	30-Jun-22	C	21-07-2022	
8	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	Ceiling mount AHU control cable termination	30-Jun-22	O		
9	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	Few areas U clamp to be provided for CHW pipe	30-Jun-22	O		
10	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	MS angle support to be fixed in ELV cable tray (Bend area)	30-Jun-22	C	25-07-2022	
11	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	Above ceiling gap closing between room to passage	30-Jun-22	O		
12	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	Ceiling electrical conduit found removed and wire visible bare, it has to be corrected	30-Jun-22	C	18-07-2022	
13	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	BMS unwanted cable kept on ceiling cable tray it has to be removed	30-Jun-22	C	25-07-2022	
14	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	Fire rated duct around fire rated sealant to be provided	30-Jun-22	O		
15	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	PHE supply water pipe support to be fixed	30-Jun-22	O		
16	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	Few area Electrical lighting wire dropped without flexible hose	30-Jun-22	C	18-07-2022	

S.No	Package	Vendor	Raised by	Raised on	Building/Floor /Area	Location	Snag Point/ Pending Works	Target Completion	Status	Actual Completion	Remarks
17	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 1	Painting to be done on hand fabricated 150 mm perforated cable tray	30-Jun-22	C	19-07-2022	
18	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 2	CAT6 cable is not laid in ELV GI cable tray, it should be dressing and GI cover to be provided on cable tray	30-Jun-22	O		
19	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 2	VESDA pipe not fixed properly and VESDA pipe to be connected with bend	30-Jun-22	C	21-07-2022	
20	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 2	Above ceiling near UPS room ELV conduit drop without camp laid	30-Jun-22	C	25-07-2022	
21	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 2	Above ceiling socket front plate to be fixed and circuit identification sticker to be provided	30-Jun-22	O		
22	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 2	Above ceiling plenum duct angle support has not fixed properly	30-Jun-22	O		
23	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 2	Ceiling mount AHU supply dropper duct insulation to be done	30-Jun-22	O		
24	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 2	Ceiling cable tray entry area fire sealant to be provided	30-Jun-22	O		
25	MEP	L&T	CBRE	27-Jun-22	1F	East Corridor - Zone 2	Above ceiling control module front plate to be fixed	30-Jun-22	C	21-07-2022	

2.11 ASSET HANDINGOVER LIST

Assets Handing Over List - (CIVIL INTERIOR)											
NPCI Smart Data Center - Chennai											
LOCATION & ITEMS	Café STORE ROOM	Café HAND SH	Café PLAT DISPOSAL AREA	PLATE WASH AREA	Café FOOD PREPARATION AREA	Café DINNING AREA	GENTS TOILET	LADIES TOILET	HWC TOILET	JANITOR ROOM	TOTAL
INTERIOR/MODULAR											
Microwave Counter						1					1
Display Unit with shelf						1					1
Planter Box						1					1
10 Meter table with SS leg						1					1
High stool						16					16
Chair						60					60
Table 4 seat						15					15
Table 8 seat						2					2
Door with lock	1		1	1	2	1	1	1	1	1	10
Door with Allen key											0
Ceiling trap door					3						3
Granite counter with storage					1						1
Granite wash basin counter		1					1	1			3
Mirror		3					1	1	1		6
Dustbin		2	1		1		3	3	1		11
Storage										1	1
Cubical							2	2			4
L&T Signature: <i>[Signature]</i> Name: <i>Balamurugan M.</i> Date: <i>2/7/22</i> CBRE Signature: <i>[Signature]</i> Name: <i>K. Ramesh</i> Date: <i>8/7/2022</i> NPCI Signature: <i>[Signature]</i> Name: <i>Royavel</i> Date: <i>25/07/22</i> Format No. G006-Ho-Fr-053/Rev02/Jul2016 Handover of assets only subject to completion of all snag points. Royavel											

Assets Handing Over List									
NPCI SDC - CHENNAI									
THIRD FLOOR	UOM	DC Operation	Meeting room 1	Meeting Room 2	Corridors	P. Lift Lobby	Male Toilet	Female Toilet	Janitor room
ELECTRICAL									
Light fixtures Model of 2x2	Nos		6	6		4			
Occupancy Sensor	Nos	6	1	1	7	1	1	1	
Lighting Switch	Nos	2	1	1	10	2	3	3	1
6 Module Power Socket	Nos	27	6	6					
3 Module Power socket	Nos	30	4	4	7	2	4	4	
Industrial socket	Nos								
Ceiling fan	Nos								
Lift Sub DB	Nos	-				2			
2x4 Light Fixture	Nos	18							
Spot Light	Nos				29		10	10	1
4 ft Linear light	Nos				4				
HVAC									
4 Way Cassette Unit with remote	Nos	6	1	1					
DX unit	Nos								
Fresh Air Diffuser	Nos	1	1	1					
Exhaust Air Grill	Nos						8	6	
Pressurization Air Grill	Nos					1			
Inline Fan	Nos						1	1	
AUDIO/VISUAL & DATA/VOICE									
Data Point	Nos	46	2	2					
Voice	Nos	46	1	1					
Dual Face Plate	Nos	46	3	3					
IO	Nos	92	3	3					
LG 45" Video Wall Display	Nos	6							
Mounting brackets push pull type	Nos	6							
12U rack	Nos	1							
Datapath video wall processor	Nos	1							
Polycom Camera with stand	Nos		1	1					
65" Display	Nos		1	1					
2 channel receiver with docking station	Nos		1	1					
Ceiling 360 degree Microphones	Nos		3	3					
Polycom Sound structure (DSP)	Nos		1	1					
Ceiling speakers	Nos		3	3					
Amplifier	Nos		1	1					
Polycom VC	Nos		1	1					
FPS									
Upright Sprinkler	Nos	12	4	4	18	4	3	3	1
Concealed Pendant Type Sprinkler	Nos	24	4	4	21	4	3	3	
Fire Extinguisher-6Kg Abc Powder	Nos	1			4	1			
Fire Extinguisher-2Kg Clean Agent	Nos	1							
Fire Extinguisher-4.5Kg CO2	Nos								
Fire Extinguisher Signage	Nos	2			4	1			
LED Exit Signage	Nos	2			5	1			
Signage - MCP	Nos				2				
Evacuation Map	Nos				2				
Signage - Do not use Lift in case of fire	Nos					1			
Fire bucket with sand	Nos					1			
ELV									
Multi class Reader	Nos	2				2			
1200LBS Electromagnetic Lock (Double Leaf)	Nos	1			2	1			
Magnetic Contact	Nos	2			4	2			
Buzzer	Nos	1				1			
EDR	Nos	1			3				
Fixed Dome Camera	Nos	2			4	1			
Above False Ceiling Smoke Detector	Nos	8	2	2	11	2	1	1	1

Page 1 of 2

Handover and close out takes place after the construction has ended. The employer is able to occupy the development but the contractor remains responsible for rectifying defects during a period known as the 'defects liability period' (or 'rectification period') which typically lasts six to twelve months.

Project handover starting with:

- Testing and commissioning
- Defect management
- Compliance reporting
- The project handover

NPCI

CBRE

DAILY PROGRESS REPORT															
NPCI- Smart Data Center, Chennai															
Client	National Payments Corporation of India										RAIN HINDRENCE IN HOURS				
PMC	CBRE South Asia Pvt. Ltd										From		To	Hrs	Total Hrs
Contractor	Larsen & Tourbo Ltd														

2.13 MONTHLY WORK DONE PLAN

NPCI- Smart Data Center, Chennai								
KPI		DATE	03-11-2022	P - Planned; A - Anticipated / Actual				
ID	Activity	Quantity	UOM	Duration in days	Start Date	Finish Date	Progress Status as per baseline schedule	Cumulative Planned Vs Achieved as per baseline schedule
Main Building								
Above Terrace & Mumty level								
41	Pedestal	156	Nos	P 12 A -44358	16-Apr-21 11-Jun-21	28-Apr-21	100% 98%	156 153
4	Terrace Water proofing work	2625	Sqm	P 14 A 95	24-Jun-21 15-Jun-21	08-Jul-21 18-Sep-21	100% 100%	2625 2625
	Terrace screed	376	Cum	P 14 A 16	24-Jun-21 03-Sep-21	08-Jul-21 19-Sep-21	100% 100%	376 376
5	Mumpty terrace Water proofing work	300	Sqm	P 14 A 8	24-Jun-21 10-Sep-21	08-Jul-21 18-Sep-21	100% 100%	300 300
5	Expansion joint	40	Rmt	P 24 A 0	16-Apr-21	10-May-21	100% 0%	40 0
6	Eye bolt fixing	360	Nos	P 24 A 0	16-Apr-21	10-May-21	100% 0%	360 0
Ground floor structure - Misc work								
1	North side DA Ramp concrete work	1	No	P 23 A 0	05-Jun-21 04-Jun-21	28-Jun-21	100% 100%	1 1
2	North side Entrance steps concrete work	16	Cum	P 23 A -44460	05-Jun-21 21-Sep-21	28-Jun-21	100% 50%	16 8
3	South side Dock leveller concrete work	1	No	P 23 A 0	05-Jun-21 09-Aug-21	28-Jun-21 09-Aug-21	100% 100%	1 1
4	West Side ramp & steps concrete work	2	Cum	P 23 A 10	05-Jun-21 05-Jun-21	28-Jun-21 15-Jun-21	100% 100%	2 2
5	East Side ramp & steps Concrete work	5	Cum	P 23 A 0	05-Jun-21 31-Jul-21	28-Jun-21 31-Jul-21	100% 100%	5 5
6	South side basement access ramp Concrete work	5	Cum	P 23 A 0	05-Jun-21	28-Jun-21	100% 0%	5 0
Finishing Works								
Basement								
1	Basement block work	30	Cum	P 13 A 26	27-Jan-21 20-Feb-21	09-Feb-21 18-Mar-21	100% 100%	30 30
2	Basement wall & Ceiling Plastering	1495	Sqm	P 13 A 37	27-Jan-21 22-Feb-21	09-Feb-21 31-Mar-21	100% 100%	1495 1495
3	Basement Primer coating work	1495	Sqm	P 11 A -44274	27-Feb-21 19-Mar-21	10-Mar-21	100% 49%	1495 733
4	Basement painting	1495	Sqm	P 11 A -44274	27-Feb-21 19-Mar-21	10-Mar-21	100% 47%	1495 700
5	Basement IPS Flooring	210	Sqm	P 3 A 1	13-Mar-21 23-Apr-21	16-Mar-21 24-Apr-21	100% 100%	210 210
6	Rolling shutter	1	No.s	P 1 A -44432	29-May-21 24-Aug-21	30-May-21	100% 100%	1 1
Ground floor								
1	Ground block work	820	Cum	P 62 A -44233	04-Feb-21 06-Feb-21	07-Apr-21	100% 99%	820 814
2	Ground wall & ceiling plastering work	9019	Sqm	P 28 A -44237	10-Feb-21 10-Feb-21	10-Mar-21	100% 100%	9019 8983
3	Ground floor POP work	2650	Sqm	P 52 A -44274	01-Mar-21 19-Mar-21	22-Apr-21	100% 98%	2650 2598
4	Ground floor primer work	9019	Sqm	P 52 A -44274	01-Mar-21 19-Mar-21	22-Apr-21	100% 87%	9019 7850
5	Ground Painting work	9019	Sqm	P 52 A -44274	01-Mar-21 19-Mar-21	22-Apr-21	100% 70%	9019 6299
6	External plastering	1561	Sqm	P 28 A -44333	10-Feb-21 17-May-21	10-Mar-21	100% 96%	1561 1496
False flooring								
1	Ground floor IPS flooring	1809	Sqm	P 19 A -44274	27-Feb-21 19-Mar-21	18-Mar-21	100% 98%	1809 1775
2	Epoxy flooring	1809	Sqm	P 26 A -44292	06-Jun-21 06-Apr-21	02-Jul-21	100% 6%	1809 101
3	Granite flooring , Cladding & Wash basin counter	380	Sqm	P 29 A -44428	05-Mar-21 20-Aug-21	03-Apr-21	100% 16%	380 62
4	Marble flooring	135	Sqm	P 29 A 7	05-Mar-21 24-Aug-21	03-Apr-21 31-Aug-21	100% 100%	135 135

P&M PLAN, RAIN LOG

Larsen & Toubro - Buildings & Factories IC				
NPCI Data Center Project, Chennai				
Plant & Machinery Plan				
Sl. No	Plant & Machinery	Sep-21		Remarks
		Planned	Achieved	
1	Multi-function hoist	1	1	
2	Air compressor	1	1	
3	Compressor Testing machine - 300T	1	1	
4	DG Set 125 KVA	1	1	
5	DG Set 40 KVA	1	1	
6	Skid Steer Loader	1	1	
7	Bar Bending Machine - 42mm	3	2	
8	Bar Shearing Machine - 42mm	3	2	
9	Auto level	1	1	
10	Water Pump	2	4	
11	Dewatering Pumps	1	10	
12	Portable Welding Machine	2	4	
13	Plate Compactor	2	2	
14	Breaker / Chipping Machine	2	4	
15	Needle Vibrators	2	4	
16	Drilling machine	5	5	
17	Wood Planner	1	1	
18	Circular Saw	1	1	
19	WeighScale - 300kg	1	1	
20	Vibratory roller 3T	1	1	
21	Vibratory roller 1T	1	1	

PROGRESS PHOTO



West side solar parking footing curing work

2.14 LABOUR REPORT

Labour Report - 29-September-2021																
S.No	Name of the Company	Rig Operator / Excavator operator	Barbender + Helper	Mason + Helper	Carpenter + Helper	Khalasi	Unskilled	Welder + Fitter	Surveyor	Supervisor / Foreman / engineer	Security	Painters & POP	Others	Total Man power in Night Shift	Total Man power in Day Shift	Today Night shift plan
Data Centre																
1	Jogi (Day)														0	
2	Saroj Gupta(Day)														0	
3	Unique civitech Waterproofing												4		4	
FINISHING WORK																
1	Anand chanda			22											22	
2	MD Khan			47						7					54	
3	SK Pradhan			2											2	
4	Mukesh kumar sah			6											6	
5	Asgar khan			20											20	
6	Pentagon Engg (Painters)											4			4	
7	Om Enterprises (IPS flooring)														0	
8	Manoji kumar Gupta						13								13	
9	Saroj Gupta(Day)						24								24	
10	Christ Engineering (Fabrication & erection)														0	
11	Mithkesh yadav				2										2	
12	G.N Sharma (Day)						12								12	
13	Stone Zebra (Granite Kotah Flooring)												1		1	
14	Pradip kumar dalai (Tile work)														0	
15	Odd jobs (Interior works)												3		3	
16	R Suguna					8									8	
17	Krishna				4										4	
18	SKJ Associates (POP)											7			7	
19	Abhaykumar biswal														0	
20	Nakoda (Marble flooring)														0	
21	Avians (Rolling shutter)														0	
MEP																
1	Honey well Automation												18		18	
2	Honey well Automation (Night)													0		
3	Unimech system india pvt ltd												29		29	
4	Unimech system india pvt ltd (Night)													0		
5	Shankar Electrical (MEP)												39		39	
6	Shankar Electrical (MEP)- Night													0		
7	Canter Engineer (Firefighting)												23		23	
8	Canter Engineer (Firefighting) - (Night)													0		
9	Sunline Infratech												1		1	
10	Sunline Infratech (Night)													0		
11	E Power engineering												4		4	
12	E Power engineering (Night)													0		
13	DG work												8		8	
14	DG work (Night)													0		
15	Racks vertiv														0	
16	Stp WTP														0	
17	Blue box														0	
18	Lift												1		1	

RAIN LOG

L&T Construction					
NPCI - Chennai Rain Log Status					
Sl.No	Date	From	To	Hrs	Remarks
1	04 November 2020	03:50 AM	04:30 AM	0.40	
2	05 November 2020	11:30 PM	12:00 AM	0.30	
3	07 November 2020	09:30 AM	06:30 PM	6.00	6 hrs only accepted
4	11 November 2020	11:30 AM	12:00 PM	0.30	
5	11 November 2020	07:00 PM	08:00 PM	1.00	
6	12 November 2020	05:15 AM	05:45 AM	0.30	
7	12 November 2020	07:00 AM	08:30 AM	1.30	
8	12 November 2020	11:00 PM	11:20 PM	0.20	
9	13 November 2020	05:35 AM	06:10 AM	0.35	
10	13 November 2020	11:00 AM	11:15 AM	0.15	
11	13 November 2020	03:50 PM	04:25 PM	0.35	
12	13 November 2020	05:10 PM	06:00 PM	0.50	
13	16 November 2020	10:30 AM	06:00 PM	8.30	
14	18 November 2020	2.55 AM	03:10 AM	0.15	
15	23 November 2020	08:45 PM	09:05 PM	0.20	
16	23 November 2020	10:35 PM	11:40 PM	1.05	
17	24 November 2020	02:10 AM	02:45 AM	0.35	
18	24 November 2020	02:45 AM	04:30 AM	1.85	
19	24 November 2020	05:45 AM	08:45 AM	3.00	
20	24 November 2020	09:40 AM	10:45 AM	1.05	
21	24 November 2020	11:45 AM	12:30 PM	0.85	
22	24 November 2020	02:45 PM	06:00 PM	3.55	
23	25 November 2020	Full day Heavy rain			Holiday declared by Govnt & Site suspended by L&T
24	26 November 2020	Full day Heavy rain			
25	29 November 2020	05:30 AM	05:40 AM	0.10	
26	29 November 2020	04:30 PM	04:50 PM	0.20	Heavy rain
1	02 December 2020	07:05 AM	08:05 AM	1.00	
2		05:15 PM	08:30 PM	3.15	
3		09:45 PM	02:00 AM	4.15	
4	03 December 2020	02:30 AM	04:05 AM	1.35	
5		05:15 AM	08:10 AM	2.35	
6		08:45 AM	09:10 AM	0.25	
7		10:05 AM	10:25 AM	0.20	
8		12:45 PM	01:35 PM	0.50	
9		04:30 PM	05:15 PM	0.45	
10		05:45 PM	06:25 PM	0.40	
11		7:10PM	07:40 PM	0.30	
12		09:45 PM	10:15 PM	0.30	
13		11:30 PM	01:00 AM	1.30	
14	04 December 2020	02:00 AM	03:45 AM	1.45	
15		5:00AM	8.50 AM	3.50	
16		09:15 AM	11:55 AM	2.40	
17		12:10 PM	01:15 PM	1.05	
18		03:00 PM	07:30 PM	4.30	
19		10:45 PM	11:00 PM	0.15	
20	05 December 2020	12:00 AM	12:45 AM	0.45	Raining
21		01:30 AM	02:15 AM	0.45	Heavy rain
22		02:50 AM	04:00 AM	1.10	Heavy rain
23		05:50 AM	07:00 AM	1.10	Raining
24		09:15 AM	10:10AM	0.55	
25		10:30AM	10:50AM	0.20	

Rain log used to record event of rain daily since it helps in claiming delay for the contractor. Because of this the event of work will be disrupted it should be attached with the weather report to claim

2.15 AGENDA AND MINUTES OF THE MEETING



Agenda

Project: NPCI- Smart Data Center **Location: Chennai & Hyderabad**

NPCI Smart Data Centre – NPCI -CBRE weekly meeting

Venue: Video Conference **Date: 19.01.22** **Time: 11:30 Am to 12:30 Pm**

Attendees Required:

Client	M/s NPCI	Mr. Pankaj, Mr. Amritraj, Mr. Deepak, Mr. Rajavel, Mr. Sai Manikanda, Mr. Srinivasalu, Mr. Sathish, Mr. Muthukrishnan,
Project Manager	M/s CBRE South Asia Pvt Ltd.	Mr. Pinto, Mr. Parthiban, Mr.Kodhandapani, Mr. Ilayaraja, Mr. Leo, Mr.Chakravarthy, Ms. Vinodha, Mr. Karma, Mr. Shahnawaz, Mr. Arjun,Mr.Suresh

S. No.	Discussion Points	Action By	Target Date
1.	L&T EOT response - Closed	NPCI / CBRE	
2.	Culvert Approval - Technical & Commercial approval shared with L&T Final Commercial order for Culvert works	NPCI	02-Dec-21
3.	Texture Paint Conclusion - CHN & HYD - Closed	NPCI / CBRE	
4.	ISAT Script	CBRE - ICS	CBRE - 10-Dec-21
5.	First floor Data center BBT tapoff box bottom and the top of the Rack section	NPCI/ CBRE	
6.	Shaft Door - Confirmation	NPCI / CBRE	
7.	HDD for Hyderabad 33Kv Cable	NPCI	31-Dec-21
8.	Completion certificate process for DTCP - Chennai & ECBC - Hyd, HMDA OC CEIG Certification	NPCI / CBRE	
9.	RFC confirmation from L&T for 2 nd & 3 rd Floor Modification	NPCI / CBRE	Hyd- 04-Dec-21 CHN - 15-Dec-21
10.	DG Structure Slab Costing	CBRE / NPCI	15-Dec-21
11.	Misc. Points if any.	CBRE / NPCI	



Minutes of Meeting

Project: NPCI- Smart Data Center **Location: Chennai & Hyderabad**

NPCI Smart Data Centre Build- NPCI Approval Status #086

ATTENDEES:

Client	M/s NPCI	Mr. Pankaj, Mr. Amritraj Charles, Mr. Deepak, Mr. Sathish, Mr. Muthu, Mr. Rajavel
Project Manager	M/s CBRE South Asia Pvt Ltd	Mr. Pinto, Mr. Parthiban, Mr. Chakravarthy, Mr.Kothandapani, Mr. Ilayaraja, Mr. Leo, Ms. Vinodha, Mr. Karma, Mr. Arjun,

CURRENT MEETING:

	Scheduled	Actual
Venue:	Video Conference	Video Conference
Date:	19-01-2022	19-01-2022
Time:	01:00pm to 02:00Pm	01:00Pm to 02:30Pm

Next meeting Scheduled on: 26.01.22

MOM Recorded by: Parthiban. R

S. No.	Agenda	Discussion / Decision	Action By	Target Date
PENDING POINTS TILL LAST MEETING # 68				
1.	DG Structure Slab Costing - Chn & Hyd	CBRE CHN team asked to share the L&T's Hyd proposal for review and comparison L&T yet to submit the quote for DG structure, NPCI instructed to Follow Keenly with L&T, CBRE replied most probably today (02-Dec-21) the Quote will be shared by L&T. L&T not yet submitted the quote for DG structure Roof slab, for commercial comparison we have collected quotes from other vendors too, NPCI suggested for a RA (reverse auction method). L&T not yet submitted the quote for DG structure Roof slab , NPCI Informed that, the Reverse auction to be started soon.	CBRE	01-Sep-21 15-Sep-21 22-Sep-21 23-Oct-21 18-Nov-21 15-Nov-21 24-Nov-21 02-Dec-21 15-Dec-21
2.	ISAT Script	NPCI asked to share the General Script for a preliminary requirement. L&T will share the ISAT script by today 24-Nov-21, as they committed in last week - for DG L4 script submitted by L&T and Equipment wise subsequently will be shared by L&T, NPCI asked to submit L5 script also For HYD L&T committed to share the script by 5 th - Dec'21 CBRE will share the Project specific ISAT script by First week of Dec'21 10-Dec'21 CBRE Testing & Commissioning team reports at site from yesterday 01-Dec-21	L&T	L&T 24-Nov-21 CBRE 07-Dec-21-10-Dec-21

2.16 METHOD STATEMENT FOR FALSE CEILING WORKS

Objective: Fixing false ceiling as per the pattern approved in shop drawing to the required level below the slab with straight line joints and finished as per the specifications in NPCI- SDC PROJECT, CHENNAI / HYDERABAD

Reference:

- 1.Client / Consultant approved drawings
- 2.Technical specifications and BOQ
- 3.Finishing schedule matrix

Table 5 Method statement for false ceiling works

S. No	Procedure	Responsibility	Check by	Record
1	Check for approved type, Dimension as per specification and drawing & arrange for mockup and get it approved Setting out and marking will be done as per approved shop drawing ceiling height of various areas shall be marked based on the benchmark provided by main contractor level will be transferred on all the corners and chalk lines will be marked. Note-Finishing schedule shall be referred prior to start the activity	Finishing engineer	Finishing in charge / QAQC engineer	LT/NPCI/MS/17
2	Mark the pattern on the slab as per drawing the wall angles will be fixed along the marked ceiling line depending on the substrate at 600mm to center spacing. Before fixing the wall angle the substrate has to receive necessary finishes as per the finish schedule. Fixing of hangers will be done as per the approved shop drawing layout details and using hanger anchorage devices of the soffit as per approved material submittal. The position of the hangers will be marked on the soffit of the slab, which has to be reviewed by main contractor site engineer upon receipt of MEP clearance hangers shall be fixed at a spacing of 1200mm centers on both the directions where MEP services are clashing with fixing hangers, additional supplies shall be provided by agreeing with main contractor on site The framework will be done according to the approved shop drawings and with approved materials. Framing members such as Main Runners and Furring Channels of 0.55mm thick shall be placed as a spacing of 1200mm and entries respectively. Heavy recessed fixtures should be independent of the ceiling framing stems Upon completion of framework, respective areas shall be offered for main contractor and consultant inspection request will be raised on prescribed formats for first	Finishing engineer	Finishing in charge / QAQC engineer	

	and second fix of ceiling. Written clearance for MEP and associated works to be different stages for the uninterrupted flow of our works. Upon receiving the approval and MEP clearance. Void closures shall be started by gypsum board installation. Gypsum boards of specified type (Regular) shall be applied to the framing using gypsum screws at 200mm. For tile ceiling, the void closure will be done by placing calcium silicate tiles on the complete grid work.			
3	Seek clearance from the respective engineers to ensure the completion of all service works like electrical and PHE. Carry out post check on levels of RC slab or any MEP works where has to be done	Finishing engineer	Finishing in charge / QAQC engineer	
4	Check the line, level, joint evenness and slope during installation First coat is initial jointing process where the fiber tape is fixed over the thin joining compound applied over the joints. Another layer of jointing compound application would be done over the tape. This would be approximately 75mm wide. Screw heads also will be covered by the application of the joint compound. The second and third coat will be applied successively after having dried the previous coats. Each successive coat to be feathered 40mm beyond the previous layer sides of the joint This would be sanded smooth after drying and leave for receiving decoration by following trades.	Finishing engineer	Finishing in charge / QAQC engineer	
5	Ensure and continuous uniform pattern	Finishing engineer	Finishing in charge / QAQC engineer	
6	Post check to be carried out and recorded. On completion of taping, jointing and sanding subcontractor supervisor will check the level and make sure that is in true level and the work is within the tolerance limits.	Finishing engineer	Finishing in charge / QAQC engineer	
7	Ensure intermediate channel resting on perimeter channel. Fix ceiling section perpendicular to the intermediate channel by using connecting clip	Finishing engineer	Finishing in charge / QAQC engineer	

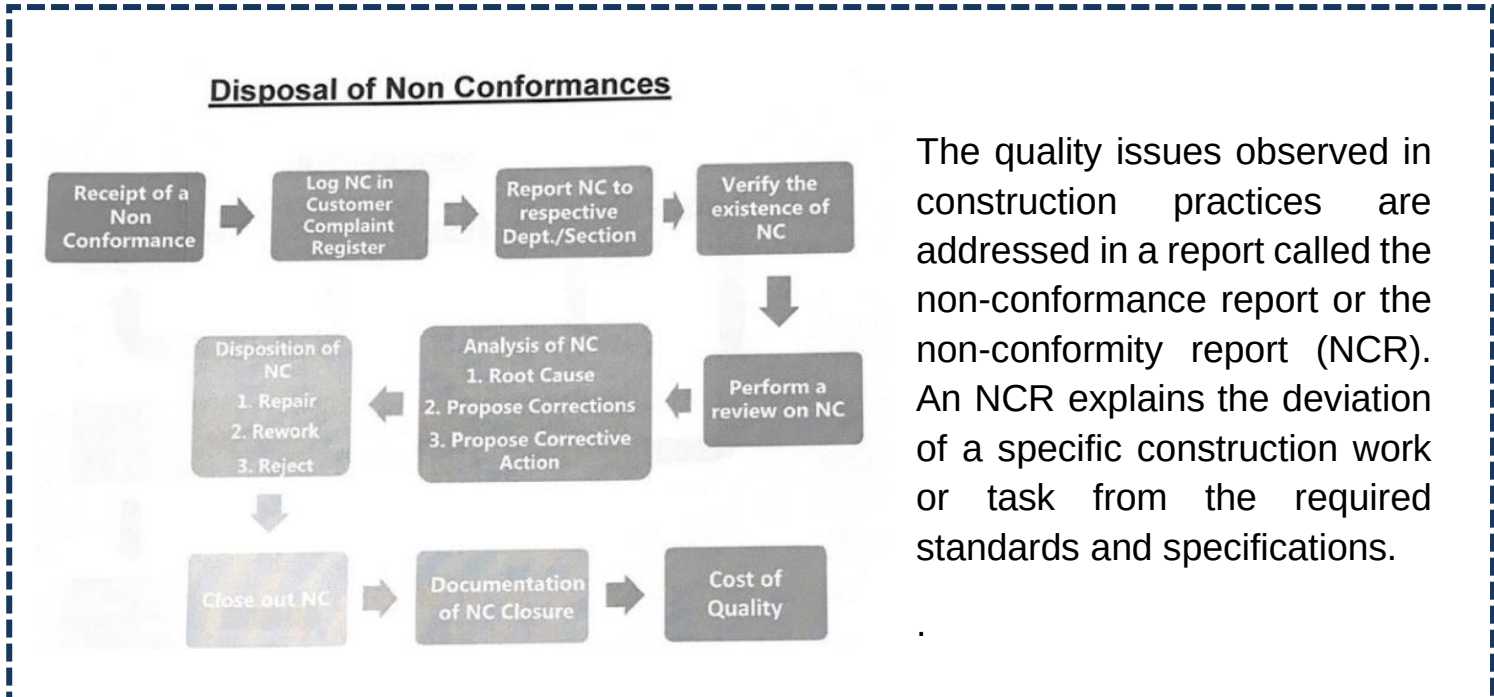
2.17 COMPLIANCE & DISPOSAL OF NON-CONFORMANCES

Site Note - Unsafe Condition

Project: NIPCI-CHENNAI DATA CENTRE-NEW BUILD-CONSTRUCTION MANAGEMENT-GOV'T
Package: EPC Contract
Vendor: Larsen & Toubro Ltd.
Incident: Unsafe Condition
Incident Date: 14-06-2021 11:21
Reason: Material Handling & Storage
Result: No Injury or Property Damage
Location: DG Shed
Description: Unsafe stacking of chimney exhaust pipe
H140621R1-1-775-1.jpg
-047-1.jpg
Corrective Action: Informed contractor for initiating action
Preventive Action: Explained impact on spot
Behaviour Root Cause: Human Error
Closure Reason: NC is full comply without penalty

Compliance photos:
Stack arrangement for DG exhaust pipe stacking

Compliance verified by
T. Jeyaraj
30/06/2021



RACI MATRIX

In a large project, there may be many people that have some role in the creation and approval of project deliverables. For complicated scenarios involving many people, it can be helpful to have a Deliverable Responsibility Matrix. This is also called a RACI chart. This helps set expectations and ensures people know what is expected from them.

On the matrix, the different people (or roles) appear as columns, with the specific deliverables in question listed as rows. Then, use the intersecting points to describe each person's responsibility for each deliverable.

The purpose of the matrix is to clarify and gain agreement on who does what, so you can define the columns with as much detail as makes sense

	Project Sponsor	Project Director	Project Manager	Project Team	Steering Committee
Project Charter	A	A	R	C	A
Communication Management Plan	A	C	R	I	C
Business Requirements	A	I	R	C	I
Status Reports	I	I	R	C	I

- “R” means that the person (or role) is responsible for the deliverable. Usually there is only one person who is responsible for creating a deliverable, although many people may provide input.
- “A” means that the person (or role) approves the deliverable.
- “C” means that the person (or role) is consulted on the deliverable. This implies there is two-way discussion.
- “I” means that the person (or role) is informed of the deliverable. This is one way communication.

2.18 CHANGE MANAGEMENT – REQUEST FOR CHANGE & ANNEXURE

REQUEST FOR CHANGE																
1	Project Name	Smart Data Center	Location	Chennai												
2	Package	FAÇADE WORKS	RFC No.	011												
3	Change requested by	Mr.Pankaj Kasturay	Head -DC build	Date 29-Nov-21												
4	Requestor Organization	NPCI	Category	Client												
5	Related References GFC Drawing Ref Ground Floor Plan CHN-B1-A-2001-R3, Minutes Of Meeting Ref 074. NPCI_SDC_MOM0074_Dtd 131021- NPCI~CBRE WM															
6	Original Proposed change In Tender stage, the Main entry door at reception (reception to corridor) considered as Glass swing door using Patch fittings and the same was quoted by L&T (ref Interior BOQ item 8.b) Now as per NPCI instruction for a functional requirement and advanced technology it is decided to go with the Automatic sliding door instead of Swing door hence the existing QRO item (Ref Interior BOQ item 7) of Automatic sliding door shall be operated instead of 2 Nos Swing door.															
7	Justification to Avoid frequent manual usage and man movement traffic Automatic sliding door is the best option compare to swing door															
8	Impact of NOT implementing Manual usage will be high, frequent maintenance will take place, man movement traffic will be there															
9	Alternatives NA															
10	Advantages/disadvantages if alternatives are implemented as compared to original proposed change. NA															
11	Review by Designers <table border="1"> <thead> <tr> <th>Review date</th> <th>Reviewer's name</th> <th>Reviewer's Role</th> <th>Recommendation</th> </tr> </thead> <tbody> <tr> <td>29-Nov-21</td> <td>Christy Pinto</td> <td>Project Manager</td> <td>Approve original proposal</td> </tr> </tbody> </table>				Review date	Reviewer's name	Reviewer's Role	Recommendation	29-Nov-21	Christy Pinto	Project Manager	Approve original proposal				
Review date	Reviewer's name	Reviewer's Role	Recommendation													
29-Nov-21	Christy Pinto	Project Manager	Approve original proposal													
12	Change Request Analysis <table border="1"> <thead> <tr> <th>Parameters Affected (Choose applicable ones from drop down list)</th> <th>Brief Explanation of the impact</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>				Parameters Affected (Choose applicable ones from drop down list)	Brief Explanation of the impact										
Parameters Affected (Choose applicable ones from drop down list)	Brief Explanation of the impact															
a)	Project Schedule	No impact														
b)	Project Costs	Cost Impact Will be 352000														
c)	Project Scope	QRO item to be Operated (7a) Scope to be reduced (8b)														
d)	Contract Amendment/Change Order	Change Order and Contract Amendment is required														
e)	Major Deliverables/Outcomes	No Challenge														
13	Rough Order of Estimate (ROM)-(attach the estimate calculations sheet) <table border="1"> <thead> <tr> <th>COST :</th> <th>Amount</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>₹</td> <td>1,76,000.00</td> <td>Cost as per PO</td> </tr> <tr> <td>₹</td> <td>5,28,000.00</td> <td>Change order request</td> </tr> <tr> <td>₹</td> <td>3,52,000.00</td> <td>Cost Impact</td> </tr> </tbody> </table>				COST :	Amount	Description	₹	1,76,000.00	Cost as per PO	₹	5,28,000.00	Change order request	₹	3,52,000.00	Cost Impact
COST :	Amount	Description														
₹	1,76,000.00	Cost as per PO														
₹	5,28,000.00	Change order request														
₹	3,52,000.00	Cost Impact														
14	Initial Review <table border="1"> <thead> <tr> <th>Review date</th> <th>Reviewer's name</th> <th>Reviewer's Role</th> <th>Recommendation</th> </tr> </thead> <tbody> <tr> <td>29-Nov-21</td> <td>Christy Pinto</td> <td>Project Manager</td> <td>Approve original proposal</td> </tr> </tbody> </table>				Review date	Reviewer's name	Reviewer's Role	Recommendation	29-Nov-21	Christy Pinto	Project Manager	Approve original proposal				
Review date	Reviewer's name	Reviewer's Role	Recommendation													
29-Nov-21	Christy Pinto	Project Manager	Approve original proposal													
15	Client Final Approval <table border="1"> <thead> <tr> <th>Final Approval date</th> <th>Name</th> <th>Title</th> <th>Final Decision</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>Original proposal Approved</td> </tr> </tbody> </table>				Final Approval date	Name	Title	Final Decision				Original proposal Approved				
Final Approval date	Name	Title	Final Decision													
			Original proposal Approved													

ANNEXURE

PROJECT : SMART DATA CENTER , CHENNAI

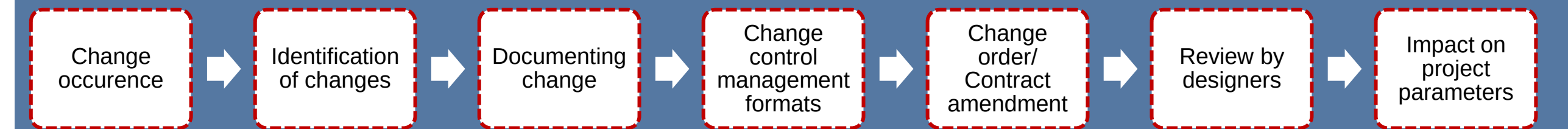
Annexure 1

[illegible]

Purpose:

To track and document individual identified project change request that affect project parameter, assessment, approvals and actions. Create platform for transformed and informed decision-making process.

Procedure:



Change request analysis:

Schedule, Cost, Quality, Scope, Roles/Responsibilities, Change order, Major deliverable outcome, Approved make/Brand, Technology.

Change control Log:

Change identification, Initial assessment, Client final decision, Change order status, Budget and Cost report status, Project schedule status.

CBRE

CHECK LIST FOR MATERIAL INSPECTION

VENDOR NAME: <u>LRT Construction.</u>		DATE OF INSPECTION: <u>19/02/21.</u>	
Name of the project	: <u>NPCIL-39C - Chennai</u>		
Package	: <u>Civil Structural - Steel, MBP.</u>		
Material Description	: <u>Name of Materials - PPC - Cement.</u>		
Quantity as per DC	: <u>20.0 MT.</u>		
D.C No & date	: <u>8996509840 - Dt: 18/02/21.</u>		
Date of receipt at Site	: <u>19/02/21.</u>		
Batch No	: <u>Batch no - 07/2021.</u>		

S.NO.	ACTION	Result			REMARKS
		Y	N	NA	
1	Check for specifications as per Tender	✓			
2	Manufacturer certificate attached	✓			
3	Warranty certificate attached			✓	
4	Check for quality as per challan (in the remarks specify the check conducted and the result and whether it is accepted)	✓			
5	Check for dimensional stability		✓		
6	Check for colour	✓			
7	Check for breakages		✓		
8	Check for packing	✓			
9	Check for any defects		✓		
10	Make	✓			<u>Vitrach - PPC. Cem</u>
11	Check for quantity as per challan	✓			

COMMENTS
Test certificate to be produced / submitted

CBRE

VENDOR

70204-00-01-195/Rev01/Rev2013

➤ Invoice Copy.

➤ Material : Test Certificate

22

2.20 MATERIAL INSTALLATION CHECKLIST

FALSE CEILING

NPCI CBRE

1st Floor - Service Lobby

Inspection Report
Checklist for Suspended False Ceiling

Project	Smart Data Centre	Inspection Report No	21/2/22
Client	NPCI - Smart Data Centre	Date	
PMC	CBRE South Asia Pvt. Ltd.	Structural Member	
Vendor	1ST Construction	Details	
Package	Civil, Structural Steel, MEP	Quantity	
Description of Work	Suspended False Ceiling	Inspection Request	
Wing	Zone 01	Req. Ref No	020289-WA-0028
Floor	First Floor	Level	+19.300
Location	Main Block	Grid	Good 11st lobby
By		Inspected by	Kothandarami
By		By	Bala
By		Time	

Sl. No.	Description	YES	NO	NA	Remarks
Before Installation					
1	Has the method statement and shop drawings been approved?	✓			* Touchup paint to ceiling finish
2	Check for completion of plastering of walls and the above ceiling services work.	✓			Yes to complete
3	The following MEP activities completed before installation of ceiling works.	✓			24/02/22
A.	Electrical	✓			
B.	HVAC	✓			
C.	Sprinkler	✓			
D.	Fire Alarm	✓			
E.	Public Address	✓			
F.	Access Control & CCTV	✓			
G.	Light Fixture Supports (if any)	✓			
4	Is the approved drawings available for reference.	✓			* Marking yet to provide for anchor.
5	Check the availability of approved material. Whether the mock up for suspended ceiling has been executed.	✓			24/02/22
6	Check the availability of installation aids and skilled manpower	✓			
7	False ceiling levels & reference lines have been marked & checked.	✓			
8	Mark the MTC of anchor fastener.	✓			
During Installation					
1	Check the levels of the suspended ceiling transferred on to the walls.	✓			
2	Check the installation of wall channels as indicated in the drawing.	✓			
3	Check if the fixing of the suspenders is as per specifications.	✓			
4	Check the fixing & alignment of centers.	✓			* Edge corner clip to be re-fixed
5	Check the rigidity of grid for suspended ceiling	✓			24/02/22
6	Check the painting at panel surface and tile edge.	✓			
7	Check for fixing of panels as shown in diag	✓			
8	Check the levels for true horizontal alignment.	✓			
9	Check the provision for fixing of A/C grids & electrical fittings.	✓			
10	Joints are sealed & fixed with approved jointing material for gypsum based false ceiling works	✓			
11	Jointing tapes applied at joints & sealed to receive paint for gypsum based false ceiling works	✓			
12	Check the matching of joints, closure of gaps & uniform finish.	✓			
Final Alignment & Adjustment to be done					
Above Observations attended to and completed					
Note: The quantity mentioned above is approximate measure and can not be considered for any billing purpose. Only JMS to be considered for billing else OFC drawings are to be referred for quantity.					
The above works have been completed and accepted					
Signature	Contractor Quality	Contractor Safety	CBRE Safety	CBRE Representative	Client Representative
Balamurugan	S. Xube	R. Vinod	21/02/22	21/02/22	21/02/22
Date	21/02/22	21/02/22	21/02/22	21/02/22	21/02/22
Time	15:42				

FALSE FLOORING

NPCI CBRE

Inspection Report
Checklist for Raised False Flooring

Project	Smart Data Centre	Inspection Report No	21/1/22
Client	NPCI - Smart Data Centre	Date	
PMC	CBRE South Asia Pvt. Ltd.	Structural Member	
Vendor	1ST Construction	Details	
Package	Civil, Structural Steel, MEP	Quantity	
Description of Work	Raised False Flooring	Inspection Request	
Wing	Zone 01	Req. Ref No	020289-C-SP-01-WD-0028
Floor	First Floor	Level	+17.15m
Location	Main Block	Grid	PAC 1A
By		Inspected by	Kothandarami
By		By	Bala
By		Time	

Sl. No.	Description	YES	NO	NA	Remarks
Before Installation					
1	Has the method statement and shop drawings been approved?	✓			* Pending MEP Service routing & work to be completed & clearance to be obtained
2	Check for completion of Civil works under the false flooring	✓			
3	The following MEP activities completed before installation of ceiling works.				21/01/22
A.	Electrical				
B.	HVAC				
C.	Sprinkler				
D.	Fire Alarm				
E.	Public Address				
F.	Access Control & CCTV				
G.	Light Fixture Supports (if any)				
4	Is the approved drawings available for reference.	✓			
5	Check the availability of approved material. Whether the mock up for suspended ceiling has been executed.	✓			
6	Check the availability of installation aids and skilled manpower	✓			* Bottom floor cleaning to be done prior to 6th day finish
7	False flooring levels & reference lines have been marked & checked in Floor	✓			
8	Check the MTC of anchor fastener	✓			
During Installation					
1	Check the levels of the raised ceiling transferred on to the walls.	✓			
2	Check the installation of floor pedestal as indicated in the drawing	✓			
3	Check if the fixing of the legs is as per specifications.	✓			* Edge corner clip to be re-fixed
4	Check the fixing & alignment of centers.	✓			
5	Check the rigidity of grid	✓			
6	Check the painting at panel surface and tile edge.	✓			
7	Check for fixing of panels as shown in diag	✓			
8	Check the levels for true horizontal alignment.	✓			
9	Check the provision for fixing of equipments, service entry and other ceiling works	✓			
10	Check the provision of tiling and ensure the floor & termination	✓			
11	Check the jointing tapes applied at joints	✓			
12	Check the matching of joints, closure of gaps & uniform finish.	✓			
* Door Entrance - tile to be finished					
Above Observations attended to and completed					
Note: The quantity mentioned above is approximate measure and can not be considered for any billing purpose. Only JMS to be considered for billing else OFC drawings are to be referred for quantity.					
The above works have been completed and accepted					
Signature	Contractor Quality	Contractor Safety	CBRE Safety	CBRE Representative	Client Representative
Balamurugan	S. Xube	R. Vinod	21/01/22	21/01/22	21/01/22
Date	21/01/22	21/01/22	21/01/22	21/01/22	21/01/22
Time	10:35 AM				

2.21 MASTER LIST OF DOCUMENTS & ROLES, RESPONSIBILITY

NPCI-SMART DATA CENTER, CHENNAI					
MASTER LIST OF DOCUMENTS					
FF- Flat File; BF- Box File; SB- Spiral Binding; 3F- Third floor; SO- Site Office					
Sl No.	Documents Title	Location	No. of Folders	File Type	Remarks
1	Meeting Attendance	3F	1	FF	Hard Copies
2	Transmittals issued	3F	1	BF	Hard Copies
3	Transmittals Received	3F	1	BF	Hard Copies
4	PEP	3F	1	FF	Hard Copies
5	Value Add initiative & Master Schedule- Signed off	3F	1	FF	Hard Copies
6	Signed off Shop Drawings	3F	1	FF	Hard Copies
7	Non-Conformity- Closures	3F	2	BF	Hard Copies
8	Site Notes- Closure	3F	1	BF	Hard Copies
9	Third Party Test Report	3F	1	BF	Hard Copies
10	ITP	3F	1	FF	Hard Copies
11	Calibration Certificates	3F	1	FF	Hard Copies
12	Method Statements	3F	2	SB & FF	Hard Copies
13	Ancillary Building checklist	3F	1	BF	Hard Copies
14	Compound Wall- Pile Cap RCC checklist	3F	1	BF	Hard Copies
15	Rainwater harvesting, Utility Yard- Pile Installation	3F	1	BF	Hard Copies
16	Pile Cap, Retaining Wall checklist	3F	1	BF	Hard Copies
17	Finishing inspection checklist-1	3F	1	BF	Hard Copies- With L&T for updation
18	Finishing inspection checklist-2	3F	1	BF	Hard Copies
19	External road work <i>checklist</i>	3F	1	BF	Hard Copies
20	Excavation Backfilling <i>checklist</i>	3F	1	BF	Hard Copies
21	TDS- High Side- Files 1, 2, 3, 4	3F	4	BF	Hard Copies 1, 2 No. - Given to L&T for Spiral Binding
22	TDS- PHE	3F	4	SB	Hard Copies
23	TDS- HVAC- File 1, 2	3F	2	BF	Hard Copies 1 No.- Given L&T for Spiral Binding
24	TDS- FPS	3F	1	BF	Hard Copies-Given L&T for Spiral Binding
25	TDS- ELV- File 1,2,3,4,5,	3F	6	BF	Hard Copies
26	TDS- Electrical	3F	2	BF	Hard Copies
27	Architecture GFC- File- 1, 2, 3	3F	3	BF	Hard Copies
28	Structural GFCs	3F	As per Tracker	Separate Drawings	Hard Copies
29	MEP GFCs	3F	As per Tracker	Separate Drawings	Hard Copies
30	Shop Drawings- MEP- Electrical, PHE, HVAC, FPS, ELV, Misc	3F	As per Tracker	Separate Drawings	Hard Copies
31	Superseed Drawings- GFC, Shop drawings	3F	-	-	Hard Copies
32	Miscellaneous Documents	3F	-	-	Working sheets of the project for reference

The above documents maintained in NPCI- Smart Data Center Chennai, since Inception 22nd Mar'20 till 14th May'22 is being handed over to Mr. Parthiban for further maintenance in the project

Handed Over By <i>[Signature]</i> Signature: VINODHAR P Date: 16.05.22	Received By Signature: Date:
---	--

Sl. No.	Name	Role	Responsibility in the Project
1	Mr. Christy Pinto	Project Manager	1 MEP Design coordination and RFI clarification
			2 First level escalation to the client
			3 Liaise on all strategic coordination matters and report to client
			4 Management of site execution team
			5 Track contractor deliverables as per project Schedule
			6 Monitoring Progress, enforcing safety measures, Witness testing and commissioning, ensuring complete handing over
			7 Monitor project performance based on time cost and quality.
			8 Hosting Governance, Weekly review meeting and other stakeholder management meetings
			9 Regular upload of all unsafe observations in OI App. -Monitoring OHSE activities at site
2	Mr. Kothandapani	Senior Civil Engineer	1 Assit Project Manager in civil and structural aspects
			2 Review of drawings and support team in raising queries (RFI) in design aspects
			3 Review of technical datasheets, shop drawing wrt architectural layout
			4 Ensuring Quality management in civil & structural aspects
			5 Maintain the Quality check lists, Pour cards, coordinating with contractors for day to day site activities.
			6 Track delivery of materials impacting progress and reporting to Project Manager
			7 Tracking of critical progress works and mailing L&T
			8 Regular upload of all unsafe observations in OI App. -Monitoring OHSE activities at site
3	Mr. Parthiban	Contracts Manager	1 Responsible for obtaining all legal documents, validating and contractual letters for the project.
			2 Maintaining the documents in a register and tracking them for their validity.
			3 Ensuring contractor progress and performance without deviating contractual terms and condition
			4 Contractual notes/letter preparation and upon approval sharing with client/contractor
			5 Raise red flags on deviation/ violation of Time, Cost and quality
			6 Receiving the bills from vendor and scrutinize them for their adequacy, supporting documents, measurements against the BOQ. Return the bills with corrections if not found adequate
			7 Ensure a commercial plan (Cost Plan & Budget) is in place and monitor monthly for the successful commercial delivery of the project
			8 Validate proposal Change request, raise the Change order request to the client with the necessary back up documents for initiating an amendment receive approval and logs for same to be maintained
			9 Periodic quantity take-off ahead of progress for parallel verification of bills against GFC
			10 Design Preliminaries, Deviation records related to Design, Tender drawing & Documents Queries, Detailed Drawings Queries to be maintained
			11 Conducting weekly meeting with architect, establishing record and maintaing it (Mail, MoM, Approvals)
			12 Responding to L&T queries related to Execution
			13 Bid Management, Evaluating contractor's Sub vendor credentials for highside items and supporting client for confirmation
			14 Regular upload of all unsafe observations in OI App. -Monitoring OHSE activities at site
4	Mr. Chakravarthy	QS cum Billing Engineer	1 Any project progress follow up in daily, weekly monthly will be tracked and mailed to vendor
			2 Follow up with L&T, Client on their deliverables and approvals respectively. Trackers for the same to be shared with respective stakeholders
			3 Receiving the Architect and consultant bills from client and scrutinize them for their adequacy, supporting documents and processing the same
			4 Raise red flags on deviation/ violation of Time, Cost and quality
			5 Cash flow preparation and updating the same on monthly basis for the project
			6 CBRE payment related works to be initiated, receive approval and Payment tracker for all stakeholders to be maintained
			7 Raising, Coordinating, responding with consultants for RFIs
			8 Conducting weekly meeting with architect, establishing record and maintaing it (Mail, MoM, Approvals)
			9 Tracking contractor on procurement aspects such as Civil & MEP TDS submission, Civil Shop drawing, Civil and MEP Material tracking, Vendor/ sub vendor follow ups related to procurement, Kick off meeting, Mail records related to the procurement, Procurement delay record wrt procurement to be maintained
			Regular upload of all unsafe observations in OI App. -Monitoring OHSE activities at site

2.22 CAUSE AND EFFECT ANALYSIS

Table 6 Cause and effect analysis

S. No	Category	Issue/ Subject	Description	Root cause	Impact	Action taken	Suggestion
1	Best practices	Curing tank	Shed arranged for curing tank to avoid evaporation	Not applicable			Shall adopt in other sites
2	Technical	Lift capacity	Lift capacity differ from Architectural drawings & BOQ	Service consultant missed to read the Architectural drawings	May lead in cost impact if client expected for more capacity	Discussed with client and confirm client requirements	Architecture services shall be coordinated well and same shall be reviewed during tender stage
3	Technical	DG roof slab requirement	In tender drawings, DG yard has only grade slab whereas client required roof slab upon updated in GFC	Consultant could check with tender drawings and provide the updated selection layout as per RFP	New requirement led to cost impact	Suggested client to not to initiate because it leads to cost variation	Client shall define the requirement during design stage and consultant also update the consideration in consideration of RFP
4	Vendor	Material delivery	Delay in finalization and delivery of interior materials which impacts the work front clearance for dependent activities	Some items been delayed in finalization by vendors procurement team	Impacts the interior work initiation and hinder the Workfront for service works	Have asked PO for civil finish item which have been procured and instructed L&T to procure the balance material	
5	Client Process	Clay tile cladding sample approval	As per approved make list vendor submitted the material which is approved by architect	Client requested for alternate sample	Alternate sample to be imported from Germany which impacts the timeline	Request client to take decision	Approval shall be provided by considering architects suggestion
6	Other	Water proofing	Thickness of 400mm in terrace as per architect	Slope consideration	Deadload of 400mm will increase the load in terrace	Suggested slope proposal to avoid higher thickness	Shall be considered in structural aspects

2.23 VENDOR PREQUALIFICATION

[illegible]

Client Logo		CBRE	
COMPLETED PROJECTS	19 Please list top COMPLETED PROJECTS that you would like us to consider while evaluating your firm. Consider parameters like Best Quality, Client Satisfaction, Value/Size of the Project & any special features of the project (Executed during last 2 years)	PROJECT-1 SIZE(sq. Ft.) BILLING(Million INR) PMC of the Project (if applicable) Project Completion Date : Client Reference (Name & Contact):	PQ/WO & Completion Certificate Copy
	Client references for the above stated projects to be shared - contact person, designation & telephone numbers.	PROJECT-2 SIZE(sq. Ft.) BILLING(Million INR) PMC of the Project (if applicable) Project Completion Date : Client Reference (Name & Contact):	PQ/WO & Completion Certificate Copy
	PM to mention (type & size of project eg. Hotel/ Mall/ Residential etc.)	PROJECT-3 SIZE(sq. Ft.) BILLING(Million INR) PMC of the Project (if applicable) Project Completion Date : Client Reference (Name & Contact):	PQ/WO & Completion Certificate Copy
		PROJECT-4 SIZE(sq. Ft.) BILLING(Million INR) PMC of the Project (if applicable) Project Completion Date : Client Reference (Name & Contact):	PQ/WO & Completion Certificate Copy
		PROJECT-5 SIZE(sq. Ft.) BILLING(Million INR) PMC of the Project (if applicable) Project Completion Date : Client Reference (Name & Contact):	PQ/WO & Completion Certificate Copy
		PROJECT-6 SIZE(sq. Ft.) BILLING(Million INR) PMC of the Project (if applicable) Project Completion Date : Client Reference (Name & Contact):	PQ/WO & Completion Certificate Copy
		PROJECT-7 SIZE(sq. Ft.) BILLING(Million INR) PMC of the Project (if applicable) Project Completion Date : Client Reference (Name & Contact):	PQ/WO & Completion Certificate Copy
20	Please specify if you have any other Business Interests which can add value to the Main Trade?		
21	Please declare if your firm is in anyway related to anyone working within CBRE. (If yes, provide details)		
22	Please declare if your firm has any cross holding in any other Organization/ Trade Categories (either directly or via any relative) - If yes, provide details		
23	Infrastructure/ Equipment/ Machinery details:		Registration Copy
24	PF/ESI details :- PF Regn No. GST Regn No. ESI Reg No.		Registration Certificate Copy of PF, ESI, GST
25	PAN No. (Also, Pl enclose Photo copy)		Copy of PAN
26	Is your organization registered for Professional Tax and Labour Welfare Payment in <State of the Project> ? (Mandatory for PrS Projects)		Registration Certificate Copy of PT and LWPF
27	Arbitration Cases No. of Past cases - If yes, provide details No. of Present cases - If yes, provide details		
28	Solvency Certificate from Bankers (In Crores Rs)		Solvency Certificate
29	List any awards, recognitions on previously executed projects		
30	Please declare if your firm, on any occasion was excluded from a tender list or procurement process? If YES state the Project, Client, occasion and reasons for exclusion.		
Occupational Health, Safety and Environment (OHSE)			
31	Does your enterprise have a written company OHSE policy?		OHSE Policy
32	Do you have a OHSE Organization structure? If yes, pls attach a copy of the same.		OHSE Organization Structure
33	Does your senior management conduct annual review of OHSE implementation your organization? If yes attach a copy of recent MOM		MOM Copy
34	Are records maintained for statistics (for example lost time, frequency rates and severity rates etc.)? If yes, provide the statistics for previous 3 years.		Statistics for last 3 years
35	Does your Organization ensure that all plant, machinery and materials (tools, appliances and containers etc.) comply with relevant Standards and OHSE requirements? If yes, provide details		
36	Are health and safety inspections at the work place conducted on a regular basis? outline regularly		
37	Did the organization face any prosecutions / notices from any state or central regulatory authorities due to non-conformity of OHSE requirement in the past five (If Yes provide the details)		

2.24 PROJECT CLOSEOUT

- 1) Client Information: Client/ Owner, Client Address: , Client contact:
- 2) Date Project Completed: The project achieved substantial completion on with snag list items completion on
- 3) Project Scope: (One paragraph on brief scope of the project)
- 4) Special Features: (Describe unique features, technologies, and tools employed, include information on the results obtained.)
- 5) Project photographs: Annexure -10(Note any contractual provisions regarding the use of photographs.
- 6) Key Project Personnel & contact details: Ref Annexure-1
- 7) Project Time Requirements:
- 8) Project Cost Summary (All packages combined):
 - Budgeted cost of the Construction Phase:
 - Original Contract Amount for the Const. Phase:
 - Construction Phase Change Orders:
 - Final cost at Closure of the Construction Phase:

9) Project Safety statistics:

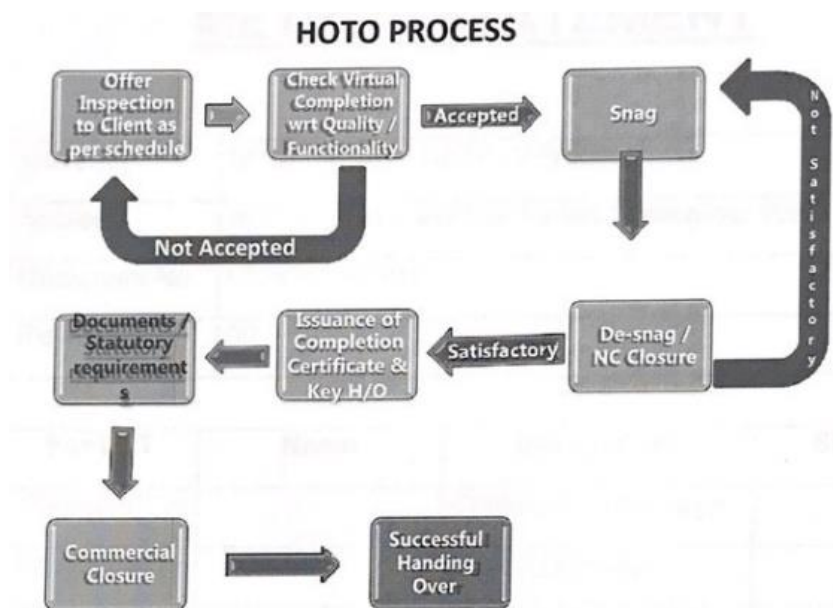
- Total Man-hours worked on the project:
- Total number of Near Misses:
- Total number of Minor injuries:
- Total number of Reportable accidents:
- Total number of lost time Accidents:
- Total number of Man-hours lost on project:

10) Open/ Unresolved issues: (List any open unresolved issues due to Client inaction/ indecision/ change of decision or due to external factors beyond our control like developer issues, legal issues, Force majeure, Snag list etc.)

Open/Unresolved issues:

11) Vendor performance: (Any major/specific issues faced during the project tenure, performance of High Value Package vendors - rate as Excellent, Very Good, Good, Satisfactory, Poor, whether the performance had any bearing on project schedule) - Annexure - 6

12) Feedback on Architects and Consultants Performance and response.



Site Clearance Certificate

PROJECT:

PACKAGE	
CONTRACTOR / SUPPLIER	

[Name of the Contractor] has cleared and removed out of the Project Premises the following, from the temporary space/area allotted to them-

SL NO	ITEM DESCRIPTION	YES	NO*
1	All temporary partitions, furniture and other office equipment		
2	All temporary Electrical connections		
3	All temporary Electrical cables		
4	All Toilets & septic tanks		
5	The allotted area leveled to its original level		
6	The area has been cleared of all debris		
7	All scrap and debris		

*Remarks (in case of NO):

SITE CLEARANCE CERTIFICATE

The said area/space is hereby handed over to [Name of the Client] in acceptable condition.

Certified by CBRE	Handed Over by [Name of the Contractor]	Taken Over by [Name of the Client]
Signature	Signature	Signature
Name	Name	Name
Date	Date	Date

CHAPTER 3: PROJECT II - SHRIRAM PARK 63, PERUNGULATHUR, CHENNAI

Shriram Park 63 by Shriram Properties is an integrated township located opposite to Perungalathur Railway Station, Chennai. These residential apartments come in different configurations, varying from 1 BHK, 2 BHK, 3 BHK & 3.5 BHK overlooking lush 1500 acres of greenery.

The proposed amenities include a retail mall spread across 0.5 million sq. with 100+ retail outlets, 6 screen multiplex and amenities.

MIVAN construction ensures great finish, good structural performance and timely construction completion.



1 BHK SMART HOMES
595 - 695 sq.ft.



3 BHK OPTIMA HOMES
1375 - 1455 sq.ft.



3 BHK ULTIMA HOMES
1770 - 1890 sq.ft.

3.1 PROJECT INTRODUCTION

Table 9 Shriram park 63 Introduction

Name of the project	Shriram, Park 63
Location	Perungulathur, Chennai
Typology	Residential development
Land Area	57 Acres
Client	Shriram developers
Contractor	GK Shetty builders
Project management consultants	CBRE South Asia Pvt Ltd



Figure 6 Aerial view of Park 63

3.2 MASTER PLAN



- The main door is a special one. It has a durable Teak wood frame with Factory made BST shutter for a premium look
- Windows and sliding doors to balcony are of UPVC. UPVC windows have excellent durability and are easy to maintain.
- They also provide better thermal insulation compared to traditional wooden-frame windows, as well as better sound insulation.
- Designed to set-up your dream kitchen, with 30mm polished granite counter, SS sink, water purifier provision and high-quality vitrified tile dado for easy maintenance. Additional SS Sink in the Utility
- Vitrified tile flooring in the Living, Dining, kitchen, Foyer & bed rooms maximize visual appeal while being very easy to maintain
- The flooring in wet areas like the utility, toilets and balcony are of anti-skid tiles to ensure safety and prevent accidents
- Toilets are fitted with reputed brands of sanitary fittings, with KOHLER or equivalent sanitary ware and CP fittings



3.3 TOWER PLAN



- Residential apartments: 570:
- Basement – 2 + 13 floors + terrace
- Fast tracking project: Phase 1 completed
 - **Phase II A:** Block 19,20,21 - Super structure
 - **Phase II B:** Block 18,22,23,24 - Sub structure
 - **Project duration:** 23 months;
 - Project cost: 210 crores
 - **Contractor:** GK Shetty builders



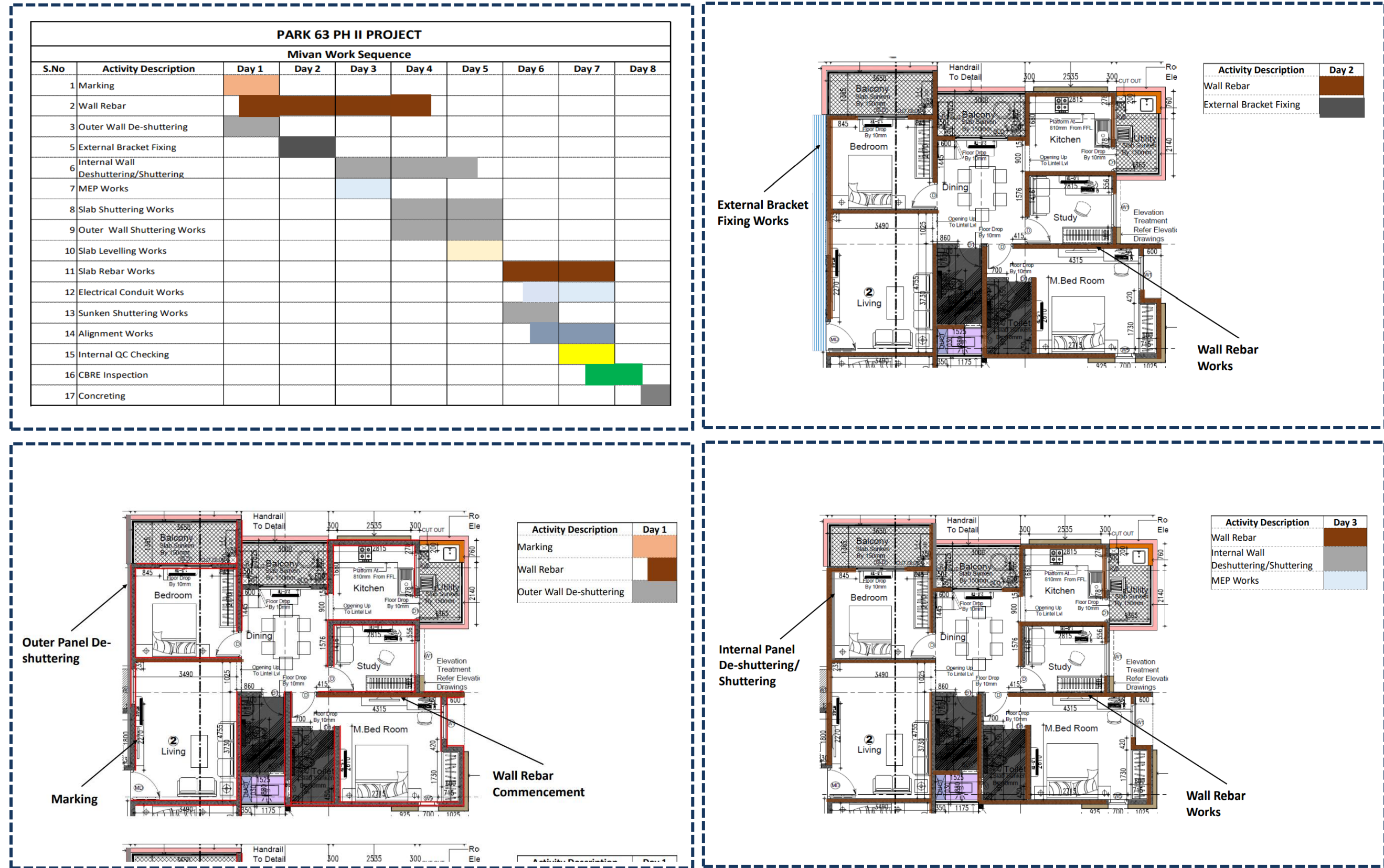
3.4 PROCUREMENT SCHEDULE

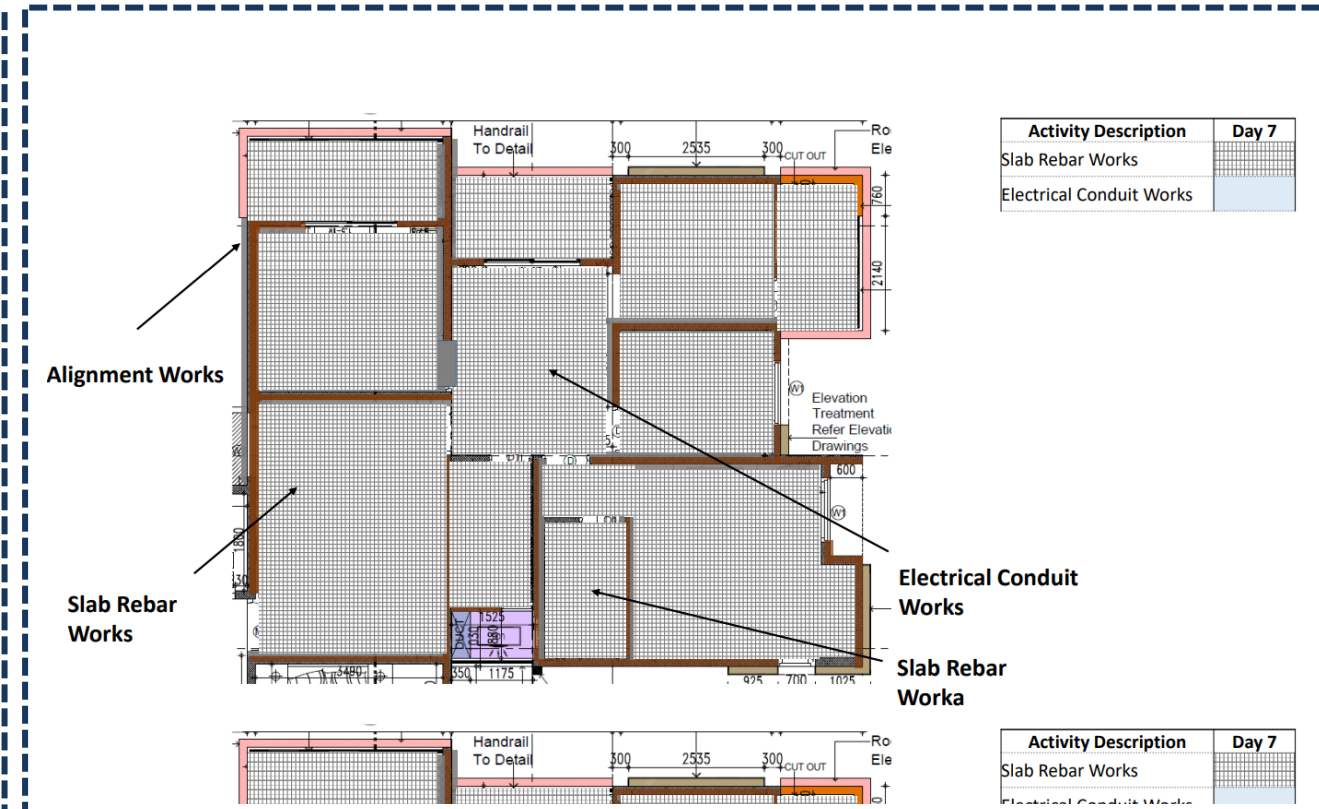
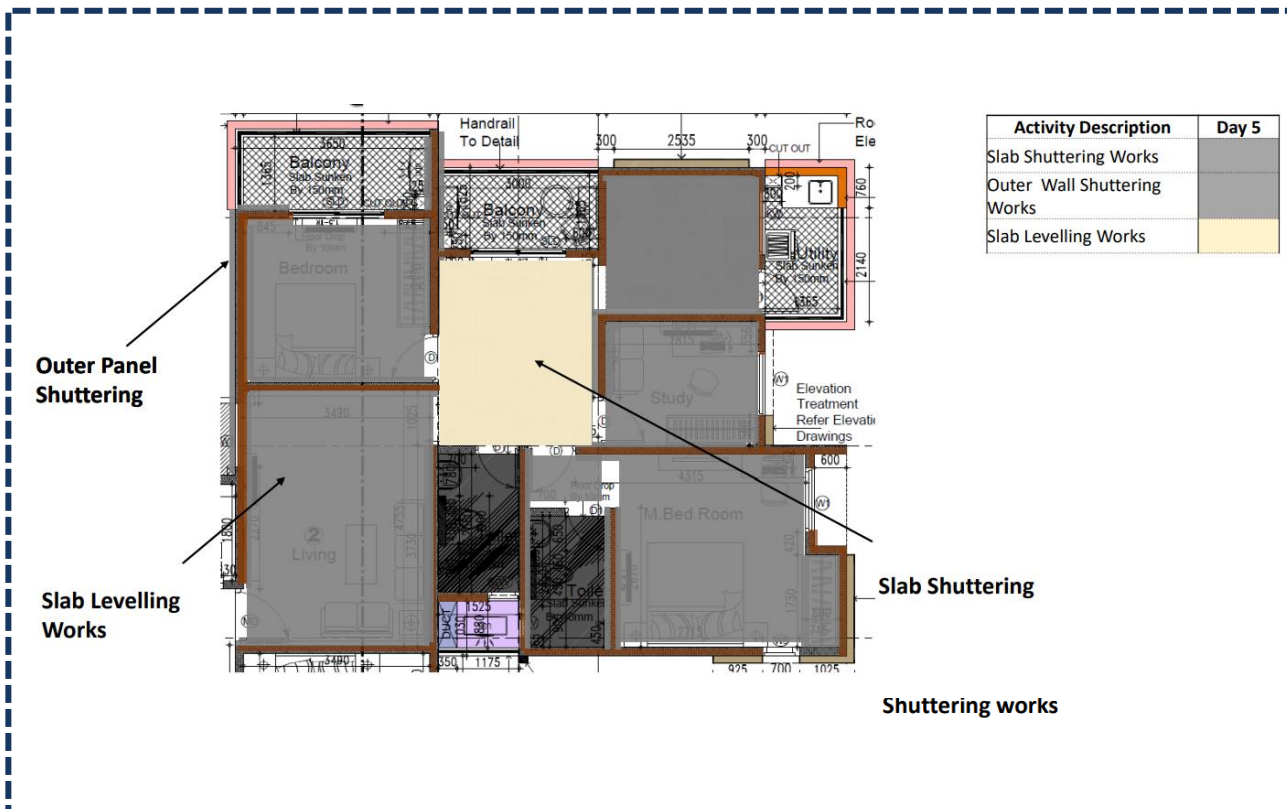
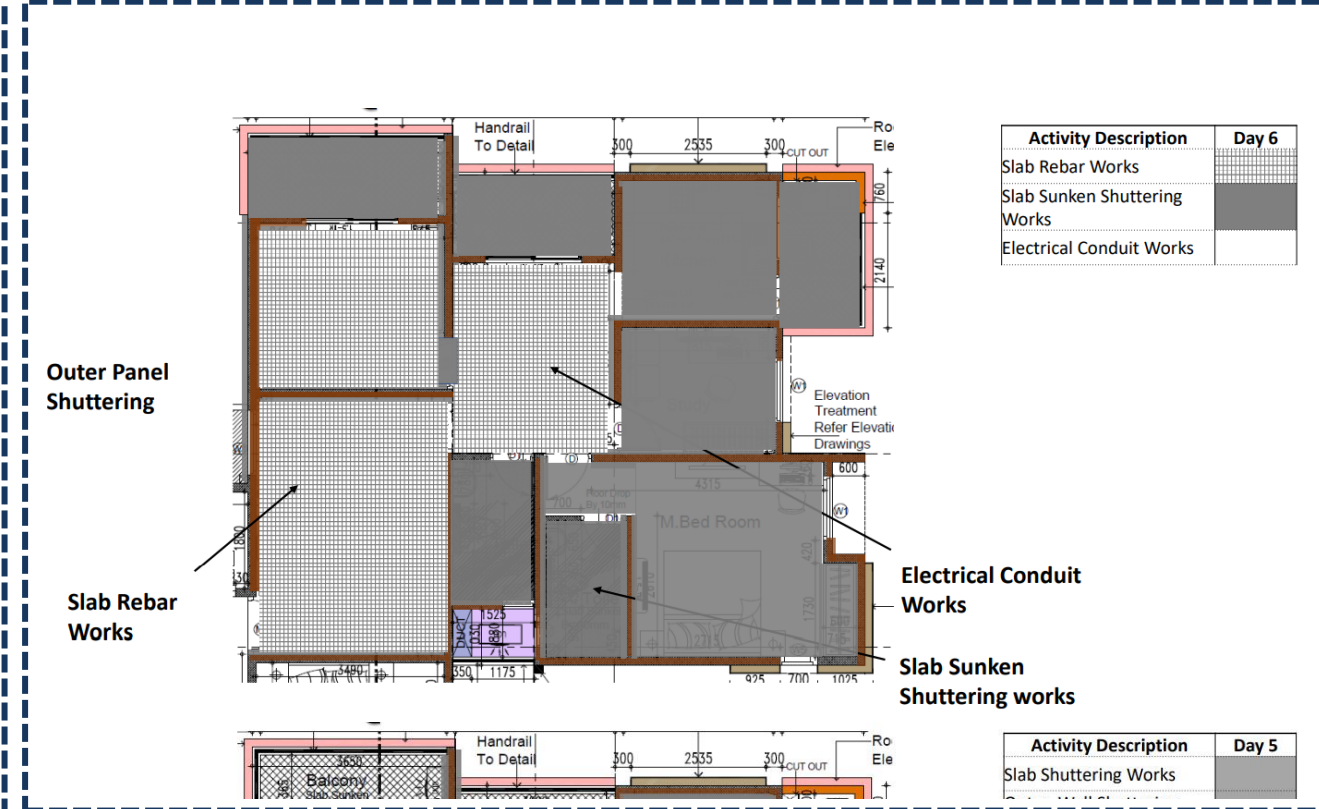
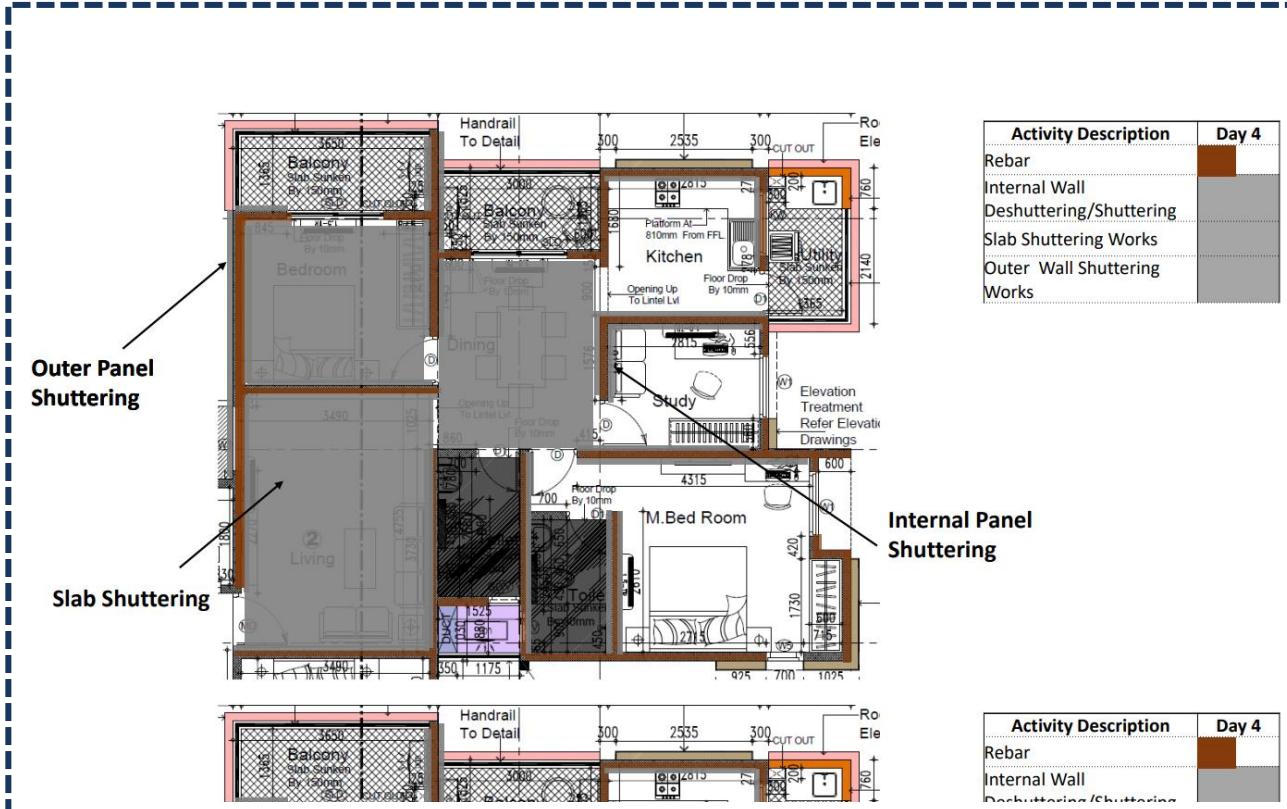
SHRIRAM PROPERTIES LIMITED PROCUREMENT SCHEDULE																							
																							Date: 24th June 2022
Sl.No	Package Name	Prequalifications by CC (QS) team	Issue of Specification & Tender Drawings by Technical consultant	Review of Tender drawings and Specifications	Issue of 100% Drawings & Specifications	Issue of BOQ	Tender Floating	Tender Enquiry/ Prebid Meetings	Prebid query clarification	Tender Submission	Tender Opening & Evaluation	First Round Negotiation	Second Round Negotiation	Third Round Negotiation	Decision taken by SPL	Issue of LOA	Issue of work order	PBG	ABG	CONTRACT AGREEMENT ISSUED	AGREEMENT SIGNED BY CONTRACTOR	AGREEMENT SIGNED BY CLIENT	Remarks
1	Excavation & Back filling works																						
	Planned date as per MCP						1-Dec-2020			7-Dec-2020	7-Dec-2020	8-Dec-2020	10-Dec-2020	NA	16-Dec-2020	21-Dec-2020	5-Jan-2021	NA	NA	30-Mar-2021	2-Apr-2021		Contract Agreement signed by client.
	Actual Date						1-Dec-2020			7-Dec-2020	7-Dec-2020	8-Dec-2020	10-Dec-2020	NA	16-Dec-2020	21-Dec-2020	5-Jan-2021	NA	NA	30-Mar-2021	2-Apr-2021		
2	Civil Shell & Core																						
	Planned date as per MCP	NA	9-Dec-2020	11-Dec-2020	14-Dec-2020	15-Dec-2020	18-Dec-2020	22-Dec-2020	23-Dec-2020	24-Dec-2020	4-Jan-2021	12-Jan-2021	28-Jan-2021	4-Feb-2021	6-Feb-2021	15-Feb-2021		29-Mar-2021	24-Mar-2021	15-Mar-2021	28-Mar-2021		Contract Agreement signed by client.
	Actual Date	NA	9-Dec-2020	11-Dec-2020	14-Dec-2020	15-Dec-2020	18-Dec-2020	22-Dec-2020	23-Dec-2020	24-Dec-2020	4-Jan-2021	12-Jan-2021	28-Jan-2021	4-Feb-2021	6-Feb-2021	15-Feb-2021		31-Mar-2021	26-Mar-2021	17-Mar-2021	30-Mar-2021		
3	Structural Earthing																						
	Planned date as per MCP	25-Feb-2021	18-Feb-2021	21-Feb-2021	23-Feb-2021	25-Feb-2021	27-Feb-2021	2-Mar-2021	3-Mar-2021	8-Mar-2021	11-Mar-2021	13-Mar-2021	19-Mar-2021	NA	22-Mar-2021	NA	2-Apr-2021	-	-	-	-	-	
	Actual Date	25-Feb-2021	18-Feb-2021	21-Feb-2021	23-Feb-2021	25-Feb-2021	27-Feb-2021	2-Mar-2021	3-Mar-2021	8-Mar-2021	11-Mar-2021	13-Mar-2021	19-Mar-2021	NA	22-Mar-2021	NA	2-Apr-2021						
4	Lift																						
	Planned date as per MCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21-Apr-2021	26-Apr-2021	26-Apr-2021				Work order signed by Mitsubishi.
	Actual Date	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12-Mar-2021	20-Apr-2021	9-Apr-2021	9-Apr-2021				
5	Sub Soil Drainage																						
	Planned date as per MCP	5-Mar-2021	4-Mar-2021	6-Mar-2021	8-Mar-2021	9-Mar-2021	15-Mar-2021	18-Mar-2021	19-Mar-2021	22-Mar-2021	25-Mar-2021	27-Mar-2021	31-Mar-2021	5-Apr-2021	10-Apr-2021	20-Apr-2021	25-Apr-2021						Work order signed by contractor. Advance not required by contractor. 5% of PBG will be deducted instead of BG in each running bill.
	Actual Date	5-Mar-2021	4-Mar-2021	6-Mar-2021	8-Mar-2021	9-Mar-2021	15-Mar-2021	18-Mar-2021	19-Mar-2021	22-Mar-2021	25-Mar-2021	29-Mar-2021	5-Apr-2021	5-Apr-2021	6-Apr-2021	NA	20-Apr-2021						
6	Electrical																						
	Planned date as per MCP	25-Mar-2021	4-Mar-2021	25-Mar-2021	26-Mar-2021	29-Mar-2021	17-Apr-2021	22-Apr-2021	23-Apr-2021	2-May-2021	6-May-2021	8-May-2021	16-May-2021	21-May-2021	23-May-2021	11-May-2021							Contract agreement signed by Yalavarthi and submitted to SHPRL office.
	Actual Date	30-Apr-2021	27-Mar-2021	7-Apr-2021	29-Apr-2021	22-Apr-2021	11-May-2021	18-May-2021	20-May-2021	25-May-2021	29-May-2021	1-Jun-2021	7th July 21	17th July 2021- Fourth round with NH on 28th July 2021	6-Aug-2021	16-Aug-2021	3rd Sep 2021						
7	PHE																						
	Planned date as per MCP	30-Apr-2021	5-Jun-2021	30-Apr-2021	5-May-2021	11-May-2021	21-Jun-2021	26-Jun-2021	27-Jun-2021	6-Jul-2021	10-Jul-2021	12-Jul-2021	20-Jul-2021	25-Jul-2021	27-Jul-2021	1-Aug-2021							
	Actual Date		11-Jun-2021	19-Jun-2021	5-Jun-2021	6-Jul-2021	7-Jul-2021	14-Jul-2021	14-Jul-2021	16-Jul-2021	24-Jul-2021	27-Jul-2021	10-Aug-2021	25th -Aug-2021	6-Sep-2021	21-Sep-2021							
8	Fire Protection																						
	Planned date as per MCP	15-Jul-2021	29-Dec-2020	30-Apr-2021	4-May-2021	19-May-2021	15-Oct-2021	20-Oct-2021	21-Oct-2021	30-Oct-2021	3-Nov-2021	5-Nov-2021	13-Nov-2021	18-Nov-2021	23-Nov-2021	28-Nov-2021							LOA issued on 14th March 2022
	Actual Date						23-Sep-2021	25-Sep-2021	29-Sep-2021	4-Oct-2021	7-Oct-2021					14-Mar-2022							
9	Internal finishes (water proofing, flooring, cladding, painting, MS railing, false ceiling etc.,)																						
	Planned date as per MCP (BL-4)	25-Feb-2022	NA	NA	NA	4-Mar-2022	11-Mar-2022	16-Mar-2022	17-Mar-2022	26-Mar-2022	30-Mar-2022	1-Apr-2022	9-Apr-2022	14-Apr-2022	16-Apr-2022	21-Apr-2022							
a	Tiles-Actual Date (Tiles) Complete supply requirement - RO						8-Apr-2022	10-Apr-2022	11-Apr-2022	15-Apr-2022	16-Apr-2022	17-Apr-2022	21-Apr-2022	25-Apr-2022	28-Apr-2022	30-Apr-2022							

A schedule that identifies the scheduling requirements of procurement (purchasing) of components on the project.

The procurement schedule must be coordinated with the actual construction schedule on the project. Procurement is a critical aspect of any construction schedule, and must be formally, and professionally addressed, to ensure that products are available as needed on the project. The formal management of the procurement schedule on a large construction project is extremely important to the success of the project.

3.5 MIVAN FORM WORK – WORKING SEQUENCE



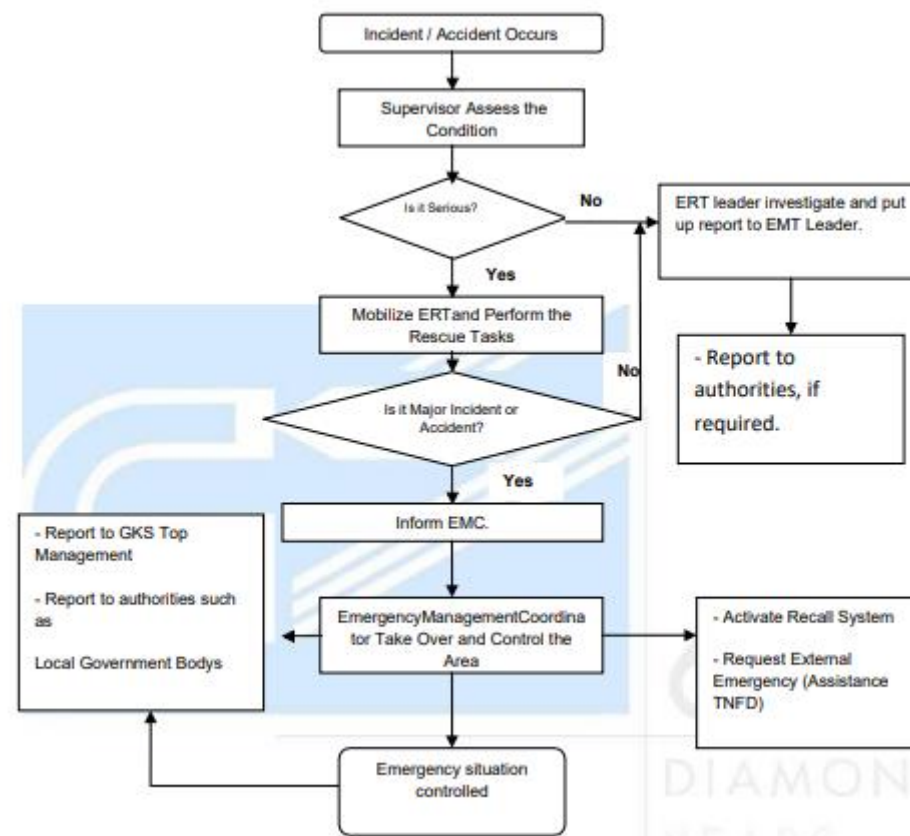


3.6 DAILY PROGRESS REPORT

																			
DAILY PROGRESS REPORT (DPR)																			
Project:		Park-63 (Phase-2) @ Shriram The Gateway														Reporting Date		10-Aug-22	
Client:		Shriprop Properties Private Limited														Progress on		9-Aug-22	
Consultant:		CBRE														Weather report		Cloudy	
Contractor:		GK SHETTY BUILDERS PVT LTD																	
Description		Unit	Scope of Work (Aprox.)	Rate	Achieved up to Previous month	PROGRESS for the month						Cumulative Achieved AOD	Total Amount	Balance to be achieved	% completed	Planned for Today	Remarks		
						Planned Qty on	Planned Amount on	Achieved Qty on	Achieved amount on	% Achieved on	Achieved Qty for the month AOD							Achieved Amount for the Month AOD	
Sub Structure																			
Phase-2A																			
PCC	Cum	1056.00	5000.00	1239		-		-				1,239.00	61,95,000.00	0.0	117.33%				
Water proofing works	Sqm	11600.00	1000.00	11600		-		-				11,600.00	1,16,00,000.00	0.0	100.00%				
Concrete works	Cum	30638.00	5800.00	11145.65	0.00	-	0.00	-	0.00%	33.00	1,91,400.00	11,178.65	6,48,36,170.00	19,459.4	36.59%				
SDC concrete works	Cum		6300.00		2,832.00	1,78,41,600.00	19.00	1,19,700.00	13.42%	380.00	23,94,000.00					175.00			
Shuttering works - Ply	Sqm	18948.00	525.00	23280	0.00	-	0.00	-	0.00%	9.00	4,725.00	23,289.00	1,22,26,725.00	-4,341.0	122.96%				
Shuttering works - Waffle	Sqm	10234.00	1244.00	13070	0.00	-		-	0.00%		0.00	13,070.00	1,62,59,080.00	-2,836.0	127.71%				
Shuttering works - Aluminum	Sqm	388118.00	295.00	34986	30,000.00	88,50,000.00	900.00	2,65,500.00	22.75%	6,825.00	20,13,375.00	41,811.00	1,23,34,245.00	3,46,307.0	12.53%	150.00			
Reinforcement works	MT	3345.00	56000.00	1729	276.00	1,54,56,000.00	10.00	5,60,000.00	25.00%	69.00	38,64,000.00	1,798.00	10,06,88,000.00	1,547.0	55.81%	5.00			
Weld mesh works	MT	33.00	90000.00	32		-		-			0.00	32.00	28,80,000.00	1.0	96.97%				
Back filling works	Cum	4000.00	240.00	2355		-		-			0.00	2,355.00	5,65,200.00	1,645.0	58.88%				
Phase-2B																			
PCC	Cum	1056.00	5100.00	815.5		-	0.00	-		18.50	94,350.00	834.00	42,53,400.00	222.0	80.73%	30.00			
Water proofing works	Sqm	11500.00	1000.00	7635		-		-			0.00	7,635.00	76,35,000.00	3,865.0	66.39%				
Concrete works	Cum	30638.00	5800.00	5837.85	1,370.00	79,46,000.00	127.50	7,39,500.00	23.54%	322.50	18,70,500.00	6,160.35	3,57,30,030.00	24,477.7	21.16%	150.00			
Shuttering works - Ply	Sqm	18948.00	525.00	13990	2,530.00	13,28,250.00	50.00	26,250.00	15.81%	400.00	2,10,000.00	14,390.00	75,54,750.00	4,558.0	78.06%	50.00			
Shuttering works - Waffle	Sqm	10234.00	1244.00	7001	1,350.00	16,79,400.00	50.00	62,200.00	70.74%	955.00	11,88,020.00	7,956.00	98,97,264.00	2,278.0	87.07%	100.00			
Reinforcement works	MT	3345.00	56000.00	790.5	196.00	1,09,76,000.00	12.00	6,72,000.00	31.12%	61.00	34,16,000.00	851.50	4,76,84,000.00	2,493.5	27.28%	5.00			
Weld mesh works	MT	33.00	96000.00	8	10.00	9,60,000.00	0.00	-	0.00%	0.00	0.00	8.00	7,68,000.00	25.0	24.24%				
Back filling works	Cum	4000.00	240.00	790		-		-				790.00	1,89,600.00	3,210.0	19.75%				
						6,50,37,250.00					1,52,46,370.00		34,12,96,464.00						
Material as of		Concrete in cum					Aluminum Materials (Sqm) 09-Aug-22					754.00							
9-Aug-22		Indented	Consumed Previous	Consumed Today	Consumed Cumulative	Remarks	Previous	Today	Cumulative										
Grade wise							14575.00	0.00	14575.00										
M10		75.0	2,099.0		2,099.0														
M30		1,239.5	12,113.5	124.00	12,237.5														
M30 SDC		1,676.0	3,239.0	19.00	3,258.0														
M40		395.0	3,962.8	3.50	3,966.3														
M40 SDC		100.0	1,427		1,426.5														
		3,485.5	22,840.8	146.5	22,987.3														
		Reinforcement in MT					Water Proofing Materials(Sqm)as of 09-Aug-22												
Dia wise		Indented	Received Aug'22	Cum. Received	Consumed Previous	Consumed Today	Consumed Cumulative	Stock @ Site & WIP	Received	Consumed Previous	Consumed Today	Consumed Cumulative							
8mm		265.000		721.900	697.1	10.00	707.1	14.8	22500.00	17890.00		17890.00							
10mm		90.000		405.930	374.87	4.00	378.9	27.1											
12mm		90.000		617.600	605.36	4.00	609.4	8.2											
16mm		60.000		648.550	625.60	4.00	629.6	18.9											
20mm		30.000		271.030	271.00		271.0	0.0											
25mm		5.000		125.390	124.25		124.3	1.1											
32mm				26.890	24.30		24.3	2.6											
		540.000	-	2,817.290	2,722.48	22.00	2,744.48												

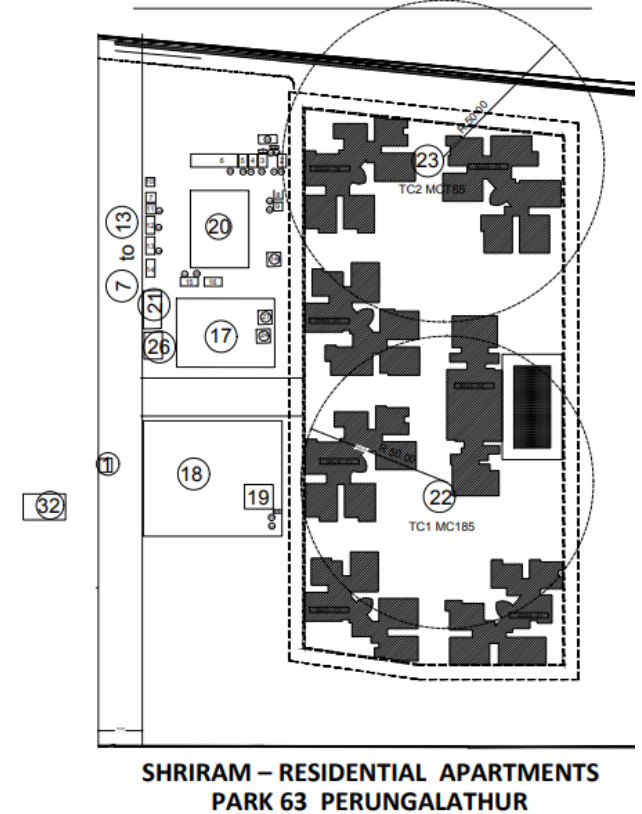
3.7 PROJECT OHSE – OCCUPATION, HEALTH, SAFETY, & ENVIRONMENT PLAN

	Content
Scope	
Project Description	
SHE Strategic objective & targets	
Site SHE Org Chart & responsibilities	
Inspection, Audit & review	
Statutory requirements	
PPE	
Safety Sign, signals & Barricades	
Work Permit	
Reinforcement, Form work,	
Scaffoldings & ladder, safety net	
Steel erection	
SHE Disciplinary action	
Confined Space	
Gas Welding & cutting	
Hand & potable power tools	
Farana for Lifting works	
Hazard Materials	
Fire Prevention & Protection	
Housekeeping	
Accident report& investigation	
Snake Bite Prevention	
Labour Toilet & Urinals	
Electrical Safety	
Communication System	
Illumination standard	
Emergency Response	
SHE Activity Plan	
Traffic management	
Gate Management	
Alcohol & drug policy	
Child labour policy	
Labour camp Management	
HIRA	
Training Awareness & competency	
LOTO	
Tower crane	
Mivan Method	
Covid-19 action Plan	
Health Management & Medical facility	
Environmental Control	
Disaster management	
Frequency of Environmental monitoring	
Pest Control	
Dust Control	
Waste Management	



EMERGENCY PLAN

- 01.SECURITY CABIN
- 02.DG -1
- 03.ELECTRICAL ROOM
- 04.SAMPLE STORAGE ROOM
- 05.DIESEL YARD
- 06.STORE ROOM
- 07.CUBE TESTING ROOM
- 08.EMERGENCY AMBULANCE
- 09.SAFETY ROOM
- 10.SAFETY STORE ROOM
- 11.QC ROOM
- 12.CBRE -1
- 13.CBRE -2
- 14.CBRE -3
- 15.GKS STAFF -1
- 16.GKS STAFF -2
- 17.ALUMINIUM YARD-1
- 18.STEEL YARD
- 19.BARBENDING YARD
- 20.ALUMINIUM YARD -2
- 21.STAFF TOILET
- 22.TOWER CRANE -1
- 23.TOWER CRANE -2
- 24.LABOUR REST AREA
- 25.LABOUR TOILET
- 26.LABOUR DRINKING WATER
- 27.LABOUR REST AREA 1
- 28.DG-2 FOR TOWER CRANE
- 29.Fire Extinguisher
- 30.Fire bucket
- 31.DG-3 FOR TOWER CRANE
- 32.Two Wheeler Praking



SITE LOGISTICS PLAN

The primary objective of this plan is to prevent any accidents, minimizing risk to personnel & properties, protect the environment and enhance company Reputation while executing the Shriram Park 63-Phase 2 Project (2021) This Plan is applicable to all GKS and contractor personnel involved in this project In the event of any conflict with the contents of this SHE Plan the following documents shall take the precedence:

- All safety rules and regulations adapted by GKS with the compliance requirement by the laws of the country.
- All the applicable local and national laws, rules and regulations including Factory Acts, IS Standards, etc.. Best safety practices in the construction industries, and All the rules, regulations and procedures as applicable from BOCW

The primary objective of this plan is to prevent any accidents, minimizing risk to personnel & properties, protect the environment and enhance company Reputation while executing the Shriram Park 63-Phase 2 Project (2021) This Plan is applicable to all GKS and contractor personnel involved in this project

3.8 PROJECT QUALITY PLAN

List of Tests to be Conducted at Site Laboratory :

Sr.No	Material to be tested	Related IS Codes	Tests to be Conducted
1.	Soil	2720 part-1-2-29 (1975)	- In-situ core test. - Moisture Content
2.	Concrete	1199 (1959) 456 (2000) 10262 (1982) 8112 (1989)	- Compressive strength - Slump Test
a.	Coarse Aggregate	2430(1986) 2386 part-1-3-4 (1963) 383 (1970)	- Sieve Analysis - Aggregate Crushing Value - Specific Gravity - Water absorption
b.	Fine aggregate	1542 (1992) 2116 (1980) 383 (1972)	- Sieve Analysis - Silt Content - Specific Gravity
3.	Bricks	3495 part-1-2 (1992) 1077 (1992) 5454 (1978)	- Compressive Strength - Water Absorption Test

Figure 8 List of tests to be conducted in lab

Setting up of infra-structure required for testing various regular material as per the list. Infra will comprise of:

- Enclosed area for conducting the tests at desired conditions.
- Equipment for the various tests as listed in table-2
- Filing rack / cabinet for keeping the records and table /chair.
- Curing tank for concrete cubes.
- Trained QC engineer & /or Trained Lab technician shall be deputed for the site.

MATERIAL INSPECTION CHECKLIST

Reinforcement Checklist 029 **CBRE**

Project: Shriram Park 63 Phase-2
Client: Shriprop Properties Pvt. Ltd.
PMC: CBRE South Asia Pvt. Ltd.
Vendor: G.K. Shetty Builders Pvt. Ltd.
Package: Civil Structure (Reinforcement)
Description of Work: Reinforcement work
Wing: — Dwg. Ref. No: ST-620 050
Floor: Basement Level 92.5
Location: Tower-21 Grid 20, 18, 212

Inspected by: Mohan
By: Prabh
Time: —

Sl. No.	Description	Yes	No	NA	Remarks
1	Method of work agreed and all parties involved / informed about specified tolerance	✓			
2	Check for latest revision of drawing	✓			
3	BBS Submitted	✓			
4	Steel used from approved lot	✓			
5	Check for grade of steel / test certificate	✓			
During placing					
1	Earlier comments attended	✓			
2	Dis of bars as per certified BBS	✓			
3	No. of bars as per certified BBS	✓			
4	Length of bars as per certified BBS	✓			
5	Spacing of bars as per certified BBS	✓			
6	Sufficient laps/development length provided	✓			
7	Dimension of stirrups as per certified BBS	✓			
8	Check for stirrups at beam column junction	✓			
9	Check for dimension, number of chairs	✓			
10	Check for cover and cover block material	✓			
11	Check for position and fixing of couplers	✓			
12	Check for provision of dowel bars	✓			
13	Additional reinforcement at opening / cut-outs if required	✓			
14	Check gauge of binding wire & sufficient binding of reinforcement	✓			
15	Check whether column location marked on slab top mat and one complete stirrup set of column provided over top mat	✓			
16	JMS submitted	✓			

Observation if any :
 1. Top mat slab Area Rending mark.
 2. Bottom wall Bending mark.
 3. Beam 26 Top extra Bar 1 mark to be provide.
 4. Beam 25 Top extra Bar 1 mark to be provide.

Above Observations attended to and completed: Yes No
 Approved for next stage: Yes No

Note: The Quantity mentioned above is approximate measure and can not be considered for any billing purpose. Only JMS to be considered for billing else GFC drawings are to be referred for quantity.

The above works have been completed and accepted

	Contractor Civil	Contractor Quality	Contractor Safety	CBRE Representative	CBRE Safety	CBRE Safety	Client Representative
Signature	[Signature]	[Signature]	[Signature]	[Signature]	[Signature]	[Signature]	[Signature]
Name	R. Prasad	V. Prasad	K. Prasad	[Name]	[Name]	[Name]	[Name]
Date	16/11/2021	16/11/2021	16/11/2021	16/11/2021	16/11/2021	16/11/2021	16/11/2021
Time	10:00	10:00	10:00	10:00	10:00	10:00	10:00

Distribution: Original: CBRE - QS

Formwork Checklist **CBRE**

Project: Shriram Park 63 Phase-2
Client: Shriprop Properties Pvt. Ltd.
PMC: CBRE South Asia Pvt. Ltd.
Vendor: G.K. Shetty Builders Pvt. Ltd.
Package: Civil Structure (Formwork)
Description of Work: Formwork
Wing: — Dwg. Ref. No: ST-620 050
Floor: Basement Level 92.5 to 93.05
Location: Tower-21 Grid 21 (H.2) (S.10)

Inspected by: Mr. Mohan
By: Vignesh
Time: 9:00

Sl. No.	Description	YES	NO	NA	Remarks
General					
1	Check for approved shuttering methodology				
2	Check for latest revision of drawings				
3	Quality of shuttering materials inspected and approved prior to execution				
Inspection process					
1	Earlier comments attended				
2	Check for safe access				
3	Check for working platform, guard rails, toe boards fixed correctly				
4	Check dimensions, line, levels and set out as per drawing				
5	Check for plumb of formwork				
6	Box, cut out - sizes and location are correct				
7	Check for supports - number and position				
8	Check plumb of beam column junction				
9	Check supports at beam column junction				
10	Check use of foam sheet all around the starter before fixing column form work				
11	Check for depth of sunken slab				
12	Check gaps/holes are properly closed				
13	Check cleanliness of pour area				
14	Shuttering oil used properly				

Observations if any :
 Above Observations attended to and completed: YES NO
 Approved for next stage: YES NO

Note: The quantity mentioned above is approximate measure and can not be considered for any billing purpose. Only JMS to be considered for billing else GFC drawings are to be referred for quantity.

The above works have been completed and accepted

	Contractor Civil	Contractor Quality	Contractor Safety	CBRE Representative	CBRE Safety	CBRE Safety	Client Representative
Signature	[Signature]	[Signature]	[Signature]	[Signature]	[Signature]	[Signature]	[Signature]
Name	S. Prasad	V. Prasad	K. Prasad	[Name]	[Name]	[Name]	[Name]
Date	15/10/21	15/10/21	15/10/21	15/10/21	15/10/21	15/10/21	15/10/21
Time	9:00	9:00	9:00	9:00	9:00	9:00	9:00

Distribution: Original: CBRE - QS

3.9 PROJECT COST TRACKING

G.K.Shetty Builders Pvt Ltd										
Park -63 Phase-2 Feb'22 Planned Vs Achieved										
S.no	Feb'22	Shuttering		Steel		Concrete		Planned amount	Achieved amount	Remarks
		Planned Qty	Achieved Qty	Planned Qty	Achieved Qty	Planned Qty	Achieved Qty			
1	Block-21									
2	1st floor	1300.0		14.0		330.0		30,81,500.00		Alu Carpenter
3	2nd floor	3300.0		33.0		330.0		47,35,500.00		
4	Block-20									
5	First floor	1000.0		45.0		240.0		44,37,000.00		
6	Cloumn /Shear wall and Core wall	700.0		30.6		70.0		24,88,500.00		
7	Block-19									
8	Cloumn /Shear wall and Core wall	750.0		26.8		125.0		26,21,902.00		
9	Block-18									
10	B1 slab & Ramp work	1200.0		45.0		450.0		66,22,800.00		
11	Block-22									
12	PCC					120.0		6,96,000.00		
13	Footing and Stich Slab	150.0		40.0		550.0		55,08,750.00		
14	NT-3 & NT4-Swimming Pool									
15	GF-Podium Slab	1200.0		50.0		200.0		45,90,000.00		Carp & Barbender from T20 & T21
16	UG Sump									
17	RC wall	200.0		10.0		38.0		8,85,400.00		
18	STP									
19	RC wall	300.0		10.0		85.0		12,10,500.00		
		10100.0	0.0	304.5	0.0	2538.0	0.0	3,68,77,852.00		

G.K.Shetty Builders Pvt Ltd									
Park -63 Phase-2 Mar'22 Planned Vs Achieved									
S.no	Mar'22	Shuttering		Steel		Concrete		Planned amount	
		Planned Qty	Achieved Qty	Planned Qty	Achieved Qty	Planned Qty	Achieved Qty		
1	Block-21								
2	3rd,4th and 5th floor alu work	9900.0		99.0		990.0		1,42,06,500.00	
3	Block-20								
4	Second floor	950.0		56.8		257.0		51,67,350.00	
5	1st setting	2000.0		19.0				16,54,000.00	
6	Block-19								
7	Void slab	2200.0		70.0		450.0		76,85,000.00	
8	Block-18								
9	Cloumn /Shear wall and Core wall, Retaining	750.0		10.0		123.0		16,67,150.00	
10	Block-22								
11	Cloumn /Shear wall and Core wall, Retaining	750.0		10.0		135.0		17,36,750.00	
12	NT-5 & NT-6								
13	B1-Podium Slab	250.0		10.0		125.0		14,16,250.00	
14	UG Sump								
15	Slab	200.0		15.0		50.0		12,35,000.00	
16	STP								
17	Slab	324.0		31.0		120.0		26,02,100.00	
		17324.0	0.0	320.8	0.0	2250.0	0.0	3,73,70,100.00	

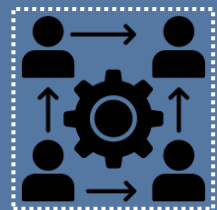
Earned value management (EVM), also known as earned value analysis, is a method for tracking ongoing construction project performance. One of the best methods in use today, it relies on three different numeric values to calculate your construction project's progress: **planned value (PV)**, **actual cost (AC)** and **earned value (EV)**.

Earned Value Variances	Description	Formula	Result
Cost Variance (CV)	The difference between the amount budgeted and the amount that was actually spent on the work performed. CV shows whether and by how much amount the project is over or under pre-approved budget.	= Earned Value (EV) - Actual Cost (AC)	> 0 means under budget < 0 means over budget
Schedule Variance (SV)	The difference between the amount budgeted and the amount that was planned for the project. SV is a good indicator to show if and by how much your work is behind or ahead of pre-approved schedule.	= Earned Value (EV) - Planned Value (PV)	> 0 means ahead of schedule < 0 means behind schedule



Figure 9 Site progress photo

CHAPTER 4: CRITICAL OVER VIEW FROM PROFESSIONAL TRAINING



Project
coordination



Communication
skills



Monitoring on
site



Client
handling



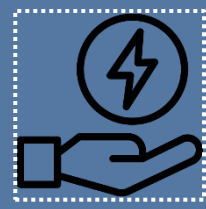
Documentation
& scheduling



Structural ,
MEP Systems



PM : Facility ,
Cost, O&M



Energy
management

- In NPCI, smart data center they guide us all the branches of project management like cost management, contract management, project planning and facility management.
- In addition to project management skills, they taught me different MEP systems since data centers are service oriented buildings. Advanced MEP systems testing and commissioning conducted on sites are useful for understanding of MEP systems in a complicated structure
- The training period in the data centres creates an interest to learn more about the typology and processes which in turn I have developed as my dissertation research.
- They asked us to monitor the daily progress reports of the contractor (L&T) and creating MOM and agenda of the meeting. Since the project is in the handing over stage snag lists, asset handing over lists, project close out reports are explained.
- Since the building is IGBC platinum rated and uptime standards, all those criteria's for achieving those standards are useful.
- This project also guides us to communicate to the client and contractor about the progresses and meetings
- All those analysis and skills for tracking of a project are understood like Risk matrix, delay analysis, RACI matrix, MOM, Inspection and installation of installation and technical data sheets are shown and studied in case of this project
- In Shriram Park 63, Since it is in the ongoing construction the sequence is construction are shown on site and the schedule tracking of the project is learnt
- Mivan construction sequence and the reusable capacity and advantages of form works are understood
- Cost tracking of the project is explained, since the original project cost is over run.
- Project quality plan and safety plan of the project is explained, and the safety and quality measures followed on site is understood
- The overall internship experience taught us how to coordinate and track a project, how to interact with client and monitor the contractor Helps to increase the project management skills and understanding of project execution.