Cotton Field (BD) Ltd (Relocated)

Plot- 42/3, Rajnagar, Sataish Road, Tongi, Gazipur
(23.920396N, 90.363708E)
28th September 2021

RSC RMG SUSTAINABILITY COUNCIL

Building Infomation

Industrial Building-1: (G+4)

Admin Building: (B+G+4)

Utility Building: (G+3)

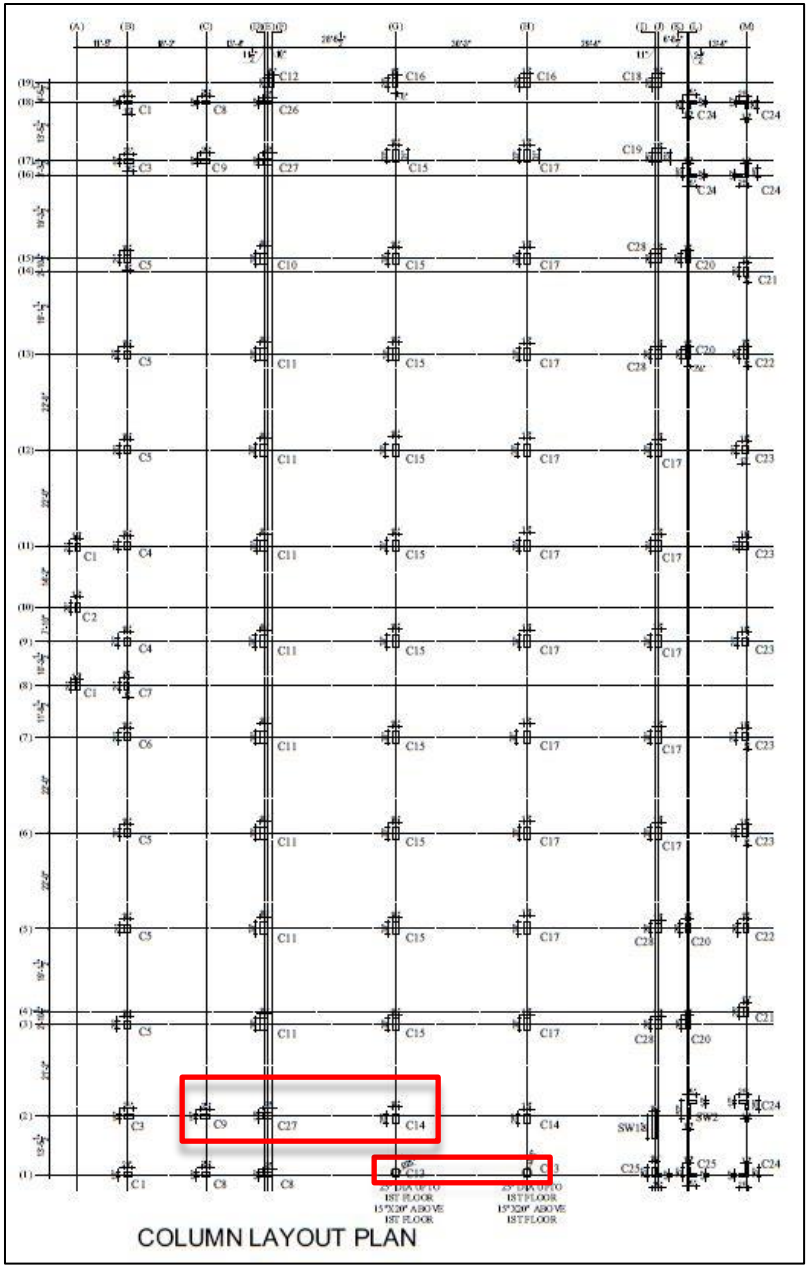
Observations

Lower Factor of safety of pile foundations

Observations: Industrial Building-1

6.2 ADEQUACY OF NUMBER OF PILES

Grid Point	Service Load (kips)	Ultimate Bearing Capacity (kips)	Nos. of piles provided	Total Ultimate Bearing Capacity (kips	Factor of Safety	Remarks
1B	225.7	345	2	690	3.06	Safe
1C	296.3	332	3	996	3.36	Safe
1E	353	319	3	957	2.71	Safe
1G	533.3	314	4	1256	2.36	Considerably Safe
1H	545.6	320.5	4	1282	2.35	Considerably Safe
1I, 1K, 2I, 2L	891.9	339.5	12	4074	4.57	Safe
1M	166.3	352	2	704	4.23	Safe
2B	389.4	345	3	1035	2.66	Safe
2C	408.6	332	3	996	2.44	Considerably Safe
2E	588.8	319	4	1276	2.17	Considerably Safe
2G	612.8	277.5	5	1387.5	2.26	Considerably Safe

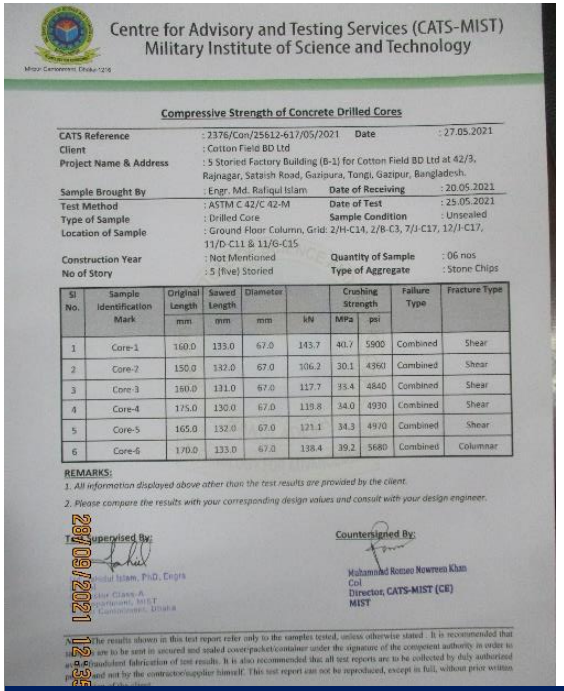


Factor of safety for Pile foundations at grid 1G, 1H, 2C, 2E,2G were found below 2.50. In the DEA report their no recommendation for those pile foundations. The factory engineer is required to check the foundation adequacy and suggest proper remedial actions accordingly.

Observations: Industrial Building-1

Mismatch in concrete core layout

Observation: Industrial Building-1



Centre for Advisory and Testing Services (CATS-MIST)
Military Institute of Science and Technology

Compressive Strength of Concrete Drilled Cores

CATS Reference	: 2376/Con/25612-617/05/2021	Date	: 27.05.2021
Client	: Cotton Field BD Ltd		
Project Name & Address	: 5 Storied Factory Building (B-1) for Cotton Field BD Ltd at 42/3, Rajnagar, Sataish Road, Gazipura, Tongi, Gazipur, Bangladesh.		
Sample Brought By	: Engr. Md. Rafiqul Islam	Date of Receiving	: 20.05.2021
Test Method	: ASTM C 42/C 42-M	Date of Test	: 25.05.2021
Type of Sample	: Drilled Core	Sample Condition	: Unsealed
Location of Sample	: Ground Floor Column, Grid: 2/H-C14, 2/B-C3, 7/J-C17, 12/J-C17, 11/D-C11 & 11/G-C15		
Construction Year	: Not Mentioned	Quantity of Sample	: 06 nos
No of Story	: 5 (five) Storied	Type of Aggregate	: Stone Chips

Sl No.	Sample Identification Mark	Original Length	Sawed Length	Diameter		Crushing Strength		Failure Type	Fracture Type
		mm	mm	mm	kN	MPa	psi		
1	Core-1	160.0	133.0	67.0	143.7	40.7	5900	Combined	Shear
2	Core-2	150.0	132.0	67.0	106.2	30.1	4360	Combined	Shear
3	Core-3	160.0	131.0	67.0	117.7	33.4	4840	Combined	Shear
4	Core-4	175.0	130.0	67.0	119.8	34.0	4930	Combined	Shear
5	Core-5	165.0	132.0	67.0	121.1	34.3	4970	Combined	Shear
6	Core-6	170.0	133.0	67.0	138.4	39.2	5680	Combined	Columnar

REMARKS:
1. All information displayed above other than the test results are provided by the client.
2. Please compare the results with your corresponding design values and consult with your design engineer.

Tested & Supervised By:
Countersigned By:
Muhammad Romeo Nowreen Khan
Col
Director, CATS-MIST (CE)
MIST

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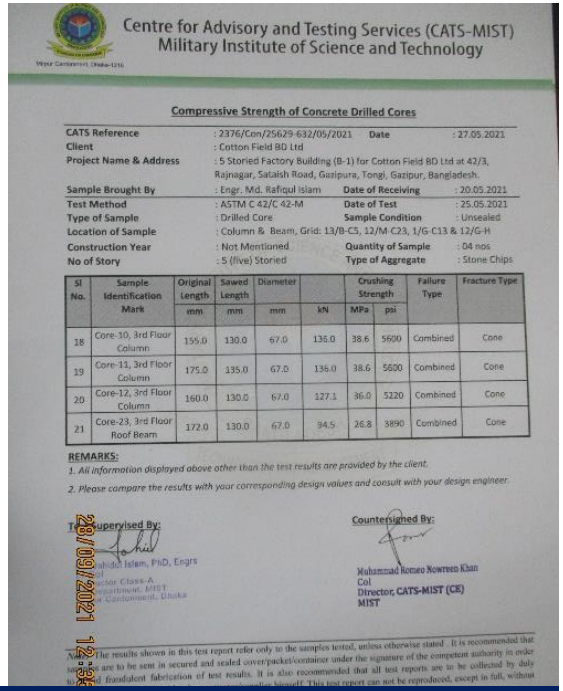

Centre for Advisory and Testing Services (CATS-MIST)
Military Institute of Science and Technology

Compressive Strength of Concrete Drilled Cores

CATS Reference	: 2376/Con/25629-632/05/2021	Date	: 27.05.2021
Client	: Cotton Field BD Ltd		
Project Name & Address	: 5 Storied Factory Building (B-1) for Cotton Field BD Ltd at 42/3, Rajnagar, Sataish Road, Gazipura, Tongi, Gazipur, Bangladesh.		
Sample Brought By	: Engr. Md. Rafiqul Islam	Date of Receiving	: 20.05.2021
Test Method	: ASTM C 42/C 42-M	Date of Test	: 25.05.2021
Type of Sample	: Drilled Core	Sample Condition	: Unsealed
Location of Sample	: Column & Beam, Grid: 13/B-C5, 12/M-C23, 1/G-C13 & 12/G-H		
Construction Year	: Not Mentioned	Quantity of Sample	: 04 nos
No of Story	: 5 (five) Storied	Type of Aggregate	: Stone Chips

Sl No.	Sample Identification Mark	Original Length	Sawed Length	Diameter		Crushing Strength		Failure Type	Fracture Type
		mm	mm	mm	kN	MPa	psi		
18	Core-10, 3rd Floor Column	155.0	130.0	67.0	135.0	38.6	5600	Combined	Cone
19	Core-11, 3rd Floor Column	175.0	135.0	67.0	136.0	38.6	5600	Combined	Cone
20	Core-12, 3rd Floor Column	160.0	130.0	67.0	127.1	36.0	5220	Combined	Cone
21	Core-23, 3rd Floor Roof Beam	172.0	130.0	67.0	94.5	26.8	3890	Combined	Cone

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MIST

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Concrete core test reports

As per core test report and layout plan, 25 number of concrete cores were taken from different locations of beam and column. But we identified only 19 core locations. Factory engineer to identify the missing core locations and revise core layout plan properly.

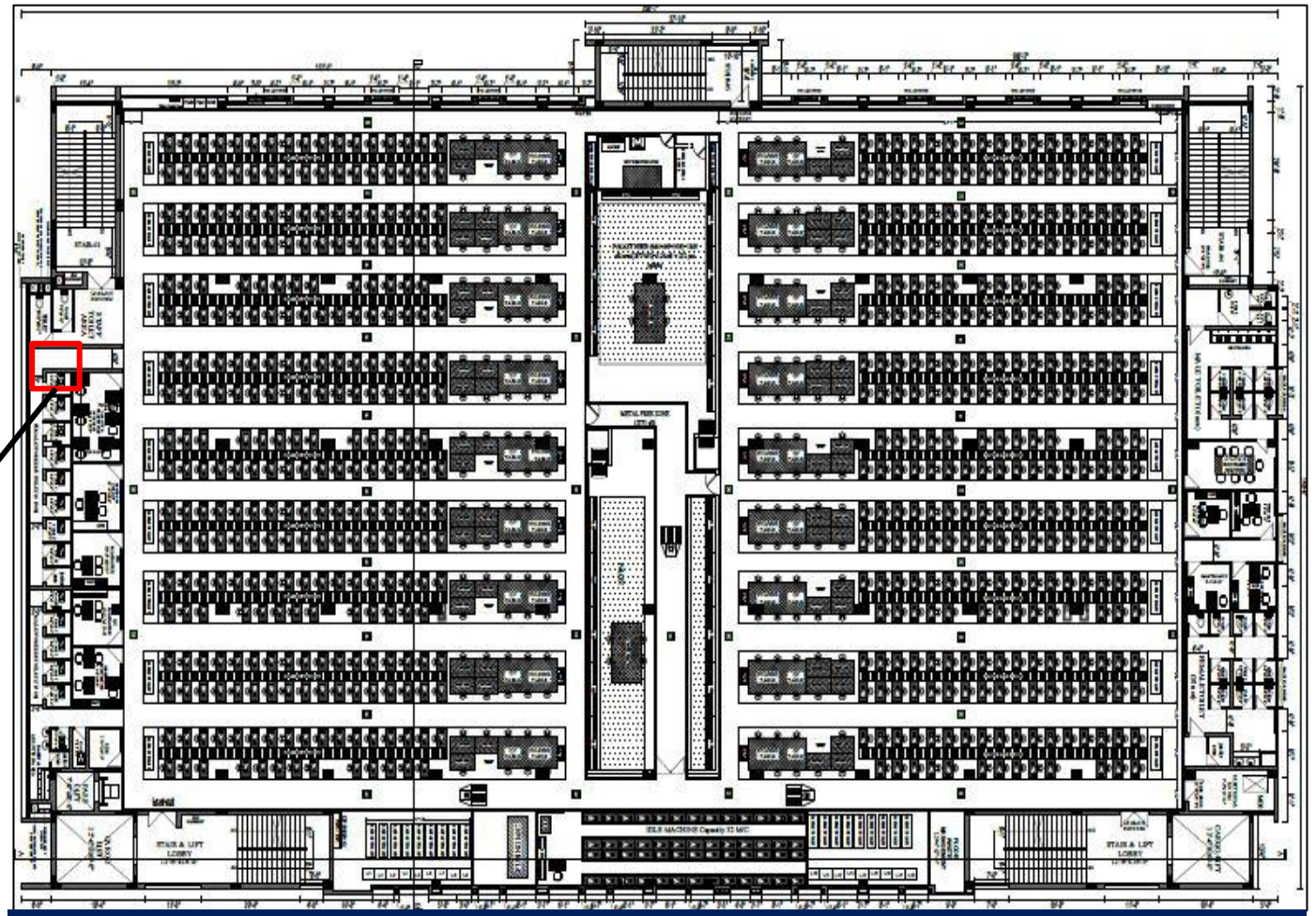
Concrete core sample location

Observation: Industrial Building-1

Perforation of 1st floor slab

Observations: Industrial Building-1

Slab perforation at 1st floor toilet zone



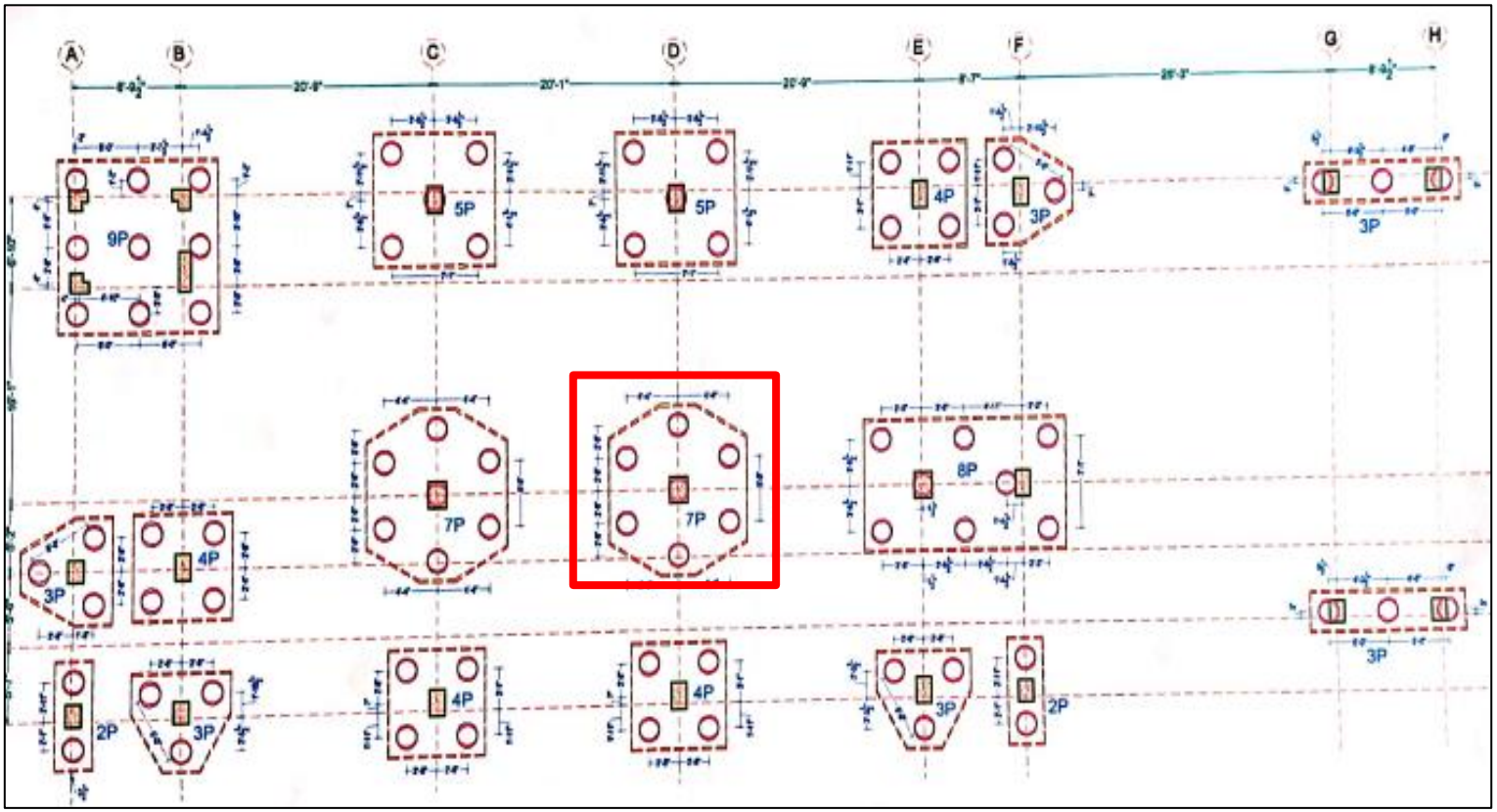
1st floor layout

Factory engineer is required to check the adequacy of slab panel having perforation and implement strengthening or remedial works as per engineer's advice.

Observations: Industrial Building-1

Lower Factor of safety of pile foundations

Observations: Admin building



Pile foundation layout

Cursory calculation indicate that the factor of safety of marked pile foundation is below 2.50 considering live load 3 kPa on typical floors, 1.5 kPa on roof & each pile capacity from soil test report (30 ton). The factory engineer is required to check the foundation adequacy and suggest proper remedial actions accordingly.

Observations: Admin building

Absence of design documents

No design documents were available for Admin Building

As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC. At the time of inspection, no design report was available which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

Observations: Admin Building

Exposed rebar at 1st floor (south portion)

Observations: Admin Building

Exposed rebar of Column

Exposed reinforcement was found on 1st floor (south portion) columns. Factory engineer is required to take necessary measures to prevent the corrosion in exposed rebar.

Observations: Admin Building

Falling Hazard

Observations: Admin Building

No barrier at 1st floor and roof

No parapet wall or railing was found at 1st floor (south portion) and roof of north portion which may cause falling hazard. The factory is required to provide proper barrier (parapet/railing) to avoid falling hazard.

Observations: Admin Building

Absence of design documents

No design documents were available for Utility Building

As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC. At the time of inspection, no design report was available which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

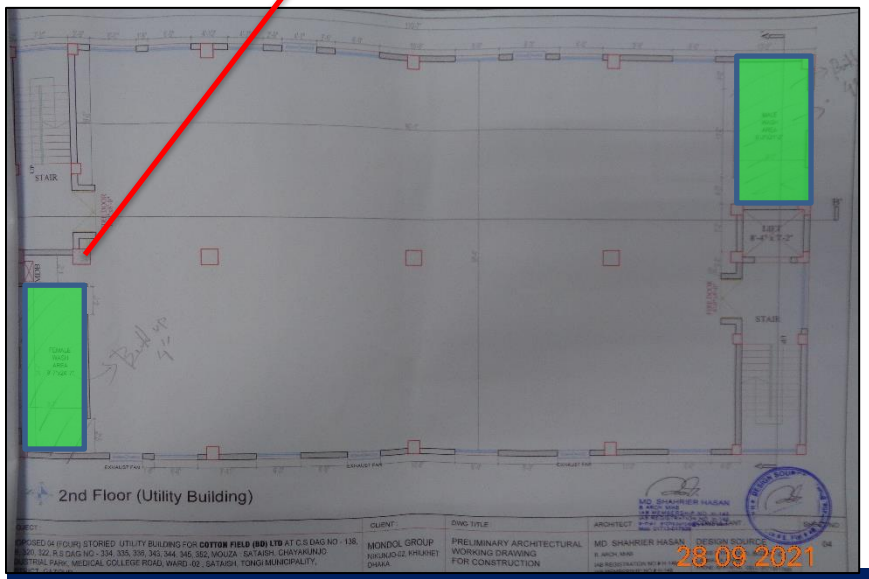
Observations: Utility Building

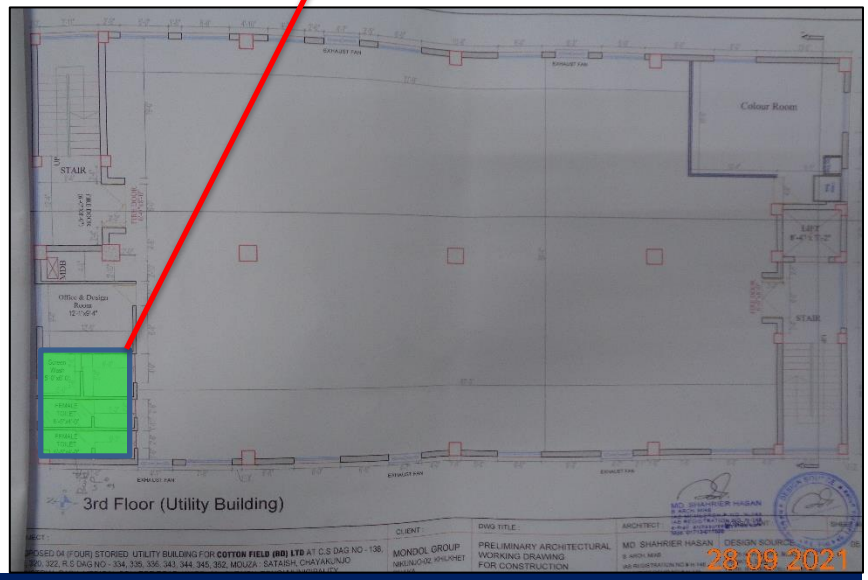
Lack of information in as-built drawing

Observations: Utility Building

100 mm build-up at toilet

25 mm build-up at toilet





2nd floor & 3rd floor layout

Approx. 100mm build-up was found in toilet area which is not mentioned in as-built drawing. The factory engineer to survey the structure and update the as-built drawings accordingly.

Observations: Utility Building

Apparently non-engineered canopy

Observations: Utility Building

Non-engineered canopy at Utility building

Non-engineered canopy was found in entrance & back side of the Utility building. The factory engineer is required to either demolish the canopy or build an engineered canopy.

Observations: Utility Building

Problems Observed

Building 1- industrial Building:

Item 01: Lower Factor of safety of pile foundations.
Item 02: Mismatch in concrete core layout
Item 03: Perforation of 1st floor slab

Admin Building:

Item 04: Lower Factor of safety of pile foundations.
Item 05: Absence of design documents.
Item 06: Exposed rebar at 1st floor (south portion)
Item 07: Falling Hazard

Utility Building:

Item 08: Absence of design documents.
Item 09: Lack of information in as built drawings.
Item 10: Apparently non-engineered canopy.

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Lower Factor of safety of pile foundations (Industrial Building-1)	The factory engineer is required to check the foundation adequacy, suggest proper remedial actions in design report and submit the design report to RSC.	6-weeks
02	Lower Factor of safety of pile foundations (Industrial Building-1)	Implement any remediation work if required.	6-months
03	Mismatch in concrete core layout (Industrial Building-1)	Factory engineer to identify the missing core locations and revise core layout plan properly. Also identify and mark the missing core locations for further verification.	6-weeks
04	Perforation of 1st floor slab (Industrial Building-1)	Factory Engineer is required to check the adequacy of slab panel having perforation.	6-weeks
05	Perforation of 1st floor slab (Industrial Building-1)	Implement strengthening or remedial works as per engineer's advice	6-months
06	Lower Factor of safety of pile foundations (Admin Building)	The factory engineer is required to check the foundation adequacy, suggest proper remedial actions in design report and submit the design report to RSC.	6-weeks
07	Lower Factor of safety of pile foundations (Admin Building)	Implement any remediation work if required.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
08	Absence of design documents (Admin Building)	Factory engineer is required to prepare the design documents including a design report, and a set of structural drawings in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC part 6 and submit to RSC for review.	6-weeks
09	Absence of design documents (Admin Building)	Produce and actively manage load plan for all floors considering floor, column and foundation capacity.	6-weeks
10	Absence of design documents (Admin Building)	Complete remedial works arising from design report.	6-months
11	Absence of design documents (Admin Building)	Implement floor loading plan.	6-months
12	Exposed rebar at 1st floor (south portion) (Admin Building)	Remove the rusting and provide rust proof paint to avoid further corrosion.	6-weeks
13	Falling Hazard (Admin Building)	The factory is required to provide proper barrier (parapet/railing) to avoid falling hazard.	Immediate-Now

Item No.	Observation	Recommended Action Plan	Recommended Timeline
14	Absence of design documents (Utility Building)	Factory engineer is required to prepare the design documents including a design report, and a set of structural drawings in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC part 6 and submit to RSC for review.	6-weeks
15	Absence of design documents (Utility Building)	Produce and actively manage load plan for all floors considering floor, column and foundation capacity.	6-weeks
16	Absence of design documents (Utility Building)	Complete remedial works arising from design report.	6-months
17	Absence of design documents (Utility Building)	Implement floor loading plan.	6-months
18	Lack of information in as built drawings (Utility Building)	The factory engineer to survey the structure and update the as-built drawings accordingly.	6-weeks
19	Apparently non-engineered canopy (Utility Building)	The factory engineer is required to either demolish the canopy or build an engineered canopy.	6-weeks