FCI (BD) Ltd -Extended New Warehouse Building

Plot No: 83-84, DEPZ (Old Zone), Ashulia, Savar, Dhaka-1349.

(23.950964, 90.266787)

24 January 2024

RSC RMG SUSTAINABILITY COUNCIL

Level 5, Shanta Forum, 187, 188/B,
Bir Uttam Mir Shawkat Sarak, Tejgaon,
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1. Building Information

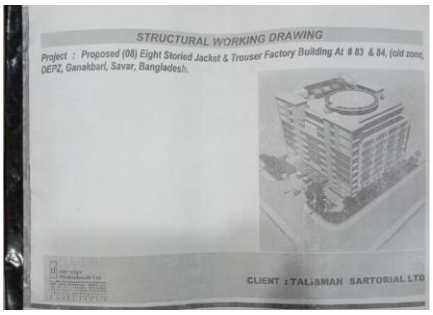
Building 1 (Factory Building): This is an existing single-story RC building with a mezzanine (G+M).

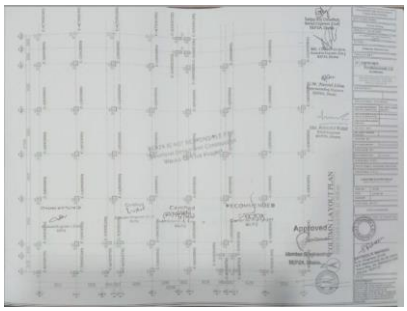
Building 2 (Utility Building): This is a single storied RC building.

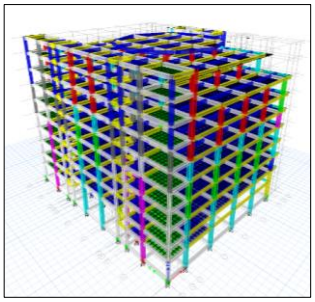
Building 3 (Security & Fire Control Room): This is a single storied RC building.

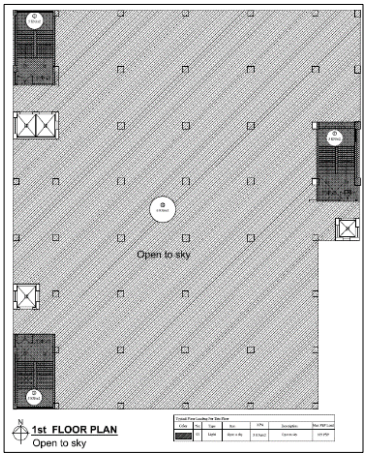
2. Observations:

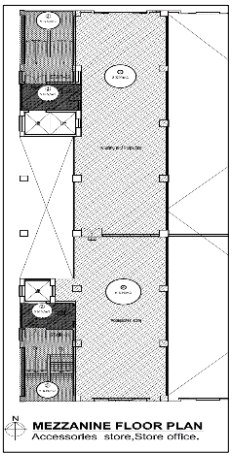
Observation-1: Possibility of Vertical Extension. Building-1 (Factory Building)







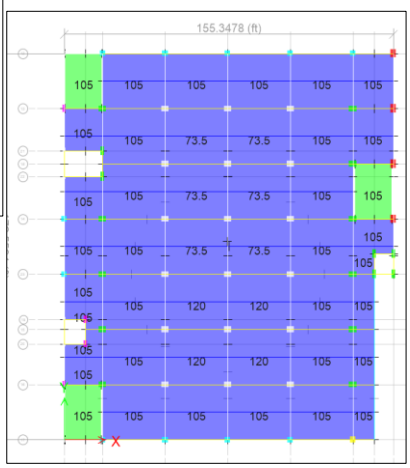


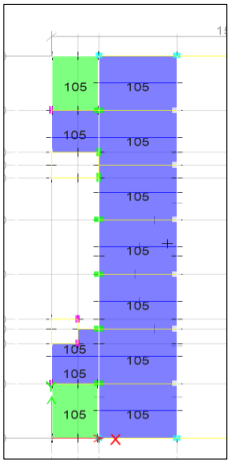


Input Parameters:

Table: Input Parameters:

1	Yield Strength of steel	fy	72,500 psi
2	Cylinder Strength of Concrete for column	f'c	5000 psi
3	Cylinder Strength of Concrete for Beam	f'c	5000 psi
4	Cylinder Strength of Concrete for Slab	f'c	5000 psi
5	Young's Modula's of Concrete (Stone Chips)	Ec	$57000\sqrt{f'c}$





TEST REPORT

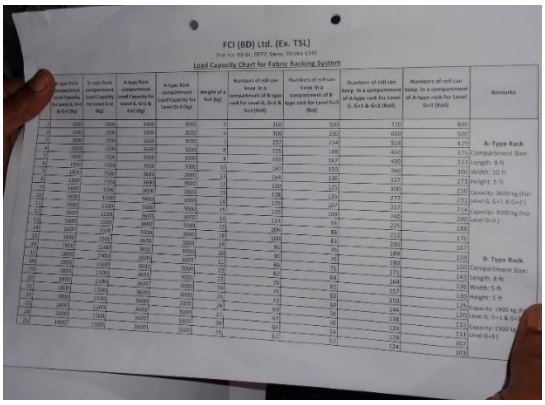
Sl. No.	Date of Casting as per the Letter	Specimen Designation/ Frog Mark	Specimen Area (sq. in)	Maximum Load (lb)	Crushing Strength (psi)	Average Crushing Strength	Mode of Failure
1	28/12/2019 (29 days test)	TS FB 4L C-1 (178)	12.42	59,449	4,787	4420 psi (30.5 MPa) (311 kg/cm²)	Combined *
2		TS FB 4L C-1 (179)	12.67	52,084	4,111		Combined *
3		TS FB 4L C-1 (180)	12.67	55,241	4,360		Combined *

Description: The building permission layout is for eight storied structures approved by BEPZA. The construction of the building started in February 2019 and completed up-to 1st floor level in January 2023. Extended columns were observed on the roof. So, there is a possibility of future vertical extension. The building engineer is required to conduct Detail Engineering Assessment (DEA) for the eight storied structure prior to commencement of further extension work and submit to RSC for further review.

In the provided load plan, 6kPa has been considered at 1st floor (existing roof) and partial area of the mezzanine. But in FEA model, the floor loading has been assigned less than 6kPa.

In design report, design concrete strength has been considered 5000psi for the column, beam and slab as well as assigned in FEA model. During inspection, Nineteen sets of concrete cylinder test reports from BUET where ten sets for Column, three sets for slab, three sets for pile cap & three sets for pile. The average cylinder strength of a ground floor lift column was found less then the design strength. Building engineers is required to verify the in-situ concrete strength for the column.

Observation-2: Implement load management programs properly. Building-1 (Factory Building)



Description: During the inspection, two storage racks were found on ground floor. Load plan or loading capacity has been provided by the manufacturer of racks. But the load management program was not found as per the capacity.
The building engineer is required to post load plan for racks all around the floors and maintain the loading in rack as per the capacity.

Observation-3: Hairline cracks in brick wall. Building-1 (Factory Building)

Description: During inspection, hairline cracks were found in the brick wall. Building engineer is required to investigate the reasons of the cracks, extend of the cracks and suggest proper remedial action.

Observation-4: Non-structural elements not anchored or braced. Building-1 (Factory Building).

Description: PVC water tank at roof is not adequately anchored or braced to resist lateral (earthquake) forces. Building is required to adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC.

Observation-5: Water dampness at roof. Building 2 (Utility Building)

Description: Water ponding was found on the roof slab due to inadequate slope. The factory is required to develop proper drainage system with adequate slope and water outlet on the roof.

3. Action Plan:

Serial No	Observation	Action Plan	Timeline
1	Possibility of Vertical Extension. Building-1 (Factory Building)	Prior to the vertical extension, the building engineer is required to conduct a Detailed Engineering Assessment (DEA) of the structure according to BNBC. Submit DEA to RSC for review.	within 6 months
2	Possibility of Vertical Extension. Building-1 (Factory Building)	Carry out remedial work if required.	within 6 months
3	Implement load management programs properly. Building-1 (Factory Building)	Post the load plan and maintain loading accordingly.	within 6 weeks
4	Hairline cracks in brick wall. Building-1 (Factory Building)	The building engineer is required to investigate the reason of crack, extend of crack and suggest proper remedial action.	within 6 weeks
5	Non-structural elements not anchored or braced. Building-1 (Factory Building)	Building engineer is required to adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC.	within 6 months
6	Water dampness at roof. Building 2 (Utility Building)	The building engineer to develop proper drainage system with adequate slope to resist water ponding on the roof.	within 6 months