

Four Brothers Fashion (Extension)

Dhaka Uddan, Beribadh, Mohammadpur, Dhaka

(23.763565, 90.343056)

22 April 2024

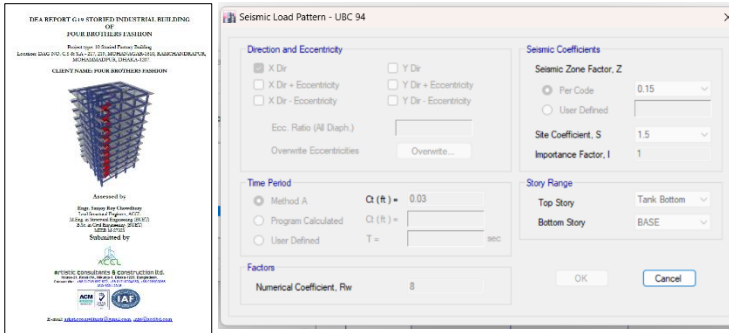


1. Building Information

Extension Building is ten (G+9) storied RC building with an underground water reservoir and fire pump room.

2. Observations:

Observation-1: Inconsistencies in prepared Detail Engineering Assessment (DEA).



5 CONCLUSION

According to BNBC-2006 loading condition-

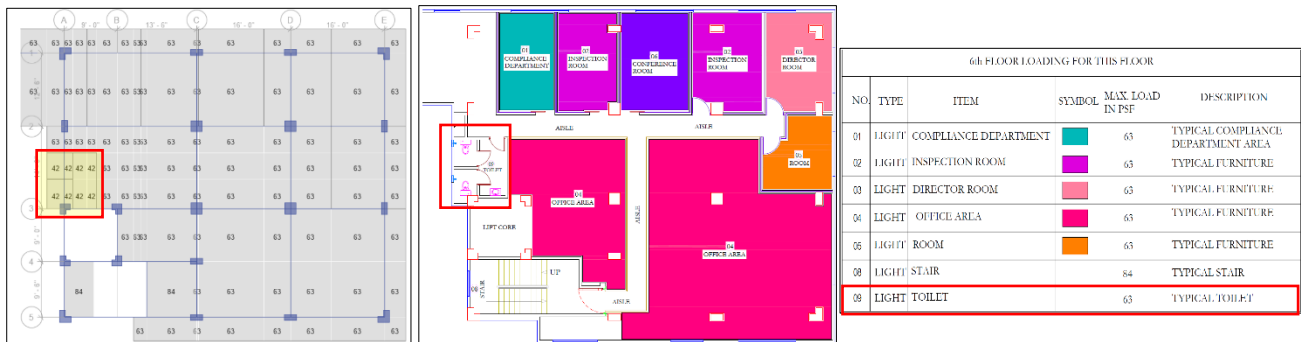
- All the footings are adequate in bearing capacity.
- All the footings are adequate in punching shear capacity.
- All piles are adequate in punching shear capacity.
- All the RCC columns are adequate.
- All the grade beams are adequate.
- All the floor beams are adequate.
- All the floor slabs are adequate.

6 RECOMMENDATION

- The factory can continue its operation by maintaining the allowable load layout plan. (As per BNBC 2006)

The factory has performed a Detailed Engineering Assessment (DEA) for the building. The structure has been considered as an Intermediate Moment Resisting Frame (IMRF) system ($R=S$). However, in the report, adequate information and calculations have not been provided to support the framing system as IMRF.

There is an underground water reservoir and fire pump room at the basement of the building. In the DEA report, the adequacy calculation of the RC wall of the reservoir and retaining wall of the fire pump room has not been provided.

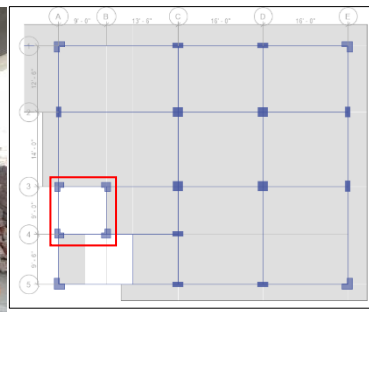


The assignment of the floor loading do not match between FEA model and load plan. Floor live load has been considered 3kPa for the toilet zone but in FEA model 2kPa has been assigned.

2.3 MATERIAL PROPERTY

The principal material of construction is reinforced concrete. As per investigation and as built drawings, the following material properties has been used:

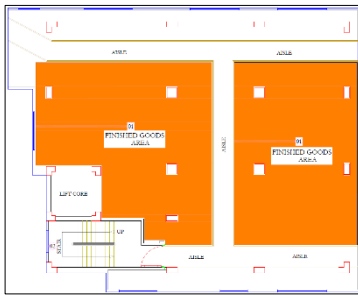
- ❖ Yield strength of steel (Rebar), f_y = 72500 lb/in²

In the DEA, the tensile strength of the re-bar has been considered 500MPa but no test report is available. During the inspection, the floor layout plan was found mismatch with the provided as-built architectural drawing. Newly brick wall have been constructed on floors that are not shown in the drawing. The opening of the lift core has been shown in the floor layout and assigned in the FEA model, but at the site lift core opening was not found. A Cantilever slab was found which has not been shown in the architectural drawing.

A building engineer is required to revise the DEA documents based on the above observations and submit to RSC for further review.

Observation-2: Load plan does not comply with BNBC requirements.



4th FLOOR LOADING FOR THIS FLOOR					
NO.	TYPE	ITEM	SYMBOL	MAX. LOAD IN PSF	DESCRIPTION
01	LIGHT	FINISHED GOODS AREA		63	TYPICAL FINISHED GOODS AREA
02	LIGHT	STAIR		84	TYPICAL STAIR

INDUSTRIAL STORAGE & HAZARDOUS (Occupancy - G, H & J)	Workshop, factory, warehouse	1 Light workroom without storage	3.0	2.7
		2 Machinery hall & circulation area	4.0	4.5
		3 Factory, workshop etc.	5.0	4.5
		4 Manufacturing : light	6.0	4.5
		heavy	12.0	9.0
		ice	15.0	9.0
		5 Printing plant :	7.0	11.0
		Press room	5.0	9.0
		Composing and linotype room	12.0	9.0
		Paper storage room	7.5	4.5
		6 Motor room, fan room etc. including the weight of machinery	15.0	9.0
		7 Cold storage, grain storage	6.0	4.5
		Storage warehouses : light	12.0	9.0
		heavy	20.0	12.0
		9 Foundries		

Posted load plan 5kPa at 3rd and 4th floor

6kPa required for storage



Storage found on the 8th, 4th, 3rd and 1st floor

Description: During the inspection, storage was found on the 8th, 4th, 3rd and 1st floor. But in loading has been considered 3kPa in load plan. As per BNBC-2006, 6kPa live load needs to be considered for the storage area. The building engineer is required to update the floor load plan for storage areas, revise the Detail Engineering Assessment (DEA) report and submit to the RSC for further review.

Observation-3: Dampness in the under-ground water reservoir and overhead water tank.



Seepage in RC wall of under-ground water reservoir



Seepage in RC wall of OHWT

Description: Dampness was found at the RC wall of the under-ground water reservoir and overhead head water tank due to the seepage of moisture. The building engineer is required to investigate the extent of dampness and take necessary measures to prevent the dampness.

Observation-4: Non-structural elements not anchored or braced.



Description: Racks on different floors are 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.

3. Action Plan:

Serial No	Observation	Action Plan	Timeline
1	Inconsistencies in prepared Detail Engineering Assessment (DEA).	Building engineers is required to survey the whole structure and prepare accurate as-built drawings.	within 6 weeks
2	Inconsistencies in prepared Detail Engineering Assessment (DEA).	Building engineers is required to revise the Detail Engineering Assessment (DEA) based on design/in-situ material strength, loading and actual site condition. Submit DEA to RSC for further review.	within 6 weeks
3	Inconsistencies in prepared Detail Engineering Assessment (DEA).	Carry out remedial work if required.	within 6 months
4	Load plan does not comply with BNBC requirement.	Revise the floor loading plan following BNBC requirement.	within 6 weeks
5	Load plan does not comply with BNBC requirement.	Implement the floor load management plan.	within 6 months
6	Dampness in under-ground water reservoir and overhead water tank.	Building Engineer is required to investigate the reason of dampness and carry out suitable repair of dampness.	within 6 weeks
7	Non-structural elements not anchored or braced.	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