

That's It Fashion Ltd - Extension (previously Peak Apparels)

65/1 Vogra, National University, Joydevpur, Gazipur, Dhaka.

(23.96972464899114, 90.38125458369382)

8 October 2024



1. Building Information:

Production Building (Extension) (G+7)

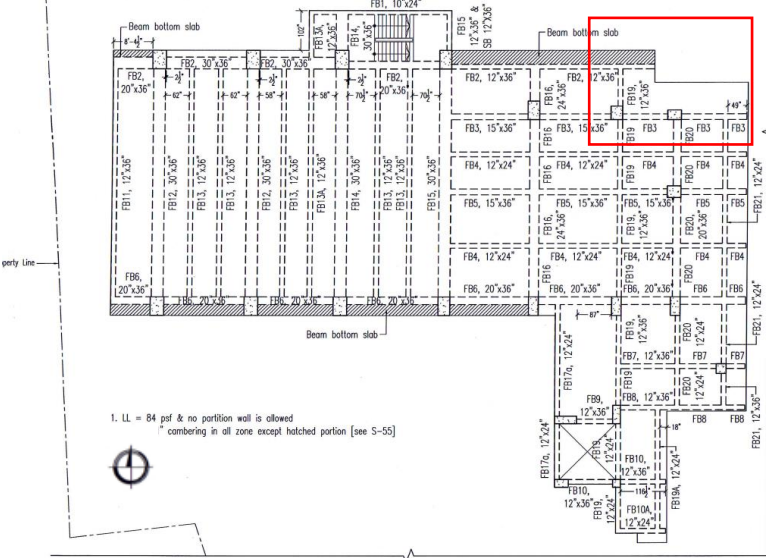
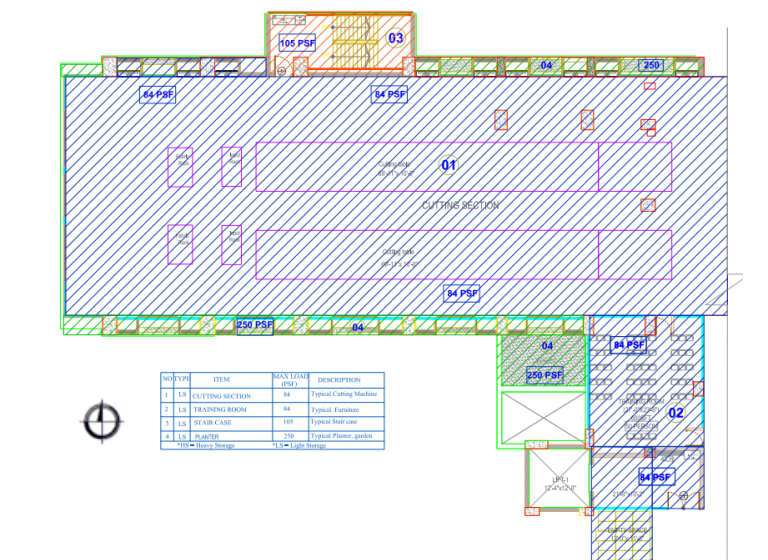
Utility Building (G+2)

Security Room (G)

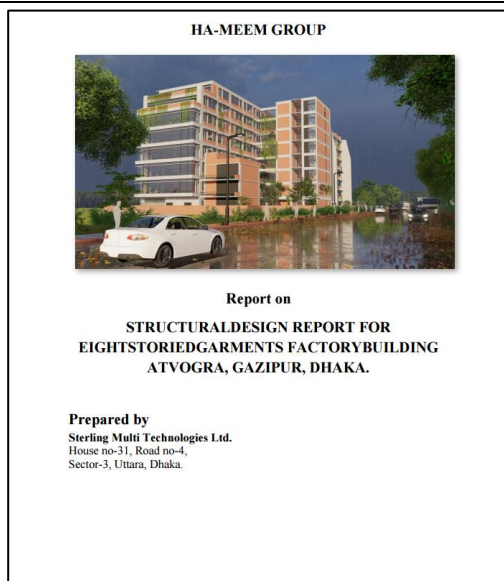
RMS Room (G)

2. Observations:

Observation-1: Inconsistencies in as-built drawing. (Production Building (Extension))

 1. LL = 84 psf & no portion wall is allowed cantilevering in all zone except hatched portion [see S-55]																									
<u>Roof floor beam layout</u>	<u>Roof floor beams at the east side</u>																								
 <table><thead><tr><th>NO</th><th>ITEM</th><th>MAX. LOAD (psf)</th><th>DESCRIPTION</th></tr></thead><tbody><tr><td>1</td><td>CUTTING SECTION</td><td>84</td><td>Typical Cutting Machine</td></tr><tr><td>2</td><td>TRAINING ROOM</td><td>84</td><td>Typical Floor plate</td></tr><tr><td>3</td><td>STAIR CASE</td><td>105</td><td>Typical Floor plate</td></tr><tr><td>4</td><td>PLANT</td><td>250</td><td>Typical Floor plate</td></tr><tr><td>5</td><td>STORAGE</td><td>125</td><td>Typical Floor plate</td></tr></tbody></table>	NO	ITEM	MAX. LOAD (psf)	DESCRIPTION	1	CUTTING SECTION	84	Typical Cutting Machine	2	TRAINING ROOM	84	Typical Floor plate	3	STAIR CASE	105	Typical Floor plate	4	PLANT	250	Typical Floor plate	5	STORAGE	125	Typical Floor plate	
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<u>3rd-floor load plan-Cutting (84 psf)</u>	<u>3rd floor-store (125 psf)</u>																								
Description: During inspection, the roof floor beam layout at the East side cantilever zone did not match the drawing. Also, the cutting section (84 psf) was mentioned in the 3rd floor load plan but was found as storage (125 psf) on site. The building engineer is required to update the as-built drawing according to the as-built condition, revise the load plan as per BNBC requirements and check the design accordingly.																									

Observation-2: Inconsistencies in design report. (Production Building (Extension))



4.7 Equivalent Static Force Method

The parameters for equivalent static loading are as follows,

Seismic zone = III, zone co-efficient, $Z = 0.28$ (BNBC 2020, Fig.6.2.24)

Site classification of soil = SC (BNBC 2020, Table.6.2.13)

Response reduction factor, $R = 5.5$ (BNBC 2020, table 6.2.19)

Structural importance factor, $I = 1$

Structure type for period formula = concrete moment resisting frame

Seismic design category = D

Based on the above input design parameters, design spectral acceleration, $S_d = 0.667(Z/I/R) \times C_s$ [BNBC 2020, eq. 6.2.34] was evaluated. Detailed calculation of seismic load by equivalent static force method is shown in Fig.10 in Appendix-I. The calculated parameters were used as input in the analysis program as a user co-efficient. The analysis program automatically calculated the design seismic force on the building (Fig.10, Appendix-I).

4.10 Materials

The principal material of construction is reinforced concrete. For the purpose of analysis and design the following material properties are used,

Yield strength of steel, f_y = 60 ksi as applicable

28 day cylinder strength of concrete, f'_c = 3.5 to 5.5 ksi as applicable for different parts of the structure.

Design report

Description: During the inspection, a design report was found on site for this structure where a Special moment resisting frame (SMRF) is considered but no details calculation was provided to justify SMRF, concrete strength calculations (as per BNBC) for the cylinder test report not provided, no adequacy check found for foundation, beam & slab and serviceability check not found also.

The building engineer is required to prepare the design report as per BNBC requirements and review the design accordingly.

Observation-3: Lack of anchorage of non-structural elements. (Production Building (Extension))



Description: On the 1st floor, the storage rack was not found anchored/braced. The building engineer is required to anchor/brace all the non-structural elements.

Observation-4: Signage of water ponding on the roof. (Production Building (Extension))



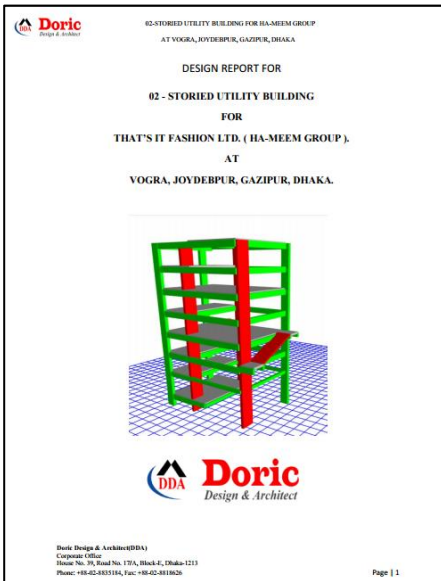
Description: During the inspection, signage of water ponding was found on the roof. The building engineer is required to improve the roof drainage system.

Observation-5: Falling hazard beside the stairs on the north side. (Production Building (Extension))



Description: During the inspection, inadequate railing height was observed at the stairs on the north side which may cause a falling hazard. The building engineer is required to increase the railing height to avoid falling hazards.

Observation-6: Inconsistencies in design report. (Utility Building)



3.2. Materials Considered in Design:

Basic design materials are considered as:

Concrete:

Compressive Strength of Concrete $f_c' = 4,000$ psi (for column, shear wall, foundation, reservoir, beam, slab, stair)

Reinforcement:

Deformed bar with minimum yield strength = 72,500 psi for all structure.

3.3. Structural System:

Special Moment Resisting Frame (SMRF) has been considered to analyze and therefore detailing of this structure. (BNBC, Part 6, Sec 1.3.2)(Table 6.2.19)

Design report

Description: During the inspection, a design report was found on site for this structure where a Special moment resisting frame (SMRF) is considered but no details calculation was provided to justify SMRF, concrete strength calculations (as per BNBC) for cylinder test report was not provided and no adequacy check found for the foundation.

The building engineer is required to prepare the design report as per BNBC requirements and review the design accordingly.

Observation-7: Exposed rebar on the roof. (Utility Building)



Description: Exposed reinforcement is left on the roof, which was prone to corrosion. The building engineer is required to provide rust-proof paint on exposed reinforcement to protect from corrosion.

3. Action Plan

Item No.	Observation	Action Plan	Timeline
1	Inconsistencies in as-built drawing. (Production Building (Extension))	The building engineer is required to update the as-built drawing according to the as-built condition.	within 6 weeks
2		The building engineer is required to revise the load plan as per BNBC requirements and check the design accordingly.	within 6 weeks
3		Produce and actively manage live load plan.	within 6 weeks
4	Inconsistencies in design report. (Production Building (Extension))	The building engineer is required to prepare the design report as per BNBC requirements and review the design accordingly.	within 6 weeks
5		Carry out suggested remedial works if required.	within 6 months
6	Lack of anchorage of non-structural elements. (Production Building (Extension))	The building engineer is required to anchor/brace all the non-structural elements.	within 6 weeks
7	Signage of water ponding on the roof. (Production Building (Extension))	The building engineer is required to improve the roof drainage system.	within 6 weeks
8	Falling hazard beside the stairs on the north side. (Production Building (Extension))	The building engineer is required to increase the railing height to avoid falling hazards.	within 6 weeks
9	Inconsistencies in design report. (Utility Building)	The building engineer is required to prepare the design report as per BNBC requirements and review the design accordingly.	within 6 weeks
10		Carry out suggested remedial works if required.	within 6 months
11	Exposed rebar on the roof. (Utility Building)	The building engineer is required to provide rust-proof paint on exposed reinforcement to protect from corrosion.	within 6 weeks