Rong Rui Garments BD Ltd

Tapirbari, Tengra, Sreepur, Gazipur, 1740, Bangladesh

(24.22678783, 90.42706390)

24 April 2024

RSC RMG SUSTAINABILITY COUNCIL

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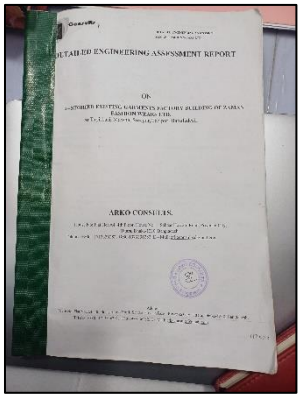
1. Building Information:

1. **Building-1 (Production Building)** is a four (G+3) storied RC building.
2. **Building-2 (Utility Building)** is a two (G+1) storied RC building.
3. **Building-3 (Fire Control Building)** is a two (G+1) storied RC building with a steel roof shed.
4. **Building-4 (Security, Medical & Childcare)** is a single-storied RC structure.
5. **Shed:1 (Admin Building)** is a single-story lightweight steel shed.
6. **Shed:2 (Generator and sub-station)** is a single-story lightweight steel shed.
7. **Shed:3 (Bonded Warehouse)** is a single-story lightweight steel shed.

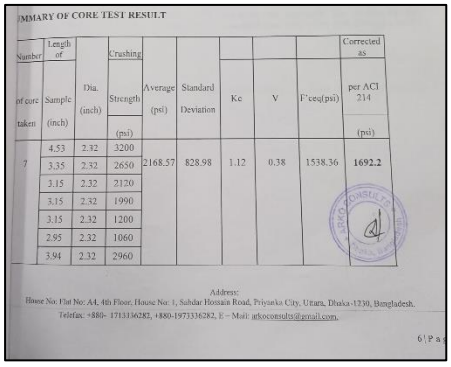
2. Observations

Observation-1: Stress in the columns exceeds the normal design limit. [Building-1 (Production Building)]

Loading condition



DEA Report



SUMMARY OF CORE TEST RESULT

Number of core taken	Length of Sample (inch)	Dia. (inch)	Crushing Strength (psi)	Average (psi)	Standard Deviation	Kc	V	F'ceq(psi)	Corrected as per ACI 214 (psi)
7	4.53	2.32	3200	2168.57	828.98	1.12	0.38	1538.36	1692.2
	3.35	2.32	2650						
	3.15	2.32	2120						
	3.15	2.32	1990						
	3.15	2.32	1200						
	2.95	2.32	1060						
	3.94	2.32	2960						

Address:
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Core test result

Description: Cursory calculation indicates that stress in the column exceeds the normal design limit considering 3 kPa live load for the typical floor, 5 kPa for stairs, 1.5 kPa for the roof, and minimum concrete strength based on aggregate type.

Structural drawings, foundation information, and floor live load plans were not found on-site during the inspection.

A Detail Engineering Assessment (DEA) report was found on site where core test value was considered for this structure, but no test report was found.

The building engineer is required to prepare a complete DEA report based on in-situ material test report, updated as-built drawings, and live load plan.

Observation-2: Crack on the brick wall and slab soffit on the 3rd floor. [Building-1 (Production Building)]

Crack on a brick wall (stair zone of 3rd floor)

Crack on slab soffit (3rd floor)

Description: Cracks were found on the brick wall (stair zone) and several locations on the 3rd-floor slab soffit.
The building engineer is required to identify the reason for the crack and take necessary remedial measures to repair the wall and slab accordingly.

Observation-3: Dampness in several locations. [Building-1 (Production Building)]

Dampness on wall

Dampness on beam

Description: Dampness found on the peripheral wall and beam (stair zone). The building engineer is required to identify the source of dampness and take remedial measures to repair the wall accordingly.

Observation-4: Poor roof drainage system. (Building-1 (Production Building))

Signage of water clogging

Description: Signage of water clogging found on the roof. The building engineer is required to improve the drainage system.

Observation-5: Non-structural elements found unbraced/not anchored. [Building-1 (Production Building)]

Description: Storage rack found within the building without braced/anchored. The building engineer is required to brace/anchor all non-structural elements.

Observation-6: Lack of design documents. [Building-2 (Utility Building), Building-3 (Fire Control Building)]

Building-2 (Utility Building)

Building-3 (Fire Control Building)

Description: As per BNBC, every building or structure designed shall have its design documents prepared by the provision of Section 1.9.1. The design documents shall include as-built drawings and a design report which shall be prepared in compliance with section 1.9.1, part 6 of BNBC.

During the inspection, as-built drawings, foundation detail, the design report and live load plan were not available on site. The building engineer is required to prepare a detailed engineering Assessment based on in-situ material strength & software-based analysis including a live load plan, and as-built drawing and submit it to RSC for review.

Observation-7: Falling Hazard at roof level. Building-2 (Utility Building)

Description: The parapet/railing was missing on the roof. The building engineer is required to provide parapet/railing at all locations of the roof to avoid possible falling hazards.

Observation-8: Exposed rebar on the roof. Building-2 (Utility Building)

Description: Exposed rebar left on the roof. The Building Engineer is required to provide rust-proof paint on exposed reinforcement to protect from corrosion.

Observation-9: Columns appear to be slender. (Building-3 (Fire Control Building))

Column dimension: 250mm x 250mm

Unsupported length: 4.5m

Columns with high unsupported length

Description: Cursory calculation shows that slenderness in highlighted columns exceeds the normal design limit due to long unsupported lengths. The building engineer is required to adequacy check of the highlighted column considering the slenderness effect as part of DEA.

Observation-10: Lack of lateral stability. Shed:1 (Admin Building), Shed:2 (Generator and sub-station), Shed:3 (Bonded Warehouse))

Shed:1 (Admin Building)

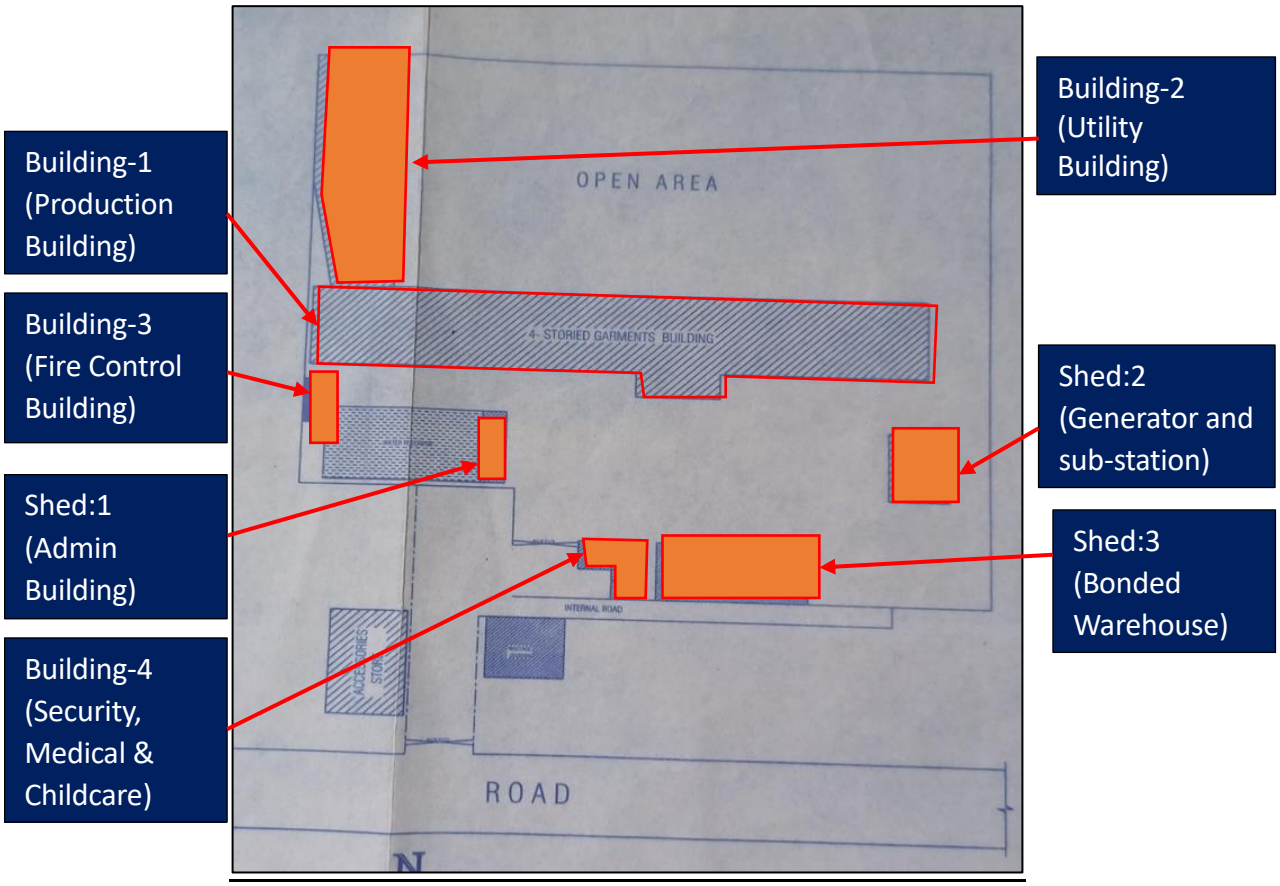
Shed:2 (Generator and sub-station)

Shed:3 (Bonded Warehouse)

Description: A lack of lateral load transfer media was observed in the structures. Also, no as-built structural drawings were available for the structures.

The building engineer is required to carry out an Engineering Assessment (EA) to check the lateral stability and adequacy of all structural elements of the structure based on in-situ material strength and software-based analysis which shall be prepared in compliance with section 1.9.1, part-6 of BNBC.

Observation-11: Lack of Geotechnical investigation report. (Building-2 (Utility Building), Building-3 (Fire Control Building), Building-4 (Security, Medical & Childcare), Shed-1 (Admin Building), Shed:2 (Generator and sub-station), Shed:3 (Bonded Warehouse))



Description: During the inspection, a geotechnical investigation report was not found for Building-2 (Utility Building), Building-3 (Fire Control Building), Building-4 (Security, Medical & Childcare), Shed-1 (Admin Building), Shed:2 (Generator and sub-station), Shed:3 (Bonded Warehouse). The geotechnical engineer is required to conduct the geotechnical investigation and prepare a geotechnical investigation report for all these structures.

3. Action Plan

Item No.	Observation	Action Plan	Timeline
1	Stress in the column exceeds normal design limit. (Building-1 (Production Building))	Verify in-situ material strength.	within 6 weeks
2	Stress in the column exceeds normal design limit. (Building-1 (Production Building))	The building engineer is required to prepare a complete as-built drawing with foundation details.	within 6 weeks
3	Stress in the column exceeds normal design limit. (Building-1 (Production Building))	As part of the Detail Engineering Assessment (DEA), the building engineer is required to review the design, load, and column stresses.	within 6 weeks
4	Stress in the column exceeds normal design limit. (Building-1 (Production Building))	The building engineer is required to prepare a live load plan for all floor plates.	within 6 weeks
5	Stress in the column exceeds normal design limit. (Building-1 (Production Building))	Carry out suggested remedial works.	within 6 months
6	Crack on the brick wall and 3rd-floor slab soffit. (Building-1 (Production Building))	The building engineer is required to identify the reason for the crack and take necessary remedial measures to repair the wall and slab accordingly.	within 6 weeks
7	Dampness in several locations. (Building-1 (Production Building))	The building engineer is required to identify the source of dampness and take remedial measures to repair the damp areas.	within 6 months
8	Poor roof drainage system. (Building-1 (Production Building))	The building engineer is required to improve the drainage system with adequate slope and drainage outlets.	within 6 months
9	Non-structural elements found unbraced/not anchored. (Building-1 (Production Building))	The building engineer is required to brace/anchor all non-structural elements.	within 6 months
10	Lack of design documents. (Building-2 (Utility Building), Building-3 (Fire Control Building))	Carry out Detailed Engineering Assessment (DEA) based on in-situ material strength & software-based analysis and submit to RSC for review.	within 6 weeks
11	Lack of design documents. (Building-2 (Utility Building), Building-3 (Fire Control Building))	The building engineer is required to prepare a complete as-built drawing with foundation details.	within 6 weeks

12	Lack of design documents. (Building-2 (Utility Building), Building-3 (Fire Control Building))	The building engineer is required to prepare a live load plan for all floor plates.	within 6 weeks
13	Lack of design documents. (Building-2 (Utility Building), Building-3 (Fire Control Building))	Carry out suggested remedial works if required.	within 6 months
14	Falling Hazard at roof level. Building-2 (Utility Building)	The building engineer is required to provide parapet/railing at all locations of the roof to avoid possible falling hazards.	within 6 weeks
15	Exposed rebar on the roof. Building-2 (Utility Building)	The Building Engineer is required to provide rust-proof paint on exposed reinforcement to protect from corrosion.	within 6 months
16	Columns appear to be slender. (Building-3 (Fire Control Building))	The factory engineer is required to carry out an adequacy check of the highlighted column considering the slenderness effect.	within 6 weeks
17	Lack of lateral stability. Shed:1 (Admin Building), Shed:2 (Generator and sub-station), Shed:3 (Bonded Warehouse))	The building engineer is required to prepare a complete as-built drawing with foundation details.	within 6 weeks
18	Lack of lateral stability. Shed:1 (Admin Building), Shed:2 (Generator and sub-station), Shed:3 (Bonded Warehouse))	The building engineer is required to carry out an Engineering Assessment (EA) to check the lateral stability and adequacy of all structural elements of the structure based on in-situ material strength and software-based analysis which shall be prepared in compliance with section 1.9.1, part-6 of BNBC.	within 6 weeks
19	Lack of lateral stability. Shed:1 (Admin Building), Shed:2 (Generator and sub-station), Shed:3 (Bonded Warehouse))	Carry out suggested remedial works if required.	within 6 months
20	Lack of Geotechnical investigation report. (Building-2 (Utility Building), Building-3 (Fire Control Building), Building-4 (Security, Medical & Childcare), Shed-1 (Admin Building), Shed:2 (Generator and sub-station), Shed:3 (Bonded Warehouse))	The geotechnical engineer is required to prepare a geotechnical investigation report covering all these structures.	within 6 weeks