UNITED COSTUME LIMITED (BUILDING-02)

Malancha Nagar, I/A, R#2, West Isdair, Fatullah, Narayanganj,

(23.633673,90.481866)

20 February 2025

RSC RMG SUSTAINABILITY COUNCIL

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1. Building Information

1. Production Building 02
2. Boiler Room
3. Fire pump room
4. Compressor room-02
5. Dining & Prayer shed

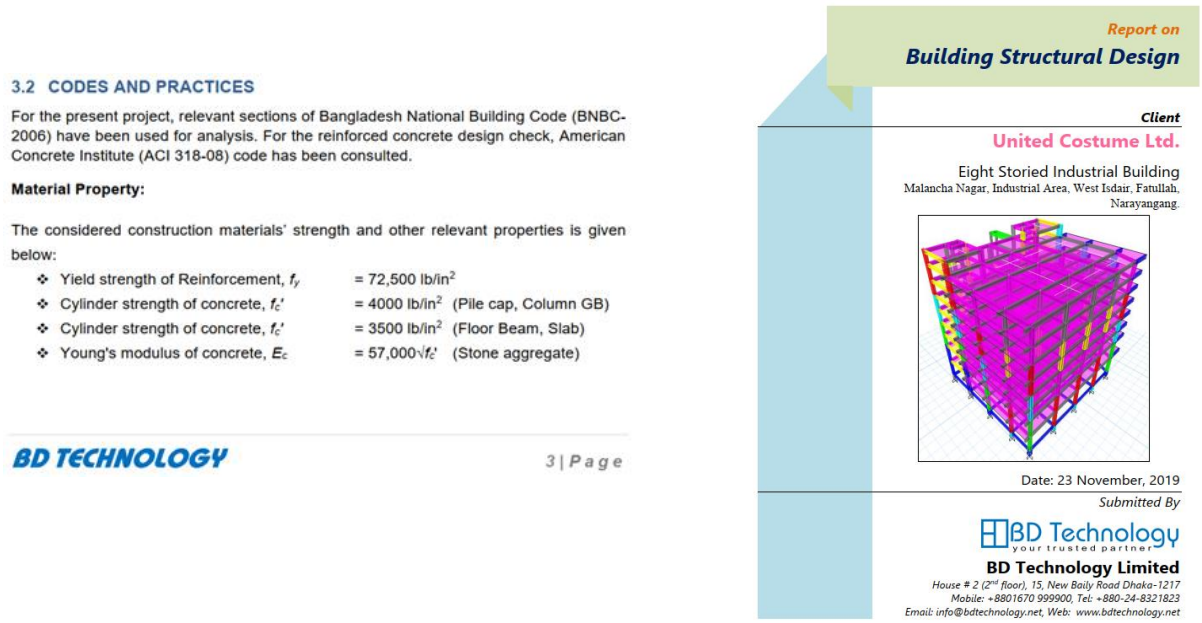
2. Observation:

Observation-01: Construction Safety practice & Falling hazard (Production Building-02).

Description: During the inspection, ongoing construction work was observed with a lack of safety measures, including fall protection, unsafe scaffolding, and inadequate edge protection on the roof.

The building engineer is required to ensure all the construction safety according to BNBC Part 7, Chapter 3. The ongoing vertical extension and renovation work should be carried out following the required safety measures as per BNBC.

Observation-02: Inconsistencies in design report and material strength (Production Building-02).



3.2 CODES AND PRACTICES

For the present project, relevant sections of Bangladesh National Building Code (BNBC-2006) have been used for analysis. For the reinforced concrete design check, American Concrete Institute (ACI 318-08) code has been consulted.

Material Property:

The considered construction materials' strength and other relevant properties is given below:

- Yield strength of Reinforcement, f_y = 72,500 lb/in^2
- Cylinder strength of concrete, f_c' = 4000 lb/in^2 (Pile cap, Column GB)
- Cylinder strength of concrete, f_c' = 3500 lb/in^2 (Floor Beam, Slab)
- Young's modulus of concrete, E_c = 57,000$\sqrt{f_c'}$ (Stone aggregate)

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Report on

Building Structural Design

Client

United Costume Ltd.

Eight Storied Industrial Building

Malancha Nagar, Industrial Area, West Isdair, Fatullah, Narayangang.

Date: 23 November, 2019

Submitted By

BD Technology your trusted partner

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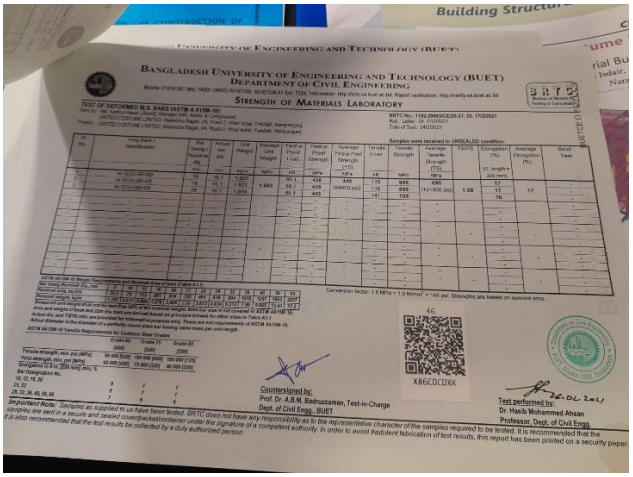


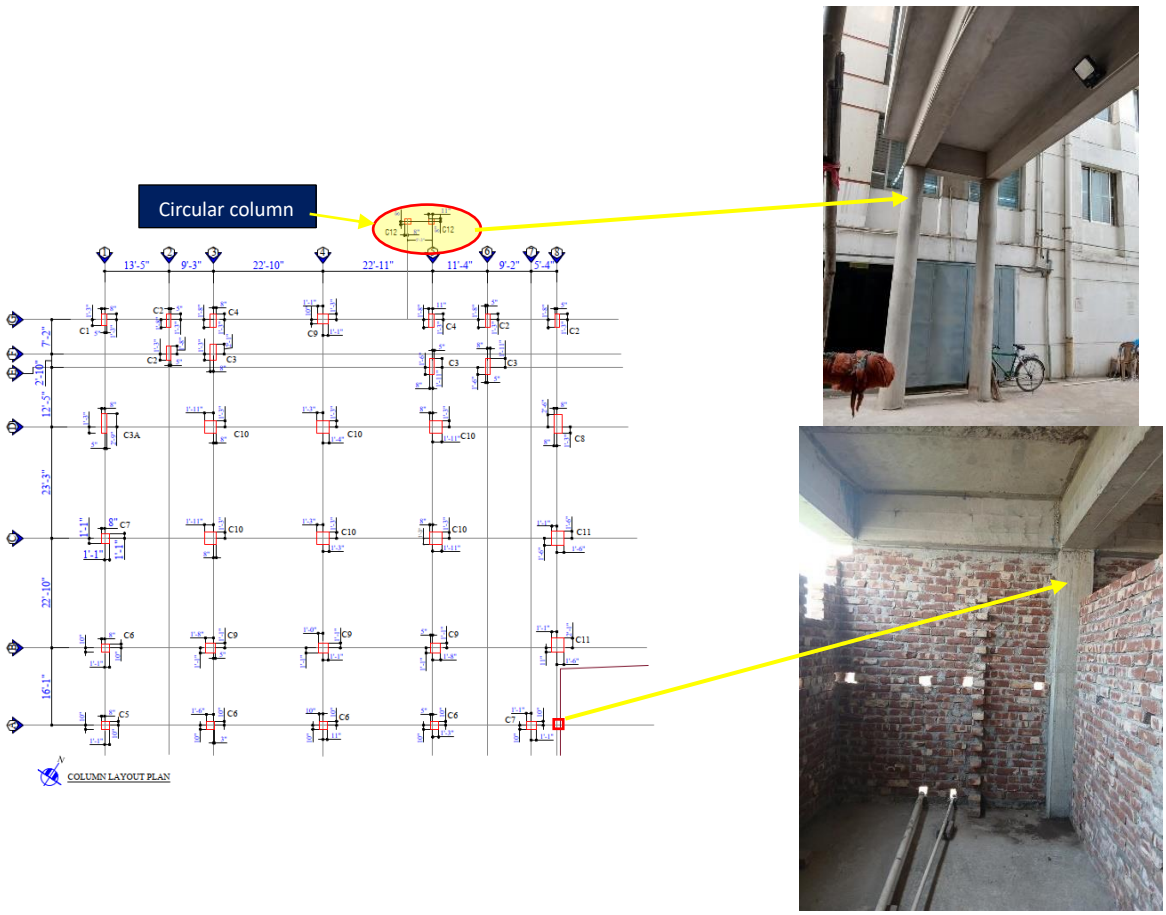
BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)
DEPARTMENT OF CIVIL ENGINEERING
STRENGTH OF MATERIALS LABORATORY

Description: During the inspection, the design report was found on-site, and the following observations were noted:

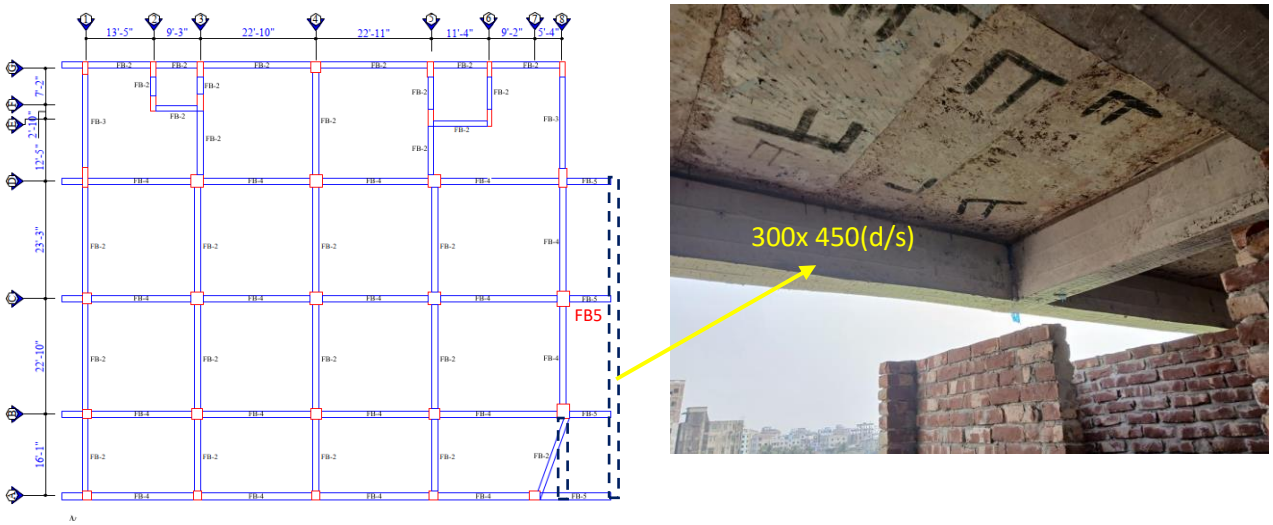
- The Response Modification Coefficient (R = 8) has been considered in the design, but the required justification or supporting calculations were not provided in the report.
- The rebar design strength was considered as 72.5 grade, whereas the test report indicates 60 grade rebar.
- The material strength was considered as 24 MPa for beams and slabs and 28 MPa for columns, but no cylinder test report was available on-site.
- Ongoing construction quality and workmanship were observed and monitored less by the building engineer. Segregation in concrete was observed in the beams, columns, and slabs.

The building engineer is required to verify the in-situ concrete strength by extracting 100mm diameter cores from four columns (preferably from the lower tier of the building), as well as from the beam and slab, or by referring to existing cylinder test reports from the specific concrete mix ratio. Also, Check the construction quality by Non-Destructive Test (NDT) & Destructive Test (DT).

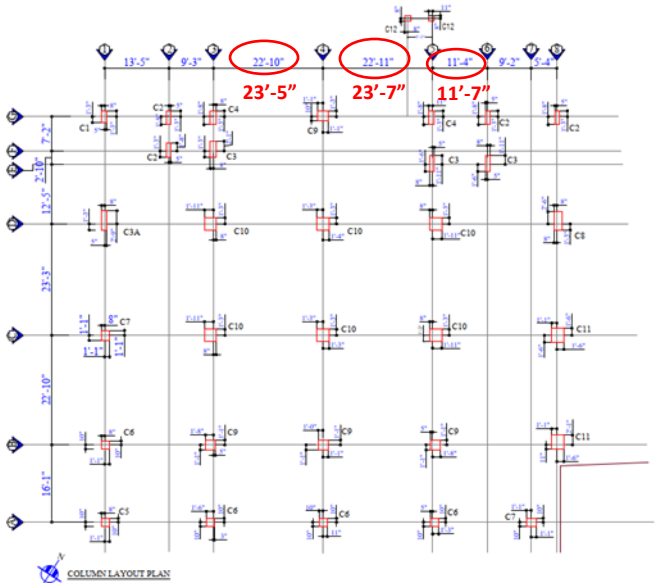
Observation-03: Mismatch/Lack of information in as-built drawing (Production Building-02).



Description: A 300 x 300 mm column was found at grid A-08, which was not shown in the column layout. Additionally, two 400 mm diameter circular columns were found in the connection bridge instead of a square column.

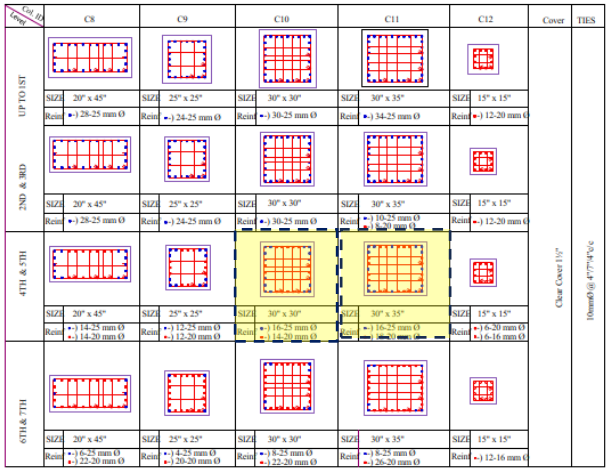


Description: A beam was found from 8-B to 8A instead of 8B to 7A, and a sub-beam was observed in the cantilever portion [size 300x450 (d/s)], which was not shown in the beam layout. Additionally, FB5 was found to be 300x450 (d/s) instead of 300x600 (d/s).



Description: The grid dimensions between 3-4, 4-5, and 5-6 were found to be 23'-5", 23'-7", and 11'-7", respectively, which differ from the drawings.

COLUMN SCHEDULE



Description: On the 4th floor, discrepancies in rebar were observed:

- At C10, 28 bars (10-25mm + 18-20mm) were found instead of the 30 bars.
- At C11, 30 bars (8-25mm + 22-20mm) were found instead of 34 bars.
- At C4, 16 bars (5-25mm + 11-20mm) were found instead of 18 bars.
- At C3, 20 bars of 20mm were found instead of the specified 6-25mm + 14-20mm."

The building engineer is required to survey the structures and prepare comprehensive as-built drawings, including necessary foundation details.

Observation-04: Waterproofing is required for the Masonry Chips Aggregate Concrete (MCAC) construction on the roof (Production Building-02).

Description: The slab of the building is constructed with MCAC. The building engineer is required to provide a waterproofing layer with proper installation of the adequate number of drainage outlets.

Observation-05: Connection bridge is rigidly attached to the adjacent building (Production Building-02).

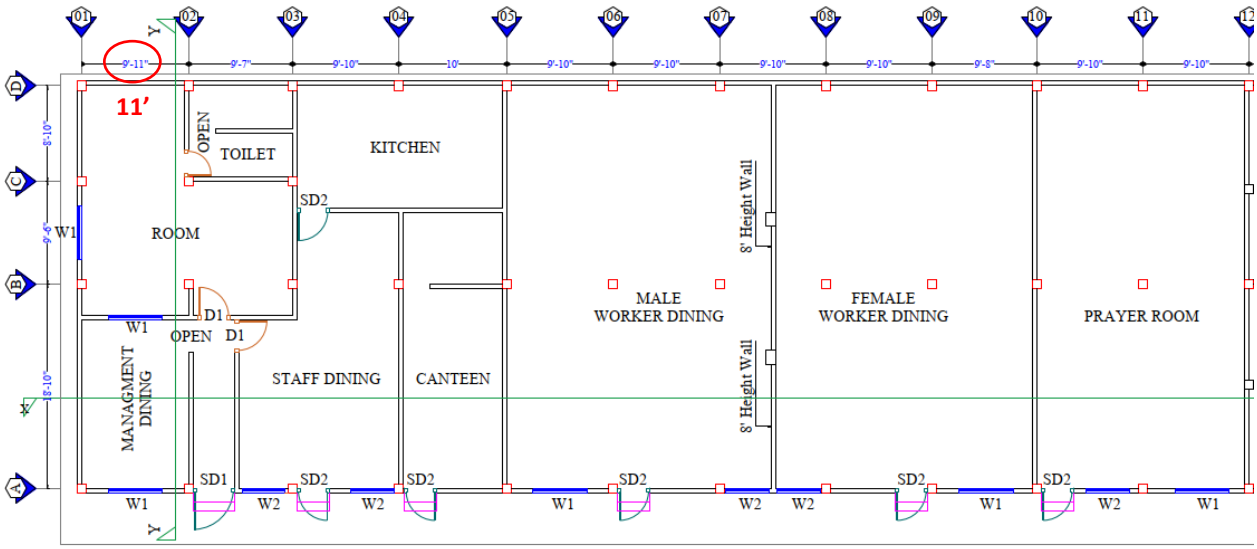
Description: The structure shows no visible signs of expansion joints or flexible connections to the adjacent building.

A clear gap is required to be provided with an expansion joint, and the gap is to be filled with appropriate compressible materials as per the engineer's recommendation. Otherwise, consider the design of the main building.

Observation-06: Lack of lateral stability system (load transfer media, bracing & proper connection) (Dining and Prayer Shed)

Description: Load transfer media and bracing along both directions was found missing.
The building engineer is required to carry out an Engineering Assessment (EA) to check the lateral stability, connection and member adequacy of these structures.

Observation-07: Mismatch/lack of information in as-built drawing (Dining and Prayer Shed)



Description: The grid dimension between 1-2 was found 11 feet (3.3m) and C-purlin size found 75x38x4 mm which differs from drawings.

The building engineer is required to survey the structures and prepare comprehensive as built drawings, including steel specifications, sections, foundation details, and necessary connection information.

Observation-08: Lack of as-built drawings (Boiler Room, Compressor room-02)

Compressor Room-02

Boiler Room

Description: As-built structural & architectural drawings were not available for those structures.

The building engineer is required to survey the structures and prepare as-built drawings.

3. Action Plan

Item No	Observation	Action Plan	Timeline
1.	Construction Safety practice & Falling hazard (Production Building-02).	The building engineer is required to ensure all the construction safety according to BNBC Part 7, Chapter 3. The ongoing vertical extension and renovation work should be carried out following the required safety measures as per BNBC.	Immediate
2.	Inconsistencies in the design report and material strength (Production Building-02).	The building engineer is required to revise the design report as per the as-built condition and prepare the design report as per BNBC 1.9.	within 6 weeks
3.		The building engineer is required to verify the in-situ concrete strength by extracting 100mm diameter cores from four columns (preferably from the lower tier of the building), as well as from the beam and slab, or by referring to existing cylinder test reports from the specific concrete mix ratio.	within 6 weeks
4.		Check the construction quality by Non-Destructive Test (NDT) & Destructive Test (DT).	within 6 weeks
5.		Produce and actively manage a loading plan for all floor plates within the factory, considering column capacity.	within 6 weeks
6.		Carry out the suggested remedial works.	within 6 months
7.	Mismatch/Lack of information in as-built drawing (Production Building-02).	The building engineer is required to survey the structures and prepare comprehensive as-built drawings, including steel specifications, sections, foundation details, and necessary connection information.	within 6 weeks
8.	Waterproofing is required for the Masonry Coarse Aggregate Concrete (MCAC) construction on the roof (Production Building-02).	The building engineer is required to provide a waterproofing layer with proper installation of the adequate number of drainage outlets.	within 6 months
9.	The connection bridge is rigidly attached to the adjacent building (Production Building-02).	A clear gap is required to be provided with an expansion joint, and the gap is to be filled with appropriate compressible materials as per the engineer's recommendation.	within 6 weeks

9.	Lack of lateral stability system (load transfer media, bracing & proper connection) (Dining and Prayer Shed) (Dining and Prayer Shed)	The building engineer is required to carry out an Engineering Assessment (EA) to check the lateral stability, connection and member adequacy of these structures.	within 6 weeks
10.		Carry out the suggested remedial works.	within 6 months
11.	Mismatch/Lack of information in as-built drawing (Dining and Prayer Shed)	The building engineer is required to survey the structures and prepare comprehensive as-built drawings, including steel specifications, sections, foundation details, and necessary connection information.	within 6 weeks
12.	Lack of as-built drawings (Boiler Room)	The building engineer is required to survey the structures and prepare as-built drawings for the structures.	within 6 weeks
13.	Lack of as-built drawings (Compressor room-02)	The building engineer is required to survey the structures and prepare as-built drawings for the structures.	within 6 weeks