

Monira Knit Apparels Ltd. Colour Fashion Ltd.

191, West Masdair, Fatullah, Narayanganj-1400
(23.628361N, 90.485250E)

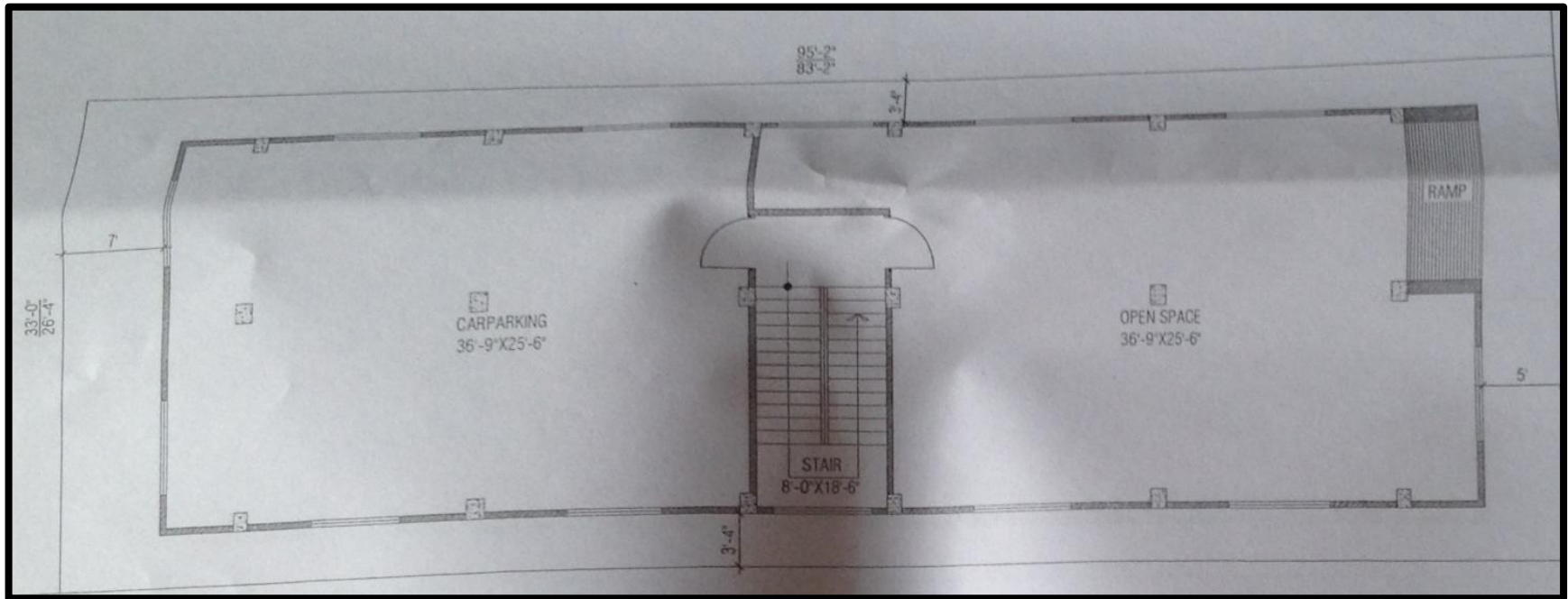
12 April 2014



Observations

High Stress Levels in Columns

Outline calculations indicate all columns at the Ground Floor and Level 1 are highly stressed under their current loading condition.



High Stress Levels in Columns

Flexural Cracking in Floor Slab Soffits

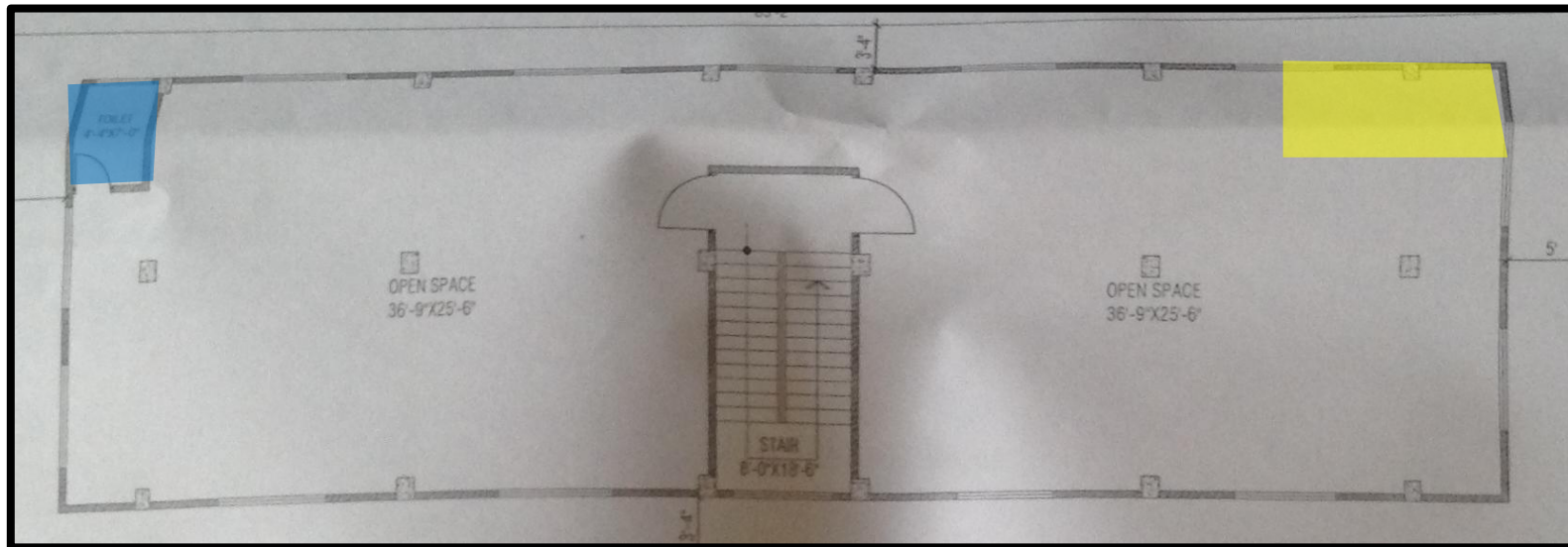


Flexural cracking was observed in flat slab soffit at most levels.

Flexural Cracking in Floor Slab Soffits

High Loading in Toilet Areas on Cantilevers

High loading was observed on cantilevers, especially in toilet areas with floor build-up.



Toilets at Levels 1 & 6

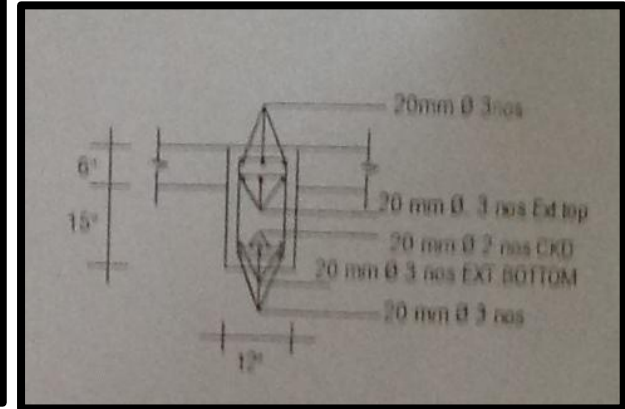
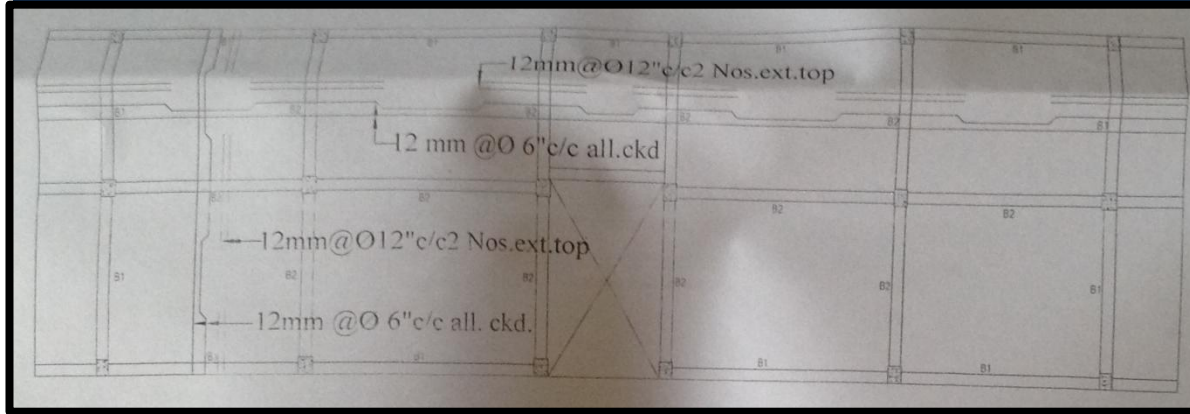


Toilets at Levels 2-5

High Loading in Toilet Areas on Cantilevers

Discrepancies between Drawings and Actual Observations

Discrepancies between Drawings and Actual Observations



Structural drawings indicated a slab and beams system while the building was entirely flat slab.

A non-exhaustive list of discrepancies include:

- Number of bars in columns
- Grid dimensions
- Slab thickness
- Structural system (beams vs. flat slab)



Typical Flat Slab

**Lightweight steel structures lack bracing
and appear non-engineered**

Lightweight steel structures lack bracing and appear non-engineered



Building Steel Roof



Generator Room Steel Roof



External Fire Stair

Free-standing Wall Panels at Roof Level

Free-standing Wall Panels at Roof Level



Freestanding wall at Roof Level support steel roof beams. Evident cracking in walls.



Priority Actions

Problems Observed

ITEM 1: High stress levels in columns

ITEM 2: Flexural cracking in floor slab soffits

ITEM 3: High loading in toilet areas on cantilevers

ITEM 4: Discrepancies between drawings and actual observations

ITEM 5: Free-standing wall panels at roof level

ITEM 6: Lightweight steel structures lack bracing and appear non-engineered

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Stress levels in Columns	Factory Engineer to review design, loads and columns stresses in all columns	Immediate - Now
2	Stress levels in Columns	Verify insitu concrete stresses either by 100mm diameter cores from 4 columns or existing cylinder strength data. Verify grade of steel reinforcement used	Immediate - Now
3	Stress levels in Columns	A Detailed Engineering Assessment of Factory to be commenced, see attached Scope	Immediate - Now
4	Stress levels in Columns	Detailed Engineering Assessment to be completed.	6-weeks
5	Stress levels in Columns	Make structural alterations as advised by Engineer.	6-weeks
6	Stress levels in Columns	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	6-weeks
7	Stress levels in Columns	Continue to implement load plan	6-months

Detail Engineering Assessment

This Schedule develops a minimum level of information, Analysis and testing expected as part of a Detail Engineering Assessment.

The Building(s) have been visually assessed and it is deemed necessary that a detailed engineering assessment be carried out by a competent Engineering Team employed by the factory Owner.

This Request should be read in conjunction with the BUET developed Tripartite Guideline document for Assessment of Structural Integrity of Existing RMG Factory Buildings in Bangladesh (Tripartite Document), the latest version of this document should be referenced. This document also gives guidance on required competency of Engineering Team.

We expect that the following will be carried out:

1. Development of Full Engineering As-Built Drawings showing Structure, loading, elements, dimensions , levels, foundations and framing on Plan, Section and Elevation drawings .
2. The Engineering team are to carry out supporting calculations with a model based design check to assess the safety and serviceability of the building against loading as set out in BNBC-2006, Lower rate provisions can be applied in accordance with the Tripartite Guidelines following international engineering practice, justification for these lower rate provisions must be made.
3. A geotechnical Report describing ground conditions and commenting on foundation systems used/proposed.
4. A report on Engineering tests carried out to justify material strengths and reinforcement content in all key elements studied.
5. Detailed load plans shall be prepared for each level showing current and potential future loading with all key equipment items shown with associated loads.
6. The Engineering team will prepare an assessment report that covers the following:
 - As-Built drawings including
 - Plans at each level calling up and dimensioning all structural components
 - Cross sectional drawings showing structural beams, slabs, floor to floor heights, roof build-ups and Basic design information of the structure
 - Highlight any variation between As-built compared to the designed structure
 - Results of testing for strength and materials
 - Results of geotechnical assessment and testing/investigation
 - Details of loading, inputs and results of computer modelling
 - Commentary on adequacy/inadequacy of elements of the structure
 - Schedule of any required retrofitting required for safety or performance of Structure

Any proposals for Retrofitting to follow guidance developed in the Tripartite Document

Item No.	Observation	Recommended Action Plan	Recommended Timeline
8	Flexural cracking in floor slab soffits	Engage an Engineer to investigate if the cracking is structural or exists only in the render, as part of the Detailed Engineering Assessment noted in item 1.	6-weeks
9	Flexural cracking in floor slab soffits	Engineer is to undertake checks for flexural and punching shear capacity.	6-weeks
10	Flexural cracking in floor slab soffits	Carry out any remedial work as directed by the Engineer.	6-months
11	High loading in toilet areas on cantilevers	Engage an Engineer to investigate if the applied loading can be safely carried by the slabs and by the columns, as part of the Detailed Engineering Assessment as noted in item 1.	6-weeks
12	High loading in toilet areas on cantilevers	Carry out load reduction and/or any remedial work as directed by the Engineer.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
13	Discrepancies between drawings and actual observations	Engage an Engineer to prepare full “as built” engineering drawings , as part of the Detailed Engineering Assessment (refer to Priority Action 1 above).	6-weeks
14	High freestanding walls at Roof Level.	Engage an Engineer to investigate the structural capacity of the freestanding external walls at roof level, as part of the Detailed Engineering Assessment as noted in item 1.	6-weeks
15	High freestanding walls at Roof Level.	Make structural alterations as advised by the Engineer.	6-months
16	Lightweight steel structures lack bracing and appear non-engineered	Building engineer to check the capacity and stability system of the lightweight roofs and stairs and make any necessary alterations.	6-months