

The New Delta ApparelsLtd

Plot# 6,8,10, Road# 1/A, Turag Housing, Mohammadpur, Dhaka - 1207

23.766476,90.345421

31st May 2014



Observations

**High stress levels in Perimeter Columns
where slabs have been extended beyond
the design/permit drawings.**



Large storage loading on Cantilever slab.

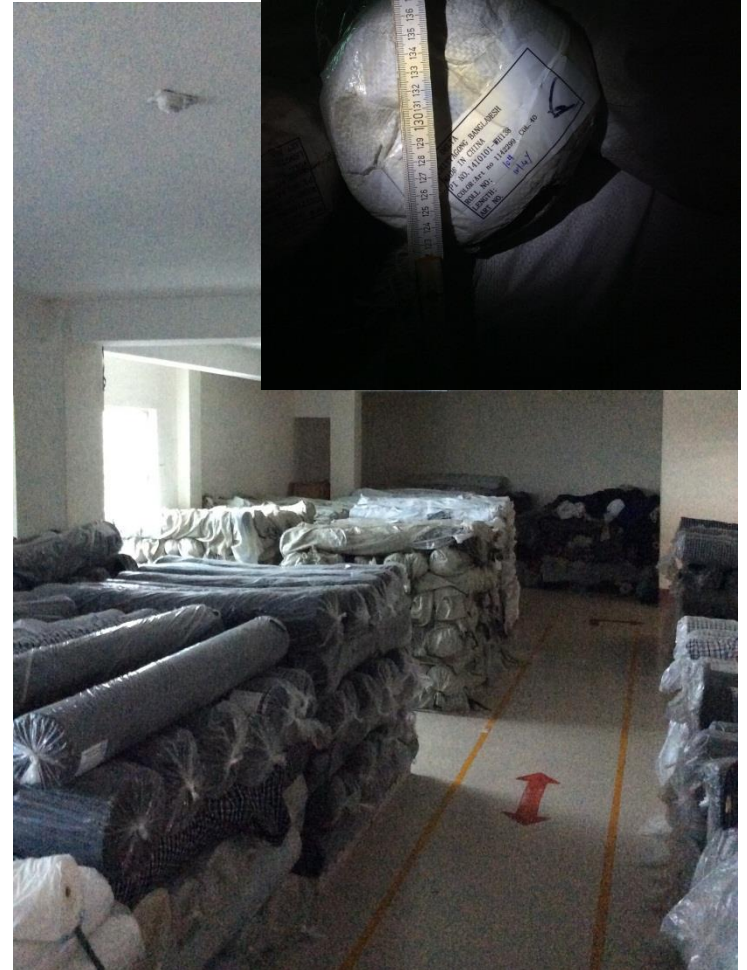


Large build-up in toilet area's on Cantilever slab.



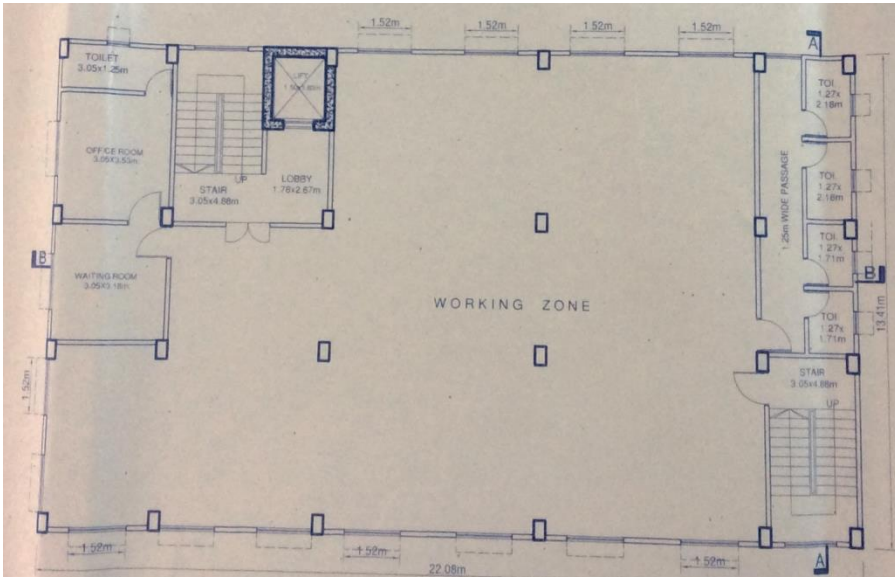
Cantilever slab.

**Heavily Loaded cantilevered slabs.
(toilet build up, storage, heavy machinery)**



Discrepancies between Drawings and Actual Observations

Observations

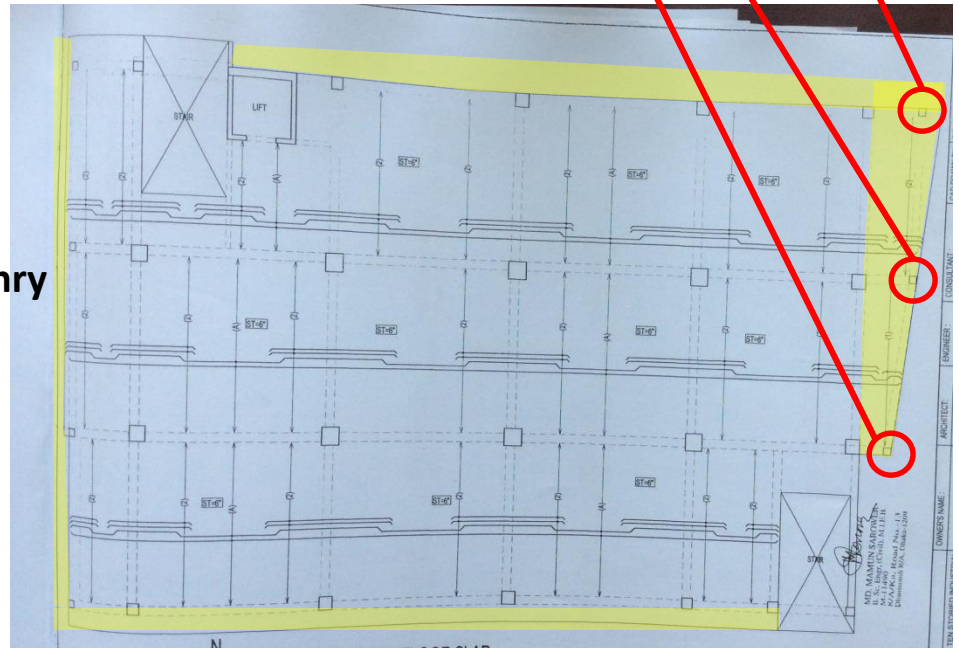


These columns do not exist from first floor to roof level.

Permit Drawing, no Cantilever Shown

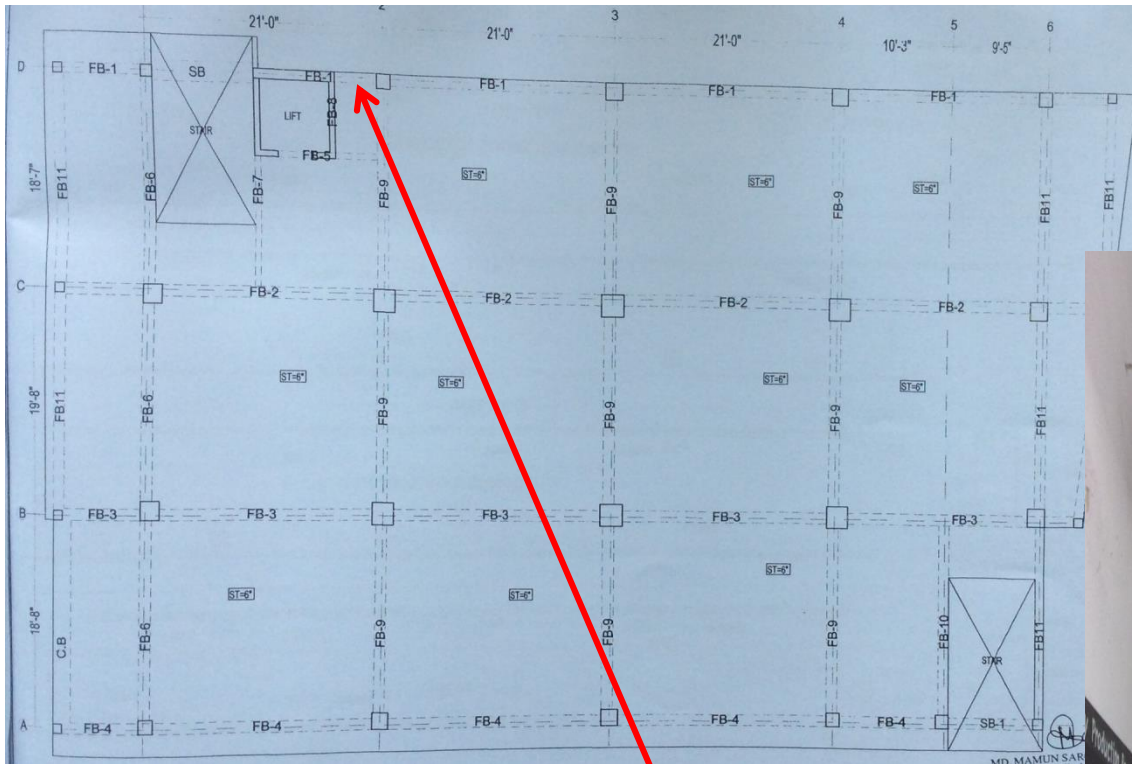


Denotes undocumented Cantilevers (may be supported on masonry wall)



Structural Drawing, no Cantilevers Shown

Observations



**Beam shown on plans
Missing in as constructed
Building at 2nd floor.**

Possible Vehicle Impact of Columns



Current column protection

These columns are prone to vehicle impact.

Cracking in floor slabs



Cracks in soffits of slabs were recently decorated.

Non-Engineered Steel Roofs to Stair Cores.



Non-Engineered Steel Roofs to Stair Cores.

Observations

Water Ingress

Observations



Cracking in roof finish may allow water ingress to structural elements.



Leaking Toilet may allow water ingress to structural elements.

Problems Observed

1. High stress levels in Perimeter Columns where cantilevers have been extended beyond the design/permit drawings.
2. Heavily Loaded cantilevered slabs. (toilet build up, storage, heavy machinery)
3. Discrepancies with the permit drawing and the as built structure. (Particularly the cantilevered element to the east of the building).
4. Possible Vehicle impact of columns.
5. Cracking in Floor Slabs
6. Non-Engineered Lightweight steel roof structures to stair-cores.
7. Water Ingress

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	High stress levels in Perimeter Columns where cantilevers have been extended beyond the design/permit drawings.	Building Engineer to review design, loads and column stresses in all edge columns attracting loads from cantilevers.	Immediate - Now
2	High stress levels in Perimeter Columns where cantilevers have been extended beyond the design/permit drawings.	Live load in cantilever/undocumented perimeter slab areas to be limited to 1.5kPa pending outcome of DEA.	Immediate - Now
3	High stress levels in Perimeter Columns where cantilevers have been extended beyond the design/permit drawings.	Verify in-situ concrete stresses either by 100mm dia. cores or existing cylinder strength data for [the identified columns] or [100mm dia. cores from 4 columns].	Immediate - Now
4	High stress levels in Perimeter Columns where cantilevers have been extended beyond the design/permit drawings.	A Detail Engineering Assessment of the Factory Building to be commenced, see attached Scope	Immediate - Now
5	High stress levels in Perimeter Columns where cantilevers have been extended beyond the design/permit drawings.	Detail Engineering Assessment to be completed	6-weeks

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
6	High stress levels in Perimeter Columns where cantilevers have been extended beyond the design/permit drawings.	Produce and actively manage a loading plan for all floor plates within the Building giving consideration to floor capacity and column capacity.	6-weeks
7	High stress levels in Perimeter Columns where cantilevers have been extended beyond the design/permit drawings.	Actions identified in the Detail Engineering Assessment to be implemented.	6-months
8	High stress levels in Perimeter Columns where cantilevers have been extended beyond the design/permit drawings.	Continue to implement the load management plan	6-months
9	Heavily Loaded cantilevered slabs. (toilet build up, storage, heavy machinery)	Live load in cantilever/undocumented perimeter slab areas to be limited to 1.5kPa pending outcome of DEA.	Immediate - Now
10	Heavily Loaded cantilevered slabs. (toilet build up, storage, heavy machinery)	As part of Item 1, Building Engineer to produce and actively manage a loading plan for all floor plates within the Building giving consideration to floor capacity and column capacity.	6-weeks
11	Heavily Loaded cantilevered slabs. (toilet build up, storage, heavy machinery)	Continue to implement the load management plan	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
12	Discrepancies between permit drawing, design drawings and as built structure	Building Engineer to commence update of the drawings to reflect the as-built structure and loading levels at all floor levels, including as built floor finishes thickness.	Immediate - Now
13	Discrepancies between permit drawing, design drawings and as built structure	Complete update of as-built drawing	6-weeks
14	Possible Vehicle impact of Columns	As part of DEA, Building Engineer to review and ensure that columns are protected from possible vehicle impact.	6-weeks
15	Cracking in Floor Slabs	Building Engineer to investigate cracking and determine cause	6-weeks
16	Cracking in Floor Slabs	Building Engineer to carry out full design check of all floor slabs to confirm that the slabs are capable of carry the building design loads.	6-weeks
17	Non-engineered lightweight steel structures	Lightweight steel roofs are to be reconstructed/upgraded to ensure adequacy for code vertical and wind loads by the Building Engineer.	6-weeks
18	Water ingress	Building engineer to survey factory and identify areas of water ingress. Divert all water away from structure to protect the RC structures from direct contact with water.	6-months