

Versatile Textiles Limited (New Buildings)

89/2 Chaydana, Degerchala Road, National University

(23.964944, 90.384703)

4th June 2018





Observations

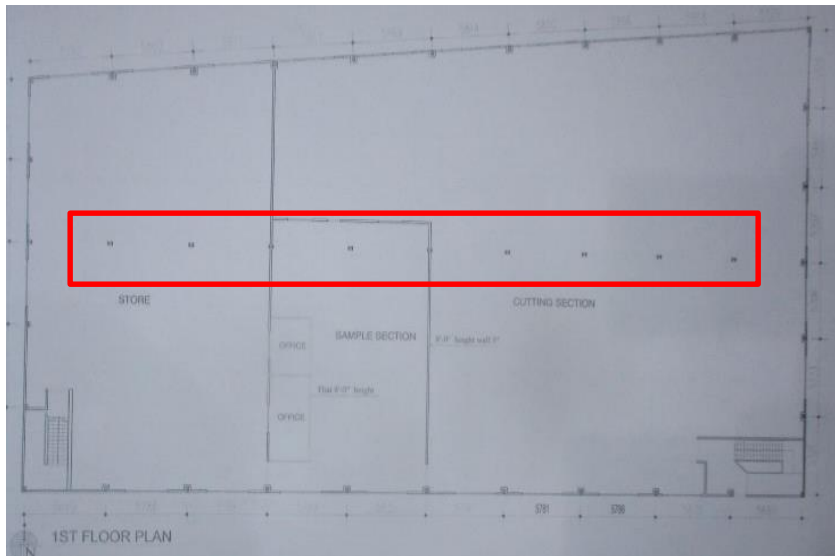


High stress column

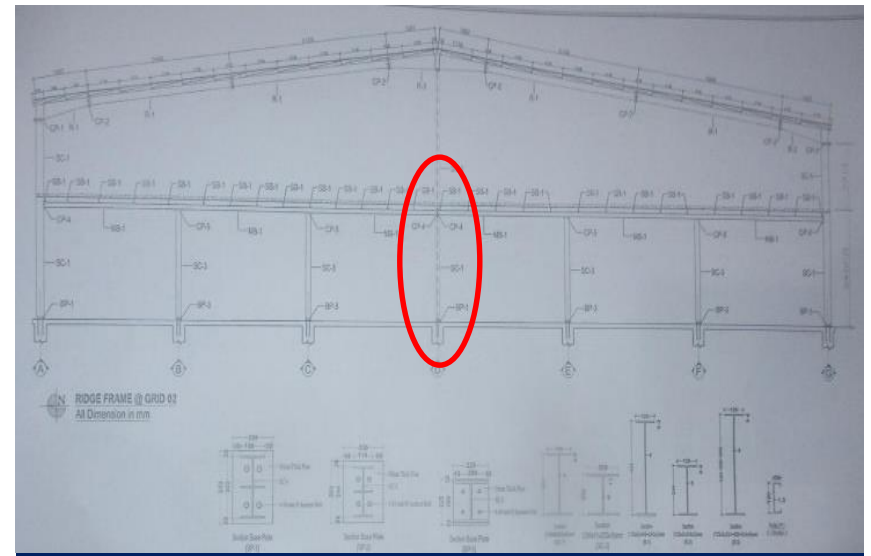
Observations: Building-2



Cursory calculation shows that the stresses of central columns exceed the normal design limit at ground level. Detail Engineering Assessment (DEA) to be commenced immediately based on in-situ steel strength.



Floor plan



Typical frame section

Observation : Building-2



Floor plan



Loading on 1st floor

Floor loading observed around 3KPa on 1st floor. No load plan found on site. Building engineer is required to produce a safe floor load plan and maintain accordingly.

Observation : Building-2



Deflection of beams and sagging of cable bracings

Observations: Building-2



Deflection of main beams



Sagging of cable bracings



Deflection of sub-beam

Deflection of beams were observed in several locations. Also, the cable bracings were sagged. Factory engineer to check the adequacy of the beams for gravity loading and prepare a safe loading plan for the floor based on beam, column and foundation capacities. Also, check the bracing adequacy for lateral loadings.

Observation : Building-2



Lack of lateral stability system

Observations: Building-2



Portal frame at 1st floor



Portal frame at ground floor

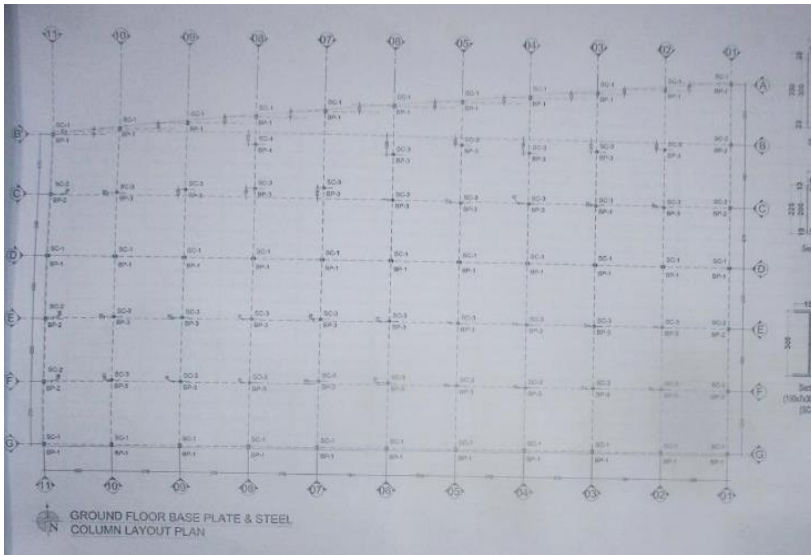
The ground floor beam-column connections were flexible and lateral load resisting system was absent. Compression strut and vertical bracing was not observed for the steel portal frame structure on roof. Also, the horizontal cable bracings were loose and there was no alternative lateral load resisting system. Factory engineer to check the stability of the structure against code defined lateral and gravity forces as part of Detail Engineering Assessment (DEA).

Observation : Building-2

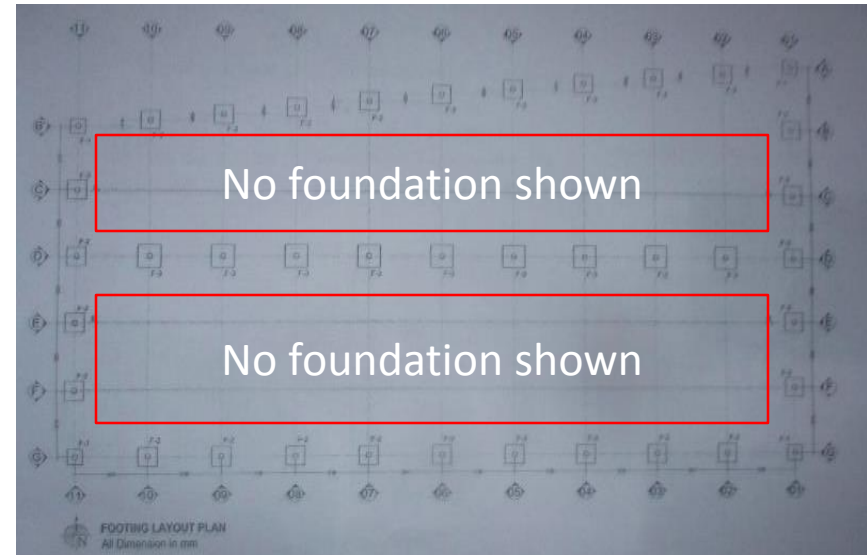


As-built drawing to be updated

Observations: Building-2



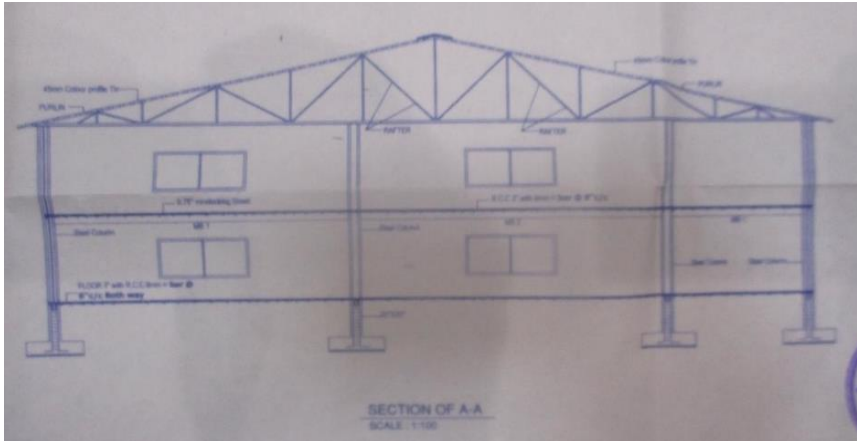
Steel column layout



Foundation layout

As per drawings, the steel columns are shown in every grid location. But the foundation layout shown only for the periphery and central columns. Also, there is no detail for RC floor slab and stairs.

Observation : Building-2



Frame section in approved drawing



Roof system on site

Truss roof system was approved but portal frame system was constructed without any design consideration.

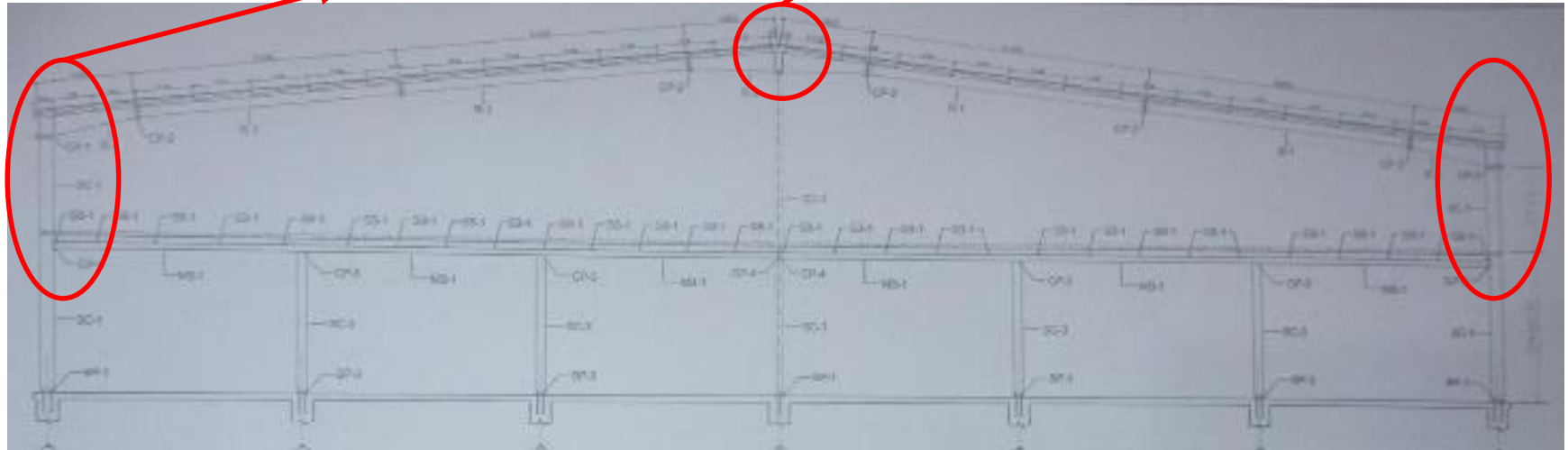
Observation : Building-2



Steel column flange thickness observed 6mm instead of 7mm.



Depth 450mm instead of 500mm



Frame section in grid-10

Discrepancies observed in the sectional dimension of SC-2 columns and rafter at ridge. Building engineer is required to update the as-built drawing and design documents.

Observation : Building-2



Crack on brick walls

Observations: Building-2



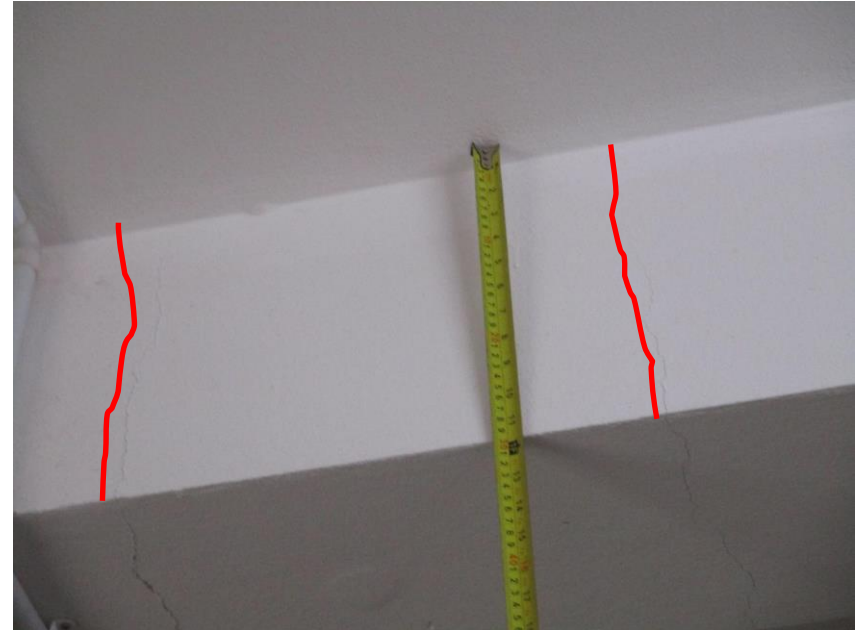
Vertical cracks were observed on joints of the brick walls. Building engineer to investigate the cracks and prepare an investigation report with proper remedial measures.

Observations: Building-2



Hairline crack on floor beam

Observations: Medical and Childcare



Vertical cracks were observed on midspan of the floor beam. Building engineer to investigate the cracks and prepare an investigation report with proper remedial measures.

Observations: Medical and Childcare

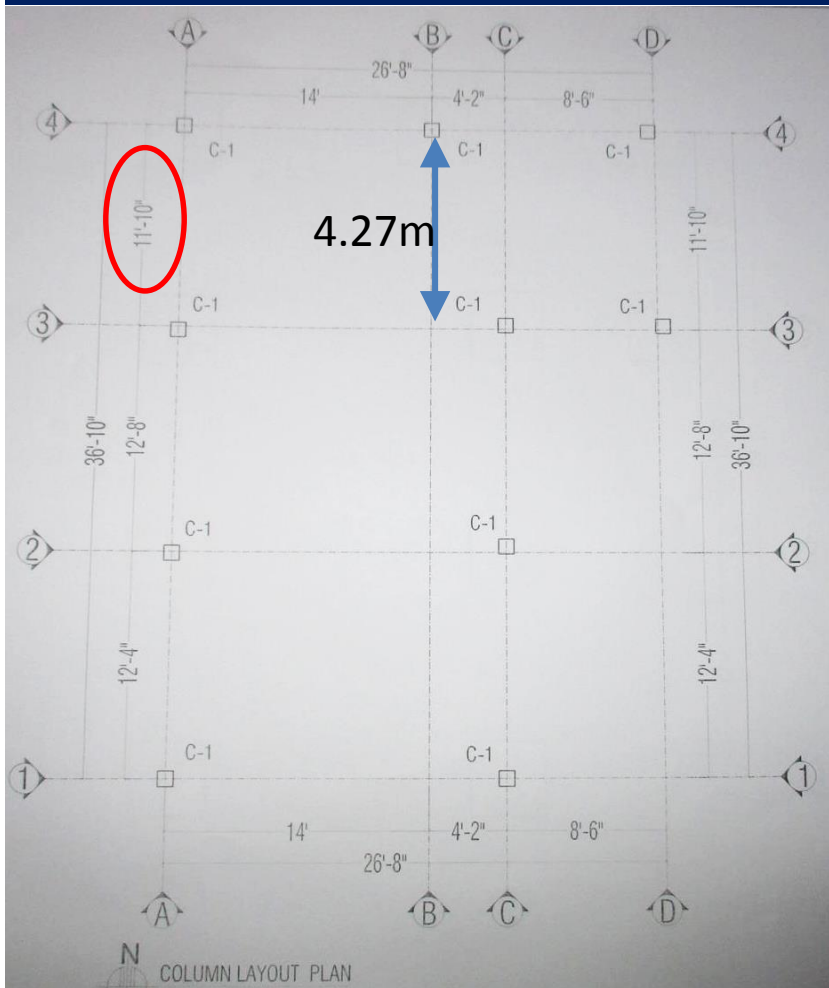


Mismatch in as-built drawings

Observations: Medical and Childcare



The distance between grid 3&4 was measured 4.27m where drawing shows 3.36m. The drawings to be updated.



Column layout

COLUMN NO.	BELOW GROUND LEVEL		GROUND & ROOF FLOOR LEVEL	
	NO. OF REINFORCEMENT	COLUMN SIZE	NO. OF REINFORCEMENT	COLUMN SIZE
C1	4-12mmØ		4-12mmØ	

6-rebars shown in drawing where 4-rebars was observed on roof.



Observations: Medical and Childcare



Apparently non-engineered structure

Observations: Wastage Go-down Shed



Apparently non-engineered structure. Factory engineer to check the connections and rafter adequacy against gravity and lateral forces.

Observations: Wastage Go-down Shed



Priority Actions



Observations

Building-2

Item 01: High stress column

Item 02: Deflection of beams and sagging of cable bracings

Item 03: Lack of lateral stability system

Item 04: As-built drawing to be updated

Item 05: Crack on brick walls

Medical and child care building

Item 06: Hairline crack on floor beam

Item 07: Mismatch in as-built drawings

Wastage Godown Shed

Item 08: Apparently non-engineered structure



Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	High stress column	Maintain floor live load below 2 kPa	Immediate - Now
2	High stress column	Building Engineer to review design, loads and stresses in all columns as part of a Detailed Engineering Assessment (DEA), please see the attach scope.	6-weeks
3	High stress column	Produce and actively manage a loading plan for all floor plates.	6-weeks
4	High stress column	Carry out remedial works as per DEA recommendation.	6-months
5	High stress column	Continue to implement load plan.	6-months
6	Deflection of beams and sagging of cable bracings	Check the deflection limit of the floor beams based on code defined loadings and install props where required.	Immediate - Now
7	Deflection of beams and sagging of cable bracings	Produce and actively manage a safe loading plan for floor plate giving consideration to slab, beam, column and foundation capacity.	6-weeks
8	Deflection of beams and sagging of cable bracings	Carryout any remedial works arise from Detail Engineering Assessment.	6-months
9	Lack of lateral stability system	Building engineer is required to check the lateral load resisting system of the building as part of DEA.	6-weeks
10	Lack of lateral stability system	Carryout any remedial works arise from Detail Engineering Assessment.	6-months
11	As built drawing to be updated	A structural engineer to check, collect information and produce accurate and complete as-built documentations.	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 ACCORD DEA guideline , ACCORD standard for Assessment of Structural Integrity of Existing RMG Factory Buildings in Bangladesh (Tripartite Document), the latest version of these document should be referenced. These 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 ACCORD DEA guideline , ACCORD standard 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 see ACCORD DEA guideline & ACCORD standard more details.
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 ACCORD DEA guideline & ACCORD standard (<http://bangladeshaccord.org/factories/resource-centre/>).



Item No.	Observation	Recommended Action Plan	Recommended Timeline
12	Crack on brick walls	Building engineer to investigate the cracks and prepare an investigation report with proper remedial measures.	6-weeks
13	Crack on brick walls	Carryout any remedial works as per crack investigation report.	6-months
14	Hairline crack on floor beam	Building engineer to investigate the cracks and prepare an investigation report with proper remedial measures.	6-weeks
15	Hairline crack on floor beam	Carryout any remedial works as per crack investigation report	6-months
16	Mismatch in as-built drawings	Building Engineer to survey the structure and prepare as-built drawings to the as-constructed status.	6-weeks
17	Apparently non-engineered structure	Building Engineer to check the connections and rafter adequacy against gravity and lateral forces.	6-weeks
18	Apparently non-engineered structure	Implement any structural alterations recommended through the Engineering Assessment.	6-months