

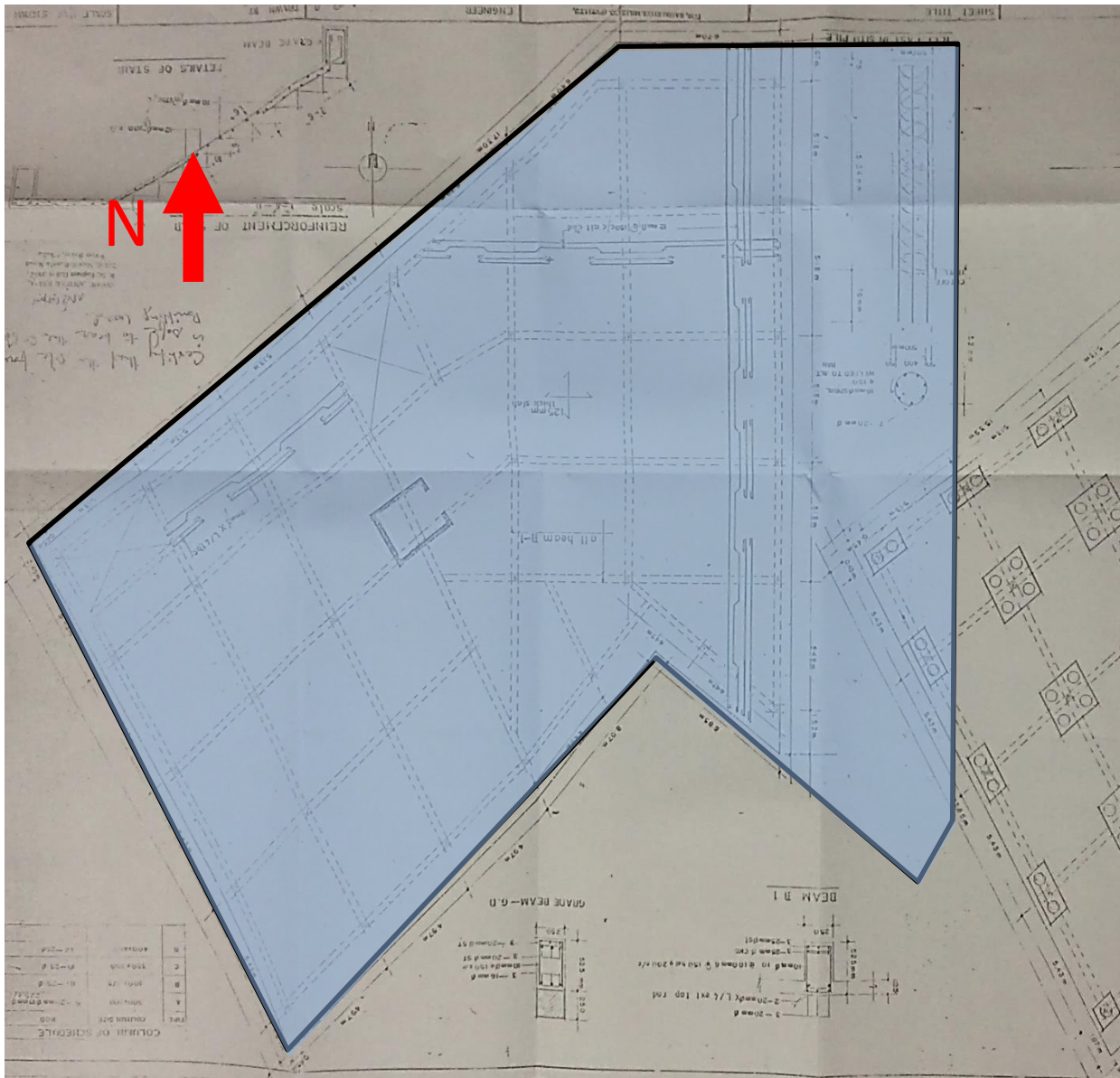
Amex Knitting & Dyeing Industries Ltd. (Unit 2)

Sufia Plaza, 327/3/B-C, South Jattrabari, Dhaka-1204, Bangladesh
(23.708897, 90.437078)
12th June, 2014



Observations

High stresses in concrete columns



Brick aggregate noted in columns.

Cursory calculations indicate that for all columns, the actual size appears to be smaller than required by code for the applied dead and live load, assuming typical concrete strength

High stresses in concrete columns

Additional Roof structures observed



RC Tank over South side of Roof

Cursory calculations indicate that weight of roof-top concrete tank and its contents contribute significantly to the potential overloading of supporting columns, assuming typical concrete strength



Communication Tower over South side of Roof

Additional weight and wind loads from roof-top communication tower are supported by roof structure

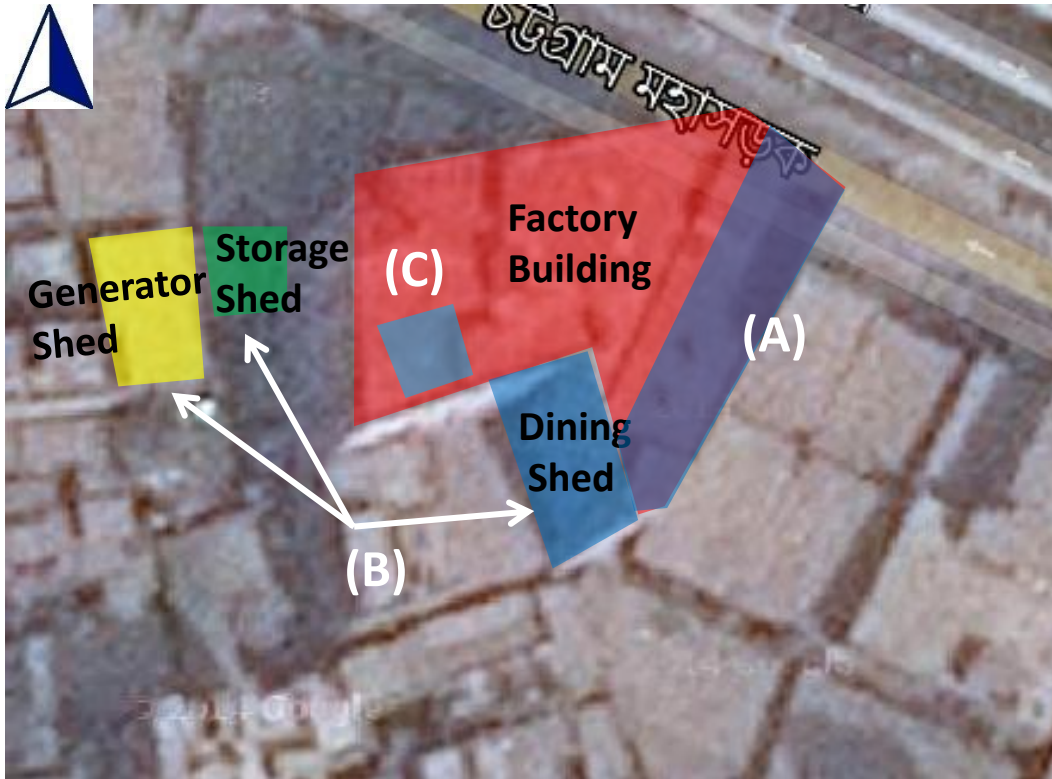


Billboards on N East and N West sides of Roof

Additional weight and wind loads from Billboards are supported by roof structure

Additional Roof structures observed

**Building drawings do not match
as-built building details.**

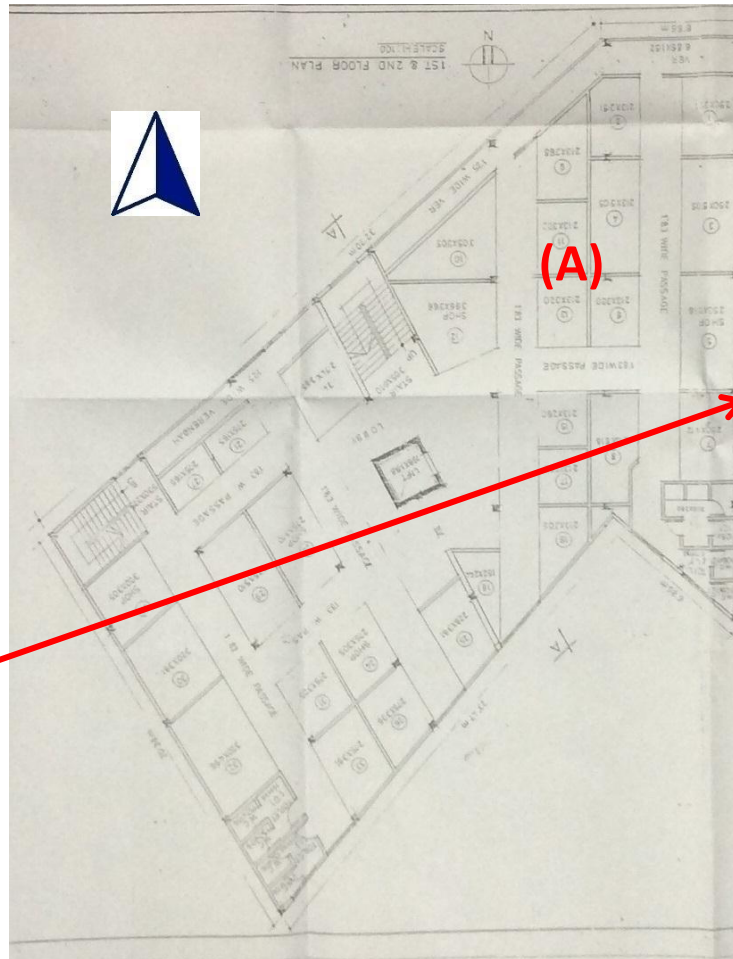


Drawings do not show:

- (A): Information on the East side of building. (Permit application submitted June 2014).
- (B): Dining, Storage and Generator Sheds
- (C): Reinforced concrete Roof Water Tank and other roof structures.

Building drawings do not match as-built building details.

Building appears to be made from separate structures.



Indicative Building Plan

East part (A) of building and West part (B) appear to be separate structural systems but appear to be connected along the interface line.

Two sets of offset columns observed along the interface.

East part of building appears to have internal columns made from two halves, with a gap in between.

Cracking was observed in beams and columns along the interface line.

Building appears to be made from separate structures.

Apparently non-engineered light steel structures



Generator Shed



Storage Shed

Steel structures to the shed buildings contain small steel sections and lateral stability structural systems are unclear.

Apparently non-engineered light steel structures



Dining Shed

Priority Actions

Problems Observed

ITEM 1: High stresses in columns

ITEM 2: Additional Roof structures observed

ITEM 3: Building drawings do not match as-built building details

ITEM 4: Building appears to be made from separate structures

ITEM 5: Apparently non-engineered light steel structures

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	High stresses in columns	Reduce floor load to a maximum of 1.5 kPa throughout the main factory building.	Immediate - Now
2	High stresses in columns	Factory Engineer to review design, loads and column stresses in all columns in the building	Immediate - Now
3	High stresses in columns	Verify insitu concrete strength either by taking 100mm diameter cores from 4 columns or by using existing cylinder strength data if available. Cores MUST NOT be from very highly stressed locations. Verify reinforcement and grade of steel reinforcement used.	Immediate - Now
4	High stresses in columns	A Detail Engineering Assessment of the entire building to be commenced, see attached Scope.	Immediate - Now
5	High stresses in columns	Detail Engineering Assessment for the entire building to be completed.	6-weeks
6	High stresses 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	High stresses in columns	Continue to implement load plan	6-months
8	Additional Roof structures observed	As part of the Detail Engineering Assessment (DEA) check columns, slabs and beams supporting the Water Tank and other roof structures.	6-weeks
9	Additional Roof structures observed	Building Engineer to review as-built structure and if required, prescribe relevant structural improvements to ensure these meets BNBC requirements as part of the DEA (refer to Item 1 above).	6-weeks
10	Additional Roof structures observed	Carry out any structural alterations directed by the engineer.	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 Elevational 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
11	Building permit drawings do not match as-built building details, missing structural information	Building Engineer to develop accurate and complete as-built structural drawings as part of the Detail Engineering Assessment (refer to Item 1 above).	6-weeks
12	Building appears to be made from separate structures	Building Engineer to investigate the connection between the building parts and develop accurate and complete as-built structural drawings clarifying the structural system along the interface line between the parts as part of the Detail Engineering Assessment (refer to Item 1 above).	6-weeks
13	Apparently non-engineered light steel structures	Building engineer to review the structures, their connections and lateral stability systems and if required, prescribe relevant structural improvements to ensure these meets BNBC requirements.	6-months