

Far East Knitting & Dyeing Industries Ltd.

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06 October 2013



Building Observations

Load Management

Building 1



Uncontrolled loading

Load Management

Building 2



Uncontrolled loading

Load Management

Hairline Cracks at slab and beams

**Hairline Cracks at underside
of slab and beams
throughout both buildings.**

**These did not appear to
coincide with the heavily
loaded areas.**



Hairline Cracks at Beams and Slabs

Mixed structural systems, Movement joints are not continuous

Building 1



Steel structure and R.C. structure are both used interchangeably. A clear logic how the two systems work together or are separated from each other is not apparent

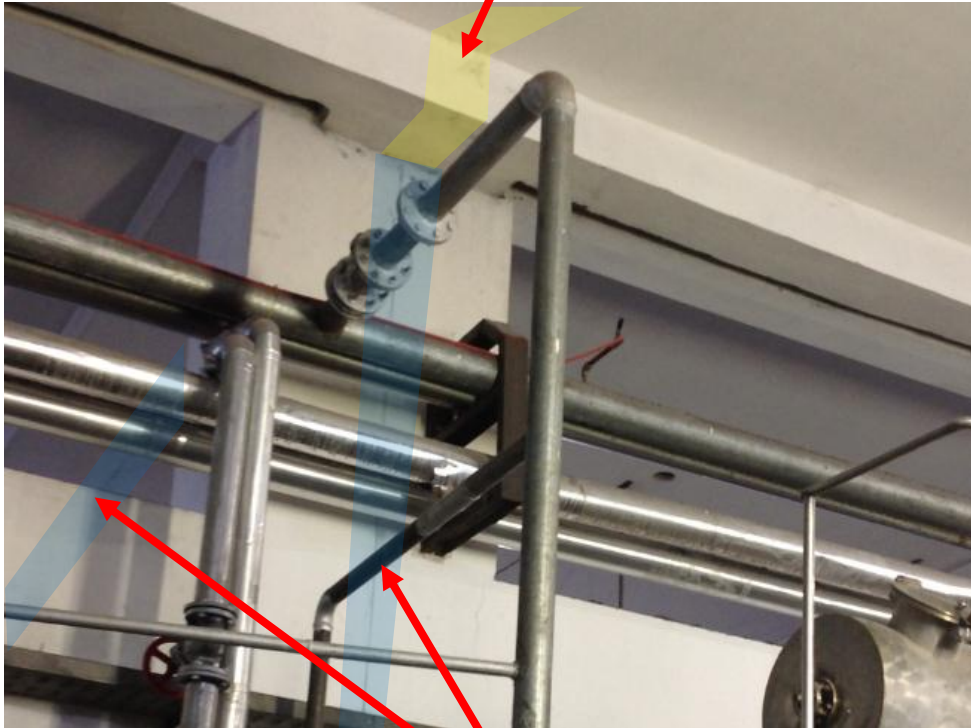
R.C. Structure

Steel Structure (supported independently on steel columns)

Mixed Structural Systems

Building 2

No Movement joint



Movement joint



Movement Joint not continuous

Building 2



Beam

Flat slab

R.C. Flat Slab and R.C. Slab on Beam structure are both used interchangeably. A clear logic why the one or the other is selected is not apparent

Mixes Structural Systems

Structural drawings and as built drawings not available. High column stresses



As-built drawings and structural drawings are not available.

Cursory calculations indicate high column stresses (building 1 and building 2)

Engineer is to perform detailed calculations and concrete tests to prove column size and (if required) :

- Reduce loads by vacating floors and removing addition structures**
- Reinforce columns**

Column stresses

Flooding to side of building 2

Building 2



Flooding to side of Building 2 basement due to surface drain backing up following heavy rain. Reported to occur every time after heavy rain. At the time of survey, there is no sign of water damage in the basement.

Surface Drainage Flooding

Condensation in soffit in kitchen in basement



Condensation in soffit of kitchen in basement. Currently there is no damage, but it should be managed

Condensation

Priority Actions

Problems Observed

1. Building 1 - Mixed structural systems – drawings not matching – high column stresses
2. Building 2 - Mixed structural systems – drawings not matching – high column stresses
3. Hairline cracks in both buildings
4. Movement joint in Building 2 not continuous
5. Surface Flooding to side of Building 2 basement
6. Condensation on soffit in Kitchen in Building 2

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Building 1 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	Factory Engineer to review design and structural system	Immediate - Now
2	Building 1 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	Factory Engineer to review loads and columns stresses for building 1.	Immediate - Now
3	Building 1 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	Verify insitu concrete stresses either by cores or existing cylinder strength from a minimum of 4 concrete columns in building 1.	Immediate - Now
4	Building 1 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	A Detail Engineering Assessment of Factory to be commenced, see attached Scope.	Immediate - Now
5	Building 1 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	Produce and actively manage a loading plan for all floor plates. within the factory giving consideration to floor capacity and column capacity.	6-weeks
6	Building 1 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	Detail Engineering Assessment to be completed.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
7	Building 1 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	Continue to implement load plan.	6-months
8	Building 2 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	No vertical extension of the building until a Detailed Engineering Assessment of the factory is complete.	Immediate - Now
9	Building 2 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	Factory Engineer to review design, loads and columns stresses for building 2.	6-weeks
10	Building 2 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	Verify insitu concrete stresses either by cores or existing cylinder strength from a minimum of 4 concrete columns in building 2.	6-weeks
11	Building 2 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	A Detail Engineering Assessment of Factory to be commenced, see attached Scope.	6-weeks
12	Building 2 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	Produce and actively manage a loading plan for all floor plates. within the factory giving consideration to floor capacity and column capacity.	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
13	Building 2 – Mixed structural systems – drawings do not match the as built conditions – high column stresses.	Detail Engineering Assessment to be completed	6-months
14	Hairline cracks in both buildings	Verify that beam/slab has sufficient capacity to support the full slab load.	6-weeks
15	Hairline cracks in both buildings	Monitor the cracks to ensure no further cracks appear and the existing cracks do not increase in size.	6-months
16	Movement joint in Building 2 not continuous	Revise As-Built drawings showing actual joints.	6-weeks
17	Movement joint in Building 2 not continuous	Building Engineer to verify integrity built structure under factory design loading.	6-weeks
18	Movement joint in Building 2 not continuous	Building Engineer to verify lateral stability for wind and seismic loading.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
19	Movement joint in Building 2 not continuous	Monitor the differential movements between the joints and possible cracks in the continuation of the joints, to insure structural integrity of the structure.	6-weeks
20	Surface Flooding to side of Building 2 basement	If possible, mitigate surface flooding by installing appropriate drainage.	6-months
21	Surface Flooding to side of Building 2 basement	Periodically inspect basement wall for possible dampness or water ingress from the outside.	6-weeks
22	Condensation on soffit in Kitchen of Building 2	If possible, eliminate condensation by installing better ventilation.	6-months
23	Condensation on soffit in Kitchen of Building 2	Protect soffit with water- and damp-proof protection.	6-months
24	Condensation on soffit in Kitchen of Building 2	Periodically inspect slab for possible damage. In case of signs of corrosion, remove heavy loads above and close kitchen for access.	6-months