Body Link Sweater Ltd.
Marigold Accessories Ltd.

Plot No. 371, 342, Noljani, Chandona, Joydevpur, Gazipur
(23.990786N, 90.389874E)
15th March 2015

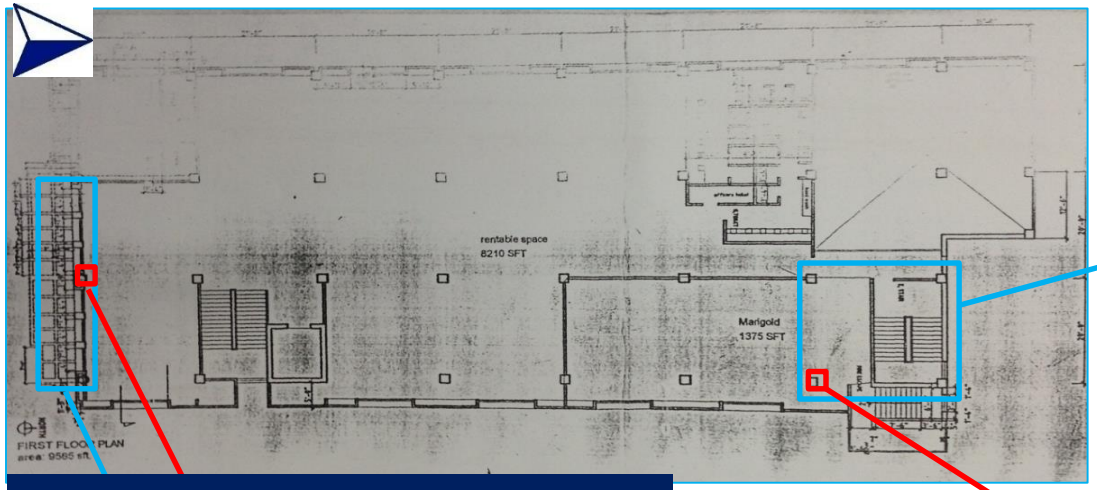
ACCORD on Fire and Building Safety in Bangladesh

ARUP

Observations

High stress levels in columns

Observations



Column supporting cantilever

Column under water tank

Cursory calculations indicate high column stress in columns, particularly those supporting cantilever and under water tank

Observations

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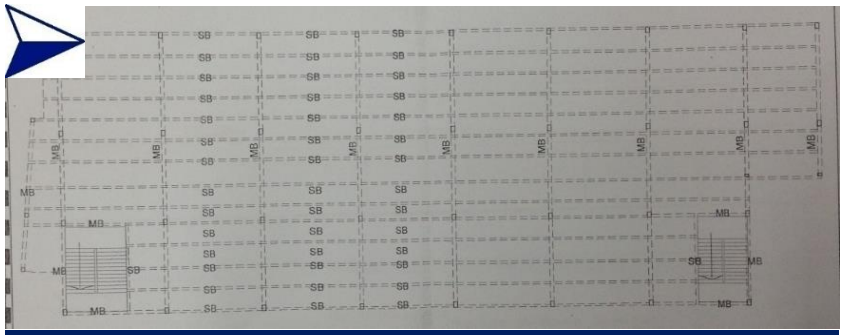
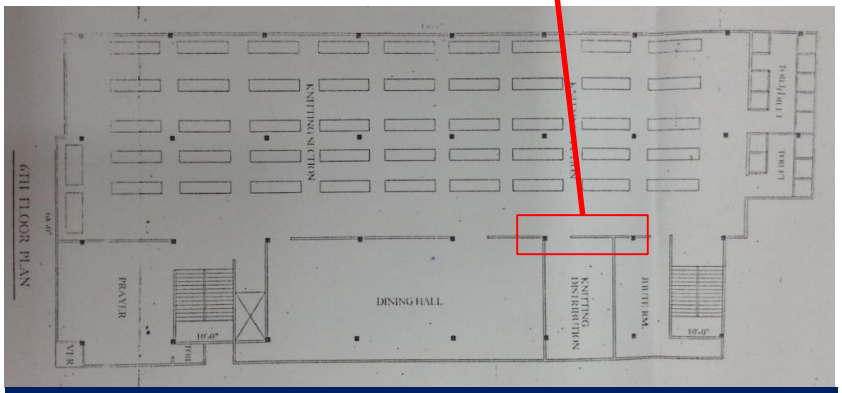
Discrepancies between composite roof design and as-built condition

Observations

As-built: Primary N-S, purlins E-W direction



Design: Primary E-W, purlins N-S direction



Primary beam missing: brick wall is load bearing

Discrepancies between composite roof design and as-built condition

Observations

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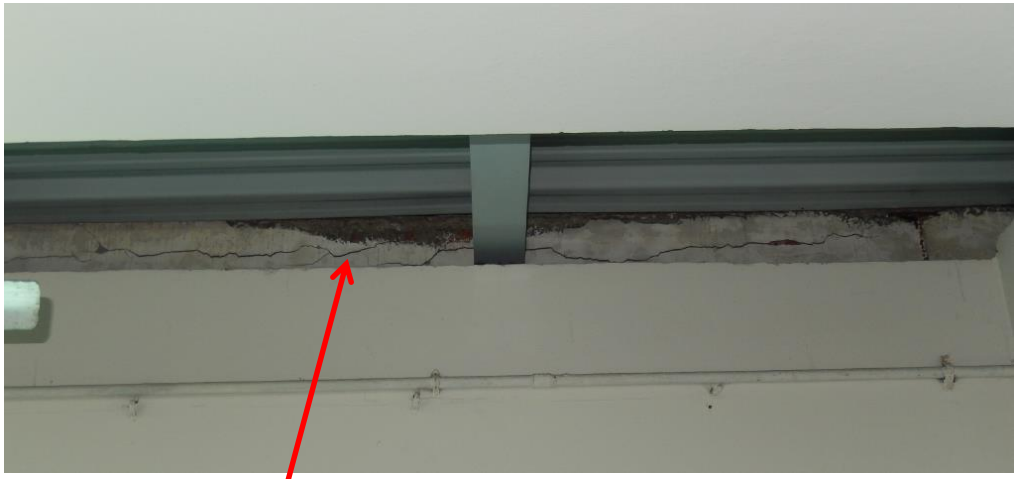
Lateral load transfer from composite roof to perimeter beams

Observations



Cracking observed between roof deck and brick wall

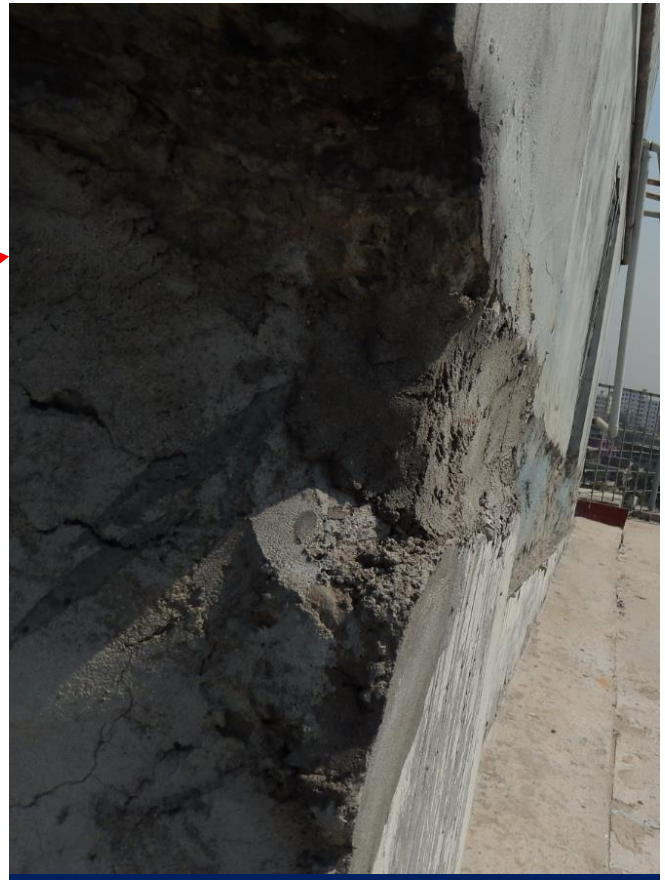
No anchorage detected between roof deck and concrete beams

Lateral load transfer from composite roof onto concrete frame is unclear

Observations

Damage to columns and beams

Observations



Three or more of the reinforcement bars in the column appear to be cut

Columns under water tank are damaged
- Review required

Observations

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Beam penetration at 5th floor

5th floor beam is damaged
- Review required

Observations

Non-engineered roof in generator and boiler buildings

Observations

Metal sheet with concrete fill in generator building

Metal deck in boiler building

Non-engineered roof in generator and boiler buildings

Observations

Non-structural Observations

Non-structural Observation: Unsafe steel access stair requires repair

Observations

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Priority Actions

Problems Observed

1. High stress levels in columns
2. Discrepancies between composite roof design and as-built condition
3. Lateral load transfer from composite roof to perimeter beams
4. Damage to columns and beams
5. Non-engineered roof in generator and boiler buildings

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	High stress levels in columns	Limit water tank to half its capacity.	**Immediate - Now**
2	High stress levels in columns	Remove storage and limit live load to max. 2kPa at all levels in the red areas shown.	**Immediate - Now**
3	High stress levels in columns	Limit live load in all other areas to max. 3kPa at all levels.	**Immediate - Now**
4	High stress levels in columns	Building Engineer to review design, loads and column stresses in all areas.	**Immediate - Now**
5	High stress levels in columns	Verify in-situ concrete stresses by 100mm diameter cores from min. 4 columns at ground floor level.	**Immediate - Now**
6	High stress levels in columns	A Detail Engineering Assessment of Factory to be commenced - see attached Scope.	**Immediate - Now**
7	High 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**
8	High stress levels in columns	Detail Engineering Assessment to be completed.	**6-weeks**
9	High stress levels in columns	Continue to implement load plan	**6-months**
10	Discrepancies between composite roof design and as-built condition	As part of the Detail Engineering Assessment (see Item 1), Building Engineer to check the design of the composite roof as constructed for adequacy to resist statutory Code loads (vertical and horizontal).	**6-weeks**
11	Discrepancies between composite roof design and as-built condition	Carry out any works arising from engineering check.	**6-months**
12	Discrepancies between composite roof design and as-built condition	As part of the Detail Engineering Assessment (see Item 1), Building Engineer to produce accurate as-built drawings.	**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. T his 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
13	Lateral load transfer from composite roof to perimeter beams	As part of the Detail Engineering Assessment (see Item 1), Building Engineer to check the connection details of the roof to the perimeter structure, in terms of vertical and lateral load transfer.	**6-weeks**
14	Lateral load transfer from composite roof to perimeter beams	Carry out any works arising from engineering check.	**6-months**
15	Damage to columns and beams	Building Engineer to assess damaged structural elements and carry out a design check.	**6-weeks**
16	Damage to columns and beams	Carry out any structural remedial works arising from engineering check.	**6-months**
17	Non-engineered roof in generator and boiler buildings	Building Engineer to check roof structures in these buildings for adequacy to resist statutory Code loads (vertical and horizontal).	**6-weeks**
18	Non-engineered roof in generator and boiler buildings	Carry out any structural remedial works arising from engineering check.	**6-months**