

Iris Fashion Ltd. MK Fashions Ltd.

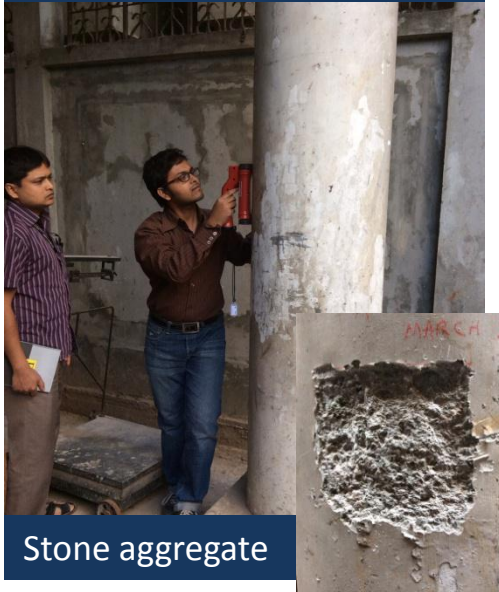
Dewan Idrish Road, Zirabo, Savar, Dhaka-1341
(23.913390, 90.313304)
11th March 2014



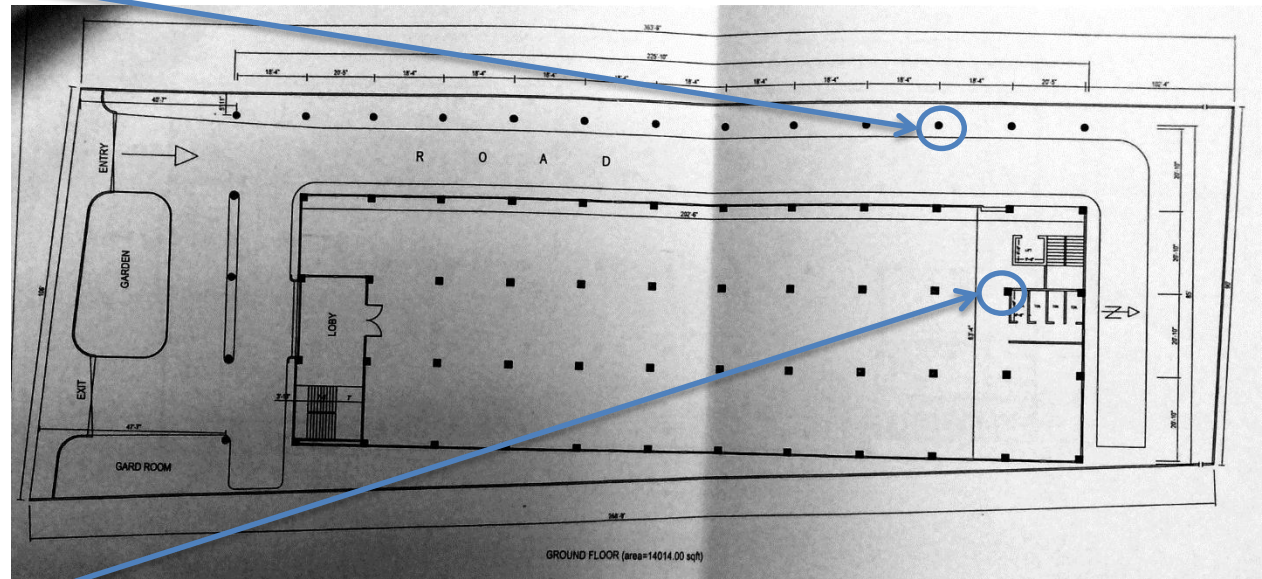
Observations

Column Strengths

Perimeter column tested



Stone aggregate



Internal column tested



Stone aggregate

Opening up confirms aggregate type is stone throughout ground floor level columns.

Cursory calculations indicate working stress in some columns are high and warrant review and checking

Column strengths

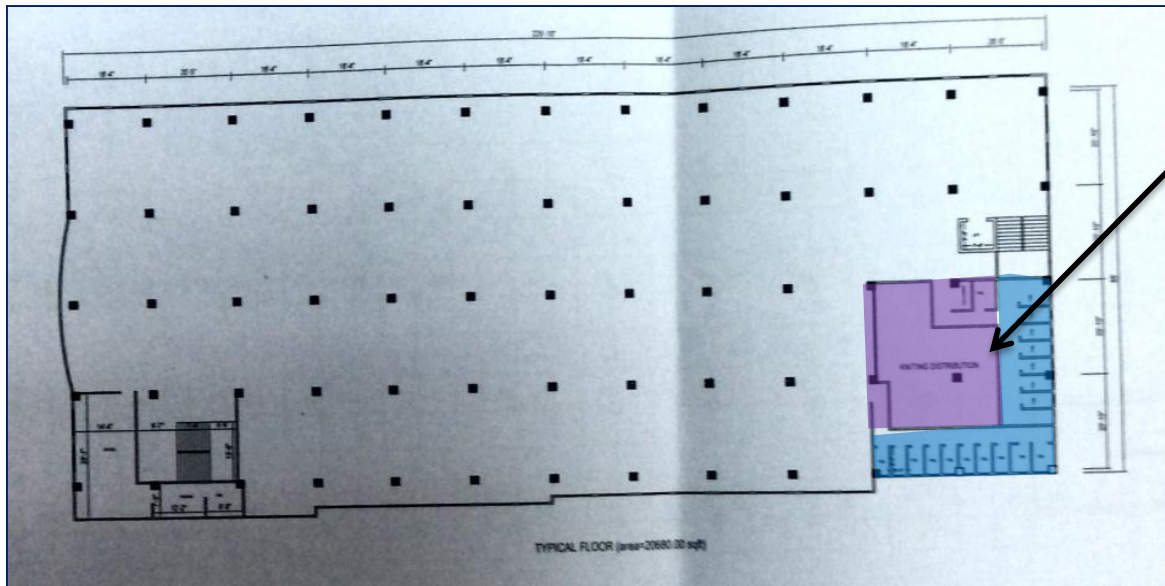
High loading due to storage areas, toilets and water tanks



High loads arising from heavy toilet floor build-up and dense arrangement of masonry partitions, sometimes cantilevering out from building column line.

Toilets are adjacent to main storage areas on all floors

Toilets and storage at this location on all floors



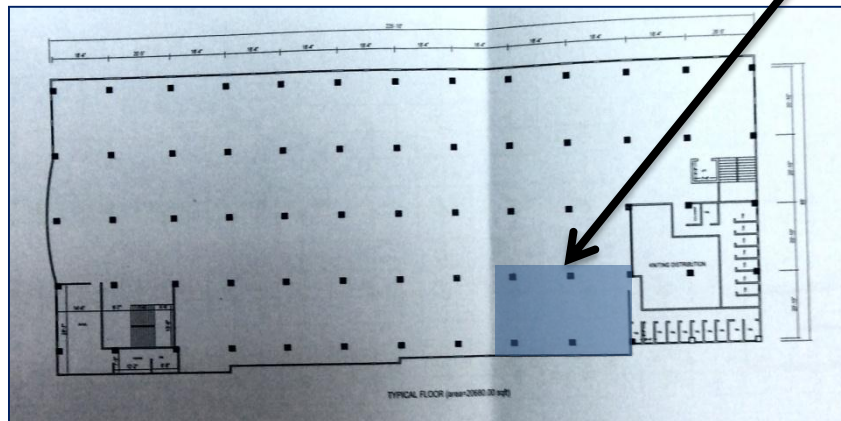
Floor loading – toilet and storage areas



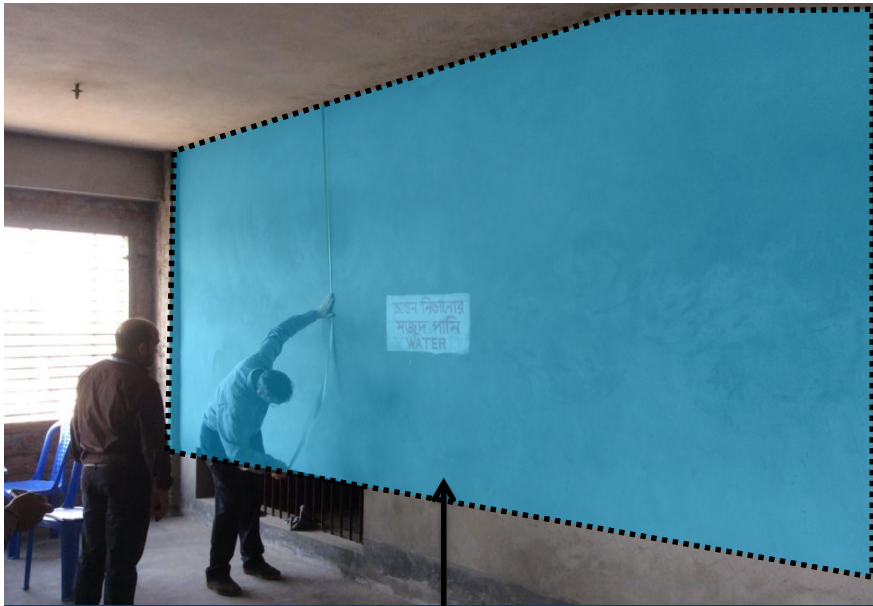
High local loads arising from heavy washer floor build-up and machines



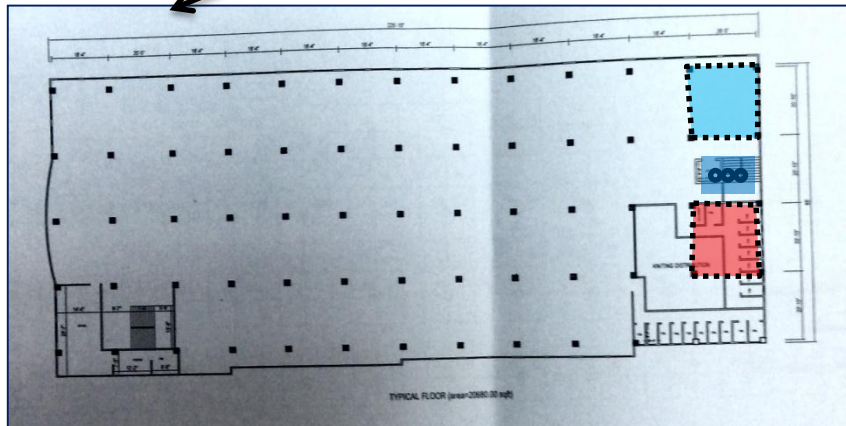
Heavy washer build-up in this location on L1



Floor loading – washer areas



Water tank height 2.3m over 2 bays by stair core = 23kN/m^2



2 large concrete water tanks (Blue and red in diagram) at Level 9 by stair core not shown on drawings add significant load to supporting structure. Some concern with Red shaded tank and column loading

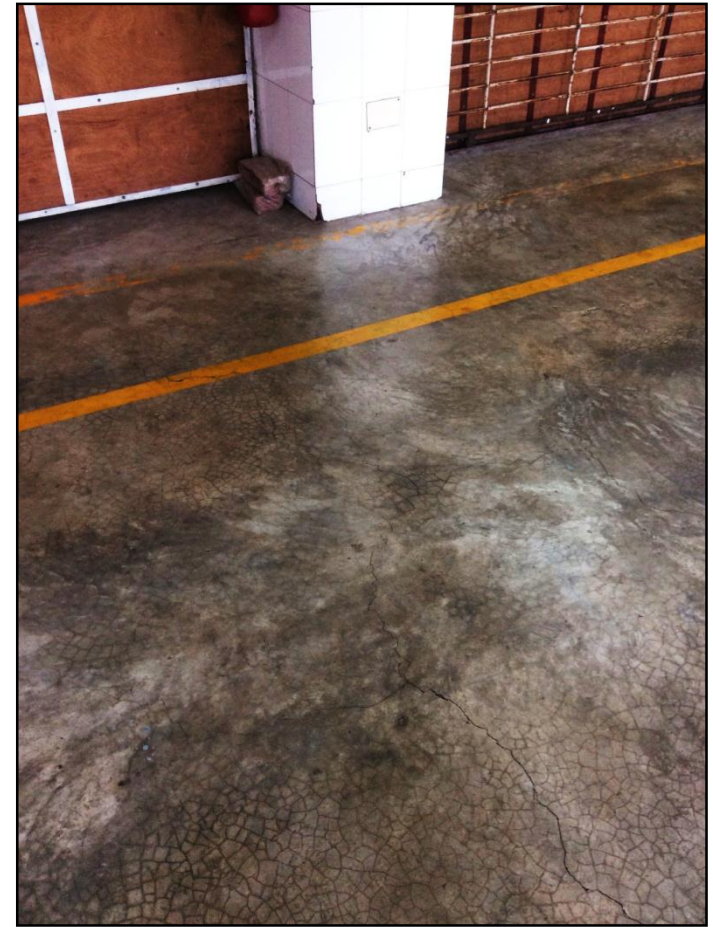
Other loading also arises from a group of 3 large plastic tanks at roof level over the stair core



Cracks on surface of floors



Some crazing and hairline cracks on slab surface. Generally crazing with no clear pattern, with some cracking running along beam lines. Some evidence that the cracking may only extend into the finishes in areas where the screed had debonded from the slab



Cracks to slabs

Local damage to framing-out beams



Notches through possible edge beams of cantilevers at 1st floor seen

Concern with Holes for services passing through structural beams and slabs.

Holes made through beams

Edge protection on roof level incomplete



Edge protection around roof currently incomplete, leaving parapets lower than waist height.

Roof edge protection incomplete

Apparently non-engineered structures: Roof of generator enclosure

Lightweight steel roof appears light and unbraced and storm event may cause significant damage.



Non engineered structure

Priority Actions

Problems Observed

ITEM 1: Concrete Stress Levels in Columns

ITEM 2: Loading from High Build-up in Toilet Areas

ITEM 3: Loading in Washing/Drying Area

ITEM 4: Large water tank loading over stair core

ITEM 5: Cracking in the surface finish on Slab at Level 1

ITEM 6: Notches taken from external beams at first floor

ITEM 7: Roof Parapet guarding is incomplete

ITEM 8: Non engineered steelwork to shed housing generator.

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Verify concrete and reinforcement strengths in all columns	The fire fighting water tank at Level 9 in the area highlighted I (blue)s to be emptied. (Note the other fire fighting tank at this level may remain in use).	Immediate - Now
2	Verify concrete and reinforcement strengths in all columns	Fire safety to be verified in the event of the tank being emptied.	Immediate - Now
3	Verify concrete and reinforcement strengths in all columns	Remove loading from the area noted (Blue) at levels 5,6,7,8 and 9 and ensure that these areas remain unloaded. Retain the current unoccupied status of Level 5 to Level 9.	Immediate - Now
4	Verify concrete and reinforcement strengths in all columns	Factory Engineer to review design, loads and columns stresses in all columns.	Immediate - Now
5	Verify concrete and reinforcement strengths in all columns	Verify stress grade of reinforcement at Ground Floor by exposing steel in lightly loaded column. Verify insitu concrete strength either by 100mm diameter cores or existing cylinder strength data for cores from a minimum of 4 columns.	Immediate - Now
6	Verify concrete and reinforcement strengths in all columns	A Detail Engineering Assessment of Factory to be commenced, see attached Scope.	Immediate - Now
7	Verify concrete and reinforcement strengths in all 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	Verify concrete and reinforcement strengths in all columns	Detail Engineering Assessment to be completed.	6-weeks
9	Verify concrete and reinforcement strengths in all columns	Continue to implement load plan	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
10	Check on Column and Slab stresses due to high loading in toilet areas.	Building Engineer to ensure the structure is not loaded beyond capacity by the loading from high build up in toilet areas as part of the Detail Engineering Assessment.	6-weeks
11	Check on Column and Slab stresses due to high loading in toilet areas.	Building Engineer to create controlled loading plans for all floors.	6-weeks
12	Check on Column and Slab stresses due to high loading in toilet areas.	Continue to implement load plan.	6-months
13	Check on Column and Slab stresses due to high loading in Washing/Drying area.	Building Engineer to ensure the structure is not loaded beyond capacity by the loading from high build up in Wash/Dry area as part of the Detail Engineering Assessment.	6-weeks
14	Check on Column and Slab stresses due to high loading in Washing/Drying area.	Building Engineer to create controlled loading plans for all floors.	6-weeks
15	Check on Column and Slab stresses due to high loading in Washing/Drying area.	Continue to implement load plan.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
16	Large water tank loading over stair core – concerns over column and slab stresses.	Building Engineer to ensure the structure is not loaded beyond capacity by the loading from the water tank as part of the Detail Engineering Assessment	6-weeks
17	Large water tank loading over stair core – concerns over column and slab stresses.	Building Engineer to create controlled loading plans for all floors	6-weeks
18	Cracking in surface of slab at Level 1	Engineer to investigate crack source/cause.	6-weeks
19	Cracking in surface of slab at Level 1	If cracks are structurally significant, remove all items above the slab and close working areas below the affected areas . Engineer to Check design, specify repairs and strengthening of the slab if necessary.	6-weeks
20	Complete parapet guarding at roof	Restrict access to area until infill work complete	6-weeks
21	Complete parapet guarding at roof	Complete infill between existing parapet posts around roof perimeter.	6-months
22	Non engineered steelwork to shed housing generator	Building engineer to check the structures and propose additional reinforcements and stability system, if required	6-weeks
23	Non engineered steelwork to shed housing generator	Additional works if required to be completed	6-months