L’Usine Fashions Ltd. (Ref. 9258)

36, Gazipura, Sataish Road, Tongi, Gazipur-1712, Bangladesh

(+23.920227N, 90.379468E)

08.MARCH.2014

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Identified Priority 1 Concerns

Heavy machinery at 1st floor level and large water reserve at roof level. Both have ancillary structural support systems which are not detailed in the structural drawings and should be checked through detailed design.

Storage of boxes and bags of material exceed the design load on several floors, particularly 6th floor level; loading to be reduced.

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1st Priority 1 Concern

The large pieces of equipment shown at 1st floor level, and the water reserve at roof level, clearly exceed the design loading of 3kN/m^2. This may not be a structural issue, as ancillary support systems have been constructed, however the capacity of these systems must be determined through detailed structural analysis.

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2nd Priority 1 Concern

Storage loading clearly exceeding 3kN/m^2 design load.

The boxes shown in these photographs are labelled as 25.78kg each. They are stacked to a maximum of 6 boxes in height, with a plan area of approximately 700 x 450mm. The simple calculation below shows that the resultant area load comfortably exceeds the 3kN/m^2 maximum.

25.78 x 6 = 154.68kg
154.68 / (0.7 x 0.45) = 491.05kg/m^2
491.05 / 100 = 4.91kN/m^2

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Identified Priority 2 Concerns

Small areas of damage to rooftop waterproofing layer should be repaired and monitored to ensure no signs of water ingress appear.

Column load run-down gives factor of safety between 1.5 and 1.86. This is low enough to suggest that further detailed investigation should take place.

1st Priority 2 Concern

No signs of water ingress were observed, however the areas of damage should be repaired and internal soffits monitored to ensure that water ingress has not/does not occur.

Missing areas of waterproofing layer on rooftop.

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AVERAGE INTERNAL COLUMN STRESS (*)

(*) Instructions: Only overwrite red values

Factory name L-Usine Fashions
36, Gazipura, Sataish Road, Tongi, Gazipur-1712, Bangladesh.
Factory Reference Number: 9258

			CASE I	CASE II
		Selfweight	Finishes	Apparent Live Load	Code Live Load
No. Floors supported INCL ROOF	7 max. 20 (including roof)	Loading on roof	3.8kPa	1.0kPa	0.5kPa	0.5kPa
Basement (Y/N)	no	Loading on 6th	4.8kPa	1.0kPa	4.9kPa	3.0kPa
Construction date	from 2005	Loading on 5th	4.8kPa	1.0kPa	1.5kPa	3.0kPa
Column size	0.51 x0.51 m	Loading on 4th	4.8kPa	1.0kPa	1.5kPa	3.0kPa
Grid (LxT)	6.10 x5.35 m	Loading on 3rd	4.8kPa	1.0kPa	1.5kPa	3.0kPa
Beam L	0.30 x0.30 m	Loading on 2nd	4.8kPa	1.0kPa	1.5kPa	3.0kPa
Beam T	0.30 x0.30 m	Loading on 1st	4.8kPa	1.0kPa	5.0kPa	3.0kPa
Slab thickness	0.150 m	GF				
Floor-ceiling height	3.000 m					
Hyperstatic effect	10%					
Concentated load on column	5.0 kN					
Column agregate	Brick					
Rebar %	1.00 %					

Limits (MPa)	X	Y	Z
	6.5	8.0	9.6

Apparent working stress	7.7	MPa
Case II working stress	8.0	MPa

Total unfactored column load (kN)	**2012 kN**

Concrete stress is between X MPa and Y MPa (FOS 1.5 to 1.86). YELLOW priority 2

2nd Priority 2 Concern

Load run-down indicates a ‘yellow’ warning.

Under the observed working loads plus the observed excess loads on 1st and 6th floor, the factory is a ‘yellow’ rating, with a sufficiently low factor of safety to require further detailed analysis. Under the BUET approved 3kN/m^2, the factory is also firmly in the ‘yellow’ category.

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Priority Actions

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Problems Observed Summary

ITEM 1: (1st Priority 1) Heavy equipment at 1st floor level and water reserve at roof level exceed standard design loads. Ancillary support structures have been constructed but their capacity has not been checked in detail.

ITEM 2: (2nd Priority 1) Storage of boxes and bags of material exceeds design loading by approximately 65%.

ITEM 3: (1st Priority 2) Waterproofing layer on the roof has some small areas of damage which should be repaired.

ITEM 4: (2nd Priority 2) Load run-down analysis gives a sufficiently low factor of safety to warrant further detailed analysis of the building and its capacity.

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Item 1 and actions

Heavy equipment at 1st floor level and water reserve at roof level supported on structures which require further investigation.

Priority 1 (Immediate – Now)	• Carry out a detailed structural check of both the slab thickening at 1st floor level (and supporting columns) as well as the water reserve support structure at roof level.
Priority 2 (within 6 – weeks)	• After determining the max. allowable loads in the stated areas, the equipment should be marked with its self-weight to ensure that the allowable load is not exceeded.
Priority 3 (within 6-months)	• Monitor the underside of the slab below (both the heavy equipment at 1st floor level and the water reserve at roof level) to ensure signs of distress do not develop.

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Item 2 and actions

Storage of boxes and bags of material/garments, which clearly exceed the 3kN/m^2 design loading.

Priority 1 (Immediate – Now)	• Remove all storage that exceeds the already marked lines of maximum storage height.
Priority 2 (within 6 – weeks)	• Carry out detailed structural analysis to determine whether or not the existing limits are acceptable. • If not, new storage height limits should be determined.
Priority 3 (within 6-months)	• Monitor the storage of goods to ensure maximum height are not exceeded. • Erect clear signage to relay the meaning of the maximum height markers to the staff.

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Item 3 and actions

Waterproofing layer at roof level shows some signs of damage, which could potentially lead to water ingress.

Priority 2 (within 6 – weeks)	• Locally repair waterproofing in areas where it has been damaged. • The missing areas should be covered with sufficient lap to ensure a continuous barrier.
Priority 3 (within 6-months)	• Continuing repairs should be carried out in future, where necessary. • Monitor the underside of the slab below to ensure signs of water ingress do not develop.

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Item 4 and actions

Capacity of the columns under full design loading conditions is suspect, and should be verified by further detailed analysis.

Priority 2 (within 6 – weeks)	• Factory engineer to review design, loads and column stresses. • Carry out detailed analysis to determine strength of concrete and capacity of columns.
Priority 3 (within 6-months)	• Produce and actively manage a loading plan for all floor plates within the factory, giving consideration to floor capacity and column capacity.

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