Jamuna Apparels

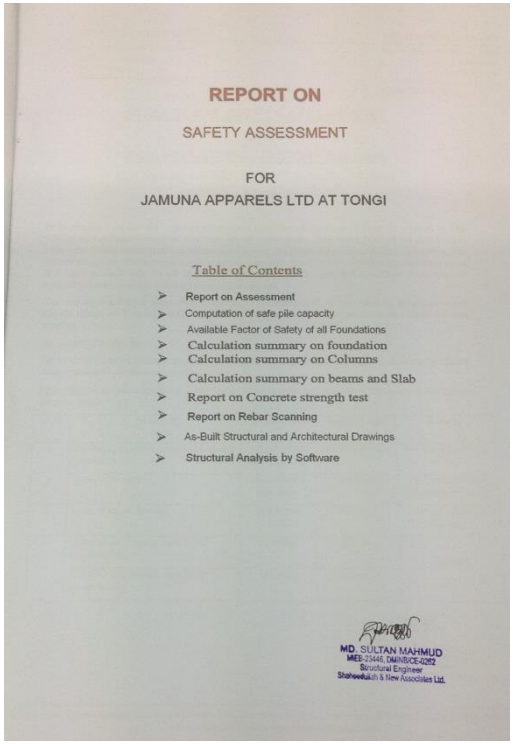
94/95 (Old), 46 (New), Block –C, Tongi I/A, Tongi, Gazipur
(23.901086N, 90.399888E)

7th November 2013

ACCORD on Fire and Building Safety in Bangladesh ARUP

Building Observations

Detailed Engineering Assessment


REPORT ON

SAFETY ASSESSMENT

FOR

JAMUNA APPARELS LTD AT TONGI

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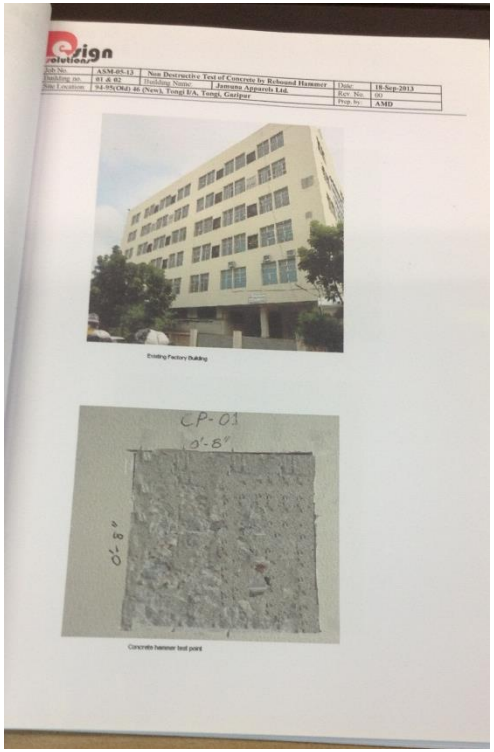
- Report on Rebar Scanning
- As-Built Structural and Architectural Drawings
- Structural Analysis by Software

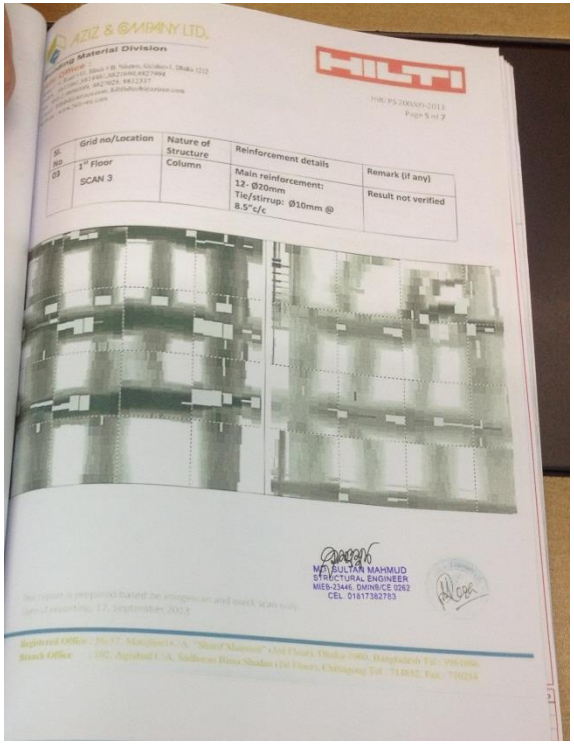
MD. SULTAN MAHMUD
MIEB-23446, DMINB/CE-0262
Structural Engineer
Shaheedullah & New Associates Ltd.


Non Destructive Test of Concrete by Rebound Hammer

Existing Factory Building

CP-01

Concrete hammer test point


AZIZ & COMPANY LTD.

Testing Material Division

HILTI

Sl. No.	Grid no/Location	Nature of Structure	Reinforcement details	Remark (if any)
03	1st Floor SCAN 3	Column	Main reinforcement: 12- Ø20mm Tie/stirrup: Ø10mm @ 8.5"c/c	Result not verified

MD. SULTAN MAHMUD
STRUCTURAL ENGINEER
MIEB-23446, DMINB/CE-0262
CEL: 01817382763

A Detailed Engineering Assessment dated August 2013 was carried out by Shaheedullah & New Associates Ltd. This assessment includes detailed structural calculations and results of material testing onsite.
It is recommended in the report that remediation to Beams grids G/6-7 & F/3-5 be carried out.

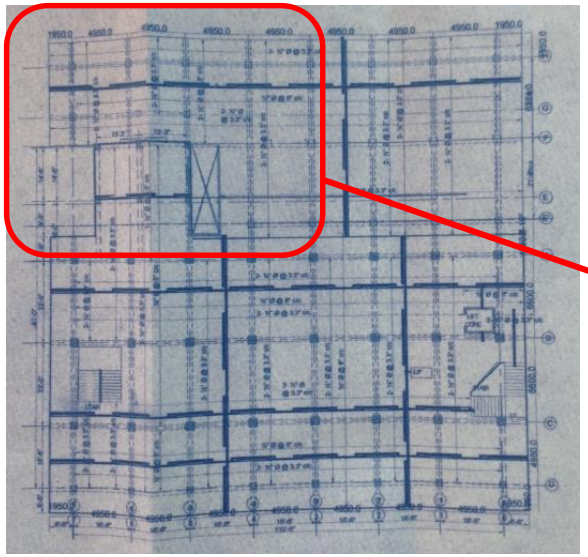
MD. SULTAN MAHMUD
MIEB-23446, DMINB/CE-0262
Structural Engineer
Shaheedullah & New Associates Ltd.

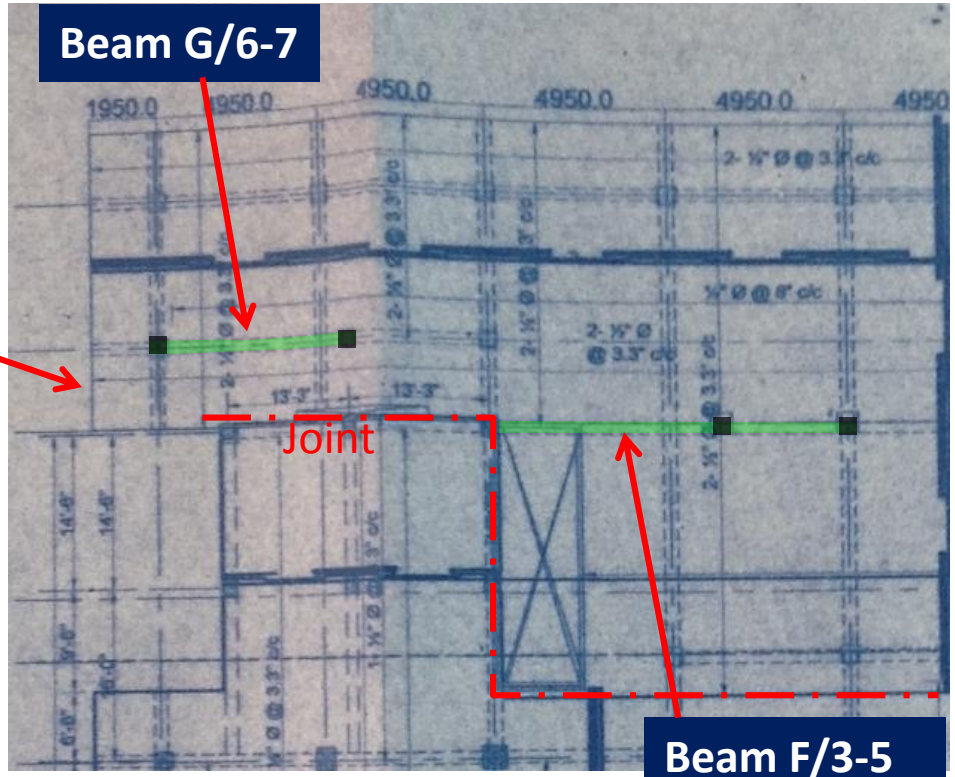
Detailed Engineering Assessment

ACCORD on Fire and Building Safety in Bangladesh

ARUP

Floor and Ground Beams grids G/6-7 & F/3-5





Columns supporting the beams indicated are offset from the main grid. From a cursory check of the reinforcement drawings the beams indicated do not comply with code requirements.

Beams grids G/6-7 & F/3-5

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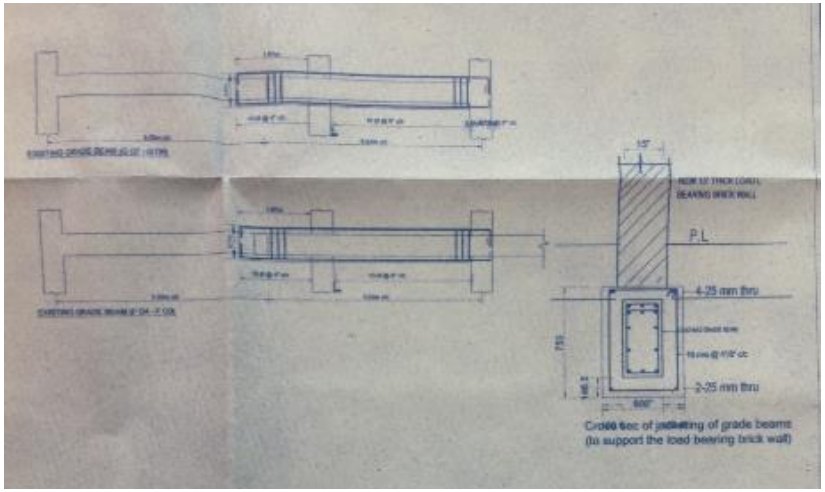
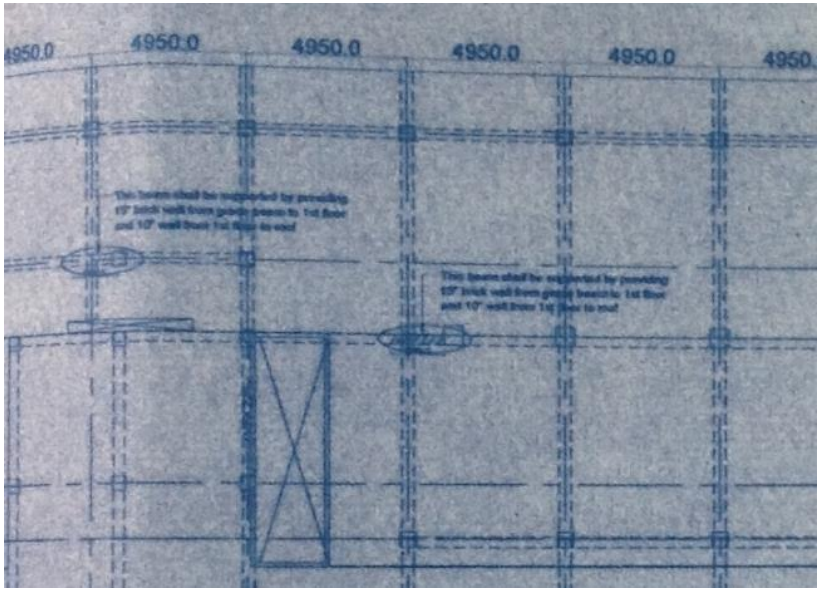
	Available safe pile capacity	105 ton/pile	hammer Analysis	More than adequate
8.	Required thickness for pile cap as per existing loading	30 inch	Drawings and by re-bar scanning	Four pile caps (F4, G5, G6, G7) are inadequate
	Provided thickness for pile cap	24 inch	Site investigation	

Foundations are therefore adequate for existing live load. Even foundations of North portion building are safe for 350 kg/m2 live load per floor.

Columns

	portion	as stirrup	bar scanning test	
6.	Required reinforcement in maximum loaded beams in south portion as per existing loadings	2.85 in2 top rebar in 27.5" depth beams and 0.72 in2/d as stirrup	Analysis (1.05D +1.275L +1.4025E)	Two beams (G5 to G7 and F3 to F5) are inadequate
	Provided reinforcement in maximum loaded beams in south portion	3.5 in2 top rebar in 27.5" depth beams and 0.72 in2/d as stirrup	Drawings and by re-bar scanning test	
7.	Required reinforcement in maximum loaded beams in north portion	2.27 in2 top rebar and 0.48 in2/d as stirrup in 27.5"	Analysis	Adequate





Remedial Solution for beam support to be implemented as per Checking Engineers report

Beams grids G/6-7 & F/3-5

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Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Floor and Ground Beams grids G/6-7 & F/3-5	Remove Storage Loading from area indicated	**Immediate - Now**
2	Floor and Ground Beams grids G/6-7 & F/3-5	Check with Engineer that light access loading of 1.5KN/m^2 is acceptable for access of operatives prior to completion of remedial support works	**Immediate - Now**
3	Floor and Ground Beams grids G/6-7 & F/3-5	Actions have already been identified by the building owner's engineers and tenders have been issued for construction remediation. Remediation works should be completed to comply with the building engineers requirements	**6-weeks**