

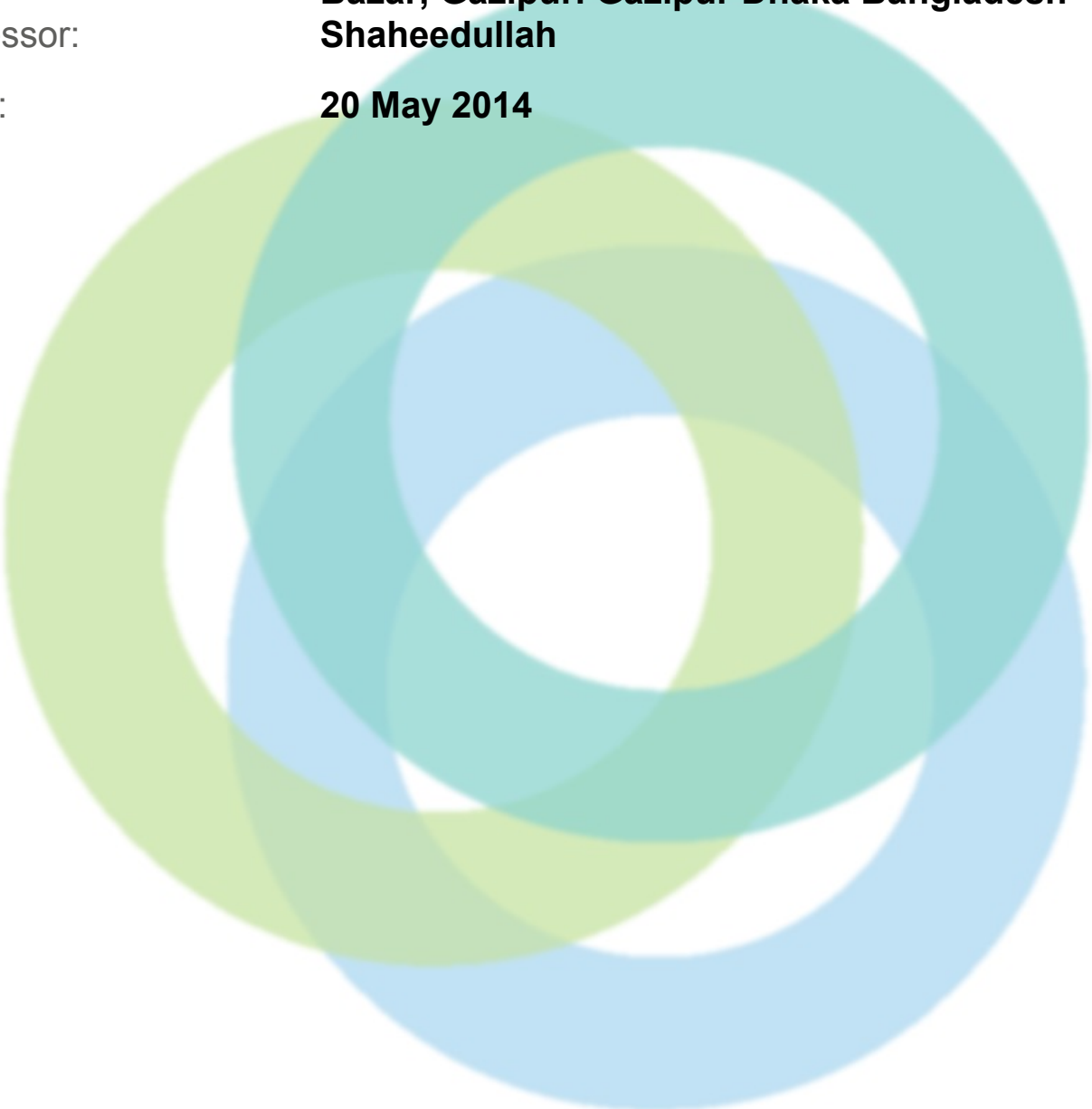
# INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name: **Fashion Store Ltd.**

Address: **81, Kalmessar, "Jalal Shopping Complex" Board  
Bazar, Gazipur. Gazipur Dhaka Bangladesh**

Assessor: **Shaheedullah**

Date: **20 May 2014**





## Introduction to the Report

The following report contains a site profile and summary of non-conformities identified during an onsite assessment commissioned by the Alliance for Bangladesh Worker Safety (Alliance) and conducted by a third-party Qualified Assessment Firm (QAF). The assessment was conducted against the Alliance for Bangladesh Worker Safety Assessment Protocols (APs) and Fire Safety and Structural Integrity Standard, which is harmonized with the factory assessment guidelines developed by Bangladesh University of Engineering and Technology (BUET) for the Bangladesh National Tripartite Plan of Action (NTPA). The goal of the Alliance process is to provide clear and practical technical requirements by which Bangladeshi Ready Made Garment (RMG) Factories producing for Alliance members may be consistently and fairly evaluated for fire, structural, and electrical safety in a non-duplicative manner. Each assessment will prompt action plans that will be used by RMG factories to systematically and sustainably improve safety conditions for garment workers. Beyond tracking and reporting on action steps taken in a transparent manner, the Alliance organization and its members will seek to further support factory improvements through technical assistance, training, implementation support for functional Worker Committees, and in some cases financial assistance and wage support for workers if factories are closed for remediation.

The contents of the report do not constitute a guarantee of compliance with the applicable laws, the Alliance Standard or the absolute or continued safety against fire, electrical and/or structural integrity issues that may lead to injury or loss of life. The report is designed to provide a non-exhaustive summary of risk issues, based on a limited sampling and duration of time onsite by the named QAF. Neither the QAF nor the Alliance can certify or guarantee the quality, outcome, or effectiveness of actions taken in response to the report.

For more information and report feedback please go to: [www.bangladeshworkersafety.org](http://www.bangladeshworkersafety.org).



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**ALLIANCE**  
FOR BANGLADESH WORKER SAFETY

## GENERAL INFORMATION

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Factory Name:	Fashion Store Ltd.
Address:	81, Kalmessar, "Jalal Shopping Complex" Board Bazar, Gazipur. Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Gazipur
Zip Code:	1704
Audit Duration:	2 Days 16 Hours
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	29 May 2014
Final Report Date :	24 June 2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	1. Factory Building. 2. Generator House and Boiler House.
Number of Building Levels (Stories) :	Basement + 6 storied.
Approximate Building Area (SF) :	Main building 91,280 sft.
Date of Building Construction :	Basement + 3 storied = 2004-2006. Rest 3 storied = 2007.
Date of Last Building Renovation/Addition :	2007 - Undocumented vertical extension at roof top in between grid 6 and 7
Is the Building mixed use?:	Yes
Ancillary Structures in Complex :	Generator and Boiler house is a single storied Sloped metallic roof structure supported by brick wall.
Number of Ancillary Levels (Stories) :	One
Approximate Ancillary	991 sft

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Structures Area (SF) :	
Number of Occupants :	Worker = 775 persons. Officials = 109 persons.
Exterior Facade Description :	5 inch thick plastered masonry brick wall with 40% window opening enclosed by R.C. flat slab and R.C Column.
Structural System Description :	Frame work of the building is composed of R.C. flat plate, R.C. column and R.C. isolated footing.






## ASSESSMENT FINDINGS

### Structural System Design

Question:	Are the available FoS for the columns adequate based on Preliminary calculation?	
Priority Level:	High	
Non-Compliance Level:	2	
Description:	Calculations show the following FoS values for a floor live load of 42 psf: Interior Columns: 2.12 Corner Columns: 2.14 Exterior Columns: 1.79 The fact that the exterior column FoS of 1.79 is less than 1.86 warrants a detailed evaluation.	
Source of Findings:	Uploaded Document: Calculation document uploaded.	
Suggested Plan of Action:	Under guidance from a qualified structural engineer arrange Detail Engineering Assessment of the structure. This assessment should include destructive core testing to validate the in-situ concrete compressive strength in columns.	
Suggested Deadline Date:	15 Aug 2014	
Standard:	Provide results of preliminary calculations in space provided. a) column capacity; FoS > 1.86 - Safe b) column capacity; FoS 1.5 -1.86 - Needs Evaluation c) Column capacity; FoS 1.25-1.5 - Needs Evaluation d) Column capacity; FoS <1.25 - Unsafe In case of a critically low FoS (<1.25), consider Immediate Escalation Protocol	
Question:	Can documentation be provided that the building is compliant with the requirements for wind loading and storm surge loadings as detailed in BNBC Part 6 Section 1.5.3?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	Documentation that the building is compliant with the requirements for wind loading and storm surge loadings as detailed in BNBC Part 6 Section 1.5.3 was not found.	
Source of Findings:	Document Review: Documents reviewed on-site.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.	
Suggested Deadline Date:	15 Aug 2014	
Standard:	2006 BNBC Part 6 Section 1.5. Compliance may be waived if the Factory	





	Owner provides satisfactory evidence of a cyclone operations plan that includes full evacuation of the factory in advance of any approaching cyclone"	
Question:	If the structure has been previously expanded, was the structural impact on the entire structure analytically evaluated and confirmed by a qualified structural engineer.	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	An undocumented vertical extension above the 6th floor in between grids 6 and 7 was noted during the site visit.	
Source of Findings:	Document Review: Documents reviewed on-site., Photograph: Attached., Visual Assessment: Visual inspection.	
Suggested Plan of Action:	Have a qualified structural engineer complete an analytical evaluation of the structural impact of the addition.	
Suggested Deadline Date:	15 Aug 2014	
Standard:	Reference Alliance Standards Part 8 Section 8.1 Applicability of Building Code.	
Question:	Where density of operations, storage of materials, or equipment weights require live load capacity in excess of 2.0 kN/m <sup>2</sup> (42 psf), do the design documents confirm that the required load capacity exists? Or has the load capacity been analytically confirmed and certified by an Alliance-qualified structural engineer?	 
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	The 5th floor slab between longitudinal grid 2-6 and transverse grid a-h used as a storage area for raw materials and accessories was found to be overloaded exceeding 2kN/m <sup>2</sup> . Floor slab under toilet block was found to be overloaded exceeding 2kN/m <sup>2</sup> . Design documents neither confirm that the required load capacity exists, and the load capacity has not been analytically confirmed and certified by qualified structural engineer.	
Source of Findings:	Document Review: Documents reviewed on-site., Photograph: Attached., Visual Assessment: Visual inspection.	
Suggested Plan of Action:	A qualified structural engineer shall be engaged to analytically confirm the capacity of the slab following Alliance Standard Part 8 Section 8.20.4.3.	
Suggested Deadline Date:	15 Aug 2014	
Standard:	Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads	
Question:	Are credible structural design documents available for review and kept on site?	



Priority Level:	Medium
Non-Compliance Level:	2
Description:	Most of the credible structural design documents are available for review and kept on site. However, an undocumented vertical extension at the roof level in between grids 6 and 7 was noted during the site visit. As-built drawings should be prepared to reflect all areas of current construction.
Source of Findings:	Document Review: Documents reviewed on-site.
Suggested Plan of Action:	Have a qualified structural engineer prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard.
Suggested Deadline Date:	15 Aug 2014
Standard:	Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories
Question:	Are Certificates of Occupancy available for review?
Priority Level:	Low
Non-Compliance Level:	1
Description:	Certificate of Occupancy was not available for review.
Source of Findings:	Document Review: Documents reviewed on-site.
Suggested Plan of Action:	Provide Certificates of Occupancy for review.
Suggested Deadline Date:	15 Aug 2014
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment

### Structural System Construction

Question:	Have all areas of needed maintenance, including areas with efflorescence, dampness, standing water on rooftops, and corrosion been addressed.
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Sign of standing water at the roof top was noticed. The floor finish at the 5th floor slab between longitudinal grid 5&6 and transverse grid H&I was noted to be damp.
Source of Findings:	Photograph: Attached., Visual Assessment: Visual inspection.
Suggested Plan of Action:	A qualified structural engineer shall be engaged to address all areas of needed maintenance by correcting the identified issues. Roof top shall be protected by providing water proof course with gentle slope for easy drainage





	of rain water outside of the building and partially damaged part of slab shall be repaired.	
Suggested Deadline Date:	15 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
Question:	If yes, have the structural members constructed with MCAC been investigated by an appropriate program of in-situ testing and representative destructive testing or core samples?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	No testing was done for assessment of the strength of the concrete.	
Source of Findings:	Document Review: Documents reviewed on-site.	
Suggested Plan of Action:	Have a qualified structural engineer assess the durability aspects as suggested in Alliance Standard Part 7 Section 7.2 and take appropriate remedial measures. This assessment should include core sample testing of MCAC concrete.	
Suggested Deadline Date:	15 Aug 2014	
Standard:	Reference Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC)	
Question:	Are all non-structural elements suspended from, attached to, or resting atop the structure adequately anchored and braced to resist earthquake forces?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	No anchoring and bracing are used in water tanks and Steel racks to resist earthquake forces.	
Source of Findings:	Visual Assessment: Visual inspection.	
Suggested Plan of Action:	Water tanks and steel racks shall be adequately anchored and braced to resist earthquake force as per BNBC and Alliance Standard.	
Suggested Deadline Date:	15 Aug 2014	
Standard:	Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6	





Question:	Are any structural elements constructed with MCAC exposed to rainfall or other sources of water sealed with a protective coating to prevent water intrusion?
Priority Level:	Medium
Non-Compliance Level:	1
Description:	Roof slab constructed with MCAC is exposed to rainfall or any other sources of water.
Source of Findings:	Photograph: Attached., Visual Assessment: Visual inspection.
Suggested Plan of Action:	Roof shall be protected from rainfall or any other source of water by providing water proof coarse over the slab.
Suggested Deadline Date:	15 Aug 2014
Standard:	Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC).



### Structural Safety Programs

Question:	Are floor loads in compliance with posted plans?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	There are no load plans.
Source of Findings:	Document Review: Documents reviewed on-site., Visual Assessment: Visual inspection.
Suggested Plan of Action:	Preparing floor load plan redistribute floor loads shall be redistributed as per Alliance standard.
Suggested Deadline Date:	15 Aug 2014
Standard:	Alliance Standard Part 8 Section 8.10 Floor Loading Plans (Load Plans).
Question:	Is a program in place to ensure that the live loads for which a floor or roof is or has been designed will not be exceeded?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	No program in place is found.
Source of Findings:	Document Review: Documents reviewed on-site., Visual Assessment: Visual inspection.
Suggested Plan of	A program shall be developed to ensure that all live loads for which a floor or



Action:	roof has been designed for will not be exceeded. The designated Load Manager shall oversee this program and ensure that it is enforced.	
Suggested Deadline Date:	15 Aug 2014	
Standard:	Alliance Standard Part 13 Section 13.7 and Part 8 Section 8.9.	
Question:	Are areas used for storage of work materials and work products, clearly marked to indicate the acceptable loading limits as described in the Load Plan for that floor?	
Priority Level:	Low	
Non-Compliance Level:	3	
Description:	Areas used for storage of work materials and work products have not been marked indicating the acceptable loading limits.	
Source of Findings:	Document Review: Documents reviewed on-site., Visual Assessment: Visual inspection.	
Suggested Plan of Action:	Areas used for storage of work materials and work products shall be clearly marked indicating acceptable loading limits as per alliance standard Part8 section 8.11.	
Suggested Deadline Date:	15 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.11 Floor Load Markings	
Question:	Have Load Plans been prepared for each floor documenting the actual maximum operational loading that is intended and/or allowable on each floor.	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	Floor load plans have not been prepared for each floor.	
Source of Findings:	Document Review: Documents reviewed on-site., Visual Assessment: Visual inspection.	
Suggested Plan of Action:	A qualified structural engineer shall be engaged to develop Floor Loading Plans as per the requirements of Part 8 Section 8.20.5.3	
Suggested Deadline Date:	15 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.10 Floor Loading Plans (Load Plans)	
Question:	Are Floor Load Plans posted as required?	
Priority Level:	Low	
Non-Compliance Level:	2	



Description:	Floor load Plans have not been posted.
Source of Findings:	Document Review: Documents reviewed on-site., Visual Assessment: Visual inspection.
Suggested Plan of Action:	A qualified structural engineer shall be engaged to develop floor load plans and shall be posted following section 8.20 of the Alliance Standard.
Suggested Deadline Date:	15 Aug 2014
Standard:	Alliance Standard Part 8 Section 8.20.5.3
Question:	Is a designated representative (Factory Load Manager), who is onsite full time, trained regarding the structural floor capacity, and serves as an ongoing vendor resource and monitor of operational factory floor loadings?
Priority Level:	Low
Non-Compliance Level:	2
Description:	No floor load manager was found at site.
Source of Findings:	Document Review: Documents reviewed on-site.
Suggested Plan of Action:	A representative shall be designated as the Factory Load Manager. The Factory Owner shall ensure that at least one individual, the Factory Load Manager who is located onsite full time at the factory, is trained in calculating operational load characteristics of the specific factory. The Factory Load Manager shall serve as an ongoing resource to RMG vendors and be responsible to ensure that the factory operational loads do not at any time exceed the factory floor loading limits as described on the Floor Loading Plans.
Suggested Deadline Date:	15 Aug 2014
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager