INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

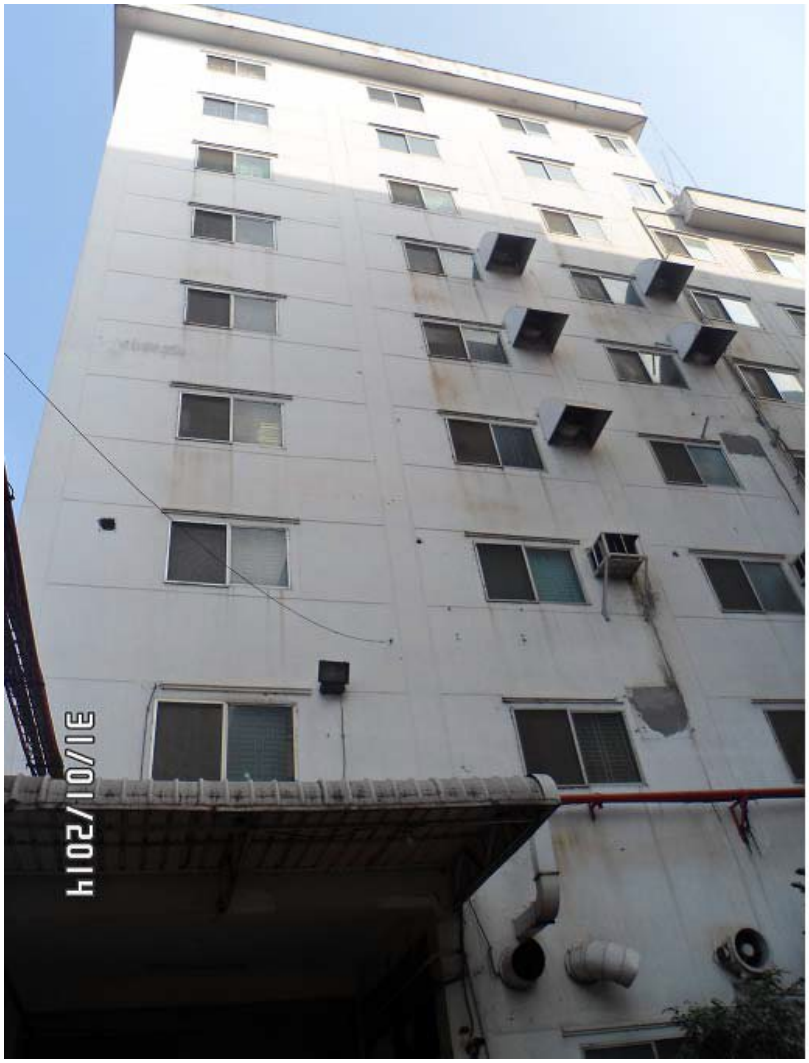
Factory Name:	**Tusuka Trousers Ltd**
Address:	**Konabari Neelnagar, Gazipur Gazipur Dhaka Bangladesh**
Assessor:	**Shaheedullah**
Date:	**08 Dec 2013**

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.



GENERAL INFORMATION

General Information	
Factory Name:	Tusuka Trousers Ltd
Address:	Konabari Neelnagar, Gazipur Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Gazipur
Zip Code:	
Audit Duration:	2 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	December 8, 2013
Final Report Date :	February 11, 2015
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	One
Number of Building Levels (Stories) :	9-Storied RC building
Approximate Building Area (SF) :	Total area of the building is 163,400 SF (approx). GF-6th: 20,800 SF, 7th-8th: 8,900 SF.
Date of Building Construction :	2004
Date of Last Building Renovation/Addition :	No sign of renovation or addition was noticed.
Is the Building mixed use?:	No
Ancillary Structures in Complex :	No
Number of Ancillary Levels (Stories) :	N/A
Approximate Ancillary	N/A

Structures Area (SF) :	
Number of Occupants :	Total number of occupants are 2500. GF: NOT USED, 1st: 400, 2nd:410, 3rd: 370, 4th: 370, 5th: 400, 6th: 350, 7th: 100, 8th: 110.
Exterior Facade Description :	5 inch thick plastered masonnary brick wall with 40% window opening enclosed by R.C. slab and R.C Column.
Structural System Description :	Frame work of the building is composed of R.C. beam supported slab, R.C. column, R.C. beam 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:	3
Description:	9-story building Part A (7-story part): Central column - 1.20 / 1.37; Edge column 1 - 1.05 / 1.16; Edge column 2 - 1.18 / 1.26. 9-story building Part A1 & D (6-story + shed part): Central column A1 - 1.27 / 1.45; Central column D - 1.29 / 1.47; 9-story building Part C (9-story part): Central column 2 - 1.04 / 1.14; Central column 3 - 1.15 ; 1.27; Corner column 1- 0.86 / 0.95; Edge column 1 - 1.07 / 1.21; Edge column 3 - 0.83 / 0.91. FoS<1.25 indicates very low Factor of Safety. A review panel was convened and the panel had the following findings: - Factor of Safety (FoS) of Central, Corner and Edge columns are well below 1.25. - All columns are highly overstressed. - The typical columns in the building at the Ground floor level have insufficient capacity when subjected to the minimum design imposed live loads (without the addition of loads from masonry partitions, extra buildup in toilet areas and areas of higher storage loads, etc.). - There are undocumented cantilevers on 3 sides of the building. - There are discrepancies between the as-built drawings and the current state of the factory building. Credible structural drawings not available.
Source of Findings:	Uploaded Document: FoS calculations, Review Panel Findings.
Suggested Plan of Action:	Based on the findings of the Review Panel investigation, the following recommendations are provided and should be implemented: 1. Adequate "propping" shall be completed in the red and yellow shaded areas (per attached "propping plan") of Part C (9-story building) from basement to second floor roof within 7 days from date of Review Panel Report (September 2, 2014). Yellow shaded area at the eastern part of Part C should not be used until the recommendation of the DEA (per item 6) are implemented. 2. Adequate "propping" shall be completed in the red shaded area (per attached "propping plan") of Parts D, A and A1 (9-story building) at the ground floor within 7 days from date of the Review Panel Report (September 2, 2014). 3. Overhead water tank on the roof of Part C should be immediately demolished. 4. Operations in Parts A through D in the 9-story building other than mentioned in item 1 above (all per attached "propping plan") may continue after necessary propping as mentioned in item 2 above. However, the live load during the operations shall not exceed 1 kN/m2 (20 psf) and all storage loads should be removed from floors except ground floor. 5. Under the present situation the building has to be carefully monitored by a group of qualified structural engineering consultants. 6. An urgent Detailed Engineering Assessment (DEA) shall be conducted including soil investigation within 7 days and completed by November 15, 2014 under the supervision of a team of certified professional structural engineers. The DEA has to be peer reviewed by a competent institution and the DEA along with CAP and the review report have to be submitted to the Alliance Dhaka office for early approval. Failing to do so within the stipulated time will lead to evacuation of multiple floors by the Alliance. 7. IN case of emergence of any sign of distress, the concerned engineer should be informed immediately for his guidance. If necessary, the building has to be evacuated. Also to be informed to the representative of DIFE. 8. Depending on the findings of the DEA, permanent remedial measures should be taken for the safety of the building. 9. All those activities should be monitored by an inspector of DIFE for strict compliance.
Suggested Deadline Date:	31 Mar 2015
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:	Are credible structural design documents available for review and kept on site?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Available structural documents are incomplete and don't meet the alliance standard.
Source of Findings:	Document Review: Seen all documents.
Suggested Plan of Action:	A qualified structural engineer shall be engaged to prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard.
Suggested Deadline Date:	31 Mar 2015
Standard:	Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories
Question:	Can credible structural documentation indicating general conformance with 2006 BNBC or other comparable applicable international model building code be produced?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	No code has been mentioned in documentation.
Source of Findings:	Document Review: Seen all documents.
Suggested Plan of Action:	Design code shall be collected from the concerned firm. Or Engage a qualified structural engineer to develop the required documents to confirm the structural integrity of the buildings. Documents must comply with Alliance Standard Part 8 Section 8.19 and 8.20
Suggested Deadline Date:	31 Mar 2015
Standard:	Reference Alliance Standards Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings
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:	2
Description:	No load case has been mentioned in documentation.
Source of Findings:	Document Review: Seen all documents.
Suggested Plan of Action:	Design load case shall be collected from the concerned firm. Or engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.

Suggested Deadline Date:	31 Mar 2015
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:	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: Seen all documents.
Suggested Plan of Action:	Certificate of Occupancy shall be obtained from appropriate authority.
Suggested Deadline Date:	31 Mar 2015
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment
Structural Safety Programs	
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:	1
Description:	No program in place is found.
Source of Findings:	Visual Assessment: Visual inspection.
Suggested Plan of Action:	A program shall be developed to ensure that all live loads for which a floor or 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:	31 Mar 2015
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:	2
Description:	Areas used for storage of work materials and work products have not been marked indicating the acceptable loading limits.

Source of Findings:	Visual Assessment: Visual inspection.
Suggested Plan of Action:	Provide the load plans, signage, plus highlight these areas by physical marking; using different contrasting colours or materials so they are easy to differentiate between the storage areas, the normal working sections and the means of egress pathways.
Suggested Deadline Date:	31 Mar 2015
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:	1
Description:	Floor load plans have not been prepared for each floor.
Source of Findings:	Visual Assessment: Visual inspection.
Suggested Plan of Action:	Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3
Suggested Deadline Date:	31 Mar 2015
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:	1
Description:	Floor load plans has not been prepared as required.
Source of Findings:	Visual Assessment: Visual inspection
Suggested Plan of Action:	Floor load plan shall be prepared and posted as per requirement.
Suggested Deadline Date:	31 Mar 2015
Standard:	Alliance Standard Part 8 Section 8.20.5.3