INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name:	**A & A Trousers LTD**
Address:	**Haribaritek, Pubail College Gate, Pubail, Gazipur Gazipur Dhaka Bangladesh**
Assessor:	**Bureau Veritas**
Date:	**09 Jul 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.

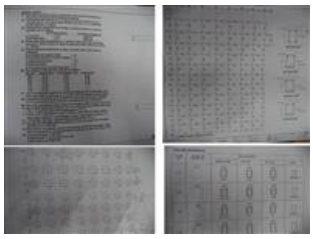
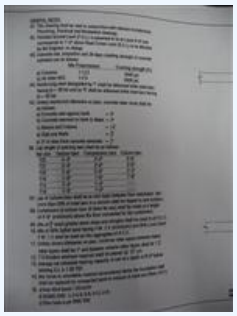
For more information and report feedback please go to: www.bangladeshworkersafety.org.

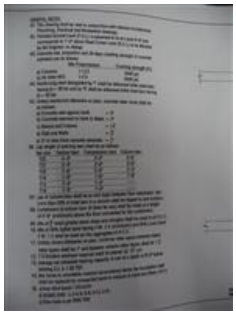
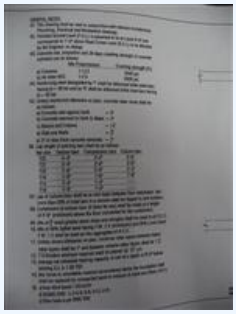
GENERAL INFORMATION

General Information	
Factory Name:	A & A Trousers LTD
Address:	Haribaritek, Pubail College Gate, Pubail, Gazipur Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Gazipur
Zip Code:	1721
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	July 09, 2014
Final Report Date :	August 28, 2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	2 Main Production Buildings: 1. Main Building 2. Dry Process Building
Number of Building Levels (Stories) :	1. Main Building: 3 (Ground+2) 2. Dry Process Building: 1 (Ground)
Approximate Building Area (SF) :	1. Main Building: 120,000 SF 2. Dry Process Building: 4,200 SF
Date of Building Construction :	2006 to 2008
Date of Last Building Renovation/Addition :	March 2014 (Vertical extension of all columns to Level 4)
Is the Building mixed use?:	No
Ancillary Structures in Complex :	9 Ancillary Buildings: 1. Generator Room & Sub-Station 2. Doctors & Child care 3. Dining shed 4. ETP Plant 5. Boiler Room-1 & Maintenance Shed 6. Guard Shed & Security 7. Fabric Store 8. Boiler Room-2 9. Wastage Room
Number of Ancillary Levels (Stories) :	1 (Ground)

Approximate Ancillary Structures Area (SF) :	13,087 SF Total
Number of Occupants :	1800
Exterior Facade Description :	Building-1: Brick masonry infill between concrete structural frame elements. Exterior face of the masonry walls are plastered and painted. Some areas are clad with decorative glass. Sliding glass windows and metallic sliding main door. Building-2: Brick masonry infill between concrete column and steel roof truss elements. Exterior face of the masonry walls are plastered and painted. Sliding glass windows and metallic sliding main door.
Structural System Description :	Building-1: Ground floor of the building is monolithic RCC moment resisting frame with slabs, beams and columns. Remainder of the floors are concrete slab over metal deck with steel beams and concrete columns. Foundation system is isolated spread footings. Building-2: Single story steel frame "shed" constructed with concrete columns and steel roof trusses.
Issues were not found during the structural integrity assessment that required the Emergency Escalation Protocol (and referral to NTC Review Panel)?:	Yes

ASSESSMENT FINDINGS

Structural System Design		
Question:	Are credible structural design documents available for review and kept on site?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	Building-1: A set of credible design document is not available on site for review (design live loads, section details of RCC column and steel beam connection points, etc. are not available). Additionally, a design report is not available which is required per BNBC 2006 clause 1.9.1.1, and the credentials of the Structural Engineer and Architect of record are not complete. Building-2: Credible structural documentation is not available.	
Source of Findings:	Photograph: Portions of available structural documents.	
Suggested Plan of Action:	Have a qualified structural engineer prepare credible as-built documents for unavailable parts of design documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard including a design report. Note that in addition to other items, these documents should include a full set of as-built structural and architectural drawings with the signature and credentials of the structural engineer and architect (per 2006 BNBC requirements).	
Suggested Deadline Date:	15 Oct 2014	
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:	Building-1: The available documents indicate conformity to the requirements of BNBC 1993 in the General Notes, but no design report was available to confirm this information. Building-2: Credible structural documentation was not available.	
Source of Findings:	Photograph: General Notes section of available Building-1 documents.	
Suggested Plan of Action:	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. This should be completed for all buildings.	
Suggested Deadline	15 Oct 2014	

Date:		
Standard:	Reference Alliance Standards Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings	
Question:	If built after 2006, can documented compliance with the seismic and wind requirements of the 2006 BNBC be provided?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	Building-1: The available documents indicate conformity to the wind and seismic design requirements of BNBC 1993, but no design report was available to confirm this information. Building-2: Credible structural documentation was not available.	
Source of Findings:	Photograph: General Notes section of available Building 1 documents.	
Suggested Plan of Action:	Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC. This should be completed for all buildings.	
Suggested Deadline Date:	15 Oct 2014	
Standard:	Alliance Standards Part 8 Section 8.17 Design for Lateral Loads and 2006 BNBC Part 6 Section 1.5	
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:	Building-1: The available documents indicate conformity to the wind design requirements of BNBC 1993, but no design report was available to confirm this information. Building-2: Credible structural documentation was not available.	
Source of Findings:	Photograph: General Notes section of available Building 1 documents.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading. This should be completed for all buildings.	
Suggested Deadline Date:	15 Oct 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:	Is a clear and redundant load path to resist lateral loads provided?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	Building-1: The structure is a special system (concrete columns and steel beams with deck slab) and hence the lateral load system is not apparent and the redundancy is not known. Building-2: It is a single story "shed" structure constructed with concrete columns and steel roof trusses. Therefore the lateral load system is not apparent and the redundancy is not known.	
Source of Findings:	Photograph: Structural systems of Buildings 1 and 2.	
Suggested Plan of Action:	Have a qualified structural engineer complete further analysis of the structure and develop a remediation plan if required. This should be completed for all buildings.	
Suggested Deadline Date:	15 Oct 2014	
Standard:	Alliance Standards Part 8 Section 8.17 Design for Lateral Loads and 8.3.3. 2006 BNBC Part 6 Section 1.5	
Question:	Have provisions been made in floors or decks for a concentrated load (such as heavy equipment, water tanks, stored materials, etc) applied at a location wherever this load acting upon an otherwise unloaded floor would produce stresses greater than those caused by a uniform load?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	There are five 1.5-ton water tanks and two 2-ton water tanks located on the roof level of the main building. There was no evidence available to indicate that the impact of these concentrated loads was considered.	
Source of Findings:	Photograph: Rooftop water tanks.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm and document that provisions have been made to accommodate these water tanks. If provisions have not been made, have a qualified structural engineer develop a remediation plan.	
Suggested Deadline Date:	15 Oct 2014	
Standard:	Alliance Standard Part 8 Section 8.13 and 8.14	
Question:	Are Certificates of Occupancy available for review?	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	The Certificate of Occupancy is not available.	

Source of Findings:	Document Review: Documents reviewed on-site.
Suggested Plan of Action:	Provide Certificates of Occupancy for review.
Suggested Deadline Date:	15 Oct 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:	The following items requiring maintenance were identified: -Dampness at Ground Level and Level 1, Building 1 -Corrosion at Levels 1 and 2, Building 1 - Dampness at east portion of Building 2
Source of Findings:	Photograph: Areas requiring maintenance.
Suggested Plan of Action:	Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.
Suggested Deadline Date:	15 Oct 2014
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance

Question:	Are structural steel members free of corrosion, physical damage or other types of deterioration?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Building 1: There are signs of corrosion in the steel members at Levels 1 and 2. Building-2 : Corrosion of steel members was not observed.
Source of Findings:	Photograph: Corrosion in Building 1.
Suggested Plan of Action:	Complete further testing on areas of deterioration in order to understand the level of corrosion and potential weakening of the members and have a qualified structural engineer develop a remediation plan.
Suggested Deadline Date:	15 Oct 2014
Standard:	Alliance Standard Part 8 Section 8.26

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:	1	
Description:	The following elements not noted to not have adequate bracing or anchorage: -Storage racks in store room at Ground Level and Level 1, Building 1. -Plastic rooftop water tanks, Building 1	
Source of Findings:	Photograph: Unbraced non-structural elements.	
Suggested Plan of Action:	Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.	
Suggested Deadline Date:	15 Oct 2014	
Standard:	Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6	
Question:	Is the building free of active signs of water intrusion or ponding due to lack of performance of the façade system?	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	There are sign of water intrusion through the floor slabs and walls of Building 1.	
Source of Findings:	Photograph: Signs of water intrusion.	
Suggested Plan of Action:	Have the exterior façade repaired to ensure prevention of dampness.	
Suggested Deadline Date:	15 Oct 2014	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
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:	2	
Description:	No load management plan is currently in place.	
Source of Findings:	Document Review: No documented load management plan.	
Suggested Plan of	Develop a program to ensure that all live loads for which a floor or roof has	

Action:	been designed for will not be exceeded. The designated Load Manager shall oversee this program and ensure it is enforced.	
Suggested Deadline Date:	15 Oct 2014	
Standard:	Alliance Standard Part 13 Section 13.7 and Part 8 Section 8.9.	
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:	Building-1: Floor load plans have not been developed. Building-2: Floor load plans not required (single story building).	
Source of Findings:	Document Review: Documents reviewed on-site.	
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:	15 Oct 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:	Building-1: Floor load plans have not been developed or posted. Building-2: Floor load plans not required (single story building).	
Source of Findings:	Visual Assessment: No posted load plans.	
Suggested Plan of Action:	Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard. Floor load plans should be visibly posted on all levels of the building.	
Suggested Deadline Date:	15 Oct 2014	
Standard:	Alliance Standard Part 8 Section 8.20.5.3	
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:	Building-1: There are no acceptable loading limit markings. Building-2: Loading limits not required (single story building).	
Source of Findings:	Visual Assessment: NO loading limit markings noted during visual assessment.	
Suggested Plan of Action:	Provide signage or the appropriate markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load Plan.	
Suggested Deadline Date:	15 Oct 2014	
Standard:	Alliance Standard Part 8 Section 8.11 Floor Load Markings	
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:	There is a Civil engineer in the factory who is trained about loading. But the engineer is not appointed as Load Manager.	
Source of Findings:	Document Review: Documents reviewed on-site, Visual Assessment: Visually confirmed	
Suggested Plan of Action:	The factory should appoint a load manager who will be on-site full time and trained regarding the structural floor capacity.	
Suggested Deadline Date:	01 Jan 2015	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	