INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name:	**AB Mart Fashionwear Ltd.**
Address:	**786 Kakil Sataish Boradawra 13/3 Purbopara Mudafa Tongi, Gazipur Tongi, Gazipur Dhaka Bangladesh**
Assessor:	**Bureau Veritas**
Date:	**22 Apr 2015**

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.

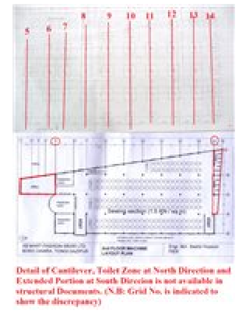
GENERAL INFORMATION

General Information	
Factory Name:	AB Mart Fashionwear Ltd.
Address:	786 Kakil Sataish Boradawra 13/3 Purbopara Mudafa Tongi, Gazipur Tongi, Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Tongi, Gazipur
Zip Code:	
Audit Duration:	7.30 Hours
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	22-Apr-2015
Final Report Date :	19-May-2015
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	There is one building in the factory premise which is the RCC main production building.
Number of Building Levels (Stories) :	Stories above grade: 5 (G+4), Stories below grade: 0;
Approximate Building Area (SF) :	Total are of the main production building: 40,000 sft. Floor wise breakdown as follows: -Ground floor: 7,600.00 sft, -First floor: 7,600.00 sft, -Second floor: 7,600.00 sft, -Third floor: 7,600.00 sft, -Roof (Open to Sky): 5,600 sft, -Occupied Area Roof: 2,000.00 sft, - Roof of Occupied Area: 2,000 sft,
Date of Building Construction :	As per the information provided by the factory legislative bodies, it has been noted that, the main production building was constructed in four phases: - Phase 1: Ground to first floor were constructed in 2008, - Phase 2: Second floor was constructed in 2010, - Phase 3: Third floor was constructed in 2011, - Phase 4: Occupied portion (Fourth floor) of roof was constructed in 2013.
Date of Last Building Renovation/Addition :	Fourth (4th) floor was added in 2013;
Is the Building mixed use?:	No
Ancillary Structures in Complex :	There is no ancillary structure in the premises.
Number of Ancillary	There is no ancillary structure in the premises.

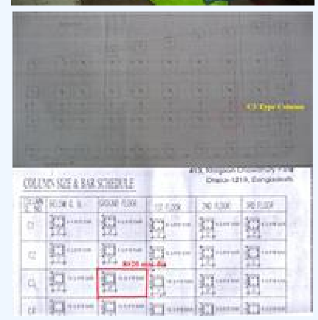
Levels (Stories) :	
Approximate Ancillary Structures Area (SF) :	There is no ancillary structure in the premises.
Number of Occupants :	Total number of occupants: 626 [Ground floor: 60, 1st floor: 240, 2nd floor: 250, 3rd floor: 70, 4th floor: 6]
Exterior Facade Description :	Perimeter facade of the building consists of brick masonry wall.Roof is fenced with 2'-6'' parapet. Parapet is not plastered. Windows are sliding glass in aluminum frame and main doors is collapsible sliding type.
Structural System Description :	Ground to third floor of the building are of moment resisting frame system with monolithic beams and slabs. Fourth floor is of flat plate system. As per structural drawing, foundation of the building is on isolated column footing.
Issues were not found during the structural integrity assessment that required the Emergency Escalation Protocol (and referral to NTC Review Panel)?:	Yes

ASSESSMENT FINDINGS

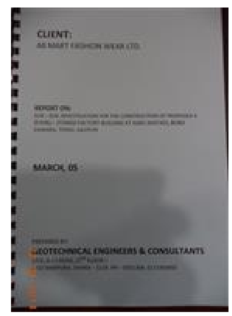
Structural System Design

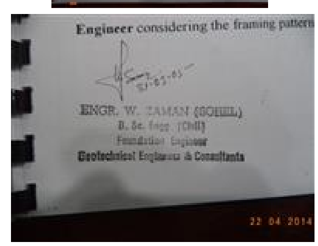
Question:	Are credible structural design documents available for review and kept on site?	 
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	Structural drawing is available along with the approval plan (approved by local authority). But, the structural drawing as well have certain lack of information and mismatch with present condition of the building such as: 1) Detail of cantilever at north	
Source of Findings:	Document Review: Design documents reviewed on-site, Visual Assessment, Document Review: Design documents reviewed on-site, Visual Assessment	
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 Jul 2015	
Standard:	Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories	
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:	Following extensions have been done beyond original construction: 1) Cantilever and toilets at north direction of the building, 2) Horizontally extended portion at south direction, 3) Vertically extended portion (4th floor) situated at east di	
Source of Findings:	Document Review: Confirmed by reviewing the documents, Visual Assessment, Document Review: Confirmed by reviewing the documents, Visual Assessment	
Suggested Plan of Action:	Have a qualified structural engineer complete an analytical evaluation of the structural impact of the additions.	
Suggested Deadline Date:	15 Jul 2015	
Standard:	Reference Alliance Standards Part 8 Section 8.1 Applicability of Building Code.	

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:	The available documents do not indicate general conformance with 2006 BNBC or other comparable applicable international model building code.
Source of Findings:	Document Review: Confirmed by reviewing the documents
Suggested Plan of Action:	Engage a qualified structural engineer to develop the required documents (i.e.design report) 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:	15 Jul 2015
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:	As stated by factory authority, the building was constructed in four phases and all the phases were constructed after 2006. There is no indication in the design documents available to understand the consideration of wind and seismic loading during the des
Source of Findings:	Document Review: Confirmed by reviewing the documents
Suggested Plan of Action:	Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC.
Suggested Deadline Date:	15 Jul 2015
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:	There is no indication in the design documents available to understand the consideration of wind and seismic loading during the design of the building.

Source of Findings:	Document Review: Confirmed by reviewing the documents	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.	
Suggested Deadline Date:	15 Jul 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:	Results of ferro-scanning for confirmation of steel rebar in the columns of the lowest tier were satisfactory.	 
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	After conducting ferro-scanning, it has been found that, rebar number in central column (8#20 mm dia) is not matching with column schedule given in structural documents (10#20 mm dia). Also, column schedule of the extended portions are not available.	
Source of Findings:	Visual Assessment: Confirmed by conducting ferro-scanning on-site	
Suggested Plan of Action:	In conjunction with preparing credible as-built documents as per the requirements of Alliance Standard section 8.20, conduct ferro-scanning to validate the in-situ reinforcing configuration within structural elements.	
Suggested Deadline Date:	15 Jul 2015	
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment	
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:	1	
Description:	Two plastic water tanks (each having a capacity of 2000L) are placed on roof surface of 4th floor. No provisions have been made for these concentrated loads.	
Source of Findings:	Visual Assessment: Visually confirmed	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm and document that provisions have been made to accommodate concentrated loads. If provisions have not been made, have a qualified structural engineer develop a remediation plan.	
Suggested Deadline Date:	15 Jul 2015	

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 factory has not obtained the Occupancy Certificate from the concerned authority.
Source of Findings:	Document Review: Confirmed by reviewing the documents
Suggested Plan of Action:	Apply for issuance of Occupancy Certificate from concerned authority.
Suggested Deadline Date:	15 Jul 2015
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment
Question:	Is a Geotechnical Report available for review and kept on site?
Priority Level:	Low
Non-Compliance Level:	1
Description:	A soil test report dated March'05 is available for review and kept on-site. After reviewing the report it has been noted that, geotechnical investigation was performed by "Geotechnical Engineers and Consultants". Engr. W. Zaman (Sohel) is the Engineer of
Source of Findings:	Document Review: Geotechnical Report reviewed on-site
Suggested Plan of Action:	Provide the MIEB No. of the Engineer of Record.
Suggested Deadline Date:	15 Jul 2015
Standard:	Alliance Standard Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings





Structural System Construction

Question:	Is the structural system free of distress, separations, or cracking that indicates lack of performance or overstress of the lateral load-carrying system?	  
Priority Level:	High	
Non-Compliance Level:	2	
Description:	Masonry crack has been observed on ceiling and beam of 3rd floor (bonded warehouse). Also, crack has been observed on ceiling of printing room at fourth floor.	
Source of Findings:	Visual Assessment: Visually confirmed	
Suggested Plan of Action:	Engage a qualified structural engineer to provide additional investigation into the areas of cracking and provide a remediation plan if required.	
Suggested Deadline Date:	15 Jul 2015	
Standard:	Alliance Standard Part 8 Section 8.3.3	
Question:	Is the structural system free of distress, settlement, shifting, or cracking in columns or walls?	
Priority Level:	High	
Non-Compliance Level:	1	
Description:	Masonry crack has been observed on brick wall of third floor.	
Source of Findings:	Visual Assessment: Visually confirmed	
Suggested Plan of Action:	Have a qualified structural engineer provide further testing and analysis of cracking in walls and provide a remediation plan to correct noted issues.	
Suggested Deadline Date:	15 Jul 2015	

Standard:	Alliance Standard Part 8 Section 8.3.3
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:	- Storage racks at store room of fourth floor, - Storage racks at bonded warehouse of third floor, - Storage racks at ground floor, - Two plastic water tanks on roof level of fourth floor. Indicated non-structural elements need to be braced an
Source of Findings:	Visual Assessment: Visually confirmed
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 Jul 2015
Standard:	Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6

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:	1
Description:	During inspection, the following areas are found to be affected by dampness: 1) Ceiling of printing room (4th floor), 2) Masonry wall of store room (4th floor), 3) Wall of bathroom on roof top, 4) Masonry wall of generator room (ground floor),
Source of Findings:	Visual Assessment: Visually confirmed
Suggested Plan of Action:	Under guidance of a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.
Suggested Deadline Date:	15 Jul 2015
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance






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:	Slabs were constructed with MCAC and roof slab is exposed to rainfall. No

	protective sealing was available on roof.	
Source of Findings:	Visual Assessment: Visually confirmed	
Suggested Plan of Action:	Provide a protective coating at the structural elements constructed with MCAC exposed to rainfall or other sources of water. Have protective coating approved by the Alliance or a qualified structural engineer.	
Suggested Deadline Date:	15 Jul 2015	
Standard:	Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC).	
Question:	The exterior façade is free of cracking.	 
Priority Level:	Low	
Non-Compliance Level:	1	
Description:	Cracks have been observed on exterior facade of 4th floor (store room) and bathroom on roof top.	
Source of Findings:	Visual Assessment: Visually confirmed	
Suggested Plan of Action:	Have a qualified structural engineer provide further analysis of the identified cracks to determine the appropriate course of corrective action.	
Suggested Deadline Date:	15 Jul 2015	
Standard:	Alliance Standard Part 8 Section 8.2	
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:	1	
Description:	Dampness has been observed on exterior facade of 4th floor.	
Source of Findings:	Visual Assessment: Visually Confirmed	
Suggested Plan of Action:	Repair the exterior façade system to prevent water intrusion.	
Suggested Deadline Date:	15 Jul 2015	
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 such program is available to ensure that the live loads for which a floor or roof is or has been designed will not be exceeded.
Source of Findings:	Document Review: No such program us documented
Suggested Plan of Action:	Develop a program 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 it is enforced.
Suggested Deadline Date:	15 Jul 2015
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:	As set of Floor Load Plan is available but not prepared as per Alliance Standard. Also, base (i.e design report) is not available to justify the consideration of load at different zone of the building.
Source of Findings:	Document Review: Load Plans unavailable
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 Jul 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:	2
Description:	As set of Floor Load Plan is available but not prepared as per Alliance Standard. Also, base (i.e design report) is not available to justify the consideration of load at different zone of the building. No Floor Load Plan is posted.
Source of Findings:	Visual Assessment: Load Plans unavailable
Suggested Plan of Action:	Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard. Once prepared post the load plans on each floor of the building as required.

Suggested Deadline Date:	15 Jul 2015	
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:	Standard Load Plans are not available and areas of storage are not marked also.	
Source of Findings:	Visual Assessment: Visually confirmed	
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 Jul 2015	
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:	No Load Manager is appointed yet.	
Source of Findings:	Visual Assessment: Visually confirmed	
Suggested Plan of Action:	Designate a representative 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 Jul 2015	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	