INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name:	**Wear Mag**
Address:	**Civil Engineer's tower, ind. Plot 1, Block-E, Avenue 1, section11, Mirpur Dhaka Dhaka Bangladesh**
Assessor:	**Bureau Veritas**
Date:	**31 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.

GENERAL INFORMATION

General Information	
Factory Name:	Wear Mag
Address:	Civil Engineer's tower, ind. Plot 1, Block-E, Avenue 1, section11, Mirpur Dhaka Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Dhaka
Zip Code:	1216
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	06-09-2014
Final Report Date :	10-18-2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	There are 3 buildings in the factory premises out of which one is main building and 2 are ancillary buildings. The buildings are named as: 1) Nineteen story main production building(with single basement), 2) Single story masonry construction with tin roof (Ancillary-01), 3) Single story masonry construction utility shed with tin roof (Ancillary-02).
Number of Building Levels (Stories) :	1) Nineteen story main production building: Stories above grade: 19 (18 floors and occupied roof), Stories below grade: 1, Occupied levels: 20. 2) Single story masonry construction with tin roof (Ancillary-01): Stories above grade: 1, Stories below grade: 0, Occupied levels: 1. 3) Single story masonry construction utility shed with tin roof (Ancillary-02): Stories above grade: 1, Stories below grade: 0, Occupied levels: 1.
Approximate Building Area (SF) :	Total area of all buildings on the factory premises: 231306 sft. (Including roof square footage). Building wise breakdown as follows: 1) Nineteen story main production building: 226006 sft (Basement: 9188 sft, Ground floor: 8532 sft, 1st floor: 10178 sft, 2nd to Roof Top: 11006 x 18=198108 sft), 2) Single story masonry construction with tin roof (Ancillary-01): 2500 sft, 3) Single story masonry construction utility shed with tin roof (Ancillary-02): 2800 sft.
Date of Building Construction :	Factory personnel informed the date of construction as follows: 1) Nineteen story main production building: Finished in 1999, 2) Single story masonry construction with tin roof (Ancillary-01): Finished in 1999, 3) Single story masonry construction utility shed with tin roof (Ancillary-02): Finished in 1999.
Date of Last Building Renovation/Addition :	Factory personnel informed the date of renovation as follows: There was a mobile tower on the roof top and that was demolished in 2013.
Is the Building mixed	No

use?:	
Ancillary Structures in Complex :	1) Single story masonry construction with tin roof (Ancillary-01), 2) Single story masonry construction utility shed with tin roof(Ancillary-02).
Number of Ancillary Levels (Stories) :	There are two ancillary structures. Each is single storied PEB shed.
Approximate Ancillary Structures Area (SF) :	1) Single story masonry construction with tin roof (Ancillary-01): 2500 sft, 2) Single story masonry construction utility shed with tin roof (Ancillary-02): 2800 sft.
Number of Occupants :	Total number of occupants: 3342. 1) Nineteen story main production building: 3310. (Basement: 20, Ground floor: 70, 1st floor: 190, 2nd floor: 5, 3rd floor: 25, 4th floor: 8, 5th floor: 325, 6th floor: 30, 7th floor: 325, 8th floor: 325, 9th floor: 325, 10th floor: 150, 11th floor: 325, 12th floor: 27, 13th floor: 90, 14th floor: 325, 15th floor: 325, 16th floor: 325, 17th floor: 75, 18th floor: 15, Roof top machine room: 5), 2) Single story masonry construction with tin roof (Ancillary-01): 2, 3) Single story masonry construction utility shed with tin roof(Ancillary-02): 30.
Exterior Facade Description :	The building is monolithic RCC flat plate structure where exterior walls are monolithic RCC shear walls. The main door of the building is a metallic door and the windows are of sliding glass type.
Structural System Description :	The building is monolithic RCC flat plate structure, regular frame and foundation system is mat.

ASSESSMENT FINDINGS

Structural System Design		
Question:	Is a clear and redundant load path to resist lateral loads provided?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	The structure is a flat plate system, therefore the lateral load system is not apparent and the redundancy is unknown.	
Source of Findings:	Document Review: Documents reviewed on site., Visual Assessment: Visual inspection conducted.	
Suggested Plan of Action:	Have a qualified structural engineer complete further analysis of the structure and develop a remediation plan if required.	
Suggested Deadline Date:	16 Aug 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:	Where density of operations, storage of materials, or equipment weights require live load capacity in excess of 2.0 kN/m2 (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 density of operation in the storage of fabric rolls in fifth and third floors exceeds 42 psf and there is no analytical confirmation this load can be supported	
Source of Findings:	Visual Assessment: Visual inspection conducted.	
Suggested Plan of Action:	Have a qualified structural engineer confirm that capacity to support the load is available. Load Plans, complying with the Alliance Standard Part 8 Section 8.20.4.3, should also be developed.	
Suggested Deadline Date:	16 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:	A set of design documents is available on site for review. The design report is required, as per BNBC 2006 Clause 1.9.1.1, but is unavailable.
Source of Findings:	Document Review: Document review reveals that a set of design documents is available on site for review. However, the design report is not available which is required, as per BNBC 2006 Clause 1.9.1.1. Also, the identity of the Structural Engineer/Architect are not complete.
Suggested Plan of Action:	Have a qualified structual engineer prepare the design report and submit to BV for review.
Suggested Deadline Date:	12 Aug 2014
Standard:	Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories

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 clear information available on the design document to understand the consideration of storm surge and wind loading, in the design of the building.
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:	16 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:	Are Certificates of Occupancy available for review?
Priority Level:	Low
Non-Compliance Level:	1
Description:	The factory has not obtained the Certificate of Occupancy from the authority.
Source of Findings:	Document Review: Documents reviewed on site.

Suggested Plan of Action:	Apply for issuance of Certificates of Occupancy and pursue the matter to obtain the same.
Suggested Deadline Date:	12 Aug 2014
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment

Structural System Construction

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:	On the 3rd, 5th, 13th, 14th and 16th floors, racks that are not braced for earthquake force are present.
Source of Findings:	Visual Assessment: Visual inspection conducted.
Suggested Plan of Action:	Adequately anchor and brace all non-structural elements to resist earthquake forces, to comply with the BNBC and the Alliance Standard.
Suggested Deadline Date:	14 Jun 2014
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:	Some water ponding exists on the roof top due to the lack of maintenance.
Source of Findings:	Visual Assessment: Visual inspection conducted.
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:	16 Aug 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:	3	
Description:	There is no program in place 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: Documents reviewed on site.	
Suggested Plan of Action:	Develop a program to ensure that all live loads, for which a floor or roof has been designed, will not be exceeded. The designated Load Manager shall oversee this program and ensure it is enforced.	
Suggested Deadline Date:	02 Aug 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:	3	
Description:	There is no Load Plan available to show the actual maximum operational loading that is allowed.	
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:	16 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:	3	
Description:	Floor Load Plans are not posted.	
Source of Findings:	Visual Assessment: Visual inspection of the factory shows that no Floor Load Plans are posted on the floors as required.	
Suggested Plan of Action:	Have a qualified structural engineer prepare Load Plans, including the information required in Section 8.20 of the Alliance Standard, and post them accordingly. Floor load plans should be visibly posted on all levels of all buildings.	
Suggested Deadline Date:	16 Aug 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:	3	
Description:	There is no Load Plan. No markings on the floor designate spaces and height for storage of work materials.	
Source of Findings:	Visual Assessment: Visual inspection conducted.	
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:	16 Aug 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:	3	
Description:	There is no designated representative (Factory Load Manager), who is onsite full time, trained regarding the structural floor capacity, and who serves as an ongoing vendor resource and monitor of operational factory floor loadings.	
Source of Findings:	Document Review: Document reviewed on site.	
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 for ensuring 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:	02 Aug 2014	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	