INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name:	**Pioneer Knitwears (BD) Ltd Unit-2**
Address:	**Jamirdia, Habirbari, Valuka, Mymensingh Mymensingh Dhaka Bangladesh**
Assessor:	**Uttaron Technologies**
Date:	**13 Mar 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:	Pioneer Knitwears (BD) Ltd Unit-2
Address:	Jamirdia, Habirbari, Valuka, Mymensingh Mymensingh Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Mymensingh
Zip Code:	2240
Audit Duration:	2 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	March 25, 2015
Final Report Date :	April 22, 2015
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	10 nos main building out of which 8 nos steel shed and 2 nos RCC building & Ancillary building 2 nos RCC.
Number of Building Levels (Stories) :	Main Building:One RCC building 5 storied, One RCC building 6 storied and all sheds are single storied and ancillary buildings are 2 storied.
Approximate Building Area (SF) :	Winding Section: 17,922 sft, Knitting- 1: 33,303 sft, Knitting- 2: 33,303 sft, Knitting- 3: 63,797 sft, Linking- 1: 27,285 sft, Linking- 2: 27,285 sft, Gas Generator & Sub-Station: 2,504 sft, RMS Room: 750 sft, Finished Goods: 14,695 sft, Compressor Room: 810 sft
Date of Building Construction :	Winding Section: 2011, Knitting- 1: 2010, Knitting- 2: 2010, Knitting- 3: 2011, Linking- 1: 2010, Linking- 2: 2010, Gas Generator & Sub-Station: 2012, RMS Room: 2012, Finished Goods: 2014, Compressor Room: 2014
Date of Last Building Renovation/Addition :	N/A
Is the Building mixed use?:	No
Ancillary Structures in Complex :	Two
Number of Ancillary Levels (Stories) :	Both are 2 storied.

Approximate Ancillary Structures Area (SF) :	RMS Room: 750 sft, Compressor Room: 810 sft.
Number of Occupants :	Winding Section: 26, Knitting- 1: Nil, Knitting- 2: Nil, Knitting- 3: 226, Linking- 1: 678, Linking- 2: 679, Gas Generator & Sub-Station: 2, RMS Room: Nil, Finished Goods: Nil, Compressor Room: Nil.
Exterior Facade Description :	10 inch brick masonry wall both side plastered without reinforcement in facade wall, some window, 0.5 mm wall sheet(with insulation) above brick wall, around 20 ft wide road in front of all sheds.
Structural System Description :	Eight main sheds are steel gable frame with partial concentric bracing system (prefabricated one storied steel shed) and all RCC buildings are beam column with isolated 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 the available FoS for the columns adequate based on Preliminary calculation?	
Priority Level:	High	
Non-Compliance Level:	2	
Description:	FoS calculations for the steel buildings were performed assuming the Alliance Standard minimum tensile yield strength for structural steel (36 ksi). The results of these calculations were determined to be satisfactory. FoS results are listed below. Winding Section: Central Column – 2.8; Corner Column – 18; Edge Column – 9.4. Knitting- 1: Central Column – 2.2; Corner Column – 14.9; Edge Column – 7.7. Knitting- 2: Central Column – 2.2; Corner Column – 14.9; Edge Column – 7.7. Knitting- 3: Central Column – 2.1; Corner Column – 15.5; Edge Column – 7.5. Linking- 1: Central Column – 2.2; Corner Column – 16; Edge Column – 7.7. Linking- 2: Central Column – 2.2; Corner Column – 16; Edge Column – 7.7. Gas Generator & Sub-Station: Corner Column – 16.0; Edge Column – 11.0. Finished Goods: Corner Column – 14.3; Edge Column – 8.1. FoS calculations for the concrete buildings were performed assuming the Alliance Standard minimum concrete compressive strength value for stone chip aggregate concrete (2,370 psi) and a reinforcing steel strength of 60 ksi. Reinforcement configuration was verified via ferro-scanning. The results of these calculations were determined to be unsatisfactory for the Office and Admin Building. FoS results are listed below. For 5-story Office & Admin RCC Building: Column FoS results, 42 psf live load : Central Column - 1.83; Corner Column – 2.57; Edge Column - 2.88. Column FoS results, 20 psf live load: Central Column – 2.01; Corner Column – 2.77; Edge Column – 3.12. For 6-story Dormatory RCC Building: Column FoS results, 42 psf live load : Central Column – 2.04; Corner Column – 4.72; Edge Column – 3.46. Column FoS results, 20 psf live load: Central Column – 2.24; Corner Column – 4.97; Edge Column – 3.69.	
Source of Findings:	Uploaded Document: FoS calculation of eight main sheds and two RCC buildings	
Suggested Plan of Action:	Under guidance from a qualified structural engineer arrange for validation of the in-situ concrete compressive strength of structural elements in the 5-story Office and Admin Building. This validation should be accomplished via destructive core testing.	
Suggested Deadline Date:	15 Jun 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:	Factory gave us architectural and structural drawings of all eight sheds prepared by ADEPT and some erection drawings of five main sheds(Knitting – 1 & 2, Linking – 1 & 2, Finished Goods) prepared by Zamil Steel. In architectural and structural drawings of ADEPT, there is no detail of steel column size, steel beam size etc. having only RCC partial drawing. Besides, factory has only erection drawings of Zamil Steel, factory do not have structural drawings of Zamil Steel. Provided available structural documents found partially credible.
Source of Findings:	Document Review: Structural and Architectural drawings of ADEPT and Zamil Steel.
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 Jun 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:	Factory have full credible structural drawings of their RCC buildings but they did not provide full credible drawing for steel sheds. So it is not possible to judge whether structural documentation conformance with BNBC or not.
Source of Findings:	Document Review: Structural and Architectural drawings of ADEPT and Zamil Steel
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
Suggested Deadline Date:	15 Jun 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 the steel shed drawings were not found credible, it was not possible to check the seismic and wind requirements as per BNBC.
Source of Findings:	Photograph: Bracing
Suggested Plan of Action:	Have a qualified structural engineer to document compliance with the wind requirements stated in the 2006 BNBC.
Suggested Deadline Date:	15 Jun 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:	In five main sheds (Knitting – 1 & 2, Linking – 1 & 2, Finished Goods) prepared by Zamil Steel, there is note that the building is designed for wind speed 215 km/hr. But for other sheds there is no indication of wind speed compliance with BNBC. Design and document for two RCC buildings are complied with BNBC 2006.
Source of Findings:	Document Review: Erection drawings of Zamil Steel.
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.
Suggested Deadline Date:	15 Jun 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:	2
Description:	Certificate of occupancy are not available during site visit.
Source of Findings:	Visual Assessment: Site visit on March 13, 2015

Suggested Plan of Action:	Provide Certificates of Occupancy for review.	
Suggested Deadline Date:	15 Jun 2015	
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment	
Structural System Construction		
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:	All sheds are prefabricated one storied steel structure and in corner & edge columns RCC pedestal exists under steel column. For RCC buildings in column and footing stone chip aggregate, beam and slab masonry-chip aggregate has been used. For RCC buildings beams and slabs have not been investigated by an appropriate program of in-situ testing and core samples.	
Source of Findings:	Visual Assessment: Site visit on March 13, 2015.	
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.	
Suggested Deadline Date:	15 Jun 2015	
Standard:	Reference Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC)	
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:	2	
Description:	The roof sheds for the steel frame buildings are not constructed with MCAC. For RCC buildings the roof levels are constructed with MCAC and are not protected against water intrusion by either a roof covering or protective coating.	
Source of Findings:	Visual Assessment: Roof found unprotected against water intrusion.	
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	15 Jun 2015	

Date:		
Standard:	Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC).	
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 in the RCC buildings.	
Source of Findings:	Document Review: No documented load management plan.	
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 Jun 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:	All sheds are prefabricated one storied steel shed and the roof is only accessible for maintenance purpose. So load plan is not required for sheds. For RCC buildings load plan have not been prepared for each floor.	
Source of Findings:	Document Review: No available load plans for RCC buildings.	
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 Jun 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:	No Floor Load Plans are not posted at RCC buildings.	

Source of Findings:	Visual Assessment: Factory owner failed to show such kind of document.	
Suggested Plan of Action:	Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard.	
Suggested Deadline Date:	15 Jun 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:	All sheds are prefabricated one storied steel shed and the roof is only accessible for maintenance purpose. So load plan for storage is not required for sheds. For RCC buildings all areas need to be clearly marked to indicate the acceptable loading limits as described in the Load Plan for that floor.	
Source of Findings:	Visual Assessment: No safe loading limit markings presents.	
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 Jun 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:	Designated representative (Factory Load Manager) is not required as all sheds are prefabricated one storied steel shed. Two RCC buildings are office, admin and dormitory building. No Factory Load Manager was in place for these buildings.	
Source of Findings:	Document Review: No Factory Load Manager for multi-story concrete buildings.	
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 Jun 2015	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	