INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name:	**Kenpark Bangladesh Apparel (Pvt) limited (K-4)**
Address:	**SFB # 03, Sector #2, Karnaphuli Export Processing Zone KEPZ, Chittagong Chittagong Chittagong Bangladesh**
Assessor:	**Emkay Enterprises LTD**
Date:	**09 Sep 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.

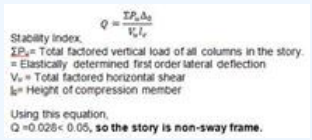
GENERAL INFORMATION

General Information	
Factory Name:	Kenpark Bangladesh Apparel (Pvt) limited (K-4)
Address:	SFB # 03, Sector #2, Karnaphuli Export Processing Zone KEPZ, Chittagong Chittagong Chittagong Bangladesh
Country:	Bangladesh
Province:	Chittagong
City:	Chittagong
Zip Code:	
Audit Duration:	2 Days 0 Hours
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	11/13/2014
Final Report Date :	12/10/2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	1 Main Building 2 Ancillary Buildings
Number of Building Levels (Stories) :	Main building: 4 (Grade + 3)
Approximate Building Area (SF) :	122,593.00 SFT
Date of Building Construction :	2008 to 2011
Date of Last Building Renovation/Addition :	None
Is the Building mixed use?:	No
Ancillary Structures in Complex :	Ancillary Building-1: 2 Story RCC building. Ancillary building-2: single storied shed.
Number of Ancillary Levels (Stories) :	Ancillary Building-1: 2 (Grade + 1) Ancillary Building-2: 1 (Grade)

Approximate Ancillary Structures Area (SF) :	5,975.00 SFT
Number of Occupants :	1073
Exterior Facade Description :	Main Building: Brick masonry wall, exterior facade is plastered and painted.
Structural System Description :	Structural Frame: Reinforced concrete column-beam moment resisting frame. Floor System: Reinforced concrete beam-slab floor supported by columns. Foundation System: Spread footing.

ASSESSMENT FINDINGS

Structural System Design		
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 drawings do not contain general note which can indicate general conformance with 2006 BNBC or other comparable applicable international model building codes.	
Source of Findings:	Document Review: Confirmed by reviewing 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.	
Suggested Deadline Date:	28 Dec 2014	
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:	The consideration of seismic and wind loads were not mentioned in the provided structural documents.	
Source of Findings:	Document Review: Structural drawings	
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:	28 Dec 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:	No design report showing compliance with the requirements of wind and storm surge loading was found.	
Source of Findings:	Document Review: Document unavailable.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.	
Suggested Deadline Date:	28 Dec 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?	 Stability Index, $Q = \frac{\sum P_u \Delta_o}{V_u l_c}$ $\sum P_u$= Total factored vertical load of all columns in the story. Δ_o = Elastically determined first order lateral deflection V_u = Total factored horizontal shear l_c= Height of compression member Using this equation, Q =0.026< 0.05, **so the story is non-sway frame.**
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	Structural analysis of frames shows that the framing is not adequate for lateral loading.	
Source of Findings:	Photograph: Sway calculation	
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:	25 Dec 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:	A water tank and pedestal was observed at the 4th floor of the Main Building adjacent to the dining area. Documentation of provisions for this concentrated load was not available.	
Source of Findings:	Photograph: Over Head tank	
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:	28 Dec 2014	
Standard:	Alliance Standard Part 8 Section 8.13 and 8.14	
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:	2	
Description:	Storage on all floors exceeds 42 psf. This load capacity has not been analytically confirmed.	
Source of Findings:	Document Review: No document was shown to confirm load capacity.	
Suggested Plan of Action:	Have a qualified structural engineer confirm that capacity to support the load is available. Load Plans complying with Alliance Standard Part 8 Section 8.20.4.3 should also be developed.	
Suggested Deadline Date:	28 Dec 2014	
Standard:	Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads	
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:	Corrosion was found in the exposed steel frame at the 4th floor of the Main Building, as well as the circular stair of Ancillary Building-1.	
Source of Findings:	Photograph: Corrosion at steel column and steel stair	
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:	28 Dec 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:	Corrosion was found in the exposed steel frame at the 4th floor of the Main Building, as well as the circular stair of Ancillary Building-1.
Source of Findings:	Photograph: Corrosion at steel column and steel stair.
Suggested Plan of Action:	Complete further testing on areas of deterioration and have a qualified structural engineer develop a remediation plan.
Suggested Deadline Date:	28 Dec 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:	Rooftop water tank requires bracing.
Source of Findings:	Photograph: Water tank
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:	
Standard:	Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6

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 in place.
Source of Findings:	Document Review: No program found for live load management.
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:	28 Dec 2014	
Standard:	Alliance Standard Part 13 Section 13.7 and Part 8 Section 8.9.	
Question:	Are Floor Load Plans posted as required?	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	Floor load plans are not posted as required.	
Source of Findings:	Visual Assessment: Posted floor load plans not found during visual assessment.	
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:	28 Dec 2014	
Standard:	Alliance Standard Part 8 Section 8.20.5.3	
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 were not found.	
Source of Findings:	Document Review: No load plan was found	
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:	28 Dec 2014	
Standard:	Alliance Standard Part 8 Section 8.10 Floor Loading Plans (Load Plans)	
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:	1	
Description:	No such markings were observed.	
Source of Findings:	Visual Assessment: No markings observed.	

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:	28 Dec 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:	1	
Description:	There is no designated Factory Load Manager in the factory.	
Source of Findings:	Document Review: No designated Factory Load Manager was found during the assessment.	
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:	28 Dec 2014	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	