

INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name: **Energypac Fashions Ltd**
Address: **Hotapara, Bokran, Monipur Gazipur Sadar, Gazipur
Gazipur Dhaka Bangladesh**
Assessor: **Uttaron Technologies**
Date: **05 Jun 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.



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GENERAL INFORMATION

General Information	
Factory Name:	Energypac Fashions Ltd
Address:	Hotapara, Bokran, Monipur Gazipur Sadar, Gazipur Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Gazipur
Zip Code:	
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	22 May 2014
Final Report Date :	09 July 2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	1 Main Building
Number of Building Levels (Stories) :	5 (Ground+4)
Approximate Building Area (SF) :	65,000 SF (Approximate)
Date of Building Construction :	2007
Date of Last Building Renovation/Addition :	Ongoing (Level 4 Under Construction)
Is the Building mixed use?:	No
Ancillary Structures in Complex :	3 Ancillary Buildings: 1. Generator Building 2. Doctor and Child Care Building 3. Wastage Godown Building
Number of Ancillary Levels (Stories) :	1 (Ground)
Approximate Ancillary	3,500 sf

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Structures Area (SF) :	
Number of Occupants :	1,052
Exterior Facade Description :	Brick masonry infill between concrete structural frame elements (slabs, beams and columns). Aluminum frame glass windows.
Structural System Description :	Reinforced concrete slabs between beams, beams between columns, forming moment resisting frame. Foundation system is isolated spread footings.



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:	A material testing report available on-site indicated a concrete compressive strength of approximately 4900 psi. However, this test only pertains to 3 test cylinders and it is uncertain what portion of the building the cylinders were obtained from. Due to this uncertainty, column FoS calculations were performed based on concrete compressive strengths obtained via both nondestructive (UPV) testing and the Alliance Standard minimum compressive strength for stone chip aggregate concrete (3500 and 2370 psi, respectively). Reinforcement configuration was obtained via ferro-scanning. Column FoS results for 42 psf live load (3500 psi): Central column - 2.11 Corner column - 3.27 Edge column - 2.75 Column FoS results for 42 psf live load (2370 psi): Central column - 1.60 Corner column - 2.41 Edge column - 2.09 The central column FoS using the Alliance Standard minimum compressive strength warrants additional investigation via core testing.	
Source of Findings:	Uploaded Document: Column FoS calculation spreadsheet, available material testing report.	
Suggested Plan of Action:	Under guidance from a qualified structural engineer arrange an engineering assessment of the structure. This assessment should include destructive core testing to validate the in-situ concrete compressive strength of structural elements.	
Suggested Deadline Date:	31 Oct 2014	
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:	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:	No documentation was available to indicate conformance with the BNBC or other comparable building code.	
Source of Findings:	Document Review: Structural documents reviewed on-site.	



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:	31 Oct 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:	No documentation was available to indicate compliance with the seismic and wind requirements of the BNBC.	
Source of Findings:	Document Review: Structural documents reviewed on-site.	
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:	31 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:	No documentation was available to indicate compliance with the requirements for wind loading as detailed in the BNBC.	
Source of Findings:	Document Review: Structural 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:	31 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:	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:	The following concentrated loads were noted during the visual assessment: - Stored materials at Level 1 -Heavy equipment at Level 2 No evidence was available to indicate that the structural impact from these concentrated loads was considered.
Source of Findings:	Photograph: Stored materials and heavy equipment at Levels 1 and 2.
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:	31 Oct 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/m ² (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:	1
Description:	The following large storage loads were noted during the visual assessment. - Materials storage at Level 2 No evidence was available to indicate that the structural impact from these loads was considered.
Source of Findings:	Photograph: Large storage load at Level 2
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:	31 Oct 2014
Standard:	Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads
Question:	Are Certificates of Occupancy available for review?
Priority Level:	Low
Non-Compliance Level:	2





Description:	Certificates of Occupancy were not available for review.
Source of Findings:	Document Review: Documents reviewed on-site.
Suggested Plan of Action:	Provide Certificates of Occupancy for review.
Suggested Deadline Date:	31 Oct 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:	The following elements were noted to contain inadequate anchorage and/or bracing against seismic loads: -Storage racks at the Ground Level and Levels 1 and 3. -Cable tray at Levels 2 and 3
Source of Findings:	Photograph: Storage racks, cable tray
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:	31 Oct 2014
Standard:	Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6



Question:	If the building is currently being renovated or expanded, are the Construction Practices and Safety requirements of Section 9 being followed?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Accumulations of combustible waste material, dust, and debris were found on Level 4 where construction is ongoing, creating a potentially unsafe working environment.
Source of Findings:	Photograph: Accumulations of combustible waste material, dust, and debris at Level 4.
Suggested Plan of Action:	Adhere to the safe practices guidelines within Section 9 of the Alliance Standard during all construction activities. The noted waste materials should





	be discarded at the end of each work shift or more frequently as necessary for safe operations.
Suggested Deadline Date:	31 Oct 2014
Standard:	Alliance Standard Part 9 Construction Practices and Safety.

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 program is currently in place.
Source of Findings:	Document Review: No load management program 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:	31 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:	Floor load plans have not been developed.
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:	31 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:	Floor load plans have not been developed or posted.



Source of Findings:	Visual Assessment: No load plans noted 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. Floor load plans should be visibly posted on all levels of all buildings.	
Suggested Deadline Date:	31 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:	Areas used for storage of work materials and work products were not clearly marked to indicate the acceptable loading limits as described in the Load Plan for that floor.	
Source of Findings:	Visual Assessment: No allowable loading limit marks 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:	31 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:	No Factory Load Manager is currently in place.	
Source of Findings:	Visual Assessment: No such representative was found.	
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	31 Oct 2014	

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Date:		
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	