INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

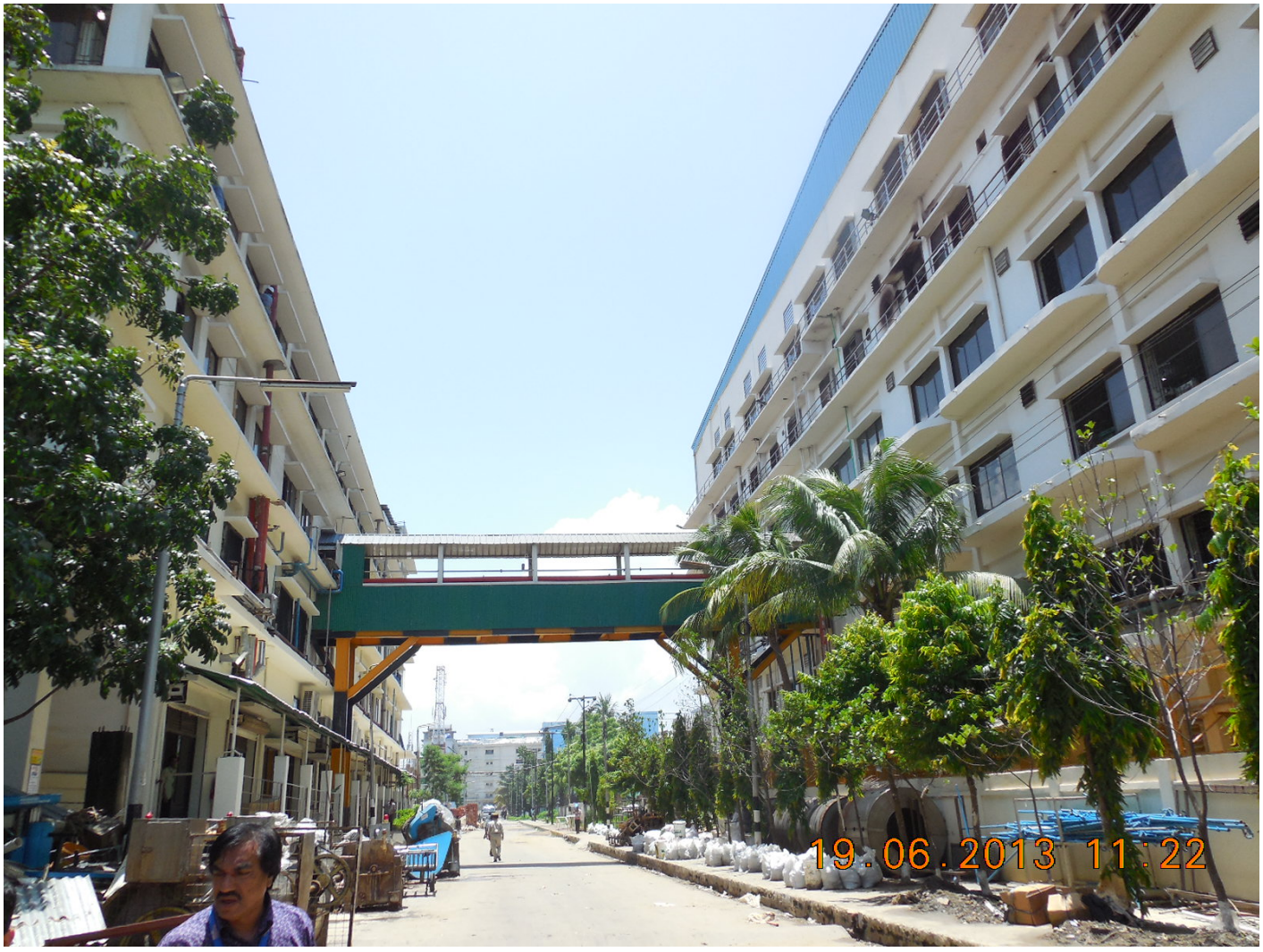
Factory Name:	**Pacific Jeans Ltd**
Address:	**Plot# 14-19, Adjecent-14 & 36, Sector-5 CEPZ, Chittagong Chittagong Chittagong Bangladesh**
Assessor:	**Walter P. Moore**
Date:	**01 Mar 2014**

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:	Pacific Jeans Ltd
Address:	Plot# 14-19, Adjecent-14 & 36, Sector-5 CEPZ, Chittagong Chittagong Chittagong Bangladesh
Country:	Bangladesh
Province:	Chittagong
City:	Chittagong
Zip Code:	4223
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	June 10 2014
Final Report Date :	December 06 2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	1 factory building and 2 annex buuldings
Number of Building Levels (Stories) :	Factory building has 6 stories.
Approximate Building Area (SF) :	Unknown
Date of Building Construction :	1998; 2000
Date of Last Building Renovation/Addition :	2011
Is the Building mixed use?:	No
Ancillary Structures in Complex :	2
Number of Ancillary Levels (Stories) :	One 3-story annex building and one 4-story annex building.
Approximate Ancillary	Unknown

Structures Area (SF) :	
Number of Occupants :	3500
Exterior Facade Description :	The perimeter façade consists of masonry infill between the exposed structural slab, beams, and columns. In general, the masonry infill is abutted tightly against the structural frame.
Structural System Description :	The structures are cast-in-place moment resisting frames with mild reinforcement. The structural floor system generally consists of two-way slabs, perimeter beams, and columns. The building lateral force resisting system for wind and seismic loads appears to be a beam-column moment frame system

ASSESSMENT FINDINGS

Structural System Design		
Question:	Are the available FoS for the columns adequate based on Preliminary calculation?	
Priority Level:	High	
Non-Compliance Level:	3	
Description:	Column FoS calculations were conducted by Shaheedullah following the site visit by Walter P Moore. FoS Calculations were performed assuming the Alliance Standard minimum concrete compressive strength value for masonry chip aggregate concrete (2,045 psi). Reinforcement configuration was verified via ferro-scanning. Several of the results of these calculations were determined to be satisfactory. FoS results are listed below. Main (6-Story) Building, 42 psf live load: Central Column - 1.19; Corner Column - 1.69; Edge Column - 1.19. Main (6-Story) Building, 20 psf live load: Central Column - 1.36; Corner Column - 1.81; Edge Column - 1.31. Ancillary (4-Story) Building, 42 psf live load: Central Column - 1.80; Corner Column - 2.15; Edge Column - 1.77.	
Source of Findings:	Uploaded Document: Column FoS calculations	
Suggested Plan of Action:	Main (6-Story) Building: Effective immediately, live loading shall be restricted to no more than 20 psf and no storage loading shall be allowed throughout the building. Under guidance from a qualified structural engineer arrange Detail Engineering Assessment of the structure. This assessment should be conducted immediately and should include destructive core testing to validate the in-situ concrete compressive strength of structural elements. Ancillary (4-Story) Building: Conduct destructive core testing within 6 weeks to validate in-situ concrete compressive strength of structural elements.	
Suggested Deadline Date:	31 Jan 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:	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:	It is uncertain but generally assumed that the building was designed in accordance with the Bangladesh National Building Code (BNBC) 1993.	
Source of Findings:	Document Review: Document Review	

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 Jan 2015	
Standard:	Reference Alliance Standards Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings	
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:	It could not be confirmed that the building was designed in accordance with the 1993 Bangladesh National Building Code which specifies seismic and wind lateral loads. In the absence of structural documents at this stage it could not be confirmed if the building was designed for a basic wind speed of 210 km per hour and for seismic loads associated with Seismic Zone 2.	
Source of Findings:	Document Review: Document Review	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading. 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	
Suggested Deadline Date:	31 Jan 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:	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:	2
Description:	An engineer's letter regarding the capacity of the existing roof structure to support a steel roof for appropriate usage, and an engineer's letter reviewing foundation capacity to safely support this same added steel roof were available for review. However, it was observed during the visual assessment that internal bay columns were installed directly above the expansion joint.
Source of Findings:	Document Review: Document Review, Visual Assessment: Visual inspection
Suggested Plan of Action:	The ability of the roof structure to safely accommodate the rooftop cover structure and rooftop occupancy must be confirmed by permitted documentation, analysis by a competent structural engineer or removed.
Suggested Deadline Date:	31 Jan 2015
Standard:	Reference Alliance Standards Part 8 Section 8.1 Applicability of Building Code.

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:	Heavy washing and drying equipment is located at the ground floor slab on grade. At the main factory building, stacked storage of various materials up to 10 feet high was observed at the roof level. This amount of storage could potentially overload this floor. In Annex building 2, heavy compressors for pneumatically driven processes were installed on the 1st floor.
Source of Findings:	Visual Assessment: Visual assessment
Suggested Plan of Action:	Storage of work materials in the noted areas should be reduced to a level that is within the design roof load capacity. The Factory Owner may provide an engineered analysis that demonstrates that the floors have adequate design capacity to safely support the storage loads in those locations. For the compressor loading, 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 Jan 2015
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:	At Annex building (#2), the roof has several cooling towers and a substantial amount of scrap/waste storage across the roof. This roof level is potentially overloaded by the combined loading of the cooling towers and waste materials.
Source of Findings:	Visual Assessment: Visual assessment
Suggested Plan of Action:	Unless engineered calculations are provided that confirm the capacity of the structure to safely support the equipment, it must be relocated from its current location to the ground level.
Suggested Deadline Date:	31 Jan 2015
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:	1
Description:	Certificates of occupancy are not available for review.
Source of Findings:	Document Review: Document Review
Suggested Plan of Action:	Provide Certificates of Occupancy for review.
Suggested Deadline Date:	31 Jan 2015
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment

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:	In the main factory building, water seepage was noted at the slab underside below open to sky roof areas. In the Annex building #2, a cracked edge of column condition was observed with possible cover compromise due to impact.
Source of Findings:	Visual Assessment: Visual assessment
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:	31 Jan 2015
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance

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:	Various non-structural elements are not adequatly anchored and braced to resist earthquake forces. These include the following: Steam pipes, Storage Racks, Water Tanks and Other Equipment
Source of Findings:	Visual Assessment: Visual assessment
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 Jan 2015
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:	In Annex building (#3), construction is currently in progress on a new internal stair between Levels 1, 2 and 3. No structural construction documents were available. It is unknown if this structural modification is properly engineered and permitted.
Source of Findings:	Visual Assessment: Visual assessment
Suggested Plan of Action:	The floor structures should be restored to original condition unless permitted structural documents are provided for review
Suggested Deadline Date:	31 Jan 2015
Standard:	Alliance Standard Part 9 Construction Practices and Safety.

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:	1
Description:	Materials testing was not completed as part of this assessment.
Source of Findings:	Visual Assessment: Visual assessment

Suggested Plan of Action:	As part of the additional analyses outlined elsewhere via the column FoS question, conduct destructive core testing to validate the in-situ concrete compressive strength of structural elements.	
Suggested Deadline Date:	31 Jan 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:	1	
Description:	The roof slabs are constructed with MCAC but are unsealed against moisture intrusion.	
Source of Findings:	Visual Assessment: Visual assessment	
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:	31 Jan 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:	Nominal cracking was noted in several non-structural in-fill walls at the building perimeter and at the finish over building expansion joints.	
Source of Findings:	Visual Assessment: Visual assessment	
Suggested Plan of Action:	This cracking is not of structural importance and should not be considered as being detrimental towards the overall building structural stability.	
Suggested Deadline Date:	31 Jan 2015	
Standard:	Alliance Standard Part 8 Section 8.2	
Structural Safety Programs		
Question:	Are floor loads in compliance with posted plans?	

Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	There are no posted plans.	
Source of Findings:	Visual Assessment: Visual assessment	
Suggested Plan of Action:	Once floor loads plans are posted redistribute floor loads to comply with the Floor Loading Plans.	
Suggested Deadline Date:	31 Jan 2015	
Standard:	Alliance Standard Part 8 Section 8.10 Floor Loading Plans (Load Plans).	
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:	There is not 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.	
Source of Findings:	Document Review: Document Review	
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 Jan 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:	Load Plans been have not been prepared for each floor documenting the actual maximum operational loading that is intended and/or allowable on each floor.	
Source of Findings:	Visual Assessment: Visual asessment	
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 Jan 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:	Floor Load Plans are not posted as required.	
Source of Findings:	Visual Assessment: 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:	31 Jan 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:	Areas used for storage of work materials and work products, are not clearly marked to indicate the acceptable loading limits as described in the Load Plan for that floor.	
Source of Findings:	Visual Assessment: 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 Jan 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:	1	
Description:	There is not 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.	
Source of Findings:	Document Review: Document Review	

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:	31 Jan 2015	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	