INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

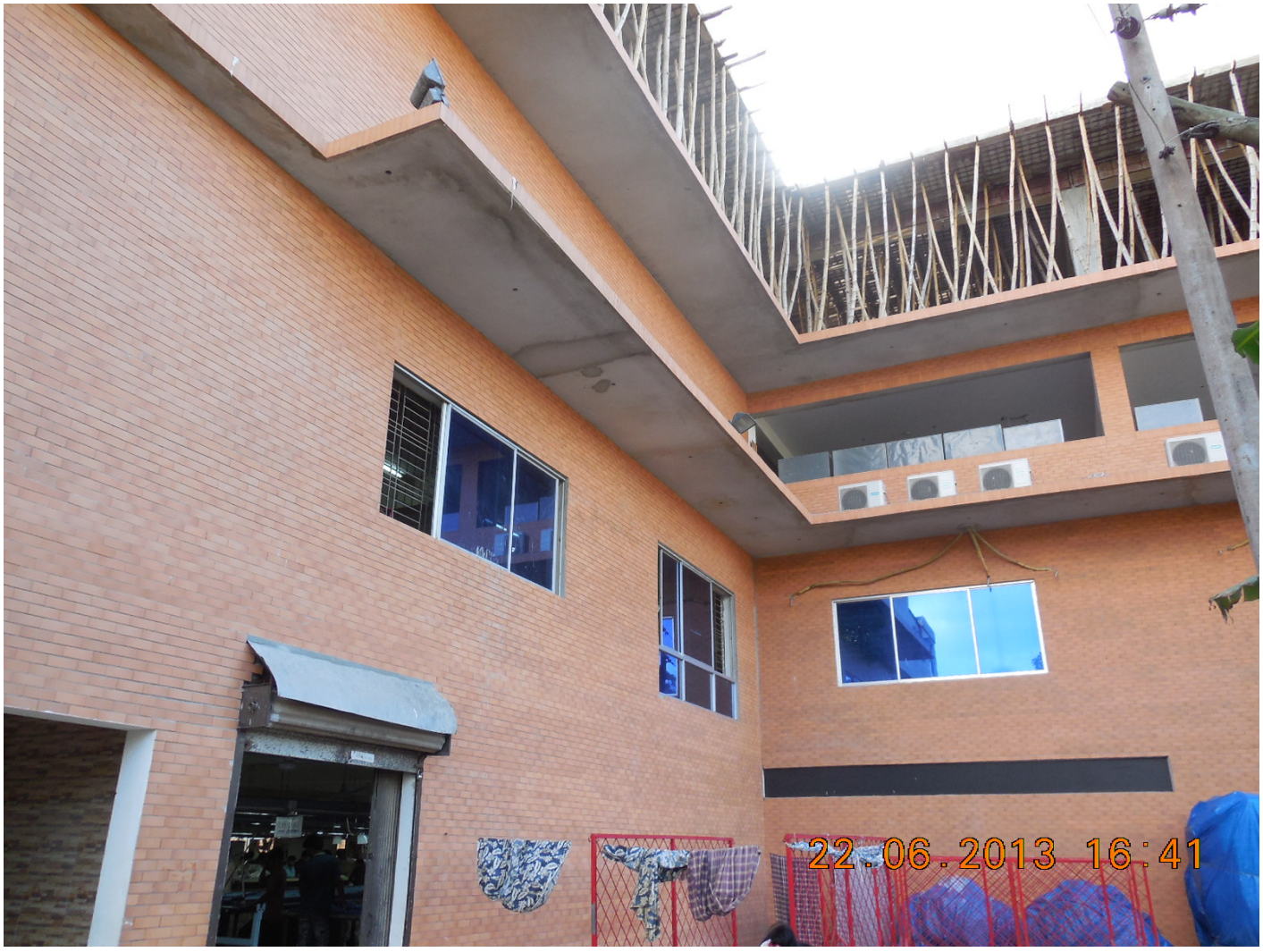
Factory Name:	**CROWN WEARS (PVT.) LIMITED**
Address:	**Zamirdia, Habirbari Union, Bhaluka, Mymensingh Mymensingh Dhaka Bangladesh**
Assessor:	**Walter P. Moore**
Date:	**22 Jun 2013**

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:	CROWN WEARS (PVT.) LIMITED
Address:	Zamirdia, Habirbari Union, Bhaluka, Mymensingh Mymensingh Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Mymensingh
Zip Code:	2240
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	5 June 2014
Final Report Date :	15 December 2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	There are 3 Factory Buildings in the complex.
Number of Building Levels (Stories) :	Building 1 is 3 Stories (G+3); Building 2 is (2 stories (G+2); Building 3 is currently 2 stories but will be 4 stories when construction is completed.
Approximate Building Area (SF) :	277,744 SF
Date of Building Construction :	Buildings 1 & 2 were constructed in 2005-2007; The construction period for Building 3 is from 2012 - Present
Date of Last Building Renovation/Addition :	The 3rd and 4th floors of building 3 are currently under construction and the third story of Building 1 is also currently under construction.
Is the Building mixed use?:	No
Ancillary Structures in Complex :	There is 1 ancillary structure in the complex. It is a generator shed.
Number of Ancillary Levels (Stories) :	1 story
Approximate Ancillary	Unknown.

Structures Area (SF) :	
Number of Occupants :	2100 workers.
Exterior Facade Description :	The perimeter façades consist 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 :	Building 1 is a cast-in-place reinforced concrete structure. The third story is currently under construction. The structural floor system generally consists of two-way 5” thick slabs, with beams (cast integrally with the slab) and columns. The building lateral force resisting system appears to be a beam-column moment frame system. Building 2 is a 2-story cast-in-place reinforced concrete structure. Seventy five percent of the roof is covered with a steel roof, creating a covered dining area. The structural floor system generally consists of two-way 7” thick slabs, with beams (cast integrally with the slab) and columns. The building lateral force resisting system appears to be a beam-column moment frame system. The one story generator shed is a steel roof supported on concrete and masonry column walls.

ASSESSMENT FINDINGS

Structural System Design		
Question:	Are credible structural design documents available for review and kept on site?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	Credible structural design documents were available for review for the main 3 factory buildings, but there were no structural documentation available for the generator shed.	
Source of Findings:	Document Review: Review of all structural documentation.	
Suggested Plan of Action:	Have a qualified structural engineer prepare credible as-built documents for the generator shed based on the requirements of Part 8 Section 8.19 of the Alliance Standard.	
Suggested Deadline Date:	31 Dec 2014	
Standard:	Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories	
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:	BUILDING 1: At the southern end of the 2nd floor an additional slab extension has been constructed to create enclosed office space. The approved drawings show this area to be open, with no roof structure above.; BUILDING 2: At the 3rd floor (concrete roof) there is a cantilevered concrete slab overhang which reaches over the exterior wall of Building 1 and appears to bear on a masonry parapet of Building 1. There is also concrete stair from this overhang to the 3rd floor (roof) of Building 1. This overhang is not shown on the Building 2 structural drawings, and was reportedly added during construction to create a covered passage in the space between the two buildings.; ROOF: A light steel trussed telecom tower is installed at the northern corner of this level. The structural impact of all of the above expansions has not been evaluated and confirmed by a qualified structural engineer.	 
Source of Findings:	Document Review: Structural Drawings., Visual Assessment: Visual assessment of expansions.	

Suggested Plan of Action:	Have a qualified structural engineer complete an analytical evaluation of the structural impact of all mentioned additions.
Suggested Deadline Date:	31 Dec 2014
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:	The storage of empty (flat) cartons to a height of over 8 feet at the 2nd floor of Building 3 may exceed the design live load capacity of the floor structure.
Source of Findings:	Visual Assessment: Visual assessment of storage.
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 Dec 2014
Standard:	Alliance Standard Part 8 Section 8.13 and 8.14

Question:	Are Certificates of Occupancy available for review?
Priority Level:	Low
Non-Compliance Level:	2
Description:	No certificates of occupancy were available for review.
Source of Findings:	Document Review: Review of all documents.
Suggested Plan of Action:	Provide Certificates of Occupancy for review.
Suggested Deadline Date:	31 Dec 2014
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment

Structural System Construction

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:	3
Description:	In building 1, the existing 3rd floor is being used for construction activities of the 4th floor columns and slab concrete structure. Several areas of poorly consolidated concrete were observed in the slab and beams. Construction was also ongoing in building 3. Based upon our visual observations, it appeared that the safety requirements of Section 9 of the Alliance Standard may not have been being adhered to.
Source of Findings:	Visual Assessment: Visual assessment of ongoing construction.
Suggested Plan of Action:	The slab and beam areas of new construction which exhibit areas of unconsolidated concrete (i.e. rock pockets) shall be repaired under the direction of the engineer-of-record. Also, the safety requirements of Section 9 of the Alliance Standard shall be adhered to during all ongoing construction practices.
Suggested Deadline Date:	31 Dec 2014
Standard:	Alliance Standard Part 9 Construction Practices and Safety.


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 throughout the buildings were observed to be not adequately braced and anchored to resist earthquake forces.
Source of Findings:	Visual Assessment: Visual assessment of non-structural elements.
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 Dec 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:	There is water seepage on the underside of the slab supporting the water tank built above the stairs in Building 2.	
Source of Findings:	Visual Assessment: Visual assessment of slab.	
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 Dec 2014	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
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:	Since this investigation was completed prior to the creation of the alliance and the standard protocol, the use of MCAC was not documented.	
Source of Findings:	Visual Assessment: MCAC usage not documented.	
Suggested Plan of Action:	If it is determined that MCAC was used, 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 Dec 2014	
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:	Minor non-structural cracks were observed in the masonry infill at a few locations.	
Source of Findings:	Visual Assessment: Visual assessment of facade.	
Suggested Plan of	Have a qualified structural engineer provide further analysis of the identified	

Action:	cracks to determine the appropriate course of corrective action.	
Suggested Deadline Date:	31 Dec 2014	
Standard:	Alliance Standard Part 8 Section 8.2	
Question:	Is the building free of active signs of water intrusion or ponding due to lack of performance of the façade system?	
Priority Level:	Low	
Non-Compliance Level:	1	
Description:	Minor non-structural cracks in the facade have lead to water seepage in some areas.	
Source of Findings:	Visual Assessment: Visual assessment of facade.	
Suggested Plan of Action:	Repair the exterior façade system to prevent water intrusion.	
Suggested Deadline Date:	31 Dec 2014	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
Structural Safety Programs		
Question:	Are floor loads in compliance with posted plans?	
Priority Level:	Medium	
Non-Compliance Level:	1	
Description:	There are no posted plans.	
Source of Findings:	Visual Assessment:	
Suggested Plan of Action:	Once plans have been posted, redistribute floor loads to comply with the Floor Loading Plans.	
Suggested Deadline Date:	31 Dec 2014	
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:	1	
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:	Visual Assessment:	
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 Dec 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:	Load Plans 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:	
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 Dec 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:	1	
Description:	Floor Load Plans are not posted as required.	
Source of Findings:	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 Dec 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:	1	
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:	
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 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 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:	Visual 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:	31 Dec 2014	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	