INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

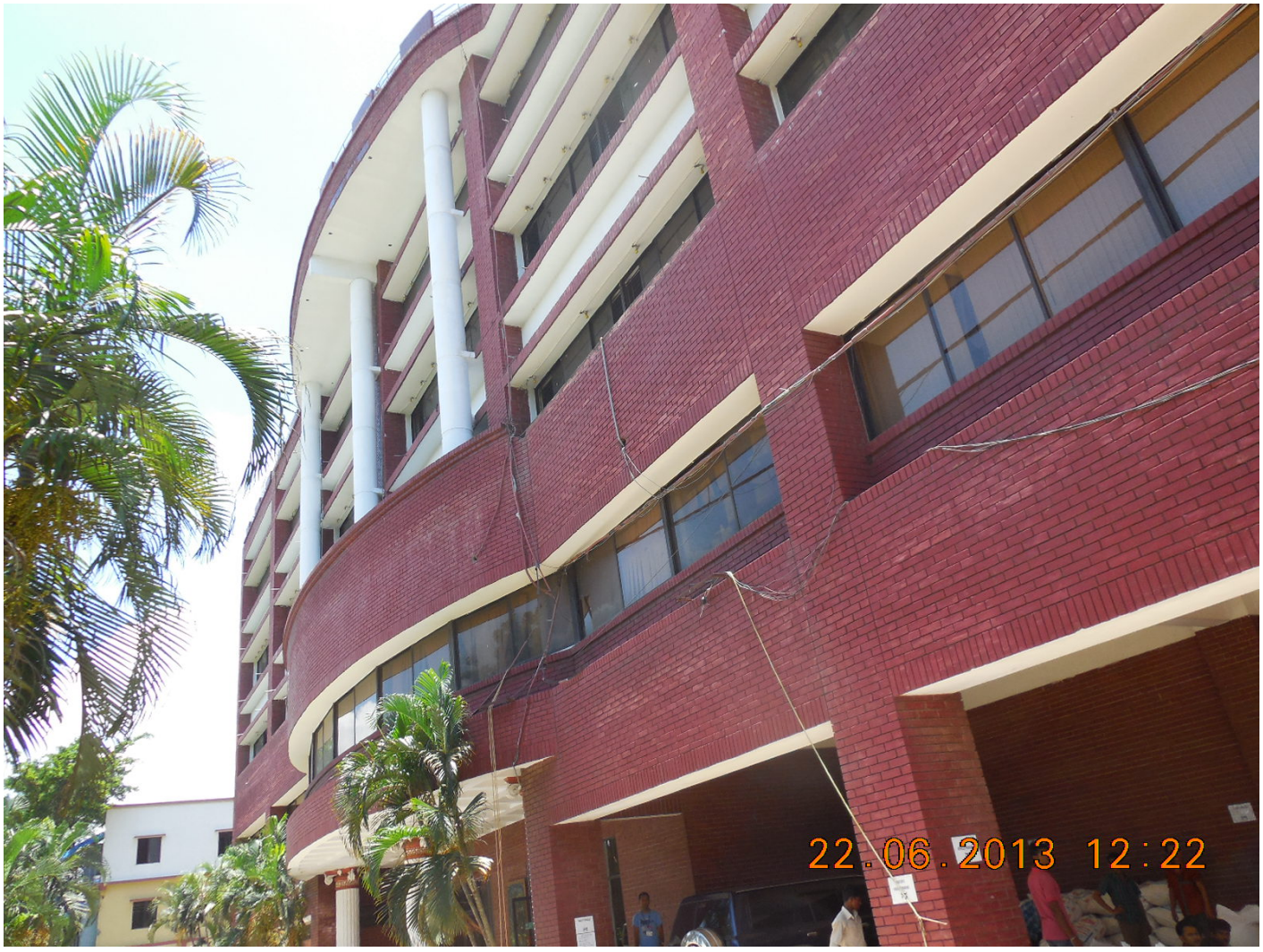
Factory Name:	**Sparrow Apparels Ltd**
Address:	**Plot No. 251, Chandona, Dhaka Dhaka Dhaka Bangladesh**
Assessor:	**Walter P. Moore**
Date:	**22 Jun 2013**

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:	Sparrow Apparels Ltd
Address:	Plot No. 251, Chandona, Dhaka Dhaka Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Dhaka
Zip Code:	1700
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	10 June 2014
Final Report Date :	13 November 2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	There are 2 Main factory buildings in the complex.
Number of Building Levels (Stories) :	Building 1 (Main) is 6 stories plus an additional steel framed roof structure. Building 2 is 3 stories. (Training/Storage Building)
Approximate Building Area (SF) :	234,286 sf
Date of Building Construction :	Building 1 was constructed in 1995. Building 2 was constructed in 2008. The Medical Center and sheds were constructed in the period between 1995 and 2008.
Date of Last Building Renovation/Addition :	Building 1 is currently undergoing additional construction.
Is the Building mixed use?:	No
Ancillary Structures in Complex :	There are 7 ancillary structures (a single story medical and child care center and 6 sheds) in the complex.
Number of Ancillary Levels (Stories) :	All ancillary structures are 1 story.
Approximate Ancillary	Unknown.

Structures Area (SF) :	
Number of Occupants :	2100 Workers.
Exterior Facade Description :	The perimeter façades of Buildings 1 and 2 typically 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 :	Buildings 1 and 2 are mild reinforced cast-in-place concrete moment resisting frame structures with one-way slabs, beams and columns, with a foundation consisting of piles, pile caps and a slab on grade. Buildings 1 and 2 both have steel roof structures constructed over the concrete roof to create functional space on the roof. The Medical center building is a single story reinforced cast-in-place structure with mild reinforcement. The “sheds” are single story structures with steel roofs supported on masonry and concrete columns with slabs on grade. For Buildings 1, 2 and the Medical center, lateral force resisting systems for wind and seismic loads appear to be beam-column moment frame systems. The lateral force resisting systems for the shed buildings appear to be cantilever masonry/concrete columns.

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:	It is not validated that the buildings were designed in accordance with the 1993/2006 Bangladesh National Building Code which specifies seismic and wind lateral loads. In the absence of complete structural design 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. Special seismic detailing of the concrete moment frame members was noted on the structural drawings for Buildings 1 and 2.	
Source of Findings:	Document Review: Review of structural 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:	31 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:	This question is not applicable for the Main building which was built in 1995, but is applicable to Building 2 and the medical center and any sheds built after 2006: It is not validated that the buildings were designed in accordance with the 1993/2006 Bangladesh National Building Code which specifies seismic and wind lateral loads. In the absence of complete structural design 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. Special seismic detailing of the concrete moment frame members was noted on the structural drawings for Buildings 1 and 2.	
Source of Findings:	Document Review: Review of all structural documents	
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 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:	It is not validated that the buildings were designed in accordance with the 1993/2006 Bangladesh National Building Code which specifies seismic and wind lateral loads. In the absence of complete structural design 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. Special seismic detailing of the concrete moment frame members was noted on the structural drawings for Buildings 1 and 2.	
Source of Findings:	Document Review: Review of all structural documents.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.	
Suggested Deadline Date:	31 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:	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:	At the 2nd floor, construction was in progress on an addition which would horizontally extend this floor level. This work also included steel framing and “tin sheet” panels to create a roof over this area. Permitted construction documents for this work were not available. At Building 1, the roof slab is covered (approximately 20% of the roof area) with a steel frame and metal/aluminum roof sheeting. This steel frame appears to have no means of lateral stability bracing. No documentation was available to indicate that this steel roof structure was engineered and permitted. There is also an undocumented canopy constructed between Building 1 and the Washing shed.	

Source of Findings:	Visual Assessment: Visual assessment of expansions.
Suggested Plan of Action:	Have a qualified structural engineer complete an analytical evaluation of the structural impact of the addition.
Suggested Deadline Date:	31 Dec 2014
Standard:	Reference Alliance Standards Part 8 Section 8.1 Applicability of Building Code.

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:	In building 1, at the 1st floor, tall stacks of boxed materials were observed. At the 2nd and 3rd floors, stacked fabric rolls were observed alongside sewing operations, creating loads which could potentially overload the floors.
Source of Findings:	Visual Assessment: Visual assessment of heavily loaded areas.
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 Dec 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: Review of all available documentation.
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:	Are the performance of key structural elements such as columns, slender columns, flat plates and transfer structures satisfactory?
Priority Level:	High
Non-Compliance Level:	2
Description:	A canopy corner column at the loading area was observed to be sufficiently damaged for WPM representatives to recommend shoring and replacement. Columns supporting the steel roof of the Dining shed were observed to be out of plumb.
Source of Findings:	Visual Assessment: Visual assessment of key structural elements.
Suggested Plan of Action:	Engage a qualified structural engineer to confirm structural performance of the structure.
Suggested Deadline Date:	31 Dec 2014
Standard:	Alliance Standard Part 8 Section 8.3.3

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:	The metal roof of the Washing facility shed was observed to be in poor condition with significant amounts of corrosion visible. A canopy corner column at the loading area was observed to be sufficiently damaged for WPM representatives to recommend shoring and replacement. Columns supporting the steel roof of the Dining shed were observed to be out of plumb.
Source of Findings:	Visual Assessment: Visual assessment of maintenance requirements.
Suggested Plan of Action:	Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues. The damaged column at the Washing shed loading/unloading bay should be shored and repaired or replaced. At the Dining shed, the out-of-plumb columns shall be repaired or replaced, under the direction of a competent structural engineer, to establish laterally stable support conditions for the steel roof. Alternatively, this structure should be removed.
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:	2	
Description:	As part of the follow up work by Uttaron (detailed elsewhere via the column FoS question) conducted following the site visit by Walter P Moore, it was determined that MCAC was not used in the construction of the building columns. MCAC usage was not documented for the other elements such as the roof slabs.	
Source of Findings:	Visual Assessment: General Remark	
Suggested Plan of Action:	If it is determined that MCAC was used in the construction of the roof or other concrete elements exposed to moisture, 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:	Are structural steel members free of corrosion, physical damage or other types of deterioration?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	The metal roof of the Washing facility shed was observed to be in poor condition with significant amounts of corrosion visible.	
Source of Findings:	Visual Assessment: Visual assessment of washing facility	
Suggested Plan of Action:	Complete further testing on areas of deterioration and have a qualified structural engineer develop a remediation plan.	
Suggested Deadline Date:	31 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:	2
Description:	Various non-structural elements throughout the buildings are not adequately anchored and braced to resist earthquake forces. These elements include: storage racks, equipment, and pipes.
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:	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:	At the 2nd floor, construction was in progress on an addition which would horizontally extend this floor level. This work also included steel framing and “tin sheet” panels to create a roof over this area. Permitted construction documents for this work were not available.
Source of Findings:	Document Review: Review of all available documents
Suggested Plan of Action:	The Factory Owner shall halt construction until he can obtain engineered, permitted construction documents for the undocumented 2 story addition to Building 1.
Suggested Deadline Date:	31 Dec 2014
Standard:	Alliance Standard Part 9 Construction Practices and Safety.

Question:	The exterior façade is free of cracking.
Priority Level:	Low
Non-Compliance Level:	2
Description:	Nominal cracking was noted in several non-structural in-fill walls at the building perimeter and underside of the roof level slab. This cracking is not of structural importance and should not be considered as being detrimental towards the overall building structural stability.
Source of Findings:	Visual Assessment: Visual assessment of facade.
Suggested Plan of Action:	Have a qualified structural engineer provide further analysis of the identified 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:	2
Description:	The Medical and Child Care center exhibited signs of water ingress on the walls and ceilings.
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 load plans.
Source of Findings:	Visual Assessment: General Observation
Suggested Plan of Action:	Once plans are 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: General Observation	
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: General Observation	
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 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: General Observation	
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:	2	
Description:	There is not a designated representative (Factory Load Manager), who is onsite full time, trained regarding the structural floor capacity, and serving as an ongoing vendor resource and monitor of operational factory floor loadings.	
Source of Findings:	Visual Assessment: General Observation	
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	
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: General Observation	
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	