INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

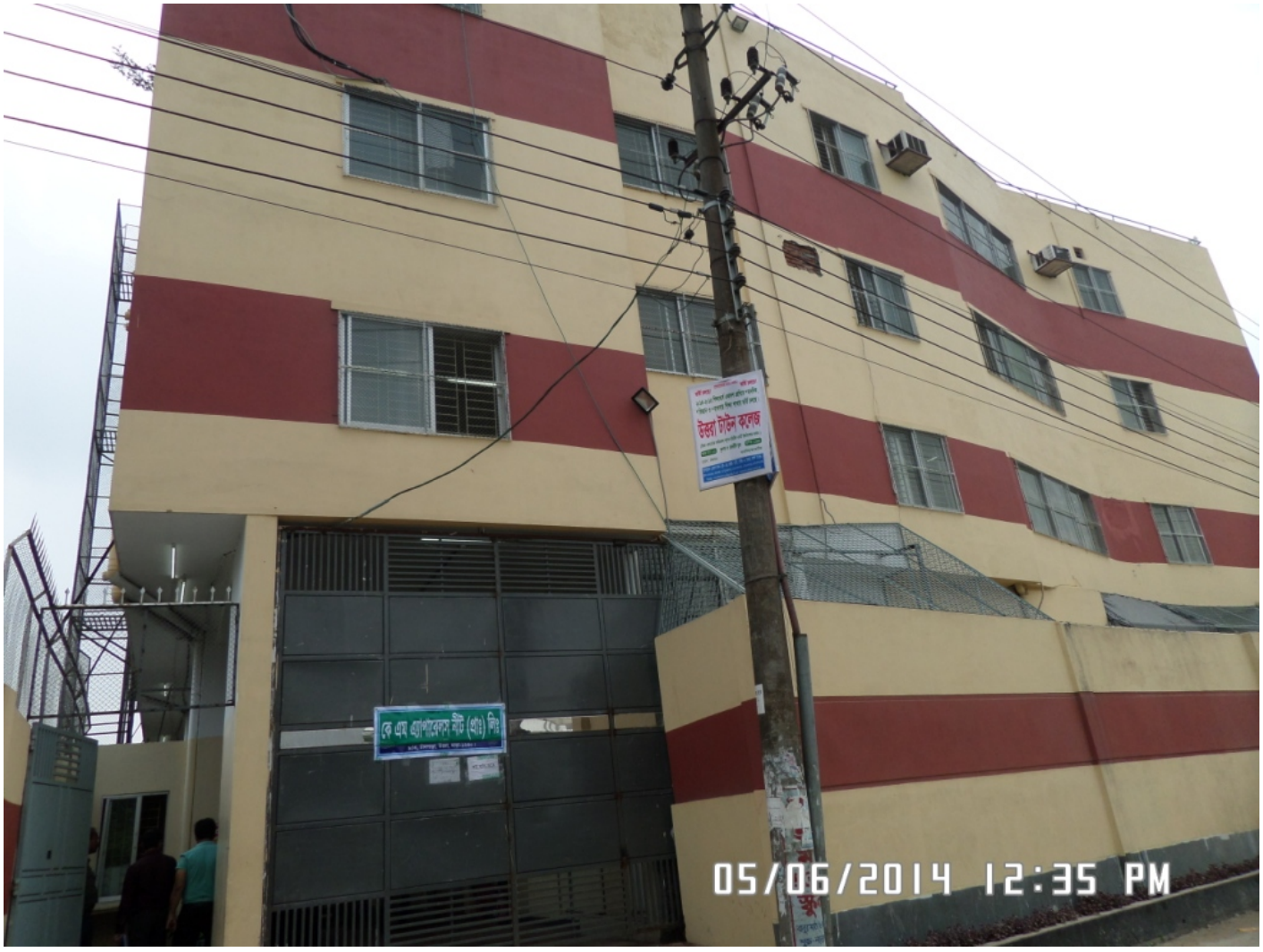
Factory Name:	**K M Apparels Ltd.**
Address:	**8/A, Chanpara, Uttarkhan Uttara, Dhaka Dhaka Dhaka Bangladesh**
Assessor:	**BD Technologies**
Date:	**05 Jun 2014**

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.



GENERAL INFORMATION

General Information	
Factory Name:	K M Apparels Ltd.
Address:	8/A, Chanpara, Uttarkhan Uttara, Dhaka Dhaka Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Dhaka
Zip Code:	1230
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 6 Months
Draft Report Date :	10/06/2014
Final Report Date :	08/08/2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	• Building #1 -4 story R.C.C. main factory building using as sewing, cutting, finishing, inspection, sample, packing, substation, sub store and office room. • Building #2 – single story ancillary building used as generator room, • Building #3 – single story ancillary shed using as fabric store, wastage store, canteen and prayer room.
Number of Building Levels (Stories) :	• Building # 1 -4 story R.C.C. factory building (Height = 41 ft.)• Building # 2 –single story Generator room (Height = 10 ft.), • Building # 3 –ancillary shed GF.
Approximate Building Area (SF) :	• Building # 1 -4 story R.C.C. factory building (Area= 10,000 + 8,000 + 8,000 + 8,000=34,000 sft) • Ancillary # 1 –single story Generator room (200 sft), • Ancillary # 2 –ancillary shed (2,000 sft). Total=36,200 sft.
Date of Building Construction :	Main Building (2006-2007).
Date of Last Building Renovation/Addition :	Ancillary shed (2013-2014)
Is the Building mixed use?:	No
Ancillary Structures in Complex :	• Ancillary # 1 –single story Generator room (Level-1), • Ancillary # 2 –ancillary shed (Level-1).
Number of Ancillary	• Ancillary # 1 –single story Generator room (Level-1), • Ancillary # 2 –ancillary shed (Level-1).

Levels (Stories) :	
Approximate Ancillary Structures Area (SF) :	• Ancillary # 1 –single story Generator room (200 sft), • Ancillary # 2 –ancillary shed (2,000 sft). Total=2,200 sft.
Number of Occupants :	GF = 92, 1st floor = 198, 2nd floor = 195, 3rd floor = 86 employee, Total= 571 employee.
Exterior Facade Description :	Infill clay bricks masonry wall, glass with aluminium window frame.
Structural System Description :	The primary type of structural system of the main building is reinforced concrete flat slab with column capital and the lateral load-resisting system is flat slab with peripheral beam. There is no discontinuity (in diaphragm, frame or soft story) in lateral load path. The typical floor framing system is monolithic RC flat slab with beams. The spread footing foundation supports the structure (as per factory info).

ASSESSMENT FINDINGS

Structural System Design		
Question:	Are credible structural design documents available for review and kept on site?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	A few structural documents are available for review and kept on site those structural documents are not credible as per BNBC part 6 section 1.9.	
Source of Findings:	Document Review: visit 5th June 2014	
Suggested Plan of Action:	Have a qualified structural engineer prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard.	
Suggested Deadline Date:	15 Sep 2014	
Standard:	Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories	
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:	3	
Description:	Credible structural documentation indicating general conformance with 2006 BNBC or other comparable applicable international model building code could not be produced.	
Source of Findings:	Document Review: On visit 5th June 2014, Visual Assessment: On visit 5th June 2014	
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:	15 Sep 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:	3	
Description:	There is no documented compliance with the seismic and wind requirements of the 2006 BNBC.	
Source of Findings:	Document Review: on visit 5th June 2014	
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:	15 Sep 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:	3	
Description:	No original structural documents exist or provided. The available drawings or documentation could not 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.	
Source of Findings:	Document Review: on visit 5th June 2014	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.	
Suggested Deadline Date:	15 Sep 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:	3	
Description:	No such provisions have been made in floors for a concentrated load (water tank at roof top, stored materials at 1st floor). The structural capacity of the factory to safely support the water tank and stored materials could not be confirmed and documented by a qualified structural engineer.	
Source of Findings:	Photograph: See photo	

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:	15 Sep 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:	3	
Description:	Original Design documents are not available. The live load or occupancy type are not mentioned in the existing so called as built structural drawings. The fabric storage in the 1st floor were evaluated and found exceeding the specified load capacity 2.0 kN/m2 (42psf).	
Source of Findings:	Photograph: see photo	
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:	15 Sep 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:	3	
Description:	No certificates of occupancy are available for review.	
Source of Findings:	Visual Assessment: Visit on 5th June 2014	
Suggested Plan of Action:	Provide Certificates of Occupancy for review.	
Suggested Deadline Date:	15 Sep 2014	
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment	

Structural System Construction

Question:	Is the structural system free of distress, settlement, shifting, or cracking in columns or walls?	
Priority Level:	High	
Non-Compliance Level:	2	
Description:	There is a crack in the 2nd floor wall slab joint	
Source of Findings:	Photograph: Photo taken on visit., Visual Assessment: visit on 5th June 2014	
Suggested Plan of Action:	Have a qualified structural engineer provide further testing and analysis of distress, settlement, shifting, or cracking in walls and provide a remediation plan to correct noted issues.	
Suggested Deadline Date:	15 Sep 2014	
Standard:	Alliance Standard Part 8 Section 8.3.3	
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:	3	
Description:	Rebound hammer tests were conducted to verify the concrete strength but the structural members constructed with MCAC have not been investigated by an appropriate program of in-situ testing and representative destructive testing or core samples	
Source of Findings:	Photograph: see photo of NDT Tests.	
Suggested Plan of Action:	Take necessary actions for appropriate program of in-situ testing and representative destructive testing or core samples for structural members as per alliance standard and protocol.	
Suggested Deadline Date:	15 Sep 2014	
Standard:	Reference Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC)	

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:	3
Description:	All non-structural elements suspended from, attached to, or resting atop the structure are not adequately anchored and braced to resist earthquake forces. 1. Unstable oil tank framing. see photo no. 2 2. Storage rack at 2nd floor without seismic bracing.
Source of Findings:	Visual Assessment: on visit 5th June 2014
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:	15 Sep 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:	2
Description:	All areas of needed maintenance, including areas with efflorescence, dampness, standing water on rooftops, and corrosion have not been addressed. For example: 1. Dampness in first floor slab. 2. Dampness in 2nd floor wall. 3. Water leakage from water supply pipes in the rooftop.
Source of Findings:	Photograph: See photo, Visual Assessment: visit on 5th July 2014
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:	15 Sep 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:	Structural elements constructed with MCAC exposed to rainfall or other sources of water are not sealed with a protective coating to prevent water intrusion	
Source of Findings:	Photograph: See the photo, Visual Assessment: visit on 5th June 2014	
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:	15 Sep 2014	
Standard:	Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC).	
Structural Safety Programs		
Question:	Are floor loads in compliance with posted plans?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	Floor load plans are not posted.	
Source of Findings:	Visual Assessment: visit on 5th June 2014	
Suggested Plan of Action:	Redistribute floor loads to comply with the Floor Loading Plans.	
Suggested Deadline Date:	15 Sep 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:	3	
Description:	There is no 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: visit on 5th June 2014	

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:	15 Sep 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:	3	
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:	Document Review: on visit 5th June 2014	
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:	15 Sep 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:	3	
Description:	Floor Load Plans are not posted as required.	
Source of Findings:	Visual Assessment: Visit on 5th June 2014	
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:	15 Sep 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:	3	
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: visit on 5th June 2014	
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:	15 Sep 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:	3	
Description:	There is no 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: visit on 5th June 2014	
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:	15 Sep 2014	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	