

INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name: **Modiste (Bangladesh) Limited**

Address: **51/C(A)BSCIC Fouzderhat Heavy Industrial
Area, Sagorika Road, Chittagong Chittagong
Chittagong Bangladesh**

Assessor: **Bureau Veritas**

Date: **24 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:	Modiste (Bangladesh) Limited
Address:	51/C(A)BSCIC Fouzderhat Heavy Industrial Area,Sagorika Road, Chittagong Chittagong Chittagong Bangladesh
Country:	Bangladesh
Province:	Chittagong
City:	Chittagong
Zip Code:	4100
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	06-03-2014
Final Report Date :	10-28-2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	There are 6 buildings in the factory premises out of which two are main production buildings (connected by expansion joint) and four are ancillary buildings. The buildings are named as: 1) Three story RCC main production building (Under construction), 2) Single story RCC production building with prefab shed on roof, 3) Two story RCC office building, 4) Single story RCC security building, 5) Single story generator shed, 6) Single story pump shed.
Number of Building Levels (Stories) :	1) Three story RCC main production building: Stories above grade: 3, Stories below grade: 0, Occupied levels: 3, 2) Single story RCC production building with prefab shed on roof: Stories above grade: 2, Stories below grade: 0, Occupied levels: 2, 3) Two story RCC office building: Stories above grade: 2, Stories below grade: 0, Occupied levels: 2, 4) Single story RCC security building: Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 5) Single story generator shed: Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 6) Single story pump shed: Stories above grade: 1, Stories below grade: 0, Occupied levels: 1.
Approximate Building Area (SF) :	Total area of all buildings in the factory premises: 31125 sft. Building wise breakdown as follows: 1) Three story RCC main production building: 8588 sft (Ground floor: 2147 sft, 1st floor: 2147 sft, 2nd floor: 2147 sft Roof:2147 sft) 2) Single story RCC production building with prefab shed on roof: 20624 sft (Ground floor: 10312 sft, 1st floor: 10312 sft), 3) Two story RCC office building: 1326 sft (Ground floor: 442 sft, 1st floor: 442 sft Roof:442) 4) Single story RCC security building: 97 sft, 5) Single story generator shed: 403 sft, 6) Single story pump shed: 87 sft.
Date of Building Construction :	Factory personnel informed the date of construction as follows: 1) Three story RCC main production building: Started in August-2013 and construction ongoing, 2) Single story RCC production building with prefab shed on roof: Started in January-1984 and finished in December-1985, 3) Two story RCC office building: Finished in June-1997, 4) Single story RCC security building: Finished in January-1997, 5) Single story generator shed:



	Finished in April-2014, 6) Single story pump shed: Finished in September-2013.
Date of Last Building Renovation/Addition :	Factory personnel informed the date of last building renovation as follows: 1) Three story RCC main production building: Vertical and horizontal extension is ongoing, 2) Single story generator shed: Finished in April-2014 but brick wall construction is ongoing.
Is the Building mixed use?:	No
Ancillary Structures in Complex :	1) Two story RCC office building, 2) Single story RCC security building, 3) Single story generator shed, 4) Single story pump shed.
Number of Ancillary Levels (Stories) :	1) Two story RCC office building: Stories above grade: 2, Stories below grade: 0, Occupied levels: 2, 2) Single story RCC security building: Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 3) Single story generator shed: Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 4) Single story pump shed: Stories above grade: 1, Stories below grade: 0, Occupied levels: 1.
Approximate Ancillary Structures Area (SF) :	1) Two story RCC office building: 884 sft (Ground floor: 442 sft, 1st floor: 442 sft, Roof: 442 sft) 2) Single story RCC security building: 97 sft, 3) Single story generator shed: 403 sft, 4) Single story pump shed: 87 sft.
Number of Occupants :	Total number of occupants: 728. 1) Three story RCC main production building: 6, 2) Single story RCC production building with prefab shed on roof: 710, 3) Two story RCC office building: 8 . 4) Single story RCC security building: 2, 5) Single story generator shed: 1, 6) Single story pump shed: 1.
Exterior Facade Description :	The exterior of the building is of infilled brick walls in RCC frame having roof truss. The windows are of sliding glass in aluminum frame. The door is metallic shutter type.
Structural System Description :	The main building: Floor framing- RCC beam supported Foundation system- Isolated column footing Structural framing members-RCC beam-slab supported on column Framing regularity- regular Roof framing- RCC Beam slab The ancillary buildings are- 01. Office building- RCC beam supported 02. Generator- Masonry with tin roof 03. Guard room- Masonry with tin roof



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 set of design documents is available on site for review. However, the design report is not available which is required as per BNBC 2006 clause 1.9.1.1. Also, the identity of the Architect is not complete.	
Source of Findings:	Document Review: Documents reviewed on site.	
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:	12 Aug 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:	2	
Description:	There is no indication that the design accommodates the requirement of BNBC 2006 or other comparable applicable international model building code.	
Source of Findings:	Document Review: 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:	22 Jul 2014	
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:	Documentation can 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: 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:	22 Jul 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:	2
Description:	There are 4 500 Liter PVC water tanks at the 1st floor roof of the office building. Beam cracks are found on the adjacent floor.
Source of Findings:	Visual Assessment: visual inspection conducted.
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:	12 Aug 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:	1
Description:	The Certificate of Occupancy is not available for review.
Source of Findings:	Document Review: Documents reviewed on site.
Suggested Plan of Action:	Organization is to apply for certificate of occupancy and obtain same as soon as possible from concerned authority.
Suggested Deadline Date:	12 Aug 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:	3
Description:	Cracks have been observed in two interior columns on the ground floor which occurred due to corrosion of the rebar.
Source of Findings:	Visual Assessment: Visual inspection conducted.
Suggested Plan of Action:	Have a qualified structural engineer carry out detailed structural assessment to understand the cause of crack and the performance of the structure as well as for identifying appropriate remedial action.
Suggested Deadline Date:	22 Jul 2014
Standard:	Alliance Standard Part 8 Section 8.3.3
Question:	Is the structural system free of distress, settlement, shifting, or cracking in columns or walls?
Priority Level:	High
Non-Compliance Level:	3
Description:	Cracks have been found in two columns at the ground floor interior due to corrosion of the rebar.
Source of Findings:	Visual Assessment: Visual inspection conducted.
Suggested Plan of Action:	Have a qualified structural engineer provide further testing and analysis of cracking in the columns and provide a remediation plan to correct noted issues.
Suggested Deadline Date:	22 Jul 2014
Standard:	Alliance Standard Part 8 Section 8.3.3
Question:	Is the structural system free of distress, separations, or cracking that indicates lack of performance or overstress of the lateral load-carrying system?
Priority Level:	High
Non-Compliance Level:	1
Description:	Hair line Crack found on office building roof slab and beam of 1st floor. Ground floor roof slab and beam of RCC shed building contains some hair line crack too.





Source of Findings:	Visual Assessment: Visually confirmed	
Suggested Plan of Action:	Engage a qualified structural engineer to provide additional investigation into the areas of cracking and provide a remediation plan if required.	
Suggested Deadline Date:	01 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:	Dampness have been found on the brick wall of ground floor in the factory building.	
Source of Findings:	Visual Assessment: Visual assessment shows that dampness have been found on the brick wall of ground floor during the visual assessment.	
Suggested Plan of Action:	A qualified structural engineer should be involved for maintenance by correcting the identified issues.	
Suggested Deadline Date:	12 Aug 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:	The roof of the building is of MCAC aggregate but no protective sealing is available.	
Source of Findings:	Visual Assessment: Visual inspection conducted.	
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. Or provide 2% slope on the exposed surface to prevent accumulation of water.	
Suggested Deadline Date:	14 Aug 2014	
Standard:	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:	2
Description:	There are some racks at the store on the ground floor and water tanks at the 1st floor roof of the office building which are not properly anchored or braced to resist earthquake forces. Also Boiler machine at ground floor requires bracing and anchorage.
Source of Findings:	Visual Assessment: Visual inspection conducted.
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:	23 Sep 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:	The building is currently renovated or expanded. Construction Practices and Safety requirements of Section 9 is not being followed. For example: 1) Did not use safety nets, 2) Workers did not wear safety equipment.
Source of Findings:	Document Review: Documents reviewed on site., Visual Assessment: Visual inspection conducted.
Suggested Plan of Action:	It is recommended to follow Construction Practices and Safety requirements of Section 9 during construction under guidance an engineer.
Suggested Deadline Date:	12 Aug 2014
Standard:	Alliance Standard Part 9 Construction Practices and Safety.
Question:	Are structural steel members free of corrosion, physical damage or other types of deterioration?
Priority Level:	Medium
Non-Compliance Level:	1
Description:	Some bolts of the roof truss are loose and corrosion has been found on some members.
Source of Findings:	Visual Assessment: Visual inspection conducted.





Suggested Plan of Action:	Complete further testing on areas of deterioration and have a qualified structural engineer develop a remediation plan.	
Suggested Deadline Date:	12 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.26	
Question:	Is expansion joint material free from cracking and other forms of deterioration?	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	Expansion joint is found in between the under construction RCC building and the main building, but the expansion joint is not authentic.The expansion joint is blocked by concrete.	
Source of Findings:	Visual Assessment: Visual assessment shows that the expansion joint is blocked by concrete.	
Suggested Plan of Action:	Remove unapproved material from expansion joint and provide new approved material at the expansion joint.	
Suggested Deadline Date:	22 Jul 2014	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
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:	3	
Description:	There is no program that will ensure that the designated load in each floor will not be exceeded.	
Source of Findings:	Document Review: Documents reviewed on site.	
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:	29 Jul 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:	There is no load plan available showing the actual maximum operational loading that is allowable.	
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:	12 Aug 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:	There is no load plan available showing the actual maximum operational loading that is allowable.	
Source of Findings:	Document Review: There is no load plan available in the documentation of the factory.	
Suggested Plan of Action:	Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3. Floor load plans should be visibly posted on all levels of all buildings.	
Suggested Deadline Date:	22 Jul 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:	There is no load plan. Also, there is no marking on the floor to designate spaces and height for storage of work materials.	
Source of Findings:	Visual Assessment: Visual inspection conducted.	
Suggested Plan of Action:	Provide appropriate markings at all areas used for storage to indicate the acceptable loading limits matching with Load Plan.	
Suggested Deadline Date:	12 Aug 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: Visual inspection conducted.
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:	29 Jul 2014
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager