

INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name: **DESH GARMENTS LIMITED**

Address: **53/A Kalurghat Heavy Industrial Area Kalurghat,
Chittagong Chittagong Chittagong Bangladesh**

Assessor: **Uttaron Technologies**

Date: **16 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:	DESH GARMENTS LIMITED
Address:	53/A Kalurghat Heavy Industrial Area Kalurghat, Chittagong Chittagong Chittagong Bangladesh
Country:	Bangladesh
Province:	Chittagong
City:	Chittagong
Zip Code:	4208
Audit Duration:	1 Days 0 Hours
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	May 14, 2014
Final Report Date :	September 08, 2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	1 Main Building
Number of Building Levels (Stories) :	1 (Ground)
Approximate Building Area (SF) :	65,000 sft Approximately
Date of Building Construction :	1980
Date of Last Building Renovation/Addition :	None
Is the Building mixed use?:	No
Ancillary Structures in Complex :	1 Ancillary Building (Generator Room)
Number of Ancillary Levels (Stories) :	1 (Ground)
Approximate Ancillary	Approximately 5,000 sft

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Structures Area (SF) :	
Number of Occupants :	820
Exterior Facade Description :	Brick masonry infill between concrete structural elements.
Structural System Description :	RCC structure with concrete slabs, beams and columns forming a moment resisting frame system.



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:	The was no indication on the available structural documentation whether to indicate conformance with the BNBC or other comparable 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:	31 Oct 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:	No evidence was available to indicate compliance with the wind loading requirements of the BNBC.	
Source of Findings:	Document Review: Structural documentation.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.	
Suggested Deadline Date:	31 Oct 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:	Several plastic water tanks were observed on the building's rooftop. No evidence was available to indicate that the structural impact of these concentrated loads was considered.
Source of Findings:	Photograph: Plastic water tanks
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 Oct 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/m ² (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:	The currently available structural documentation does not indicate the design live load for the current roof slab. Prior to further expansions of the factory building, the live load capacity of the existing structure should be confirmed.
Source of Findings:	Document Review: Documents reviewed on-site.
Suggested Plan of Action:	Have a qualified structural engineer confirm the live load capacity of the existing structural elements. Prior to further expansions of the building (vertical or horizontal), a qualified structural engineer should consider this existing capacity in determining whether the structure is capable of supporting the loads from the expansion. Load Plans complying with Alliance Standard Part 8 Section 8.20.4.3 should also be developed.
Suggested Deadline Date:	31 Oct 2014
Standard:	Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads





Question:	Are credible structural design documents available for review and kept on site?
Priority Level:	Medium
Non-Compliance Level:	1
Description:	A set of structural drawings was available for review. However, the column layouts shown on these drawings did not align with the as-built column layouts observed during the visual assessment. In particular, the available drawings showed all column lining up, but several columns (in the extension portion of the building) were offset slightly from other columns in the as-built configuration.
Source of Findings:	Document Review: Structural layout plan dated 1979 and "as-built" plan of 1995.
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:	31 Oct 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:	1
Description:	The main factory building has been laterally expanded in the north and east directions. In the north direction, the expansion includes concrete columns and a concrete roof slab. In the east direction, the expansion included interior structural steel tube columns supporting steel roof trusses. The roof trusses rest on the steel columns at the center of the expansion and on exterior brick masonry walls at the exterior of the expansion. Although limited documentation of the extents of the north expansion was available, there was not evidence to suggest that the structural impact of either of the two additions was considered. The seismic bracing system was unclear in both of the expansions.
Source of Findings:	Photograph: Expansion in east direction.
Suggested Plan of Action:	Have a qualified structural engineer complete an analytical evaluation of the structural impact of the additions. Moreover, any further extension is completely prohibited without analyzing the structural impact of the expansion on the entire structure.
Suggested Deadline Date:	31 Oct 2014
Standard:	Reference Alliance Standards Part 8 Section 8.1 Applicability of Building Code.





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: Documents reviewed on-site.
Suggested Plan of Action:	Provide Certificates of Occupancy for review.
Suggested Deadline Date:	31 Oct 2014
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:	The vertical reinforcing bars for the concrete columns had been extended through to the roof level and had been left exposed, presumably for use in splices in a future vertical expansion applications. The bars had not been protected with a corrosion inhibitor and many were noted to be corroded. Furthermore, some of these bars had been yielded (bent) in several directions. These exposed bars are not suitable for vertical expansions.
Source of Findings:	Photograph: Exposed column reinforcing.
Suggested Plan of Action:	Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues. This should include removing the exposed portions of the vertical column reinforcing bars and coating any remaining exposed portions with a corrosion inhibitor.
Suggested Deadline Date:	31 Oct 2014
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:	The following elements were noted without adequate anchorage or bracing against seismic loading: -Steel storage racks -Suspended piping within the building -Rooftop water tanks
Source of Findings:	Photograph: Steel storage racks, suspended piping, rooftop water tanks.
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 Oct 2014
Standard:	Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6
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:	Nondestructive concrete compressive strength testing was not completed as part of this assessment. Historical nondestructive results were available but no destructive materials testing results were available for review. Although the building currently consists of only 1 story, further materials testing should be completed prior to any additional horizontal or vertical expansions of the building.
Source of Findings:	Visual Assessment: Nondestructive testing not completed during visual assessment.
Suggested Plan of Action:	Prior to any additional horizontal or vertical expansions of the building, have a qualified structural engineer assess the strength of the structural elements within the building constructed with MCAC. This assessment should include destructive core testing to validate the in-situ concrete compressive strength of structural elements.
Suggested Deadline Date:	31 Oct 2014
Standard:	Reference Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC)





Question:	Is expansion joint material free from cracking and other forms of deterioration?
Priority Level:	Low
Non-Compliance Level:	2
Description:	A non-engineered construction joint was observed within the building. Concrete cracking and spalling were noted in the vicinity of this joint due to the lack of an appropriate construction joint material.
Source of Findings:	Photograph: Deteriorated expansion joint.
Suggested Plan of Action:	Under the guidance of a qualified structural engineer, remove deteriorated expansion joint material and provide new approved material at the expansion joint. The replacement expansion joint material should be able to accommodate building movement without causing structural distress.
Suggested Deadline Date:	31 Oct 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:	2
Description:	No floor load management plan is currently in place.
Source of Findings:	Visual Assessment: No floor load management plan noted.
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 Oct 2014
Standard:	Alliance Standard Part 13 Section 13.7 and Part 8 Section 8.9.

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:	Storage areas have not been marked to indicate acceptable loading limits.
Source of Findings:	Visual Assessment: No acceptable loading limit markings.



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 Oct 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:	No Factory Load Manager has been appointed.	
Source of Findings:	Visual Assessment: No Factory Load Manager present.	
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 Oct 2014	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	
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:	1	
Description:	Floor load plans have not been developed.	
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:	31 Oct 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	

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Non-Compliance Level:	1	
Description:	Floor load plans have not been developed or posted.	
Source of Findings:	Visual Assessment: Floor plans not posted.	
Suggested Plan of Action:	Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard. Floor load plans should be visibly posted on all levels of all buildings.	
Suggested Deadline Date:	31 Oct 2014	
Standard:	Alliance Standard Part 8 Section 8.20.5.3	