

INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name: **Tusuka Processing Ltd**
Address: **Konabari, Neelnagar, Gazipur Gazipur Dhaka
Bangladesh**
Assessor: **Shaheedullah**
Date: **08 Dec 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:	Tusuka Processing Ltd
Address:	Konabari, Neelnagar, Gazipur Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Gazipur
Zip Code:	1346
Audit Duration:	2 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	December 8, 2013
Final Report Date :	February 11, 2015
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	There are four buildings in complex.
Number of Building Levels (Stories) :	Building 1: Basement + 9 stories; Building 2: 4-stories (partially 2-stories).
Approximate Building Area (SF) :	Building 1: 195,750 Sft(approx); Building 2: 26,320 Sft.
Date of Building Construction :	2004 (all buildings)
Date of Last Building Renovation/Addition :	No sign of renovation or addition was noticed.
Is the Building mixed use?:	No
Ancillary Structures in Complex :	There are 2 ancillary structures in complex.
Number of Ancillary Levels (Stories) :	Building 3: 2 stories R.C building; Building 4: 1 story shed building.
Approximate Ancillary Structures Area (SF) :	Building 3: 7,200 Sft; Building 4: 19,680 Sft.
Number of Occupants :	Building 1: 2080; Building 2: 150; Building 3: 150; Building 4: 120.

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Exterior Facade Description :	5 inch thick masonnary brick wall with 40% window opening enclosed by R.C. slab and R.C column.
Structural System Description :	For 9 & 4 story: Frame work of the building is composed of R.C. beam supported slab, R.C. column and R.C. isolated footing. For 2 story: Frame work of the building is composed of R.C. beam supported slab, R.C. column, R.C. isolated footing and roof is cover by corrugated iron sheet. For 1 story: Frame work of the building is composed of R.C. column, R.C. isolated footing and roof is cover by corrugated iron sheet.



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:	Available structural documents are incomplete and don't meet the alliance standard.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:	A qualified structural engineer shall be engaged to prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard.	
Suggested Deadline Date:	31 Mar 2015	
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:	No code has been mentioned in documentation.	
Source of Findings:	Document Review: Document review 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 Mar 2015	
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:	Built before 2004 and there are no documents to prove seismic adequacy according to BNBC 2006 requirements.	



Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:	Design load case shall be collected from the concerned firm. Or engage a qualified structural engineering firm to analyze the building's seismic load adequacy according to the BNBC 2006 requirements	
Suggested Deadline Date:	31 Mar 2015	
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:	No documentation is available to show that the building is compliant with the requirements for wind loading and storm surge loading's.	
Source of Findings:	Document Review: Document review 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:	31 Mar 2015	
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:	Are Certificates of Occupancy available for review?	
Priority Level:	Low	
Non-Compliance Level:	1	
Description:	Certificate of occupancy was not available for review.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:	Certificate of Occupancy shall be obtained from appropriate authority.	
Suggested Deadline Date:	31 Mar 2015	
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment	
Structural System Construction		
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:	2	
Description:	Based on preliminary calculations, the grade beams for Building 2 seem to lack adequate capacity to resist code-level lateral loads. Additional investigation is warranted.	
Source of Findings:	Uploaded Document: Calculation sheet attached.	
Suggested Plan of Action:	Engage a qualified structural engineer to provide additional investigation into the capacity of the Building 2 grade beams and provide a remediation plan if required.	
Suggested Deadline Date:	31 Mar 2015	
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:	Sign of water standing over roof has been noticed.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
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 Mar 2015	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
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:	No testing has been done on-site for the strength of the concrete columns for 2 and 4 storied buildings.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:	Have a qualified structural engineer assess the durability aspects as suggested in Alliance Standard Part 7 Section 7.2 and take appropriate remedial measures for the 2 and 4 story buildings. This assessment should be conducted as part of the Detailed Engineering Assessment (DEA) outlined elsewhere via the column FoS question and should include destructive core testing for compressive strength of the concrete for the columns.	
Suggested Deadline Date:	31 Mar 2015	
Standard:	Reference Alliance Standards Part 7 Building Materials Section 7.2 Masonry-	



	chip aggregate concrete (MCAC)	
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:	Net cement finishing over cc pad has been found exposed to rainfall. The roof slab covered with a plain concrete pad on it has been found exposed to rainfall due to absence of proper net cement finishing for two nos of buildings (9 & 4 storied).	
Source of Findings:	Visual Assessment: Visual inspection on site.	
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:	31 Mar 2015	
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:	1	
Description:	Corrosion was observed at the roof purlins for Building 4.	
Source of Findings:	Photograph: Corrosion of roof purlins in Building 4., Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:	Complete further testing on areas and have a qualified structural engineer develop a remediation plan.	
Suggested Deadline Date:	31 Mar 2015	
Standard:	Alliance Standard Part 8 Section 8.26	
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:	1	
Description:	No program in place was found.	
Source of Findings:	Document Review: Document review on site.	



Suggested Plan of Action:	A program shall be developed 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 that it is enforced.	
Suggested Deadline Date:	31 Mar 2015	
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:	The load plans have not been prepared for each floor .	
Source of Findings:	Document Review: Seen all documents.	
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 Mar 2015	
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:	2	
Description:	Floor Load Plans have not been developed.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:	Load plans must be prepared by a qualified engineer and posted clearly on each floor and as necessary to distribute floor loads to comply with the floor loading plans as per Alliance Standard Part 8 Section 8.20.5.3	
Suggested Deadline Date:	31 Mar 2015	
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:	Assessment team did not observe any load plans posted as per Reference Alliance Standards Part 8 Structural Design Section 8.11 Floor Load Markings.	
Source of Findings:	Visual Assessment: Visual assessment on site.	

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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 Mar 2015	
Standard:	Alliance Standard Part 8 Section 8.11 Floor Load Markings	