INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name:	**SGWICUS (BD) LTD.**
Address:	**Plot # 73, 77~80, Dhaka EPZ, Ganakbari, Savar Savar Dhaka Bangladesh**
Assessor:	**BD Technologies**
Date:	**10 Apr 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.

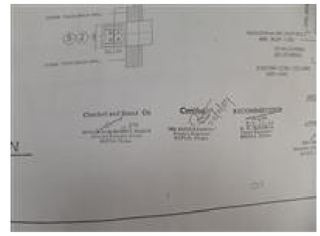
GENERAL INFORMATION

General Information	
Factory Name:	SGWICUS (BD) LTD.
Address:	Plot # 73, 77~80, Dhaka EPZ, Ganakbari, Savar Savar Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Savar
Zip Code:	1349
Audit Duration:	1 Days 8 Hours
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	5-10-2014
Final Report Date :	05-23-2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	• Building # 1 - 3 story R.C.C. factory building/ Production Building using as sewing, finishing, inspection, iron, fabric store etc., • Building # 2 - 4 story R.C.C. office building using as admin department, conference room, accessories store, others stores, child care etc., • Building # 3 - single story building using as generator room, • Ancillary Shed # 1 –single story shed using as wastage store.
Number of Building Levels (Stories) :	• Building # 1 - 3 story R.C.C. factory building/ Production Building level- 3, • Building # 2 - 4 story R.C.C. office building Level-4 • Building # 3 - single story building using as generator room, • Ancillary Shed # 1 – single story shed Level-1.
Approximate Building Area (SF) :	Approximate Total Building Area = 2,45,000 sq ft.
Date of Building Construction :	Factory Building/ Production Building Construction date: 1997. Office Building Construction date: 2005.
Date of Last Building Renovation/Addition :	2005, top most steel Shed.
Is the Building mixed use?:	No
Ancillary Structures in Complex :	3(• Building # 1 -4 story R.C.C. office building Level-4 • Building # 2 - single story building using as generator room, • Ancillary Shed # 1 – single story shed Level-1).

Number of Ancillary Levels (Stories) :	• Building # 1 - 3 story R.C.C. factory building/ Production Building level-3, • Building # 2 - 4 story R.C.C. Office Building level-4, • Building # 3 - single story generator room level-1, • Ancillary Shed # 1 – single story shed Level-1.
Approximate Ancillary Structures Area (SF) :	33,884 sq. ft.
Number of Occupants :	1700
Exterior Facade Description :	Infill Brick Wall
Structural System Description :	Ground Floor+ 1st Floor RCC structure with Beam, Column, Slab system.2nd Floor is Steel Structure.

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:	Few structural documents approved from EPZ authority are available for review and kept on site. But those structural documents are not credible as per BNBC part 6 section 1.9.	
Source of Findings:	Document Review: document provided during visit., Visual Assessment: visit on 10th April 2014.	
Suggested Plan of Action:	Have a qualified structural engineer prepare credible as-built documents based on the requirements of Part 8 Section 8.19/8.20 of the Alliance Standard.	
Suggested Deadline Date:	30 Jun 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:	No credible structural documentation indicating general conformance with 2006 BNBC or other comparable applicable international model building code be produced before the assessment team.	
Source of Findings:	Document Review: Documents supplied by the Owner.	
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:	30 Jun 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:	No credible structural documentation indicating general conformance with 2006 BNBC or other comparable applicable international model building code be produced before the assessment team.
Source of Findings:	Document Review: Documents supplied by the owner.
Suggested Plan of Action:	Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC. Because i.) Credible original Structural documents in accordance with BNBC Part 6 Section 1.9 do not exist. ii.) The available as-built architectural & structural documents are not in compliance with Section 8.20 of the alliance Fire Safety and Structural Integrity Standard. As the question no. 7 of the alliance standard section 8.3.3 is negative, it is recommended to conduct detail assessment as per alliance section 8.4.2 by Qualified Structural Engineering Consultant.
Suggested Deadline Date:	30 Jun 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. Nothing mentioned about wind loading and storm surge loadings as detailed in BNBC Part 6 Section 1.5.3 in the available so called approval drawings approved by BEPZA.
Source of Findings:	Document Review: Documents supplied by owner's of the building.
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.
Suggested Deadline Date:	30 Jun 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:	3

Description:	The building was constructed in 1996 with a structural steel shed addition in 2005 at the top. It is unknown to the team whether the structural impact on the entire structure was analytically evaluated and confirmed by a qualified structural engineer or not.	
Source of Findings:	Visual Assessment: visit on 18th April 2014.	
Suggested Plan of Action:	Have a qualified structural engineer complete an analytical evaluation of the structural impact of the addition.	
Suggested Deadline Date:	30 Jun 2014	
Standard:	Reference Alliance Standards Part 8 Section 8.1 Applicability of Building Code.	
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 (fabric storage at 1st floor, see photo; finished goods at 2nd 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:	Visual Assessment: visit on 10th April 2014.	
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:	30 Jun 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 available drawings. The fabric storage in the 1st floor and finished goods storage at 2nd floor were evaluated and found exceeding the specified load capacity 2.0 kN/m2 (42psf).	

Source of Findings:	Visual Assessment: visit on 10th April 2014.
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:	30 Jun 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.
Source of Findings:	Visual Assessment: visit on 10th April 2014.
Suggested Plan of Action:	Provide Certificates of Occupancy for review.
Suggested Deadline Date:	30 Jun 2014
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment
Question:	Is a Geotechnical Report available for review and kept on site?
Priority Level:	Low
Non-Compliance Level:	3
Description:	Geotechnical Report is not available for review and kept on site.
Source of Findings:	Document Review: during visit on 10th April 2014.
Suggested Plan of Action:	Under guidance from a qualified structural engineer arrange geotechnical investigation at close vicinity of the structure and make the report available for review.
Suggested Deadline Date:	30 Jun 2014
Standard:	Alliance Standard Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings

Structural System Construction

Question:	Is the structural system free of settlement cracking, excessive perimeter separations, and unlevel floors attributable to foundation settlements?	 
Priority Level:	High	
Non-Compliance Level:	3	
Description:	There are sign of ground settlement both outer as well as inner side floor of the factory building.	
Source of Findings:	Visual Assessment: visit on 10th April 2014.	
Suggested Plan of Action:	Have a qualified structural engineer provide further analysis and testing of the noted settlement and crack issues. If required, a remediation plan shall also be provided by the qualified structural engineer.	
Suggested Deadline Date:	30 Jun 2014	
Standard:	Reference Alliance Standards Part 8 Structural Design Section 8.2 Structural Integrity of Existing Factory Buildings	
Question:	Is the structural system free of distress, settlement, shifting, or cracking in columns or walls?	
Priority Level:	High	
Non-Compliance Level:	3	
Description:	One corner column joint at top of office building is cracked due to distress. see attached photo.	
Source of Findings:	Visual Assessment: visit on 10th April 2014.	
Suggested Plan of Action:	Have a qualified structural engineer provide further testing and analysis of distress, settlement, shifting, or cracking in columns or walls and provide a remediation plan to correct noted issues.	
Suggested Deadline Date:	30 Jun 2014	
Standard:	Alliance Standard Part 8 Section 8.3.3	
Question:	Is the structure free from any major/progressive distress?	
Priority Level:	High	
Non-Compliance Level:	3	
Description:	No. there are cracks at beam column joint in office building.	
Source of Findings:	Visual Assessment: visit on 10th April 2014.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm the causes of such distress and suggest appropriate remedial measures.	

Suggested Deadline Date:	30 Jun 2014	
Standard:	Alliance Standards Part 8 Section 8.3.3	
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:	1	
Description:	yes. But there is a crack in a beam which should be addressed. see photo	
Source of Findings:	Visual Assessment: visit on 10th April 2014.	
Suggested Plan of Action:	ngage a qualified structural engineer to confirm structural performance of the structure.	
Suggested Deadline Date:	30 Jun 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:	3	
Description:	There are sign of efflorescence and dampness in the exterior facade and standing water on rooftops of factory building at below RCC water tank. see photos.	
Source of Findings:	Visual Assessment: visit on 10th April 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:	30 Jun 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:	3	
Description:	AC systems outside of building, storage racks, smoke chimneys outside of factory building are without seismic bracing.	
Source of Findings:	Visual Assessment: visit on 10th April 2014.	
Suggested Plan of Action:	Adequately anchor and brace all non-structural elements like water tank, storage racks and tall chimney in front of facade to resist earthquake forces to comply with the BNBC and Alliance Standard 8.18.	
Suggested Deadline Date:	30 Jun 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:	3	
Description:	Non destructive rebound hammer test was done onsite to find concrete strength. No representative destructive testing or core sample testing were conducted.	
Source of Findings:	Visual Assessment: visit on 10th April 2014.	
Suggested Plan of Action:	Have a qualified structural engineer assess the durability aspects as suggested in Alliance Standard Part 7 Section 7.2. Destructive core testing is suggested to ensure concrete strength. Engineer should suggest appropriate remedial measures as necessary.	
Suggested Deadline Date:	30 Jun 2014	
Standard:	Reference Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC)	

Question:	The exterior façade is free of cracking.
Priority Level:	Low
Non-Compliance Level:	3
Description:	There is crack in the exterior facade of factory building near ground level. see photo.
Source of Findings:	Visual Assessment: visit on 10th April 2014.
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:	30 Jun 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:	3
Description:	There is active signs of water intrusion or ponding due to lack of performance of the façade system in the building such as exterior facade of office building. see photo.
Source of Findings:	Visual Assessment: visit on 10th April 2014.
Suggested Plan of Action:	Repair the exterior façade system to prevent water intrusion.
Suggested Deadline Date:	30 Jun 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:	3
Description:	Explanation: No floor Loading Plans exist in the factory as mentioned in Alliance Standards Part 8 Structural Design Section 8.10. Company Plan of Action:
Source of Findings:	Visual Assessment: visit on 10th April 2014.
Suggested Plan of Action:	Prepare Floor Loading Plans and redistribute floor loads to comply with the Floor Loading Plans as per alliance standard.

Suggested Deadline Date:	30 Jun 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 10th April 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:	30 Jun 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:	Visual Assessment: visit on 10th April 2014.
Suggested Plan of Action:	Have a qualified structural engineer develop Floor Loading Plans per the requirements of Alliance Standard Part 8 Section 8.20.5.3.
Suggested Deadline Date:	30 Jun 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:	No floor load plans posted.
Source of Findings:	Visual Assessment: visit on 10th April 2014.

Suggested Plan of Action:	Have a qualified structural engineer prepare load plans including the information required in Section 8.20.5.3 of the Alliance Standard and posted in each floor designated areas as per standard.
Suggested Deadline Date:	30 Jun 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 10th April 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:	30 Jun 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:	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 available during visit.
Source of Findings:	Visual Assessment: visit on 10th April 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:	30 Jun 2014

Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	