

INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name: **Daeyu Bangladesh Ltd.**
Address: **731, Bhannara, Mouchak, Kaliakoir, Gazipur Gazipur
Dhaka Bangladesh**
Assessor: **Sumerra**
Date: **20 Mar 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:	Daeyu Bangladesh Ltd.
Address:	731, Bhannara, Mouchak, Kaliakoir, Gazipur Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Gazipur
Zip Code:	1751
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	March 30, 2014
Final Report Date :	April 30, 2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	-Main Building -Day care & medical centre -Generator Building -Yarn store -Winding section & machine godown.
Number of Building Levels (Stories) :	Main factory is one 2 storied building.
Approximate Building Area (SF) :	71000 SF
Date of Building Construction :	The factory building construction started 1998 by owner Mr. Keolee, after that this is handed over to Daeyu Bangladesh Ltd 2010.
Date of Last Building Renovation/Addition :	2013
Is the Building mixed use?:	No
Ancillary Structures in Complex :	Ancillary four Structures are all teen shed one storied steel fabricated building used as purpose 1) Day care & medical centre 2) Generator 3) Yarn store 4) Winding section & machine godown.
Number of Ancillary Levels (Stories) :	1 Storied Tin Shade.

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Approximate Ancillary Structures Area (SF) :	13870 SF Approx
Number of Occupants :	Approximate 600 per Floor.
Exterior Facade Description :	Brick (5") masonry infill.
Structural System Description :	According to the structural design, it is RC slab with beam column frame 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:	No credible structural design documents available for review and kept on site as per Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories. They have reportedly lost their structural drawing. Daeyu management has not made as built drawing (they have constructed a part (15% of total building) attached with this building, only have structural drawing of that part).
Source of Findings:	Document Review: They have reportedly lost their structural drawing. Daeyu management has not made as built drawing.
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:	09 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:	They have no architectural approval drawing, no structural drawing & guideline with engineer approval, and factory inspector approval (Md. Esmail Mia at dated 14th January 2004) is not made on approved drawing sheet. But it should be in Approval Drawing sheet. Factory does not have credible structural design or as-built drawings available to confirm compliance with Alliance Standards Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings
Source of Findings:	Document Review: They have no architectural approval drawing, no structural drawing & guideline with engineer approval, and factory inspector approval (Md. Esmail Mia at dated 14th January 2004) is not made on approved drawing sheet
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:	09 Jun 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:	3	
Description:	Wind load is not shown in the report as per 2006 BNBC Part 6 Section 1.5.	
Source of Findings:	Document Review: Review of structural documents does not indicate consideration of wind load.	
Suggested Plan of Action:	The management should obtain design report so that design load criteria can be inspected. Design report should include wind, seismic, and other load data.	
Suggested Deadline Date:	09 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:	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:	Storage of materials on yarn store mezzanine floor have not been evaluated for concentrated load.	
Source of Findings:	Visual Assessment: Observation of concentrated load in yard store.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm and document that provisions have been made to accommodate loads on mezzanine floor in yarn store. If provisions have not been made, have a qualified structural engineer develop a remediation plan.	
Suggested Deadline Date:	09 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:	1
Description:	For the Mezanine Floor of yarn store in tin shed fabricated steel structure no live load has been calculated or shown in the structural documents as per Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads.
Source of Findings:	Document Review: Mezanine Floor of yarn store in tin shed fabricated steel structure no live load shown in the structural documents, Visual Assessment: Mezanine Floor of yarn store in tin shed fabricated steel structure no live load posted
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:	09 Jun 2014
Standard:	Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads

Structural System Construction

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:	No documentation of strength testing of MCAC has been provided.
Source of Findings:	Document Review: No documentation of strength testing available.
Suggested Plan of Action:	The compressive strength of columns, floor framing and shear walls using MCAC shall be investigated by an appropriate program of in-situ testing and representative destructive testing of core samples.
Suggested Deadline Date:	07 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:	2
Description:	Huge accessories materials fabrics are piled up in the storage area of Yarn store mazanine floor without anchorage as per Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6
Source of Findings:	Photograph: Yarn store mazanine floor without anchorage
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:	20 Jun 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:	1
Description:	Small areas of water ponding observed on roof top east side. Standing water on rooftop or other locations shall not be permitted as per Alliance Standard Part 8 Section 8.26 Durability and Maintenance.
Source of Findings:	Photograph: Water ponding roof top.
Suggested Plan of Action:	Under guidance from a qualified structural engineer design and apply roof drainage system with proper slope.
Suggested Deadline Date:	09 Jun 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 programe is in place to ensure that the live loads for which a floor or roof is or has been designed will not be exceeded as per 2006 BNBC Part 6 Chapter 1 Section 1.4.6 and Alliance Standard Part 13 Section 13.7 and Part 8 Section



	8.9.	
Source of Findings:	Worker Interviews: Management confirms they do not have a programme in place to ensure that the live loads for which a floor or roof is or has been designed will not be exceeded	
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:	19 May 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:	No load plan posted anywhere in the floor as per Reference Alliance Standards Part 8 Structural Design Section 8.10 Floor Loading Plans (Load Plans)	
Source of Findings:	Visual Assessment: No load plans observed.	
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:	19 May 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 load plan posted in the floor as per Alliance Standard Part 8 Section 8.20.5.3	
Source of Findings:	Visual Assessment: No load plans observed.	
Suggested Plan of Action:	Load plans (see other action item regarding preparation of plans) should be posted on each floor.	
Suggested Deadline Date:	19 May 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:	2	
Description:	As there is no load plan for the storage area no loading limit was found as per Reference Alliance Standards Part 8 Structural Design Section 8.11 Floor Load Markings	
Source of Findings:	Visual Assessment: No load signage observed	
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:	19 May 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:	There is no designated representative as Factory load manager as per Alliance Standards Part 8 Section 8.9 Factory Load Manager	
Source of Findings:	Worker Interviews: Management confirms no load manager has been assigned.	
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:	19 May 2014	
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	