INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

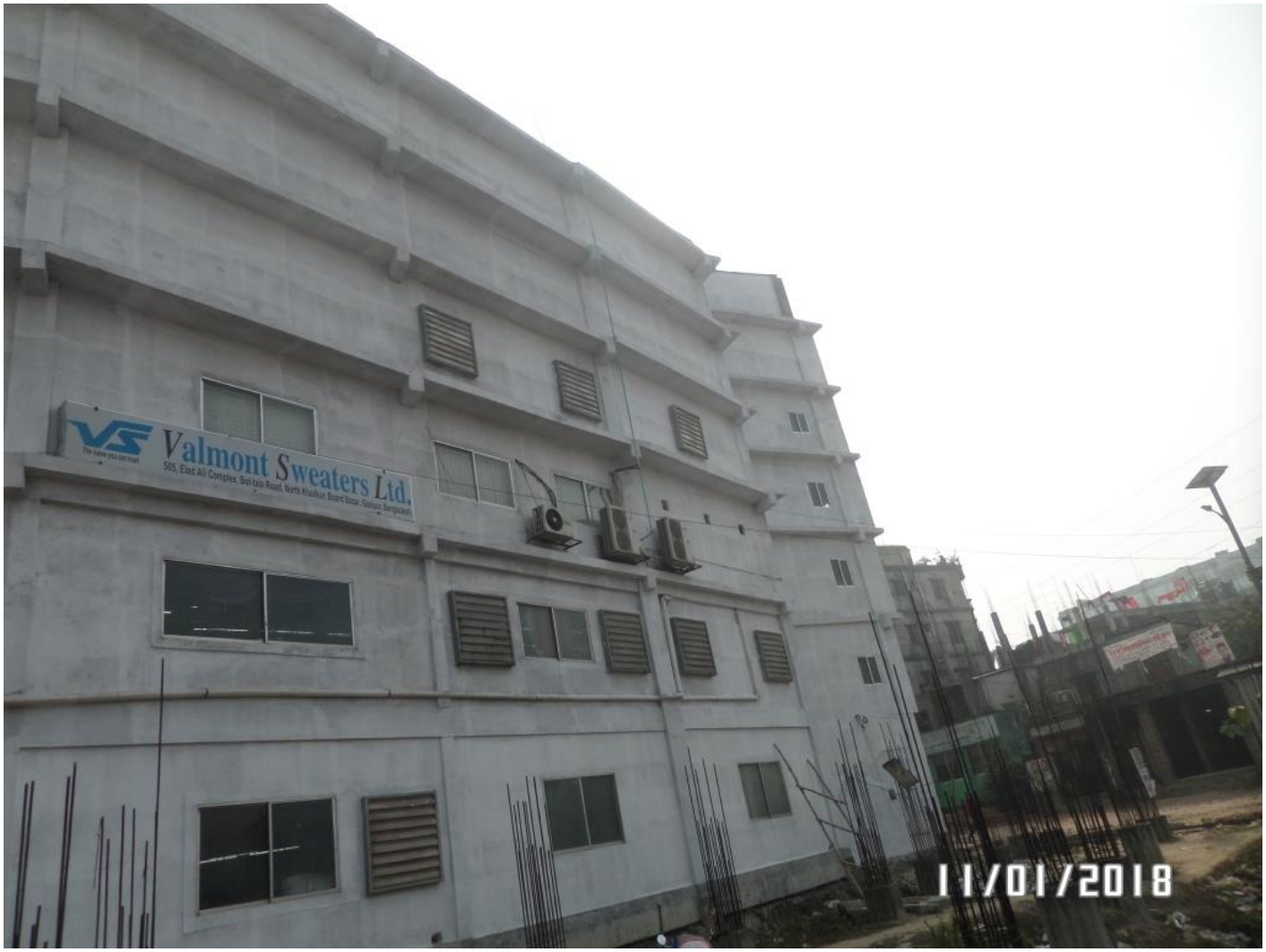
Factory Name:	**Valmont Sweaters Ltd**
Address:	**505, Yaid Ali Complex, North Khailkur, National University, Gazipur Gazipur Bangladesh**
Assessor:	**BD Technology**
Date:	**11 Jan 2018**

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:	Valmont Sweaters Ltd
Address:	505, Yaid Ali Complex, North Khailkur, National University, Gazipur Gazipur Bangladesh
Country:	Bangladesh
Province:	
City:	Gazipur
Zip Code:	
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	January 15, 2018.
Final Report Date :	January 18, 2018.
Buildings in Complex :	There are 2 buildings in complex. One is Main Factory Building and another one is Ancillary Structures.
Number of Building Levels (Stories) :	Main Factory Building is 6 storied and Ancillary Structures is Single storied.
Approximate Building Area (SF) :	Main Factory Building: 14000 sqft X 6= 84000 sqft. Ancillary Structures: 1000 sqft. Total Area: 85000 sqft.
Date of Building Construction :	Main Factory Building was constructed in 2009-2013.
Date of Last Building Renovation/Addition :	N/A
Is the Building mixed use?:	No
Ancillary Structures in Complex :	There is one Ancillary Structures available in Complex. This is namely Utility Building and used as Substation, Boiler & Generator Room.
Number of Ancillary Levels (Stories) :	Ancillary Structures is Single story.
Approximate Ancillary Structures Area (SF) :	Approximate Ancillary Structures Area = 1000 sqft.
Number of Occupants :	Main Factory Building: 660 (Gf:45; 1st:132; 2nd:201; 3rd:169; 4th:91; 5th floor:22;) Utility Building: 2
Exterior Facade	The perimeter façade of the main factory buildings typically consists of 5" thick non-bearing masonry infill

Description :	walls. In general, the masonry walls are abutted tightly against the structural concrete frame members. A plaster finish is provided in the exterior surface of the masonry walls. Aluminium framed glass windows are available in the periphery masonry walls. The perimeter façade of Utility Building is brick masonry wall and plaster finish is not provided in the wall.
Structural System Description :	Structural System of the Main Factory Building is a cast in place reinforced concrete structure. The typical structural floor framing system consists of R.C. beam slab. The building lateral force resisting system for wind and seismic loads appears to be a beam and column system. Foundation system consists of Isolated Footing Foundation (As per the available documents). Utility Building is brick wall with RCC slab and in some portion brick wall above tin shed.
Issues were not found during the structural integrity assessment that required the Emergency Escalation Protocol (and referral to NTC Review Panel)?:	Yes

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 few structural documents for the main factory building are available for review and kept on site but the documents are not credible as per BNBC part 6 section 1.9 and the requirements of Part 8 Section 8.19/8.20 of the Alliance Standard. Design Report for the Main Factory Building is not available. As-built drawing for Utility Building is not available.	
Source of Findings:	Document Review: Document reviewed during Site visit January 11, 2018.	
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. The documents should be prepared for all buildings within the factory complex. Also Design Report for the Main Factory Building should be prepared.	
Suggested Deadline Date:	15 Mar 2018	
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:	Credible structural documentation indicating general conformance with 2006 BNBC or other comparable applicable international model building code could not be produced.	
Source of Findings:	Document Review: Document reviewed during Site visit January 11, 2018.	
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:	15 Mar 2018	
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:	Some structural drawings are available but are not in compliance with Part 8 Section 8.20 of the Alliance Standard and do not indicate compliance with the seismic and wind requirements of the 2006 BNBC.	
Source of Findings:	Document Review: Document reviewed during Site visit January 11, 2018.	
Suggested Plan of Action:	Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC.	
Suggested Deadline Date:	15 Mar 2018	
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 credible documentation are available to indicate 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: Document reviewed during Site visit January 11, 2018.	
Suggested Plan of Action:	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.	
Suggested Deadline Date:	15 Mar 2018	
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:	3	
Description:	During visual review concentrated load condition is noted in PVC Tank in Roof top and 5th floor storage area.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.	
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:	15 Mar 2018	
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 were not available and the design live loads was not mentioned in the available as-built structural drawings. The storage area at 5th floor of the main building, were evaluated and determined to create loading condition in excess of 2.0 kN/m2 (42 psf).	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.	
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:	15 Mar 2018	
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:	2	
Description:	No certificates of occupancy are available for review.	

Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.
Suggested Plan of Action:	Provide Certificates of Occupancy for review.
Suggested Deadline Date:	15 Mar 2018
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment

Structural System Construction

Question:	Is the structural system free of distress, settlement, shifting, or cracking in columns or walls?
Priority Level:	High
Non-Compliance Level:	3
Description:	Cracking in found in brick wall in different floor.
Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.
Suggested Plan of Action:	Have a qualified structural engineer provide further testing and analysis of distress, settlement, shifting, or cracking in walls and provide a remediation plan to correct noted issues.
Suggested Deadline Date:	15 Mar 2018
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:	During visual assessment water ponding on the flat roof of the Main Building was observed. Corrosion is found in exposed rebar in roof. Brick wall is also found without plaster and painting and in roof parapet is found less than 42 inch. A lot of debris is found in roof. Dampness is found in most of the floor brick wall. In Utility Building Brick Wall is also found without Plaster,Painting and Dampness is also present in Brick Wall and Roof Slab. In Main Factory Building Stair Roof and in Utility Building Roof Non Engineering Structures like Bamboo, Wood with Tin Shed is found.

Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.
Suggested Plan of Action:	Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues. The roof slope and drainage system should be corrected as required to produce proper and timely drainage of the roof surface and eliminate or minimize water ponding. Where not already installed, an active roofing (including a continuous moisture barrier) and drainage system as designed and directed by a qualified design professional specializing in the design of such systems should be provided. All exposed rebar should be protected from corrosion by using suitable technique like anti corrosive paint or others. All Brick wall should make plaster and paint properly. Roof parapet work should completed properly upto 42 inch. All debris and non engineering structures should remove properly.
Suggested Deadline Date:	15 Mar 2018
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:	Roof slab was unsealed and signs of water intrusion were also visible at the

	exterior brick masonry facade wall. This condition could potentially lead to moisture exposure for the columns, beams and slabs constructed of MCAC.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.	
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:	15 Mar 2018	
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:	During visual assessment, PVC Tank in roof and storage rack in 4th floor found without seismic bracing.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.	
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:	15 Mar 2018	
Standard:	Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6	
Question:	The exterior façade is free of cracking.	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	Cracking was observed in the exterior facade.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.	
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:	15 Mar 2018	
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:	2
Description:	Signs of water intrusion due to lack of performance of the facade system was observed in main factory building.
Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.
Suggested Plan of Action:	Repair the exterior façade system to prevent water intrusion.
Suggested Deadline Date:	15 Mar 2018
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 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: Visual Assessment on Site visit January 11, 2018.
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:	15 Mar 2018
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:	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: Visual Assessment on Site visit January 11, 2018.
Suggested Plan of	Have a qualified structural engineer develop Floor Loading Plans per the

Action:	requirements of Part 8 Section 8.20.5.3.	
Suggested Deadline Date:	15 Mar 2018	
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 are not posted as required.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.	
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 the building.	
Suggested Deadline Date:	15 Mar 2018	
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:	Areas used for storage of work materials and work products are not clearly marked to indicate a acceptable loading limits.	
Source of Findings:	Visual Assessment: Visual Assessment on Site visit January 11, 2018.	
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:	15 Mar 2018	
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 (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 Assessment on Site visit January 11, 2018.
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:	15 Mar 2018
Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager