

INITIAL STRUCTURAL INTEGRITY ASSESSMENT REPORT (SIAR)

Factory Name: **Pearl Garments Co. Ltd.**
Address: **Palash Bari, Nabinagar, Savar Savar Dhaka
Bangladesh**
Assessor: **Bureau Veritas**
Date: **19 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.



Figure: View of building

Factory Name: Pearl Garments Co. Ltd.

Address: Palash Bari, Nabinagar, Savar Savar Dhaka Bangladesh

Assessor: Bureau Veritas

Date: 19 Jun 2014



ALLIANCE
FOR BANGLADESH WORKER SAFETY

GENERAL INFORMATION

General Information

Factory Name:	Pearl Garments Co. Ltd.
Address:	Palash Bari, Nabinagar, Savar Savar Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Savar
Zip Code:	
Audit Duration:	1 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	06-24-2014
Final Report Date :	11-01-2014
Are all Action Items From Previous Assessment Completed?:	N/A
Buildings in Complex :	There are 6 buildings in the factory premises out of which two are main production buildings and four are ancillary buildings. The buildings are named as: 1) Five story main production building, 2) Single story accounts production shed, 3) Single story prefab store shed, 4) Single story Wastage shed, 5) Single story security shed, 6) Two story RCC generator & boiler shed.
Number of Building Levels (Stories) :	1) Five story main production building: Stories above grade: 5, Stories below grade: 0, Occupied levels: 5, 2)Single story accounts shed: Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 3)Single story prefab store shed: Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 4)Single story Wastage shed: Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 5)Single story security shed: Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 6)Two story RCC generator & boiler shed: Stories above grade: 2, Stories below grade: 0, Occupied levels: 2.
Approximate Building Area (SF) :	Total area of all buildings in the factory premises: 102139.00 sft. Building wise breakdown as follows: 1) Five story main production building: 81076.00 sft, (Ground floor: 17097.00 sft, 1st floor: 16127.00 sft, 2nd floor: 16127.00 sft, 3rd floor: 16127.00 sft, 4th floor: 7799.00 sft Roof:7799.00 sft) 2) Single story accounts shed: 2530.00 sft, 3) Single story prefab store shed: 16995.00 sft, 4) Single story Wastage shed: 520.00 sft, 5) Single story security shed: 100.00 sft, 6) Two story RCC generator & boiler shed: 1918.00 sft, (Ground floor: 1060.00 sft, 1st floor: 858.00 sft).
Date of Building Construction :	Factory personnel informed the date of construction as follows: Started in December 1999 and finished in December 2008 (all buildings).
Date of Last Building Renovation/Addition :	No record for date of renovation or addition was found from factory personnel.



Is the Building mixed use?:	No
Ancillary Structures in Complex :	1) Single story accounts shed, 2) Single story Wastage shed, 3) Single story security shed, 4) Two story RCC generator & boiler shed.
Number of Ancillary Levels (Stories) :	1)Single story accounts shed: Building height (Highest occupied floor level): 30 cm or 1 ft above grade [Height up to roof: 3.05 m or 10 ft], Stories above grade: 1, Stories below grade: 0, Occupied levels: 1 2) Single story Wastage shed: Building height (Highest occupied floor level): 30 cm or 1 ft above grade [Height up to roof: 3.05 m or 10 ft], Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 3) Single story security shed: Building height (Highest occupied floor level): 30 cm or 1 ft above grade [Height up to roof: 3.05 m or 10 ft], Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 4) Two story RCC generator & boiler shed: Building height (Highest occupied floor level): 3.65 m or 12 ft above grade [Height up to roof: 6.70 m or 22 ft], Stories above grade: 2, Stories below grade: 0, Occupied levels: 2.
Approximate Ancillary Structures Area (SF) :	1) Single story prefab store shed: 16995.00 sft, 2) Single story Wastage shed: 520.00 sft, 3) Single story security shed: 100.00 sft, 4) Two story RCC generator & boiler shed: 1918.00 sft, (Ground floor: 1060.00 sft, 1st floor: 858.00sft).
Number of Occupants :	Total number of occupants: 1300. 1)Five story main production building: 1240 (Ground floor: 250, 1st floor: 330, 2nd floor: 330, 3rd floor: 220, 4th floor: 110), 2)Single story accounts production shed: 20, 3)Single story prefab store shed: 25, 4)Single story Wastage shed: 1, 5)Single story security shed: 10, 6)Two story RCC generator & boiler shed: 4 (Ground floor: 2, 1st floor: 2).
Exterior Facade Description :	The exterior facade of the building is of infilled masonry with some decorative glass panel in RCC frame. The main door of the building is swing door and rolling shutter door. Windows are sliding glass in aluminium frame. MS Railing is used as parapet surrounding the roof. One basket type ladder at front facade of building is anchored.
Structural System Description :	The building is a special structural system. In ground and 1st floor, half portion of building is beam-slab system and rest of the portion is flat slab with edge beam. In 2nd floor, full building structural system is flat slab with edge beam. In 3rd floor, half portion of the building is beam-slab system and rest of the portion is PEB shed. In 4th floor, the structural system is beam-slab type. The foundation type is isolated footing. This building is a irregular framing system.



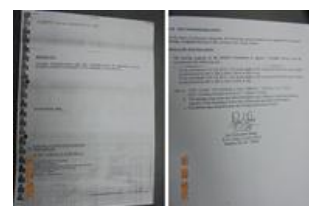
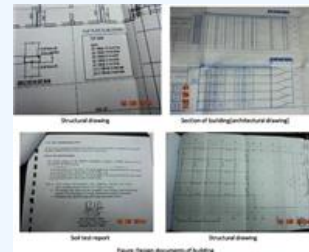
ASSESSMENT FINDINGS

Structural System Design

Question:	Are Certificates of Occupancy available for review?	
Priority Level:	Low	
Non-Compliance Level:	1	
Description:	The factory has not obtained Certificates of Occupancy from the appropriate authority.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:	Apply for issuance of Certificates of Occupancy, and pursue the matter to obtain the same.	
Suggested Deadline Date:	10 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment	
Question:	Structural Engineer of Record	
Priority Level:		
Non-Compliance Level:		
Description:	Mr. Pizush Mohan Bhaowal is the Structural Engineer of Record for RCC portion of the main building whose IEB membership no. is M-21336 and signature is available on site. Mr. Tarkik Shahriar is the Structural Engineer of Record for steel portion of main building whose IEB membership no. is MIEB-28199 and signature is available on site.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Provide the name and firm of the structural engineer of record.	
Question:	Architect of Record	
Priority Level:		
Non-Compliance Level:		
Description:	Mr. Shakil Ahmed is the Architect of Record whose IAB membership no. is A-093 and signature is available on site.	



Source of Findings:	Document Review: Document review on site.
Suggested Plan of Action:	
Suggested Deadline Date:	
Standard:	Provide the name and firm of the architect of record.
Question:	Are credible structural design documents available for review and kept on site?
Priority Level:	Medium
Non-Compliance Level:	1
Description:	Five storied main production building: There is a set of credible design document available for review and kept on site. Warehouse: As-built structural design documents are available without the design report.
Source of Findings:	Document Review: Document review on site.
Suggested Plan of Action:	Have a qualified structural engineer prepare design report for the warehouse based on the requirements of the Alliance Standard.
Suggested Deadline Date:	01 Dec 2014
Standard:	Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories
Question:	Is a Geotechnical Report available for review and kept on site?
Priority Level:	Low
Non-Compliance Level:	
Description:	The Geotechnical Report is complete and available for review.
Source of Findings:	Document Review: Document review on site.
Suggested Plan of Action:	
Suggested Deadline Date:	
Standard:	Alliance Standard Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings





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 building was designed and constructed before 2006. The main production building was designed according to BNBC 1993. For the warehouse there is a indication on the structural documents that, the building is designed as per BNBC 1993, UBC 1997 and ACI 1995. But this statement can not accepted without design report.
Source of Findings:	Document Review: Document review on site.
Suggested Plan of Action:	Engage a qualified structural engineer to develop the required documents (Design report for the warehouse) 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:	01 Dec 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:	
Description:	The building was designed and constructed before 2006.
Source of Findings:	Document Review: Document review on site.
Suggested Plan of Action:	
Suggested Deadline Date:	
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:	For main building: The design document provides information in the design note that the wind loading and seismic loading has been considered. But, the assessment report claims that " beam columns joints detailed in the drawing of the main building lack the detailing of reinforcement required by the present day code for seismic safety." For warehouse: For the warehouse there is a indication on the structural documents that, the building is designed by considering the wind load and seismic load . But this statement can not accepted without design report.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:	Main building: Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading. Ware house: Engage a qualified structural engineer to prepare design report to confirm satisfactory structural performance of the buildings under wind loading.	
Suggested Deadline Date:	01 Dec 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:	Has evidence of structural integrity been provided using a Preliminary Structural Assessment?	 Evidence of preliminary structural assessment
Priority Level:	High	
Non-Compliance Level:		
Description:	A preliminary structural assessment was carried out in main factory building and the report concluded that the building is safe.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Reference Alliance Standards Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings	
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:		
Description:	The structure has not been previously expanded.	
Source of Findings:	Visual Assessment: Visual inspection on site.	



Suggested Plan of Action:		 Figure: Structural system type of building
Suggested Deadline Date:		
Standard:	Reference Alliance Standards Part 8 Section 8.1 Applicability of Building Code.	
Question:	Structural System Type as defined by 2006 BNBC Part 6 Chapter 1 Table 6.1.2.	
Priority Level:		
Non-Compliance Level:		
Description:	The five story main production building is a special structural system. In ground and 1st floor, half portion of the floor is beam-slab system and rest of the portion is flat slab with edge beam. In 2nd floor, structural system is flat slab with edge beam. In 3rd floor, half portion of the floor is beam-slab system and rest of the portion is PEB shed. In 4th floor, the structural system is beam-slab system.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:		 Figure: Regularity of structure
Suggested Deadline Date:		
Standard:	2006 BNBC Part 6 Chapter 1 Table 6.1.2	
Question:	What is the Structural Configuration?	
Priority Level:		
Non-Compliance Level:		
Description:	It is a irregular structure both vertically and horizontally.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	2006 BNBC Part 6 Chapter 1 Section 1.3.4	



Question:	Is a clear and redundant load path to resist lateral loads provided?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	The lateral load path is not apparent, and further information (design report) is required to understand the redundancy against lateral loads.	
Source of Findings:	Visual Assessment: Visual assessment on site.	
Suggested Plan of Action:	Have a qualified structural engineer complete further analysis of the structure and develop a remediation plan if required.	
Suggested Deadline Date:	12 Aug 2014	
Standard:	Alliance Standards Part 8 Section 8.17 Design for Lateral Loads and 8.3.3. 2006 BNBC Part 6 Section 1.5	
Question:	Are the available FoS for the columns adequate based on Preliminary calculation?	
Priority Level:	High	
Non-Compliance Level:		
Description:	FoS of the main building columns (front portion) are given below: 1) Considering minimum concrete compressive strength for MCAC (2045 psi) and 40 ksi rebar strength: Central Column: 2.46, Corner Column: 3.47, Edge Column: 2.19, 2) Considering the value of UPV (2200 psi) and 40 ksi rebar strength: Central Column: 2.57, Corner Column: 3.63, Edge Column: 2.29, FoS of main building columns (backside portion) are given below: 1) Considering minimum concrete compressive strength for stone chips (2370 psi) and 40 ksi rebar strength: Central Column: 1.94, Corner Column: 3.50, Edge Column: 2.51, 2) Considering the value of UPV (3000 psi) and 40 ksi rebar strength: Central Column: 2.23, Corner Column: 4.01, Edge Column: 2.92, FoS of warehouse columns is given below: Central Column: 1.84, Corner Column: 3.38, Edge Column: 2.51, The FoS for all columns is within the acceptable limit.	
Source of Findings:	Uploaded Document: FoS calculations uploaded.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Provide results of preliminary calculations in space provided. a) column capacity; FoS > 1.86 - Safe b) column capacity; FoS 1.5 -1.86 - Needs Evaluation c) Column capacity; FoS 1.25-1.5 - Needs Evaluation d) Column capacity; FoS <1.25 - Unsafe In case of a critically low FoS (<1.25), consider Immediate Escalation Protocol	



Question:	Results of ferro-scanning for confirmation of steel rebar in the columns of the lowest tier were satisfactory.
Priority Level:	Medium
Non-Compliance Level:	
Description:	Result of ferro-scanning confirms that the number of rebars are matching with the structural design.
Source of Findings:	Visual Assessment: Visual assessment on site.
Suggested Plan of Action:	
Suggested Deadline Date:	
Standard:	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment
Question:	What are the full dead and live loads of the floor slabs and decks?
Priority Level:	
Non-Compliance Level:	
Description:	Main building: The slab thickness of beam slab is 5.83" (average). Therefore, dead load is $72.87+25(FF)=97.91$ psf. The estimated live load is about 42 psf. And the slab thickness of flat slab is 6.3" (average). Therefore, dead load is $78.75+25(FF)=103.8$ psf. The estimated live load is about 42 psf. Ware house: As slab thickness is 4". Dead load is $50 + 25 (FF) = 75$ psf; The estimated live load is about 42 psf.
Source of Findings:	Document Review: Document review on site., Visual Assessment: Visual assessment on site.
Suggested Plan of Action:	
Suggested Deadline Date:	
Standard:	Provide information regarding the dead and live loads of the floor slabs and decks.
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:	
Description:	There are four water tanks, each having capacity of 1500 litre of water storage. There is analytical information on the provision of these tanks in the design.



Figure: Ferro scanning of building





Source of Findings:	Document Review: Document review on site.	
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:		
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:		
Description:	The density of operation does not exceed 42 psf.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standards Part 8 Section 8.15 Minimum Floor Design Loads	
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:	1	
Description:	Water ponding on the rooftop and dampness on the ground floor, 1st, 3rd, and 4th floors have been observed in the factory building.	
Source of Findings:	Visual Assessment: Visual assessment 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:	12 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	



Dampness at 1st floor wall Water ponding on roof
 Figure: Presence of dampness and water ponding



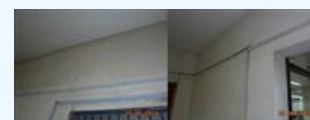
Question:	The exterior façade is free of cracking.	
Priority Level:	Low	
Non-Compliance Level:		
Description:	The exterior façade is free of cracking.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.2	
Question:	Are expansion joints provided at appropriate intervals on the exterior façade?	
Priority Level:	Low	
Non-Compliance Level:		
Description:	No expansion joint is provided at exterior facade.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings	
Question:	Is expansion joint material free from cracking and other forms of deterioration?	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	There are expansion joints, but they are filled with mortar. Mortar will make the expansion joint ineffective. Also, the expansion joint material is not free from cracking.	
Source of Findings:	Visual Assessment: Visual assessment showed that the expansion joint material is not free from cracking.	
Suggested Plan of Action:	Remove deteriorated expansion joint material, and provide new approved material at the expansion joint.	
Suggested Deadline Date:	17 Aug 2014	



Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
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:	There is sign of dampness has been observed at front side of roof level on the due to lack of performance of the façade.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:	Have the exterior façade repaired to ensure prevention of dampness and water ponding on slab.	
Suggested Deadline Date:	17 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	
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:		
Description:	The performance of the key structural elements are satisfactory.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.3.3	
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:		
Description:	The structural system is free of settlement, cracking, excessive perimeter separation etc which shows no noticeable settlement has occurred.	
Source of Findings:	Visual Assessment: Visual Inspection on site.	
Suggested Plan of Action:		



Suggested Deadline Date:		
Standard:	Reference Alliance Standards Part 8 Structural Design Section 8.2 Structural Integrity of Existing Factory Buildings	
Question:	Is the structural system free of deflections (sagging), rotations (twisting), perceivable vibrations, or other noticeable movements of the structure?	
Priority Level:	High	
Non-Compliance Level:		
Description:	The structural system is free of deflections (sagging), rotations (twisting), perceivable vibrations, or other noticeable movements of the structure.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
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, separations, or cracking that indicates lack of performance or overstress of the lateral load-carrying system?	
Priority Level:	High	
Non-Compliance Level:		
Description:	There is no visible sign of distress or crack that may indicate lack of performance or over-stress of the lateral load-carrying system.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.3.3	
Question:	Is the structural system free of distress, settlement, shifting, or cracking in columns or walls?	
Priority Level:	High	
Non-Compliance Level:	1	
Description:	There are no cracks in the columns. However, there are some masonry cracks have been observed in Ground floor, 2nd and 3rd floor. Although the cracks	





	are not major structural concern, but further maintenance is required.	
Source of Findings:	Visual Assessment: Visual assessment on site.	
Suggested Plan of Action:	Have a qualified structural engineer provide further testing and analysis of racking in walls and provide a remediation plan to correct noted issues.	
Suggested Deadline Date:	01 Dec 2014	
Standard:	Alliance Standard Part 8 Section 8.3.3	
Question:	Have any previous repairs to correct structural deficiencies or to reinforce the existing structure been completed?	
Priority Level:		
Non-Compliance Level:		
Description:	No strengthening or retrofitting has been done on the structural members of the building.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:		
Question:	Was masonry-chip aggregate concrete (MCAC) used in the construction of the building?	
Priority Level:		
Non-Compliance Level:		
Description:	Front portion of the structure is of MCAC and the back side portion of the structure is of stone chips.	
Source of Findings:	Visual Assessment: Visual assessment on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Reference Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC)	
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:	
Description:	The structural members constructed with MCAC have not been investigated by an appropriate program of in-situ testing and representative destructive testing or core samples. The column stress calculated, taking into account the strength of the concrete, do not show overstress at assuming the Alliance Standard minimum compressive strength and UPV test.
Source of Findings:	Document Review: Document review on site.
Suggested Plan of Action:	
Suggested Deadline Date:	
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:	The roof of the building is constructed of MCAC aggregate, but it has not been sealed with a protective coating.
Source of Findings:	Visual Assessment: Visual inspection on site.
Suggested Plan of Action:	Provide a protective coating to the structural elements constructed with MCAC that are exposed to rainfall or other sources of water. Have the protective coating approved by the Alliance or a qualified structural engineer. In the alternative, provide a 2% slope on the exposed surface to prevent the accumulation of water.
Suggested Deadline Date:	12 Aug 2014
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:	There are sign of corrosion in the steel members on the 3rd floor of the structure.



Figure: MCAC in slab



Figure: Corrosion in steel column



Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:	Complete further testing on areas of deterioration in order to understand the level of corrosion and weakening of the member. Then, have a qualified structural engineer develop a remediation plan.	
Suggested Deadline Date:	12 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.26	
Question:	For post-tensioned reinforced concrete systems or elements, cored holes have not compromised the post-tensioned strands.	
Priority Level:	High	
Non-Compliance Level:		
Description:	There is no post-tensioned reinforced concrete system or element has been found in the structure.	
Source of Findings:	Document Review: Document review on site., Visual Assessment: Visual assessment on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Not Applicable	
Question:	Is the structure free from any major/progressive distress?	
Priority Level:	High	
Non-Compliance Level:		
Description:	There is no sign of progressive distress visible in the structure.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standards Part 8 Section 8.3.3	
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:	Main Building: 1) Racks of cutting cloth at fourth floor. 2) Four plastic water tanks at the top of the staircase Two storied utility building: 1) Racks of mechanical equipment at ground floor. Warehouse: 1) Accessories racks at ground floor. All the racks, tanks and equipment's mentioned here should be anchored and braced.
Source of Findings:	Visual Assessment: Visual assessment on site.
Suggested Plan of Action:	Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standards.
Suggested Deadline Date:	12 Aug 2014
Standard:	Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6
Question:	If the building is currently being renovated or expanded, are the Construction Practices and Safety requirements of Section 9 being followed?
Priority Level:	Medium
Non-Compliance Level:	
Description:	Previously, above the 4th floor there was an approved steel shed structure. After the detailed assessment, the assessment report recommended that the steel shed structure can be replaced by RCC beam-slab floor system. (the renovation has been completed)
Source of Findings:	Document Review: Document review on site., Visual Assessment: Visual assessment on site.
Suggested Plan of Action:	
Suggested Deadline Date:	
Standard:	Alliance Standard Part 9 Construction Practices and Safety.



Structural Safety Programs

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:	There is no Floor Load Plan available showing the actual maximum operational loading that is allowable on each floor.
Source of Findings:	Document Review: Document review 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:	12 Aug 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:	Floor Load Plans are not posted as required.	
Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:	Have a qualified structural engineer prepare load plans for each floor, including the information required in Section 8.20 of the Alliance Standard. Post Floor Load Plans at all required locations.	
Suggested Deadline Date:	12 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.20.5.3	
Question:	Are floor loads in compliance with posted plans?	
Priority Level:	Medium	
Non-Compliance Level:		
Description:	There are no floor load plans available to compare with the actual floor loads.	
Source of Findings:	Visual Assessment: Visual assessment on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.10 Floor Loading Plans (Load Plans).	
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:	Floor Load Plans have not been developed. In addition, there are no markings on the floor to designate spaces and heights for the storage of work materials.	



Source of Findings:	Visual Assessment: Visual inspection on site.	
Suggested Plan of Action:	Have a qualified structural engineer prepare a load plan for each floor, and have the floors marked to designate storage areas as per the developed load plans.	
Suggested Deadline Date:	12 Aug 2014	
Standard:	Alliance Standard Part 8 Section 8.11 Floor Load Markings	
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 designated load for each floor will not be exceeded	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:	Develop a program to ensure that all live loads for which a floor or roof has been designed will not be exceeded. The designated Load Manager shall oversee this program and ensure that it is enforced.	
Suggested Deadline Date:	12 Aug 2014	
Standard:	Alliance Standard Part 13 Section 13.7 and Part 8 Section 8.9.	
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:	There is no designated representative (Factory Load Manager) who is onsite full time, trained regarding the structural floor capacity, and serving as an ongoing vendor resource and monitor of operational factory floor loadings.	
Source of Findings:	Document Review: Document review on site.	
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, is located onsite full time at the factory and 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 shall be responsible for ensuring 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:	12 Aug 2014	

Factory Name: **Pearl Garments Co. Ltd.**

Address: **Palash Bari, Nabinagar, Savar Savar Dhaka Bangladesh**

Assessor: **Bureau Veritas**

Date: **19 Jun 2014**



ALLIANCE
FOR BANGLADESH WORKER SAFETY

Standard:	Alliance Standards Part 8 Section 8.9 Factory Load Manager	
Question:	For post-tensioned reinforced concrete systems or elements, is a program in place to ensure post-tensioned strands are located before core drilling begins?	
Priority Level:	Medium	
Non-Compliance Level:		
Description:	There is no post-tensioned reinforced concrete system or element has been found in the structure.	
Source of Findings:	Document Review: Document review on site.	
Suggested Plan of Action:		
Suggested Deadline Date:		
Standard:	Alliance Standard Part 8 Section 8.26 Durability and Maintenance	