

Initial Structural Integrity Assessment Report (SIAR)

Factory Name : **Radisson Casual Wear Ltd.**
Address: **Sreerampur, Kalampur , Dhamrai, Dhaka Bangladesh**
Assessor: **EIMS Ltd.**
Audit Date : **13 Dec 2018**



FACTORY INFORMATION

General Information	
Factory Name	Radisson Casual Wear Ltd.

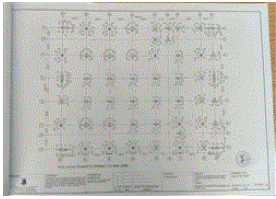
Basic Information	
Address :	Sreerampur, Kalampur , Dhamrai, Dhaka Bangladesh
Country :	Bangladesh
Province/State :	Dhaka
City/Town :	
Postal Code :	
Audit Duration :	1 Days 0 Hours
Re-Audit :	No Re-Audit
Draft Report Date :	20 December, 2018
Final Report Date :	15 July, 2019
Buildings in Complex :	There are one main building and five ancillary buildings in complex. Main building: 1) Main Production Building with Mezzanine. Ancillary buildings are: 2) Utility Shed (Generator, Compressor, Sub-station and Fire Pump Room), 3) ETP, Underground Water Reservoir and Accessories Warehouse, 4) Boiler Room, 5) Child Care and Medical Room and 6) Security Room.
Number of Building Levels (Stories) :	Main Production Building with Mezzanine: 7 storied with two mezzanine floors. All other ancillary buildings are single storied.
Approximate Building Area (SF) :	1) Main Production Building with one Mezzanine: each floor: 15000 sft, 7 storied total= 7X15000= 105000 sft + mezzanine floor (2000+100)= 105000+2000+100= 107100 sft. 2) Utility Shed: 1863 sft, 3) ETP, Underground Water Reservoir and Accessories Warehouse: ETP=4,067 sft+ Accessories Warehouse=1,333 sft + ETP Control Room=1,050 sft= 6450 sft, 4) Boiler Room= 2706 sft, 5) Child Care and Medical Room= 495 sft and 6) Security Room= 176 sft. Total building area covered= 1,18,790 sft
Date of Building Construction :	1) Main Production Building with Mezzanine: 2016~18, 2) Utility Shed (Generator, Compressor, Sub-station and Fire Pump Room): 2017, 3) ETP, Underground Water Reservoir and Accessories Warehouse: 2017, 4) Boiler Room: 2018, 5) Child Care and Medical Room: 2018 and 6) Security Room: 2017.
Date of Last Building Renovation/Addition :	No renovation/addition have been done previously in any audited building
Is the Building mixed use? :	No

Ancillary Structures in Complex :	There are five ancillary buildings in complex. Ancillary buildings are: 1) Utility Shed (Generator, Compressor, Sub-station and Fire Pump Room), 2) ETP, Underground Water Reservoir and Accessories Warehouse, 3) Boiler Room, 4) Child Care and Medical Room and 5) Security Room.
Number of Ancillary Levels (Stories) :	All ancillary buildings are single storied.
Approximate Ancillary Structures Area (SF) :	1) Utility Shed: 1863 sft, 2) ETP, Underground Water Reservoir and Accessories Warehouse: ETP=4,067 sft+ Accessories Warehouse=1,333 sft + ETP Control Room=1,050 sft= 6450 sft, 3) Boiler Room= 2706 sft, 4) Child Care and Medical Room= 495 sft and 5) Security Room= 176 sft.
Number of Occupants :	Main Production Building with Mezzanine: GF: 70, Mezzanine floor: 16, 1F: 60, 2F: 70, 3F: 0, 4F: 185, 5F: 358, 6F: 195, Total= 954. Utility Shed: 01, ETP, Underground Water Reservoir and Accessories Warehouse: 02, Boiler Room: 10, Child Care and Medical Room: 10 and Security Room: 15. Total occupant in all buildings= 992
Exterior Facade Description :	Main Production Building with Mezzanine: 5 inch brick masonry wall both side plastered without reinforcement in facade wall, some window and some glasses in the building. Utility Shed; ETP, Underground Water Reservoir and Accessories Warehouse; Boiler Room: 5 inch brick masonry wall both side plastered without reinforcement in facade wall, some window, 0.5 mm wall sheet(with insulation) above brick wall. Child Care and Medical Room; Security Room: 5 inch brick masonry wall both side plastered without reinforcement in facade wall with some window and door.
Structural System Description :	Main Production Building with Mezzanine: RCC beam-column frame with shear wall. Pile foundation has been given. Utility Shed; ETP, Underground Water Reservoir and Accessories Warehouse; Boiler Room: RCC column frame with steel shed. Foundation is individual column footing. Child Care and Medical Room: RCC column frame with tin shed. Foundation is unknown. Security Room: RCC column with flat slab. Foundation is unknown. ETP (4063 sft portion): Open to Sky having shear wall.
Issues were not found during the structural integrity assessment that required the Emergency Escalation Protocol (and referral to NTC Review Panel)? :	Yes

Last Assessment Information	
Auditor	EIMS Ltd.
Assessment Date	13 Dec 2018

ASSESSMENT FINDINGS

Structural Safety Report - Structural System Design

Question	Are Certificates of Occupancy available for review?
Level(Priority Level)	Low
Non-Compliance Level	2
Description	Certificate of Occupancy was not available during site visit.
Source of Findings	Document Review: Document reviewed during Site visit on 13 December, 2018
Suggested Plan of Action	Provide Certificates of Occupancy for review.
Suggested Deadline Date	19 Aug 2019
Standard	Alliance Standard Part 8 Section 8.3 Preliminary Structural Assessment
Evidence	
Question	Are credible structural design documents available for review and kept on site?
Level(Priority Level)	Medium
Non-Compliance Level	2
Description	Design report is required for two buildings: 1) Main Production Building with Mezzanine and 2) ETP, Underground Water Reservoir and Accessories Warehouse. Partition wall block of Chemical store and Sub-chemical room, mezzanine floor in store section was not shown in architectural drawing of Main Production Building with Mezzanine. Structural drawing of this building was found credible. Complete as-built drawing should be prepared for all ancillary buildings.
Source of Findings	Document Review: As-built drawings of audited buildings
Suggested Plan of Action	Have a qualified structural engineer prepare credible as-built documents based on the requirements of NTPA Guidelines Part A Section 16.
Suggested Deadline Date	15 Aug 2019
Standard	Alliance Standard Part 8 Section 8.19 Required Structural Documentation for New and Existing Factories
Evidence	  Structural drawing-1 Structural drawing-2

Question	Can credible structural documentation indicating general conformance with 2006 BNBC or other comparable applicable international model building code be produced?
Level(Priority Level)	Medium
Non-Compliance Level	2
Description	No design report was found for any building to confirm with 2006 BNBC or other comparable applicable international model building code.
Source of Findings	Document Review: Document reviewed during Site visit on 13 December, 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 2006 BNBC Part 6 Chapter 1 Section 1.9 and NTPA Guidelines Part A Section 17
Suggested Deadline Date	15 Aug 2019
Standard	Reference Alliance Standards Part 8 Section 8.2 Structural Integrity of Existing Factory Buildings
Evidence	
Question	If built after 2006, can documented compliance with the seismic and wind requirements of the 2006 BNBC be provided?
Level(Priority Level)	Medium
Non-Compliance Level	2
Description	No design report was found for any building to confirm with the seismic and wind requirements of the 2006 BNBC.
Source of Findings	Document Review: Document reviewed during Site visit on 13 December, 2018
Suggested Plan of Action	Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC and NTPA Guidelines.
Suggested Deadline Date	19 Aug 2019
Standard	Alliance Standards Part 8 Section 8.17 Design for Lateral Loads and 2006 BNBC Part 6 Section 1.5
Evidence	
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?
Level(Priority Level)	Medium
Non-Compliance Level	2
Description	No design report was found for any building to confirm 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 on 13 December, 2018
Suggested Plan of Action	Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.

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Evidence	 Rooftop PVC water tank
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Structural Safety Report - Structural System Construction	
Question	Have all areas of needed maintenance, including areas with efflorescence, dampness, standing water on rooftops, and corrosion been addressed.
Level(Priority Level)	Medium
Non-Compliance Level	2
Description	Water ponding was found on roof of Main Production Building with Mezzanine. Dampness was found in brick partition wall at 4th floor toilet block in this building.
Source of Findings	Photograph: 1. Water ponding on roof
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	15 Aug 2019
Standard	Alliance Standard Part 8 Section 8.26 Durability and Maintenance
Evidence	  Water ponding on roof Dampness in toilet block
Question	The exterior façade is free of cracking.
Level(Priority Level)	Low
Non-Compliance Level	2
Description	Crack was found in exterior facade at 4th floor of Main Production Building with Mezzanine and Boiler Room.
Source of Findings	Photograph: Crack in exterior facade
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	19 Aug 2019
Standard	Alliance Standard Part 8 Section 8.2
Evidence	  Exterior facade crack in Main Production Building Exterior facade crack in Boiler Room
Question	Are the performance of key structural elements such as columns, slender columns, flat plates and transfer structures satisfactory?
Level(Priority Level)	High
Non-Compliance Level	2
Description	Slender column has been found on ETP (Accessories Warehouse) but no flat plate has been seen on any building.
Source of Findings	Photograph: Main Production Building , ETP (Accessories Warehouse), Utility Shed, ETP Control Room, Child Care and Medical Room, Boiler Room., Visual Assessment: Site visit on 13 December, 2018
Suggested Plan of Action	Engage a qualified structural engineer to confirm structural performance of the structure.
Suggested Deadline Date	15 Aug 2019
Standard	Alliance Standard Part 8 Section 8.3.3
Evidence	    Main Production Building ETP (Accessories Warehouse) Utility Shed ETP Control Room   Child Care and Medical Room Boiler Room

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?
Level(Priority Level)	Medium
Non-Compliance Level	2
Description	Masonry-chip aggregate concrete (MCAC) was used in ETP (Accessories Warehouse) and ETP Control Room. No material test report was found to confirm the concrete strength.
Source of Findings	Document Review: Document reviewed during Site visit on 13 December, 2018
Suggested Plan of Action	Complete further testing to assess the concrete strength where MCAC has been used.
Suggested Deadline Date	19 Aug 2019
Standard	Reference Alliance Standards Part 7 Building Materials Section 7.2 Masonry-chip aggregate concrete (MCAC)
Evidence	
Question	Are structural steel members free of corrosion, physical damage or other types of deterioration?
Level(Priority Level)	Medium
Non-Compliance Level	2
Description	Rusting was found in steel members of Stair Room roof sheet in Main Production Building with Mezzanine.
Source of Findings	Photograph: Rusting in steel
Suggested Plan of Action	Complete further testing on areas of deterioration and have a qualified structural engineer develop a remediation plan.
Suggested Deadline Date	15 Aug 2019
Standard	Alliance Standard Part 8 Section 8.26
Evidence	 Rusting in steel
Question	Are all non-structural elements suspended from, attached to, or resting atop the structure adequately anchored and braced to resist earthquake forces?
Level(Priority Level)	Medium
Non-Compliance Level	2
Description	4 nos. PVC water tanks were found on roof of Main Production Building with Mezzanine. They were not

	anchored and braced to resist earthquake forces.
Source of Findings	Photograph: Unbraced PVC water tank
Suggested Plan of Action	Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and NTPA Guidelines.
Suggested Deadline Date	19 Aug 2019
Standard	Alliance Standards Part 8 Section 8.18 Seismic Bracing of Key Non-Structural Elements and 2006 BNBC Part 6
Evidence	 Unbraced PVC water tank

Structural Safety Report - 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.
Level(Priority Level)	Low
Non-Compliance Level	2
Description	Load plan was not available for 7 storied Main Production Building with Mezzanine. Other ancillary buildings were single storied. So load plan is not required for them.
Source of Findings	Visual Assessment: Site visit on 13 December, 2018
Suggested Plan of Action	Have a qualified structural engineer develop Floor Loading Plans per the requirements of NTPA Guidelines Part A Section 4.
Suggested Deadline Date	19 Aug 2019
Standard	Alliance Standard Part 8 Section 8.10 Floor Loading Plans (Load Plans)
Evidence	
Question	Are Floor Load Plans posted as required?
Level(Priority Level)	Low
Non-Compliance Level	2
Description	No posted floor load plan was found in the Main Production Building with Mezzanine. Other ancillary buildings are single storied. So load plan is not required for them.
Source of Findings	Visual Assessment: Site visit on 13 December, 2018

Suggested Plan of Action	Have a qualified structural engineer prepare load plans including the information required in NTPA Guidelines Part A Section 16.
Suggested Deadline Date	19 Aug 2019
Standard	Alliance Standard Part 8 Section 8.20.5.3
Evidence	
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?
Level(Priority Level)	Low
Non-Compliance Level	2
Description	Storage was found at different levels of Main Production Building with Mezzanine. But no load marking was found at storage areas.
Source of Findings	Photograph: Storage areas without load marking
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 Aug 2019
Standard	Alliance Standard Part 8 Section 8.11 Floor Load Markings
Evidence	  Storage areas without load marking-1 Storage areas without load marking-2
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?
Level(Priority Level)	Medium
Non-Compliance Level	2
Description	No load management program was noticed for Main Production Building during site visit.
Source of Findings	Visual Assessment: Site visit on 13 December, 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	19 Aug 2019
Standard	Alliance Standard Part 13 Section 13.7 and Part 8 Section 8.9.

Evidence	
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?
Level(Priority Level)	Low
Non-Compliance Level	2
Description	No Factory load manager was found during site visit.
Source of Findings	Visual Assessment: Site visit on 13 December, 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 Aug 2019
Standard	Alliance Standards Part 8 Section 8.9 Factory Load Manager
Evidence	