

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: SIMFTEX Apparel and Washing Ltd.
Address of the Factory	: Bhawnipur, Mahona Mouza, Gazipur Sadar, Gazipur, Bangladesh.
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural & Fire Inspection	: 02-September-14
Fire & Electrical assessment conducted by	: Alliance
Date of Electrical Inspection	: 24-November-14

BASIC INFORMATION:

The present garment factory comprises of one Main Building and four Ancillary Buildings. The following general information was noted:

i.	Building Usage Type	: Garments Factory
ii.	Structural System	: Main Building 1: Steel beam, column and steel frame with deck slab. Ancillary # 1: RCC Beam-Column framed structures with RCC slab. Ancillary # 2: RCC Column framed structures with RCC slab and roof truss frame. Ancillary # 3: RCC Beam-Column framed structures with RCC slab. Ancillary # 4: RCC Beam-Column framed structures with RCC slab.
iii.	Floor System	: Deck slab in main factory building
iv.	Floor Area	: 176,370 sft.
v.	No. of Stories	: Building-1: Single Story Prefabricated Steel building (Main production). Building-2: Two Storied RCC building (Utility Building). Building-3: Two Storied RCC Building (Hospital Building). Building-4: Two Storied RCC Building (Toilet Building). Building-5: Two Storied RCC Building (Office Building).
vi.	Construction Year	: 2013 to ongoing
vii.	Foundation Type	: Unknown
viii.	Design Drawings	: Available
ix.	Soil investigation Report	: Available
x.	Construction Materials	: Steel materials with RC materials
xi.	Generator	: Unknown

RECOMMENDATIONS FOR CORRECTIVE ACTION:

The recommendations of corrective action for Structural, Fire and Electrical Safety comprises of Short Term, Mid Term and Long Term basis are as follows:

The recommendations for Structural Safety corrective actions are:

Immediate : NA

Short Term: (3 Weeks) :

- i. 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.
- ii. Designate a representative as the Factory Load Manager. The Factory Owner shall ensure that at least one individual, the Factory Load

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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.

Mid Term (6 Weeks)

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- i. Engage a qualified structural engineer to confirm structural performance of the structure.
- ii. Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.
- iii. Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC
- iv. Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.
- v. 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
- vi. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.
- vii.
 1. Provide adequate lateral bracing to ensure lateral stability against all construction and incidental loads, especially in the case of floor height more than 3.3 m (10.8 ft.) per the requirement of Part 9 Section 9.12 Load capacity.
 2. Construction of all elements of a building shall be in accordance with good practice. It shall also be ensured that the elements of structure satisfy the appropriate fire resistance requirements as specified in Part 4 'Fire Protection', and quality of building materials/components used shall be in accordance with Part 5 'Building Materials' per the requirement of Part 9 Section 9.6. Timber, Bamboo, coal, paints and similar combustible materials shall be kept separated from each other. A minimum of two dry chemical powder (DCP) type fire extinguishers shall be provided at both open and covered locations where combustible and flammable materials are stored per the requirement of Part 9 Section 9.9.
 3. Provide at least one hose valve shall be provided to allow connection of fire department hoses per the requirement of Part 9 Section 9.1.6.2.
 4. Develop a hot work permit program. The program must comply with the requirements of NFPA 51B."
- viii. 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.
- ix. Provide signage or the appropriate markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load Plan.
- x. 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 all buildings.
- xi. Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Long Term (6 Months) :

- i. 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.
- ii. Provide Certificates of Occupancy for review.

The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	Disconnect the panel from the electrical service and clean interior components of all dust and debris. Close openings in the enclosure to prevent dust and debris from entering. Implement a housekeeping program to clean the boards periodically.
Short Term (3 Weeks)	<p>Establish a routine maintenance and testing program for the emergency generator. The program shall be based on all of the following:</p> <ol style="list-style-type: none"> (1) Manufacturer's recommendations (2) Manufacturer's Instruction manuals (3) Requirements of NFPA 110 Chapter 8 <p>Install phase separators between terminal connections. Verify phase separators are installed at all remaining locations.</p>
Mid Term (6 Weeks)	<p>Remove combustible materials from the generator room and clean the room on regular basis.</p> <p>Permanently mark all boxes and enclosures (including transfer switches, generators, and power panels) for emergency circuits identifying them as a component of an emergency circuit or system. The required marking can be by color code, the words "emergency system," or any other method that identifies the box or enclosure as a component of the emergency system.</p> <p>Remove all combustible materials from electrical rooms. Install distribution boards in accessible locations.</p> <p>Install approved cover over the main cable trench to prevent damage.</p> <p>Program that ensures deterioration of insulation resistance will be identified quickly. Testing should be in compliance with InterNational Electrical Testing Association (NETA). All transformers, switchgears etc. shall be subject to an insulation resistance measurement test to ground after installation but before any wiring is connected. Insulation tests shall be made between open contacts of circuit breakers, switches etc. and between each phase and earth.</p> <p>Install approved supports for wiring and conduit. Install cable trays as required so that there is no mechanical stress on the cables and the cables are properly supported.</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

<p>Long Term (6 Months)</p>	<p>Contract a qualified electrical engineer to develop an as-built single line diagram detailing key components and capacity of the electrical system.</p> <p>Develop and implement an electrical safety program. Include key topics such as lock-out tag-out procedures, personal protective equipment requirements etc. Reference NFPA 70e for example program requirements.</p> <p>Contract a qualified electrical engineer design a lightning protection system according to the BNBC requirements. Contract a licensed electrician to install the designed system.</p> <p>Install individual protective device (MCCB/MCB) for every branch circuits (load).</p> <p>Survey all cables and circuit breakers and identify wires that are rated lower than the connected circuit breakers. Replace with correctly rated wires. The rated current of a protective device (MCB, MCCB, fuse) shall not exceed the current carrying capacity of any conductor in the circuit.</p> <p>Install individual neutral connections the same size as the respective phase cable for all single-phase loads. The number of neutral connections in neutral bus bar shall be same as the number of single-phase circuit breakers.</p> <p>Provide cable- socket for termination of every cable to bus-bar and circuit breaker (MCCB).</p> <p>Establish an inspection testing, and maintenance program for the Uninterruptable Power Supply (UPS) and associated components. The program must based on the following:</p> <ol style="list-style-type: none"> (1) Manufacturer's recommendations (2) Manufacturer's instruction manuals (3) Minimum Requirements of NFPA 111 Chapter 8 (4) Minimum Requirements of NFPA 70B Chapter 28
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The recommendations for Fire Safety corrective actions are:

<p>Immediate (3 to 6 Days)</p>	
<p>Short Term (3 Weeks)</p>	<p>Keep the means of egress doors lock free in the direction of egress under any conditions. All hasps, locks, slide bolts, and other locking devices shall be removed.</p>
<p>Mid Term (6 Weeks)</p>	<p>Develop and execute an emergency evacuation plan which includes all necessary components required by the Alliance Standards. Provide sufficient communication and training of this plan to all employees.</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>Post the occupant load for every assembly and production floor in a facility in a conspicuous space near the main exit or exit access doorway for the space.</p> <p>Develop a testing and maintenance program that ensures the operation of all emergency lights is verified at least once per year. If battery-operated emergency lights are used, these lights shall be tested on a monthly basis. Functional testing of battery powered lights shall be provided for a minimum 90 min once per year.</p> <p>Provide certified training (25% of total workers) by an approved training provider, for the required number of workers necessary for the safe protection of your workers. The training shall cover firefighting, first aid and emergency rescue training including CPR. Additional CPR and advanced first aid training should be considered for electrical staff and those working with, or around dangerous equipment.</p> <p>Collect all applicable permit and license and kept up to date including fire license and BERC license from BERC.</p>
Long Term (6 Months)	<p>Install initiating devices and notification appliances as required by the Alliance Standard and NFPA 72. This includes electrical supervision of all valves controlling fire protection systems (sprinklers, fire pumps, water supplies, etc.). Devices should be part of an automatic fire alarm and detection system for the facility. All fire alarm installations shall be submitted for review by the Alliance prior to commencement of installation.</p> <p>Modify or install the standpipe system (Class-III) to meet the requirements of Alliance Standard's Section 5.4. Consult a qualified fire protection engineer before modify or installing a new system as per NFPA 14. Also establish an inspection, testing and maintenance program for the standpipe and hose system. Program need to be complying with the requirements of NFPA 25. Also install identification signs at required locations with required components for standpipe system. Signage need to be complying with the requirements of NFPA 14.</p>