

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Canvas Garments (Pvt.) Ltd.
Address of the Factory	: 301, North Baizid Bostami Road, Nasirabad I/A, Canvas Building, Bangladesh.
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 18-May-14
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 4-May-14
BGMEA Membership No	: 3581

BASIC INFORMATION:

There are 6 buildings in the factory premises out of which one is main production building and five are ancillary buildings. The buildings are named as: 1) Five story main building with pre-fab shed on roof; 2) Single Story shed (HR & Child care), 3) Single Story PEB shed (Tennis court), 4) Single Story shed (Embroidery), 5) Single Story shed (Hanger Keeping store), 6) Two Story RCC Building (Generator). The following general information was noted:

i.	Building Usage Type	: Garments Factory
ii.	Structural System	: The main building is a RCC moment resisting frame structure with infilled masonry. Slabs and beams are poured monolithically. There are moment resisting frames in one direction (one way slab) of the main building except ground floor. There is a dining hall at roof top of the main building which is a tin shed with infilled masonry, supported by RCC columns.
iii.	Floor System	: RCC Structure with beam and column
iv.	Floor Area	: 72504 SF
v.	No. of Stories	: 1) Five story main building with pre-fab shed on roof: Stories above grade: 5, Stories below grade: 0, Occupied levels: 5, 2) Single Story shed (HR & Child care): Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 3) Single Story PEB shed (Tennis court): Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 4) Single Story shed (Embroidery): Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 5) Single Story shed (Hanger Keeping store): Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 6) Two Story RCC Building (Generator): Stories above grade: 2, Stories below grade: 0, Occupied levels: 2.
vi.	Construction Year	: 1) Five story main building with Pre-fab shed on roof (Ground floor to 4th floor): Finished in 2005, 2) Single Story shed (HR & Child care): Finished in 2005, 3) Single Story PEB shed (Tennis court): Finished in 2005, 4) Single Story shed (Embroidery): Finished in 2005, 5) Single Story shed (Hanger Keeping store): Finished in 2005, 6) Two Story RCC Building (Generator): Finished in 2005.
vii.	Foundation Type	: Unknown
viii.	Design Drawings	: Available.
ix.	Soil investigation Report	: Available.
x.	Construction Materials	: Reinforced Concrete & steel
xi.	Generator	: Ground Floor

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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 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 load limits as described on the Floor Load Plans.

Mid Term (6 Weeks) :

- i. 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.
- ii. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.
- iii. Have a qualified structural engineer complete further analysis of the structure and develop a remediation plan if required.
- iv. Have a qualified Structural Engineer prepare the design report and submit it for review.
- v. Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard and have it posted in all required locations.
- vi. Provide signage or the appropriate markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load Plan.

Long Term (6 Months) :

- i. Provide Certificates of Occupancy for review.

The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	Ensure light fixtures without protective covers are not installed in storage areas or in any area where the Inspector of the Factories Rules (1.5.3.5) Part 53 disallows these fixtures.
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Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	Find the cause of the overheating and take proper action.
Short Term (3 Weeks)	
Mid Term (6 Weeks)	<p>Provide shielding or additional insulation for wiring exposed to external heat sources.</p> <p>Ensure proper ventilation for the generator room.</p> <p>Ensure the generator room is properly rated and physically separated from the remainder of the building.</p> <p>Provide clearance of at least 1 m (39 in) in front of switchboards and/or distribution boards.</p> <p>Establish a periodic inspection program to ensure the electrical systems are free from damage, debris, dirt, lint, etc. Maintain records concerning inspections and follow-up actions.</p>
Long Term (6 Months)	<p>Ensure that the wet type transformer is not leaking and has appropriate oil levels.</p> <p>Ensure switchboards and/or distribution boards are metal enclosed with a dead front construction.</p> <p>Connect all metal in the building to the building's earthing/grounding system, such as metal rebar in concrete, metal frame of the building, or metal water pipe.</p> <p>Provide adequate fire rating or protection for substation room.</p> <p>Install switchboards and/or distribution boards in compliant locations so that operation is not hindered due to limited access.</p> <p>Consult with a qualified Electrical Engineer and ensure electrical wiring/cables are sized according to the capacity of the circuit breakers.</p> <p>Ensure switchboards and/or distribution boards are provided with physical means to prevent the installation of more over current devices than that number for which the panel board was designed, rated, and listed following NFPA 70 section 408.54.</p> <p>Complete an oil analysis on applicable transformers and replace harmful substances to reduce health hazards.</p> <p>Develop an Insulation Resistance Measurement Program that ensures deterioration of insulation resistance will be identified quickly. Testing should be in compliance with the 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>Develop an electrical maintenance program that includes inspections and testing of the electrical systems.</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>Inspect electrical switchgear and panel boards on an annual basis to ensure that the equipment is in good working condition.</p> <p>Provide means of ventilation for the substation room. Consult a qualified electrical engineer to determine the required ventilation rates based on the installed equipment.</p> <p>Ensure cable joints are through porcelain/PVC connectors with PIB tape wound around the joint.</p>
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The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	Remove all combustibles stored underneath the cutting tables at the noted locations.
Short Term (3 Weeks)	Remove all hasps, locks, slide bolts, or other locking devices at the noted locations. Doors may be locked where the latch and lock are disengaged with one motion where the occupant load does not exceed 49 persons. Turning a door handle and disengaging a lock is considered two motions.
Mid Term (6 Weeks)	<p>An emergency evacuation plan has been developed and communicated to all employees.</p> <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 emergency power for exit signs is tested at least once per year. If battery operated signs are used, these lights are tested on a monthly basis. Functional testing of battery powered signs is provided for a minimum of 90 minutes, once per year.</p> <p>Fire drills are to be conducted on a quarterly basis for all garment facilities. Fire drills shall be conducted under the direction of a Fire Safety Director. All requirements for fire drills shall be conducted in accordance with BNBC Part 4 Appendix A.</p> <p>Apply to BERC for a waiver certificate.</p>
Long Term (6 Months)	<p>Provide 1.5 hr fire-protective opening assemblies in 2 hr rated exit enclosures.</p> <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,</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>etc.). Connect devices to 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>Install a class III standpipe system at required locations designed by a qualified fire protection engineer. The system is to be compliant with the requirements of NFPA 14. Establish an inspection, maintenance, and testing program for the standpipe and hose system. The program must comply with the requirements of NFPA 25 Chapter 6 Table 6.1.1.2.</p> <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.). Connect devices to 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>Provide fire-resistive rated construction barriers between hazard types following Table 4.4.1 of Alliance Standard or Table 4.1.1 from BNBC Part 4. Consult a qualified fire protection engineer to design the required rated construction barrier.</p> <p>Install a pump dedicated for fire fighting or fire protection following the requirements of NFPA 20. Establish an inspection, maintenance, and testing program for the fire pump. The program must comply with NFPA 25.</p>
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