

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Babylon Trims Ltd (PKG).
Address of the Factory	: Kandi Boilarpur, Horindhora, Hemayetpur, Savar, Bangladesh
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 27-May-14
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 20-May-14

BASIC INFORMATION:

There are 4 buildings in the premises out of which all are main production buildings . The buildings are named as: 1) Two Story RCC main production Building with prefab shed on roof, 2) Single story Prefab production Shed-1, 3) Single story Prefab production Shed-2 (with one mezzanine floor), 4) Single story Prefab production Shed-3. The following general information was noted:

i.	Building Usage Type	: Garments Factory
ii.	Structural System	: RCC flat slab supported on columns..
iii.	Floor System	: Flat plate system
iv.	Floor Area	: 88958 sft
v.	No. of Stories	: Main building 2 storied and others are single storied
vi.	Construction Year	: 2005-2006
vii.	Foundation Type	: Unknown
viii.	Design Drawings	: Available.
ix.	Soil investigation Report	: Available.
x.	Construction Materials	: Reinforced Concrete & steel
xi.	Generator	: Ground Level

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, 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 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.

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Mid Term (6 Weeks)

- i. Have a qualified structural engineer provide further testing and analysis of distress, settlement, shifting, or cracking in columns or walls, and provide a remediation plan to correct noted issues.
- ii. Engage a qualified structural engineer to confirm structural performance of the structure.
- iii. 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.
- iv. "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"
- v. Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.
- vi. Have a qualified structural engineer prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard.
- vii. Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.
- viii. Provide signage or the appropriate markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load Plan.
- ix. Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3.
- x. Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard.

Long Term (6 Months)

- i. Provide Certificates of Occupancy for review.

The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	<p>Ensure the generator room is free of improperly stored materials.</p> <p>Find out the cause of overheating, overloading, or signs of burning and take proper action.</p>
Short Term (3 Weeks)	<p>In order to avoid the effects of heat from external sources one of the following methods should be used to protect wiring systems: (1) shielding; (2) placing 900 mm (36 in.) from the source of heat; (3) local reinforcement or substitution of insulating material.</p>
Mid Term (6 Weeks)	<p>Ensure the generator room is properly rated and physically separated from the remainder of the building.</p> <p>Provide adequate fire rating/protection for substation room and make it separated from rest of the building.</p> <p>All boxes and enclosures (including transfer switches, generators, and power panels) for emergency circuits shall be permanently marked so they will be readily identified as a component of an emergency circuit or system. The</p>

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	<p>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>Install switchboards and distribution boards in compliant locations so that operation is not hampered due to limited access.</p> <p>Provide adequate cover on cable trench.</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>Provide additional light fixtures to increase illumination levels provided in the BNBC.</p>
Long Term (6 Months)	<p>Develop and implement an electrical safety program. Include key topics such as lock out/tag out procedures, personal protective equipment requirements, etc.</p> <p>Ensure switchboards and/or distribution boards are metal enclosed with a dead front construction.</p> <p>Remove multi looping/bunching of cables at circuit breakers within distribution boards.</p> <p>Ensure overcurrent protection device (circuit breaker) for each and every load.</p> <p>Provide clearance of at least 1 m (39 in) in front of distribution boards.</p> <p>Connect all metal in the building to the building earthing/grounding system, such as metal rebar in concrete, metal frame of building, or metal water pipe.</p> <p>Ensure appropriate numbers of down conductors are installed based on the building size.</p> <p>Lightning protection ground terminals should be bonded to the structure grounding.</p> <p>Provide two separate points earthing (grounding) for generator.</p> <p>Ensure appropriate size for generator room in order to properly access the generator to perform routine maintenance activities.</p>

The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	
Short Term (3 Weeks)	Remove all hasps, locks, slide bolts, or other locking devices at the noted locations and provide non-lockable, side-hinged, emergency exit doors that swing in the direction of egress.

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Mid Term (6 Weeks)	<p>Establish an inspection, maintenance, and testing program for the fire pump. Program must comply with NFPA 25.</p> <p>Develop an emergency evacuation plan in accordance with the Alliance Standard and communicate the plan to all employees.</p> <p>Develop a testing and maintenance program that ensures the emergency power for all egress lighting is verified at least once per year. If battery-operated 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>Get a BERC license for the newly installed generator.</p>
Long Term (6 Months)	<p>Provide listed and approved self-closing 1 hr fire rated door assemblies in 1 hr rated exit enclosures.</p> <p>Arrange for direct connection of the fire alarm system as per Alliance Standard Part 5 Section 5.7.5 Monitoring. Until that time that monitoring can be set up, a person shall be assigned to contact the fire department in the event of fire alarm activation. An annunciator shall be located in a constantly attended location (such as a fire control room) to alert this person.</p> <p>Provide fire-resistive rated construction barriers between hazard types following Table 4.4.1 of Alliance Standard. Consult a qualified fire protection engineer to design the required rated construction barrier.</p>