

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Apollo Stickers Co
Address of the Factory	: Plot # 649, 650, DEPZ Road, Zirabo, Ashulia, Savar, Dhaka, Bangladesh.
Present Status of the Factory	: Under Operation
Structural Assessment conducted by	: Alliance
Date of Structural Inspection	: 19 Dec 2013
Fire & Electrical Assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 17 Dec 2013

BASIC INFORMATION:

The Present Garment Factory is comprises of a 1 Main Pre Engineered Building. The following general information was noted:

- i. Building Usage Type : Garments Factory.
- ii. Structural System : Shed building. RC columns with steel frame roof structure.
- iii. Floor System : Slab on ground.
- iv. Floor Area : 8,500 Sft.
- v. No. of Stories : Single Story.
- vi. Construction Year : 2011
- vii. Foundation Type : Isolated Spread Footings.
- viii. Design Drawings : Available.
- ix. Soil investigation Report : Available
- x. Construction Materials : RCC (Brick Chips).
- xi. Generator : Ground Floor

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 : N/A.

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.

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Mid Term (6 Weeks)

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- i. A qualified structural engineer develop Floor Loading Plans as per the requirements of Part 8 Section 8.20.5.3
- ii. A qualified structural engineer prepares load plans including the information required in Section 8.20 of the Alliance Standard. Floor load plans should be visibly posted at all floors.
- iii. 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)

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- i. Apply for issuance of Certificate of Occupancy and pursue the matter.

The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	Engage a licensed electrician or electrical contracting firm to rectify all non-conforming and unsafe electrical works throughout the entire complex.
Short Term (3 Weeks)	<p>Provide earthing of equipment at required locations and connect to required number of electrodes. Refer to the BNBC for required number of electrodes.</p> <p>Provide emergency power for life safety loads.</p> <p>Have a qualified electrical engineer develop as-built electrical drawings providing detailed key components of the electrical system.</p> <p>Need to maintain color code for all cables. For phase conductors use red, yellow and blue, for neutral conductors use black and for grounding cables use green dotted yellow.</p> <p>Need to joint cable through porcelain/PVC connectors with PIB tape wound around joint.</p> <p>Provide mechanical guards for electrical equipment and wiring where necessary.</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> <p>Provide electrical insulation mats in front of distribution boards.</p> <p>Light fixtures without protective covers (otherwise known as naked lights) shall not be allowed in storage areas or in any area where the Inspector of the Factories Rules (1.6.3.7) Part 53 disallows these fixtures. Install signs posted in Bengali and English, indicating this prohibition at all entrances to these areas.</p>
Mid Term (6 Weeks)	Consult with a qualified Electrical Engineer and ensure

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	<p>electrical cables are sized according to capacity of circuit breakers.</p> <p>Need to separate the multiple and looping cables either using proper size of circuit breakers or connecting separately on bus bars as per requirements.</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>Provide dedicated neutral for every circuit.</p> <p>Develop an Insulation Resistance Measurement 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>
Long Term (6 Months)	<p>Complete Thermographic scans at least on a three year cycle. Thermographic scans should be completed in accordance with the Standard for Infrared Inspection of Electrical Systems & Rotating Equipment and NFPA70B or a comparable standard.</p>

The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	None
Short Term (3 Weeks)	<p>Remove all hasps, locks, slide bolts, or other locking devices from the means of egress.</p> <p>Smoking shall be prohibited in any garment factory building, separate storage building, or any building or area where the Inspector of the Factories Rules (1.6.3.7) Part 53 requires that smoking be prohibited. If an Owner creates a designated smoking area outside the buildings, information on the location of these designated areas shall be posted on the signs required in 13.5.2.</p>

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<p>Mid Term (6 Weeks)</p>	<p>Install automatic fire alarm and detection system. Once installed, arrange for direct connection of the fire alarm and detection system to a central station monitoring service or the Fire Service and Civil Defense as per Alliance Standard Part 5 Section 5.7.5 Monitoring. Until that time that a central station monitoring service or direct connection to the Fire Service and Civil Defense can be set up, a person trained to contact the Fire Service and Civil Defense in the event of fire alarm activation shall be provided. An annunciator shall be located in a constantly attended location (such as a fire control room) to alert this person.</p> <p>Install signage at required locations and on required equipment. Signage must comply with NFPA 14.</p> <p>Obtain an occupancy certificate for each building and ancillary structures from the approving government authority</p> <p>The occupant loads shall be posted for every production floor in a conspicuous space near the main exit or exit access doorway for the space.</p> <p>Training programs need to be implemented and documented in accordance with the Alliance Safety Training Curriculum.</p>
<p>Long Term (6 Months)</p>	<p>Create a Fire Safety Director position and fill the position with an individual that has had sufficient training to be able to carry the required duties.</p> <p>Establish an inspection, maintenance, and testing program for the standpipe and hose system. Program must comply with the requirements of NFPA 25.</p> <p>Establish an inspection, testing, and maintenance program for all fire extinguishers. Program must comply with the requirements of NFPA 10.</p> <p>Fire department (Siamese) inlet connections shall be provided to allow fire department pumper equipment to supplement the fire protection systems. Fire department outlet connections shall be provided to allow fire department pumper vehicles to draw water from ground-level or underground water storage tanks. Connections shall match the Fire Service and Civil Defense hose thread standard.</p> <p>Install Illuminated exit signs at entrances to exits and along the path of egress anywhere the continuation of egress is not obvious or there is a change in the direction of the path of travel.</p> <p>Install initiating devices and notification appliances as required by the Alliance Standard and NFPA 72. 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>Produce, establish and enforce a written policy and</p>

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	<p>procedure for housekeeping to ensure scheduled cleaning of all floors, walls, ceilings, air ventilation systems and other building components. Ensure the timely removal of defective, waste and rubbish materials is included. As a general rule the maximum tolerable deposit thickness for loose fluffy lint is 13 mm (½ in.) over a maximum of 46.5 m² (500 ft²). Limit dense deposits to 6 mm (¼ in.) and oil saturated deposits to 3.2 mm (⅛ in.).</p> <p>Replace with side-hinged swinging type door including door hardware relating the specific position requirements. Position the door so it shall open in the direction of egress without obstructing other paths of egress.</p>
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