

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Colossus Apparel Limited Unit 2
Address of the Factory	: Mogorkhal, Chowrasta, National University, Gazipur, Dhaka, Bangladesh
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 20-May-2014
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 17-June-2013
BKMEA Membership No	: 1896

BASIC INFORMATION:

The present garment factory comprises of two buildings, Building A and Building B. The following general information was noted:

i.	Building Usage Type	: Garments Factory
ii.	Structural System	: Cast-in-place reinforced concrete columns monolithic with concrete beams and slabs (both buildings)
iii.	Floor System	: Beam supported slab
iv.	Floor Area	: Building A - 18,500 sf/floor; Building B - 17,000 sf/floor.
v.	No. of Stories	: Building A - G+7+R; Building B - G+7+R (currently G+5 are constructed and G+1 are occupied)
vi.	Construction Year	: Building A - 2011; Building B - 2011
vii.	Foundation Type	: unknown.
viii.	Design Drawings	: unknown
ix.	Soil investigation Report	: unknown
x.	Construction Materials	: Reinforced Concrete for RCC building
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 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. Reduce storage loads to not exceed design floor live loads
 - ii. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.
 - iii. Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.
 - iv. 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."
 - v. Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3
 - vi. Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard.
 - vii. 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. 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.

The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	Find out cause of overheating and burning sign and take proper action including replacing cable or equipment where necessary.
Short Term (3 Weeks)	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. Ensure Signage indicating the prohibition of light fixtures without protective covers is installed at required locations.
Mid Term (6 Weeks)	Install a sign that provides details on electrical shock first aid procedures. Signage should also include instructions on artificial respiration. Install phase separators between terminal connections at the noted locations.
Long Term (6 Months)	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. 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

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	<p>between each phase and earth.</p> <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>
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The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	Remove all thresholds.
Short Term (3 Weeks)	Keep all egress doors unlocked in the direction of egress at all times. Remove all locking devices from all egress doors and means of egress components.
Mid Term (6 Weeks)	<p>Close shafts with 2-hour fire rated construction.</p> <p>Construct a 2-hour fire-resistance rated corridor from the bottom of the stair to the exterior discharge door. Install fire rated doors in doorways through these walls.</p> <p>Install listed fire stop systems at every penetration through fire rated walls and assemblies.</p> <p>Install listed fire stop systems at every penetration through floors. Install normally closed fire rated doors over vertical openings for chutes. Close open shafts with fire rated construction.</p> <p>Protect all egress stairs with a shaft enclosure including 2-hour fire-rated construction. Install fire rated doors.</p> <p>Install a listed, approved fire alarm system. Install pull stations at each entrance to an exit. Install notification horns and strobes so that all occupants are notified in an alarm. Replace single station smoke alarms at specific hazards with smoke detectors connected to the fire alarm system.</p> <p>Install a listed, approved fire pump to supply the demand of sprinkler and standpipe system, per NFPA 20.</p> <p>Install a Class III standpipe system in the building with fire department valves at the floor landings in each stair. The standpipe will be part of the combined standpipe/sprinkler system supply.</p> <p>Remove all existing gates and doors. Install fire doors at the stairs that are listed, approved, swinging, automatic-closing, in compatible fire rated frames with latching panic hardware.</p> <p>Provide fire-resistive rated construction barriers between hazard types in accordance with Alliance Standard Sections 3.4.2 and 4.5. Consult a qualified fire protection engineer to</p>

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	<p>design the required rated construction barrier.</p> <p>Post the occupant load for all assembly and production floor areas in a conspicuous space near the main exit or exit access doorway for the space.</p> <p>Install approved, listed labeled fire-rated doors and required panic hardware. Provide re-entry to floor levels from the stairwells according to the standard.</p> <p>Arrange for direct connection of the fire alarm and detection system to a central station monitoring service or the Fire Service and Civil Defense. Assign a person to contact the fire department in the event of fire alarm activation until this connection is set up. Locate an annunciator to alert this person in a constantly attended location (such as a fire control room).</p> <p>Install signage adjacent to each stair door indicating the stair name and the floor level in both English and Bengali.</p>
Long Term (6 Months)	<p>Install automatic fire sprinkler systems throughout the facility. System shall be designed by a qualified fire protection engineer and plans shall be submitted to Alliance for review prior to installation.</p> <p>Install a landing outside Block B south stair discharge doors in front of the discharge steps. Install swinging egress doors that comply with the standards.</p> <p>Provide handrails on both sides of each stairway. Mount handrails at a height between 30 in. and 44 in.</p> <p>Install emergency lighting for all paths of egress. Illumination needs to be a minimum of 10 lux for all corridors, exit doors and stairways. Illumination for aisles needs to be a minimum of 2.5 lux.</p> <p>Provide continuously illuminated exit signs. Signs shall be placed at all required exits and along egress paths, especially where there is a change in direction for the path of travel.</p> <p>Implement a hot work permit program. Comply with the requirements of NFPA 51B.</p>