Name of the Factory	: **Colossus Apparel Ltd.**
Address of the Factory	: JM Complex, Plot #220, Road #27, Khortoil, Gazipur, Dhaka, Bangladesh
Present Status of the Factory	: **Under Operation**
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 18-May-2014
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 17-June-2013
BKMEA Membership No	: 1714

BASIC INFORMATION:

The present garment factory comprises of one main factory building. The following general information was noted:

i.	Building Usage Type	: Garments Factory
ii.	Structural System	: Concrete columns monolithic with slabs and beams; at Floors 2-10 beams are same depth as slab (beam elements are within the depth of the slab).
iii.	Floor System	: Beam supported slab
iv.	Floor Area	: 8750 SF / Floor
v.	No. of Stories	: G+10+R
vi.	Construction Year	: 2008
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.

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. Reduce loads by redistributing storage. Load Plans complying with Alliance Standard Part 8 Section 8.20.4.3 should also be developed.
iii. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.
iv. Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.
v. 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."
vi. Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3
vii. Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard.
viii. 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. Obtain an occupancy certificate for each building and ancillary structures from the approving government authority.

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. Determine the causes of overheating and consider replacement of conductors or equipment.
Short Term (3 Weeks)	Develop and implement an electrical safety program. Include key topes such as lock out tag out procedures, personal protective equipment requirements, etc. Reference NFPA 70e for example program requirements. Ensure inspection, maintenance, and testing procedures of the IPS and UPS are completed and documented.
Mid Term (6 Weeks)	Consult with a qualified Electrical Engineer and ensure electrical wiring/cables are sized according to capacity of circuit breakers. Remove multi looping or multi looping of wiring/cables at circuit breakers within switchboards and/or distribution boards. Provide dedicated neutral for each circuit.

Long Term (6 Months)	Provide an earthing/grounding system for all metal in the building. 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.

The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	Provide gates which swing out and that are equipped with panic hardware. Remove hose cabinets from the egress path and locate them elsewhere. Create an even walking surface for the rear stair discharge path.
Short Term (3 Weeks)	Remove all gates, hasps, locks, bolts, sliding doors, tracks and other devices from the stairs and exits. Remove unrated doors in the egress stairs. Install listed, labeled, approved automatic-closing, side-swinging, fire rated doors in fire rated frames with latching panic hardware. These doors should be a minimum of 39 inches wide with a total opening of at least half the width of the stair. Doors should swing in the direction of egress from the floors into the stair. Remove all trash, storage and other foreign materials from all stairs.
Mid Term (6 Weeks)	Install listed, labeled, approved, automatic-closing, side-swinging, fire rated doors in fire rated frames with latching panic hardware. These doors should be a minimum of 39 inches wide with a total opening of at least half the width of the stair. Doors should swing in the direction of egress from the floors into the stair. Install a listed fire stop system at every penetration through fire rated walls and floors. Design and install a fire pump system that delivers the water flow requirements of the standpipe system. Submit plans and calculations for approval. Remove the existing unlisted fire alarm system. Install a listed 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. 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.

	Install sprinkler systems to alleviate dead-end conditions. Remove sliding doors and gates and all associated hardware. Install side-swinging doors with panic hardware. Doors should swing in the direction of egress. Provide re-entry hardware on the new fire doors on the 5th floor. Install occupant load signs at every floor landing in each stair. 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 design the required rated construction barrier. 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 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. Provide continuously illuminated exit signs at all required exits and along egress paths, especially where path has a change of direction. Install stair designation signs at each floor entrance from the stairs.
Long Term (6 Months)	Install automatic fire sprinkler systems throughout the facility. System shall be designed by a certified fire protection engineer and plans shall be submitted to Alliance for review prior to installation. Install handrails on both sides of all stairs. Install handrails at stair discharge steps and ramps. Provide illumination of egress paths at all times the building is occupied. 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. Put the housekeeping policy in writing. Enforce the policy, paying special attention to keep egress paths clear and stairs clear of all combustibles.