Name of the Factory	: **Columbia Apparels Ltd.**
Address of the Factory	: 228/1, Tin Sharak, Luxmipura, Joydevpur, Gazipur, Dhaka, Bangladesh
Present Status of the Factory	: **Under Operation**
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 20-June-2013
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 23-June-2013
BGMEA Membership No	: 3465

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	: Cast-in-place concrete structure with mild reinforcement. Floor System is two-way slabs
iii.	Floor System	: Beam supported slab
iv.	Floor Area	: 192,360 SF
v.	No. of Stories	: 5 stories
vi.	Construction Year	: 2004
vii.	Foundation Type	: unknown.
viii.	Design Drawings	: Available
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. "Have a qualified structural engineer complete an analytical evaluation of the structural impact of the addition."
ii. Have a qualified structural engineer confirm that capacity to support the load is available. Load Plans complying with Alliance Standard Part 8 Section 8.20.4.3 should also be developed.
iii. "Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading."
iv. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.
v. Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues
vi. "Once Floor Loading Plans have been posted, redistribute floor loads to comply with the Floor Loading Plans."
vii. "Complete further testing on areas of deterioration and have a qualified structural engineer develop a remediation plan."
viii. Have a qualified structural engineer provide further analysis of the identified cracks to determine the appropriate course of corrective action.
ix. "Repair the exterior façade system to prevent water intrusion."
x. "Remove deteriorated expansion joint material and provide new approved material at the expansion joint."
xi. "Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3"
xii. Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard.
xiii. Provide signage or the appropriate markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load Plan.
xiv. 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."

Long Term (6 Months) :

i. "Provide Certificates of Occupancy for review."
ii. 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)	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.
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)	Remove all storage from under the cutting tables.
Short Term (3 Weeks)	Remove all hasps, locks, sliding gates, tracks, and other non-compliant devices.
Mid Term (6 Weeks)	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. Install occupant load signs at every floor landing in each stair. Install stair designation signs at each floor entrance from the stair. Add another exit stair to the building to increase the number of allowable occupants per floor to 1200 as reported for the 3rd floor level. Remove all existing gates and doors in the egress stairs. Install 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 required doors instead of gates. Install landings on both sides of doors. Install a listed fire stop system at every penetration through a fire wall. Install a Class III standpipe system at required locations. Standpipe system must comply with NFPA 14. The existing pump is not capable of delivering the required system flow. It should be replaced with a listed fire pump that will deliver the calculated requirement of the standpipe system. Design per NFPA 20 and submit for approval. Install visual notification strobes. Install listed smoke detectors at required locations that are connected to the fire alarm system. Design per NFPA 72 and submit for approval. 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.
Long Term (6 Months)	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. Provide continuously illuminated exit signs at all required exits and along egress paths, especially where path has a change of direction. Remove all excess storage from the dining area.