

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Cosmopolitan Industries (Pvt.) Ltd.
Address of the Factory	: Khejur Bagan, Mouja: Baro Ashulia, Savar, Dhaka, Bangladesh
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 26-Mar-2014
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 18-May-2014
BGMEA Membership No	: 4567

BASIC INFORMATION:

The present garment factory comprises of 6 buildings in the factory premises out of which one is main production building and five are ancillary buildings. The buildings are named as: 1) Six story main production building, 2) Two story utility building, 3) Two story office building, 4) Two story medical & day care (RCC building), 5) Single story RCC building (security, RMS & drivers waiting room), 6) Three story prefab shed (warehouse);. The following general information was noted:

i.	Building Usage Type	: Garments Factory
ii.	Structural System	: The main building is a six story RCC moment resisting frame structure.
iii.	Floor System	: Beam supported slab
iv.	Floor Area	: Total area of all buildings in the factory: 456,408 sft
v.	No. of Stories	: 1) Six story main production building: Stories above grade: 6, Stories below grade: 0, Occupied levels: 6, 2) Two story utility building: Stories above grade: 2, Stories below grade: 0, Occupied levels: 2, 3) Two story office building: Stories above grade: 2, Stories below grade: 0, Occupied levels: 2, 4) Two story medical & day care (RCC building): Stories above grade: 2, Stories below grade: 0, Occupied levels: 2, 5) Single story RCC building (security, RMS & drivers waiting room): Stories above grade: 1, Stories below grade: 0, Occupied levels: 1, 6) Three story prefab shed (warehouse): Stories above grade: 3, Stories below grade: 0, Occupied levels: 3.
vi.	Construction Year	: 2005 - 2010
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) :

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

- 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. "Under guidance from a qualified structural engineer arrange a detailed engineering assessment of the structure with columns made of masonry bricks."
- ii. Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3
- iii. Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard.
- iv. 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. Provide Certificates of Occupancy for review.

The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	<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>
Short Term (3 Weeks)	<p>Ensure proper identification of emergency power switchboards, distribution boards, and circuits..</p> <p>Provide two separate points of earthing (grounding) by distinct connections for each generator.</p>
Mid Term (6 Weeks)	<p>Install Distribution Boards in compliant locations so that operation is not hampered due to limited access.</p> <p>Consult with a qualified electrical engineer and ensure electrical wiring/cables are sized according to capacity of circuit breakers.</p> <p>Remove multi looping of cables at circuit breakers within switchboards and distribution boards.</p> <p>Have a qualified electrical engineer develop an as-built single line diagram detailing key components and capacity of the electrical system.</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Long Term (6 Months)	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 existing gates and non-approved doors in the means of egress including all locking devices. Install approved fire doors with compliant panic hardware that cannot be locked in the direction of egress under any conditions.
Short Term (3 Weeks)	N/A
Mid Term (6 Weeks)	<p>Post the occupant load for every assembly and production floor in a facility in a conspicuous space near the main exit or exit access doorway for the space.</p> <p>Develop an emergency evacuation plan which includes duties and responsibilities of various people/groups, interfacing between groups and fire brigade, headcount and identification of trapped victims, physically disabled people and their rescue, etc. Look to the guidelines of BNBC in Appendix. The evacuation plan shall include provisions to assist physically disabled persons. A list of all employees with physical disabilities shall be kept by the Fire Service Director.</p> <p>Develop a testing and maintenance program that ensures the operation of all exit signs is verified at least once per year. If battery-operated signs are used, these lights shall be tested on a monthly basis. Functional testing of battery powered signs shall be provided for a minimum 90 min once per year.</p> <p>Impart training in accordance with Alliance Safety Training Curriculum and keep record with proper documentation.</p> <p>Since battery operated signs are used, these lights are tested on a monthly basis. Functional testing of battery powered signs is provided for a minimum 90 min once per year.</p> <p>Arrange for direct connection of the fire alarm system to a central monitoring station or Fire Service and Civil Defense. Until that time that monitoring can be set up, arrange a monitoring system using own central detection system and personnel. 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>Install required identification signs at the noted locations. Signage must comply with NFPA 14 Chapter 6.</p> <p>Get all the required licenses and permits from the proper</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>issuing authority.</p> <p>Complete fire department pre-planning activities with the local Fire Service and Civil Defense.</p>
<p>Long Term (6 Months)</p>	<p>Fill windows and similar opening that are within 10 feet of the stairs with fire rated construction, or install fire shutters.</p> <p>Install listed firestop systems at every penetration through fire rated walls and assemblies. Install listed firestop systems at every penetration through fire rated walls and assemblies.</p> <p>Remove all existing gates and doors in the means of egress. Install fire rated door at the stairs that are listed, approved, permanently labeled, in compatible fire rated frames with latching panic hardware.</p> <p>Outward opening, side-swinging, self-closing, non-lockable fire doors must have 1.5 hr rating in all stairwell enclosures. Consult a qualified fire protection engineer to design the required rated construction barriers.</p> <p>Design and install a listed fire pump system to supply the demand of standpipe system. Submit product data, drawings and hydraulic calculations and secure approvals before construction.</p> <p>Train and certify at least 25 percent of workers in fire fighting, first aid, and rescue by the proper authority.</p> <p>Remove existing aisle marking and draw new marking fulfilling the minimum aisle width requirement. Relocate the machines accordingly if necessary.</p> <p>Install fire doors of required ratings that are listed, permanently labeled, swinging, automatic-closing, in compatible fire rated frames with latching panic hardware. Submit product data for approval before construction.</p> <p>Modify the existing standpipe system of main building following the requirements of NFPA 14 and also obtain the approved hydraulic calculation for the installed standpipe system of the factory buildings.</p> <p>Keep the dimensions of in process storage within the requirements of miscellaneous storage as per Alliance Standard Section 3.4.2.1.6 or provide 1 hr fire separation as per Alliance Standard Section 3.4.2.1.5. Separate the production area at above mentioned locations with fire resistive construction barriers following the requirements of Table 3.2.1 of BNBC Part 3.</p> <p>Fire extinguishers are to be inspected, tested, and maintained in accordance with NFPA 10 Chapter 7.</p> <p>Every door in a stair enclosure serving more than 5 stories shall be provided with re-entry unless it meets the following requirements: Stair doors may be permitted to be locked from the stair (ingress) side that prevents re-entry to the floor, provided that at least two floors allowing re-entry to access another exit are provided, there are not more than 4</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>stories intervening between re-entry floors, re-entry is allowed on the top or next to top level, reentry doors are identified as such on the stair side, and locked doors shall be identified as to the nearest re-entry floors. When the discharge floor is determined to be a required re-entry floor using the above requirements, re-entry does not have to be provided back into the building on this level.</p> <p>Establish an inspection, maintenance, and testing program for the fire pump. Program must comply with NFPA 25.</p> <p>Establish an inspection, maintenance, and testing program for the standpipe and hose system. Program must comply with the requirements of NFPA 25 Chapter 6 Table 6.1.1.2.</p> <p>Develop a hot-work permit program. The program must comply with the requirements of NFPA 51B. In general, this program should address process of request and approval by authorities, necessary checks prior to approval, standby fire watch and fire fighting equipment, sounding of alarm procedure, duration and expiry of permit and re-approval procedure, etc.</p> <p>Establish written corporate and plant policies on housekeeping to ensure scheduled cleaning for floor, wall, ceiling, supply, and return air ventilation systems. Promptly reschedule skipped cleanings. Provide a documented line of authority for authorizing a cleaning delay and rescheduling. 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>Provide handrails on both sides of each stairway. Provide intermediate handrails when the stair width exceeds 2.2 meters (87 inches). Install handrails at a height between the range of 865 mm (34 in.) and 965 mm (38 in.).</p>
--	--