

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: THE ROSE GARMENTS DESIGNER LTD
Address of the Factory	: N. Islam Center, Mazar Road, Dhakkhin Khan Uttara, Dhaka, Bangladesh
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 09 Jun 2014
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 12 Feb 2014 & 09 Jun 2014
BGMEA Membership No	: 2987

BASIC INFORMATION:

The present garment factory is comprises of a 1 Building. The following general information was noted:

- i. Building Usage Type : Garments Factory.
- ii. Structural System : RCC Beam-Column frame system.
- iii. Floor System : Beam slab type in RCC Building
- iv. Floor Area : 40930 SF.
- v. No. of Stories : 6.
- vi. Construction Year : 1998-1999
- vii. Foundation Type : isolated column footing.
- viii. Design Drawings : Available.
- ix. Soil investigation Report : Available
- x. Construction Materials : RCC (stone chips).
- 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. 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. "Engage a qualified structural engineer to confirm the requirement for wind loading and storm surge loading as detailed in BNBC part 6 section 1.5.3 .
- iii. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.

Long Term (6 months)

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- i. Provide Occupancy Certificate for Review

The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	Find out the cause of overheating and take proper action.
Short Term (3 Weeks)	Provide illumination of at least 150 lux inside the generator room. 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. The required marking can be done by color code, the words "emergency system," or any other method that identifies the box or enclosure as a component of the emergency system.
Mid Term (6 Weeks)	Provide individual neutral connections same as the respective phase cable-size for all single-phase loads. The number of neutral connections in neutral bus bar must be same as the number of single-phase circuit breakers. Provide earthing connection to all exposed-conductive parts (metal) related to/in close proximity to electrical equipments/installation and utility service such as metallic water/gas/steam pipes etc. such that all the metals remain at a substantially same potential of building earthing system.
Long Term (6 Months)	Complete thermo graphic scans at least on a three year cycle. Thermo graphic scans should be completed in accordance with the Standard for Infrared Inspection of Electrical Systems & Rotating Equipment and NFPA70B or a comparable standard. Have a qualified Electrical Engineer design a lightning protection system according to the BNBC requirements. Have a licensed electrician install the designed system.

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The recommendations for Fire Safety corrective actions are:

Immediate	N/A
Short Term (3 Weeks)	Doors shall be kept lock free in the direction of egress under all conditions. All hasps, locks, slide bolts, and other locking devices shall be removed where installed.
Mid Term (6 Weeks)	<p>Develop a testing and maintenance program that ensures the emergency power for all egress lighting is verified at least once per year. If battery-operated lights are used, these lights shall be tested on a monthly basis. Functional testing of battery powered lights shall be provided for a minimum 30 min once per year.</p> <p>Develop a testing and maintenance program that ensures the emergency power for exit signs is tested at least once per year. If 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>Develop an emergency evacuation plan which includes all components required by the Alliance Standards and communicate the plan to all employees.</p> <p>Implement and document training programs in accordance with the Alliance Safety Training Curriculum.</p> <p>Post the occupant load for every assembly and production floor in a conspicuous space near the main exit or exit access doorway for the space.</p> <p>Provide identification signs with permanently marked water proof metal or rigid plastic to the required components of sprinkler system as per NFPA 13, chapter-6 System components and hardware.</p> <p>Provide stair designation signs at each floor entrance from the all stairs to the floor in English and Bengali. Signs shall be indicate the name of the stair and the floor level.</p> <p>Apply to RAJUK for issuance of the Certificates of Occupancy for main building and ancillary structure according to building use. Pursue the matter to expedite.</p> <p>Complete fire department pre-planning activities with the local Fire Service and Civil Defense.</p>
Long Term (6 Months)	<p>Replace all non-compliant doors and frames in the means of egress with side swinging doors in accordance with Alliance Standard Section 6.8. Replacement doors shall be listed, approved, self-closing, fire rated door assemblies (door and frame) with latching panic hardware.</p> <p>Provide fire rated door in all rated exit stair enclosures. Fire door shall be of the side-hinged, swinging, self-closing type and shall swing in the direction of egress. Door shall have a minimum clear width of 1.0 m (39 in.). Consult a qualified a fire protection engineer to design the fire rated door.</p> <p>Install fire rated door assemblies at all exits. Provide required fire resistance rated opening protection (Door, Window, Hatch Cover,</p>

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	<p>etc.) at opening and penetration through fire rated walls and/or assemblies or closed the unprotected openings by fire-resistance rated barrier as per Alliance Standard. Consult a qualified fire protection engineer to design the required rated opening protection.</p> <p>Install a standpipe system at required locations designed by a qualified fire protection engineer. Modify or install the standpipe System (Class-I and class- II) to meet the requirements of Alliance standard's section 5.4. Once standpipe system is installed in accordance with NFPA 14, adjust and install signage at required locations and on required equipment. Signage must comply with NFPA 14. Consult a qualified fire protection engineer before modify or installing a new system.</p> <p>Provide 2.5 hour (as rating of 150 mm thick RCC slab is 2.5-hours) fire-resistive rated penetration protection for floor assemblies in accordance with Alliance Standard Sections 4.7. Sealing materials shall meet the testing requirements of ASTM E 119 and NFPA 251. Consult a qualified fire protection engineer to design the required penetration systems.</p> <p>Provide 2-hours fire-resistive rated construction barriers at exit enclosures with 1.5-hours fire-rated opening protection (Door, window, etc.). The new fire rated door will side-hinging swinging opening in the direction of egress type, with auto closure and panic bar and without locking arrangement. Minimum width of new fire rated door will 1.0 m. Every door in a stair enclosure serving more than 4 stories needs to provide with re-entry provision. Doors need to be free from general locking arrangements. . Fire doors assemblies need to conform as per NFPA 252, BS 476 Part 22, EN 1364-1, GB 12955-2008, or IS 3614 Part II. Consult a qualified fire protection engineer to design the required rated construction barriers with opening protection.</p> <p>Install initiating devices and notification appliances as required by the Alliance Standard and NFPA 72. This includes electrical supervision of all valves controlling fire protection systems (sprinklers, fire pumps, water supplies, etc.). Connect devices to 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>Provide training for the required number of people (25%) certified in firefighting, first aid, and rescue training by the appropriate authority.</p> <p>Consult a qualified fire protection engineer to design the required rated construction barrier with opening protection.</p> <p>Every door in a stair enclosure serving more than 5 stories shall be provide re-entry provision as per Alliance Standards Part 6 Section 6.8 Doors and Gates. Re-entry floor and door shall be marked with proper signage.</p> <p>Provide a uniform slope/ramp for the walking surface. Slope shall not exceed 1 in 20 in the direction of travel. Any changes in elevation (protrusions or lips) must not exceed 1/4 in.</p> <p>All valves controlling automatic sprinkler systems, fire pumps, and water supply systems shall be electrically supervised by a listed fire alarm system control unit as per Alliance Standard Part 5 Section</p>
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	<p>5.3.5 Supervision and Alarms and NFPA 13 chapter 7 System requirements. Assign a qualified fire Protection engineer for these purposes.</p> <p>Establish an inspection, testing, and maintenance program for all fire extinguishers. Program shall be comply with the requirements of NFPA 10 chapter 7.</p> <p>Install handrails on the both side of the stairs. A minimum height of 865 mm (34 in.) and a maximum height of 965 mm (38 in.) as measured from the leading edge of the tread need to be maintained when installing new handrails. The spacing between vertical members will not exceed 200 mm (8 inch).</p> <p>Provide parapet in every occupied roofs with same fire rating of outer wall of the building with a minimum height of 1067 mm (42 in.).</p> <p>Provide identification mark on fire department connections.</p> <p>The hangers, bracing, and restraint of sprinkler piping system shall be design modify and installed as per NFPA 13 chapter 9. Assign a qualified fire protection system designer for that modification.</p> <p>Install an approved audible device connected to every automatic sprinkler system, which will activate by water flow equal to the flow of one sprinkler. Where a fire alarm system is installed, activation of the water flow need to be Activated the fire alarm system. These arrangement need to be design and Implement as per NFPA 13 chapter 7 System requirements. Assign a qualified Fire protection engineer for these purposes.</p> <p>Establish an inspection, testing, and maintenance program for the standpipe and hose system. Program need to be comply with the requirements of NFPA 25.</p> <p>Establish an inspection, testing, and maintenance program for the fire pump. Program must comply with NFPA 25.</p> <p>Establish an inspection, maintenance, and testing program for the sprinkler System. Program shall be comply with the requirements of NFPA 25.</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>Develop a hot work permit program. The program must comply with the requirements of NFPA 51B.</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>
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