

## **Summary of Preliminary Assessment on Structural, Fire and Electrical Safety**

---

Name of the Factory	: Royal Fashions Limited
Address of the Factory	: 241/74, Faidabad Chowrasta, Dakkhinkhan, Dhaka
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 11 <sup>th</sup> April, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 11 <sup>th</sup> April, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 11 <sup>th</sup> April, 2015
BGMEA Membership No.	: 5428

### **BASIC INFORMATION:**

The factory building is a three storied RCC building with beam and column system and flat slab system. The following information was noted:

i. Building Usage Type	: Garment Factory.
ii. Structural System	: Brick column with non engineered shed.
iii. Floor System	: One story shed.
iv. Floor Area	: 9,602 square feet.
v. No. of Stories	: 1 story
vi. Construction Year	: 2009.
vii. Foundation Type	: Unknown.
viii. Design Drawings	: Not Available: Approval plan, structural design drawing, architectural design drawing, machine layout plan, material test report, floor load plan and soil test report..
ix. Soil Investigation Report	: Not Available.
x. Construction Materials	: Brick aggregate.
xi. Generator	: Ground Floor.

### **RECOMMENDATIONS FOR CORRECTIVE ACTION:**

The recommendations of corrective action for both Structural and Fire & Electrical Safety comprises in Short Term, Mid Term and Long Term basis.

The recommendations for **Structural Safety** corrective action are:

Short Term (Immediate)	: N/A
Mid Term (6-weeks)	: 1. Building Engineer to review the adequacy of the steel roof structure to ensure that it is designed to resist code specified live and wind loads.
Long Term (6-months)	: 1. Install horizontal bracing at the roof system if required.

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

The recommendations for **Fire & Electrical Safety** corrective action are:

**(A): Recommendations for Fire Safety Corrective Actions:**

<p>Immediate</p> <p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<p>Short Term</p> <p><i>(Actions that must be incorporated into a Fire Safety Management Plan immediately (1 ~ 2 weeks) and should be a regular activity</i></p>	<ul style="list-style-type: none"> <li>Factory needs to have sufficient number &amp; width (0.9m) of marked aisles at ground floor of the building -1.</li> <li>Factory needs to have sufficient number &amp; width (0.9m) of marked aisles at ground floor of the building -1.</li> <li>Lights in storage area needed to be installed with protective covers and conduits.</li> <li>Combustibles are to be managed with good housekeeping. Storage facilities with no air-conditioning duct shall be minimum 2.9m and when used as a storage facility there shall be a minimum clearance of one third the floor height from the ceiling to the top of the storage stack.</li> <li>Ensure the visibility of exit sign at every exit &amp; in floors from all positions.</li> </ul>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<ul style="list-style-type: none"> <li>Needs to have as built drawing with floor machine layout showing means of escape with proper dimension.</li> <li>Fire manager/Director need to have safety training from proper authority &amp; workers of the factory should as far as possible be trained for use fire extinguisher</li> <li>Ensure adequate numbers of fire drills under the fire safety plan.</li> <li>Factory needs to be installed with adequate illuminated emergency light in floor ,exit &amp;stairs .(Escape route)</li> <li>Factory need to have emergency backup power for critical fire safety system with sufficient capacity &amp; arrangement according to NTPA Guideline</li> </ul>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<ul style="list-style-type: none"> <li>Factory needs to have a proper pre-plan for fire service &amp; civil department.</li> <li>Factory need to maintain travel distance as per RMG guide line.</li> <li>The (West-south Exit-2) e cipesroutesneedstosbesfire protected(1shour sritedsenclo uresinds45sminsritedsdoor)tillstosreichs ifesrefu esirei</li> <li>The (South-middle exit-1) escape route need to be fire protected(4 hours rated enclosure and 2shour rated</li> </ul>

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

---

	<p>door)swithsgeneritorsroomsindshivesisfiresprotectedsr outestill to reach safe refuse area</p> <ul style="list-style-type: none"><li>• Storage areas need to be protected with 2 hour rated construction &amp; 1.5 hour rated opening or doors.</li><li>• Generator, substation &amp; transformer room need to be fire separated with 4 hr fire rated enclosure and 2 hrs rated opening having direct access from outside.</li><li>• Boiler room needs to be separated with 4 hours fire rated enclosure and 2hours rated door/opening</li><li>• Factory need to install centralized and automatic fire detection &amp; alarm system on all occupied floors, including other tenanted floors of the building as per NTPA Guideline</li><li>• The factory need to install manually operated electrical fire alarm system and automatic fire alarm system with single or multiple call boxes on all occupied floors, including other tenanted floors of the building</li><li>• Install automatic fire and smoke detection system throughout the building to cover every portion in that building.</li><li>• Install proper standpipe system having at least 75smm dia of standpipe</li><li>• Factory needs to install 1 riser per 1000 m2 of floor area &amp; 38 mm dia of hoses with variable nozzle.</li><li>• Provide the required flow of 1900 liter/min and minimum pressure of 200 KPa for supplying first aid hose (38 mm nominal) Or Hydraulically design the standpipe and hose system to get the required pressure.</li><li>• Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection</li><li>• Factory need to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900 ltr x 75 min=142500 liters water storage tank.</li><li>• Install dedicated fire pump with backup power system &amp; sufficient capacity for achieve required pressure in the remote place of the factory.</li></ul>
--	---

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

---

### **(B): Recommendations for Electrical Safety Corrective Actions:**

<p>Immediate</p> <p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<p>Short Term</p> <p><i>(Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity</i></p>	<ul style="list-style-type: none"> <li>• Provide two separate and distinct connections of earthing for each generator.</li> <li>• Ensure all distribution boards (including panel door) are earthed properly.</li> <li>• Ensure proper earthing connections at all electrical equipment.</li> <li>• Provide provision for inspection of all earthing system and ensure inspection is being completed and documented.</li> </ul>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<ul style="list-style-type: none"> <li>• Install appropriate number and type of safety signage and fire-fighting equipment at substation and generator room. Also ensure graded rubber mats are provided in front of all distribution boards.</li> <li>• Provide Instruction board for first aid and artificial respiration in the substation room and generator room.</li> <li>• Ensure in the substations room and generator room, all working place, exit light and escape light have adequate illumination level as per standard.</li> <li>• Ensure switchboards and/or distribution boards have a minimum clearance of 1 m (39 in) in front.</li> <li>• Install switchboards and/or panel boards in proper way or proper place to ensure safe installation.</li> <li>• Provide dedicated &amp; adequate size of earthing with proper identification for each circuit from the earth busbar of distribution boards and ensure continuous earth path is back to main building intake.</li> <li>• Rewire to ensure each incoming supply to an MCB has a dedicated supply from busbar. Avoid the use of multiple cables on outgoing side of MCB's.</li> <li>• Replace wooden boxes and panels with metal clad construction for mounting the</li> <li>• lighting boards and switch controls.</li> </ul>

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<ul style="list-style-type: none"> <li>• Consult with a qualified electrical engineer and ensure all electrical wiring/cables are sized according to capacity of circuit breakers.</li> <li>• Use noncombustible material to make channel and/ or cable trench and provide adequate covers on cable trenches/channel.</li> <li>• Avoid flexible cables for fixed wiring unless contained in an enclosure affording mechanical protection</li> <li>• Ensure cable joints are made in respect of conductivity, insulation and mechanical strength.</li> <li>• Connect all metal in the building to the building earthing/grounding system such as metal rebar in concrete, metal frame of building, or metal water pipe etc.</li> <li>• Ensure Lighting fixtures are supported from the structure properly and if flexible cords are used to support light fixture then make sure it has enough strength to carry the weight.</li> </ul>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<ul style="list-style-type: none"> <li>• Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system.</li> <li>• Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data.</li> <li>• Inspect electrical switchgear and panel boards on an annual basis.</li> <li>• Ensure the generator room has adequate fire separation from the production area/main building.</li> <li>• Ensure overhead service connections to the building are led via adequate size and type of service masts.</li> <li>• Ensure appropriate generator room size in order to properly access the generator to perform routine maintenance activities.</li> <li>• Replace switchboards and/or distribution boards with metal enclosed body.</li> <li>• Ensure distribution boards have no opening and all live internal components are concealed properly.</li> <li>• Provide dedicated &amp; adequate size of neutral with proper identification for each circuit.</li> <li>• Ensure each distribution board is provided with a circuit list and means of identification is provided as per list.</li> <li>• Ensure surface/exposed wiring are run either horizontally or vertically with proper mechanical support and avoid wiring at an angle or hanging way</li> </ul>

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

---

	<p>with improper support.</p> <ul style="list-style-type: none"><li>• Provide proper cable terminator/connector for stranded conductors at its point of termination.</li><li>• Install separate distribution boards for lighting and power circuits.</li><li>• Install lightning protection system on the building</li></ul>
--	--