

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: COTTON FASHION WEARS.
Address of the Factory	: Plot-152/9, Road-9/2, Sector-12, Block-B, Mirpur, Dhaka-1216
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	:
Date of Structural Inspection	:
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 21 April, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 21 April, 2015
BGMEA Membership No.	: 5378

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 :
- ii. Structural System :
- iii. Floor System :
- iv. Floor Area :
- v. No. of Stories :
- vi. Construction Year :
- vii. Foundation Type :
- viii. Design Drawings :
- ix. Soil Investigation Report :
- x. Construction Materials :
- xi. Generator :

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:

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|------------------------|---|
| Short Term (Immediate) | : |
| Mid Term (6-weeks) | : |
| Long Term (6-months) | : |

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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>	<p>N/A</p>
<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>	<p>Fire drill shall be conducted quarterly (4 times a year) under the Fire Safety Plan. A record of such drills shall be kept in writing for at least 3 years for the inspection of fire brigade whenever called for.</p> <p>Factory needs to have sufficient number & width (0.9m) of marked aisles at all floor of the Production building. Factory needs to have sufficient total width of marked aisles (5mm per occupant) at all floor of the building.</p> <p>Factory needs to remove all temporary obstruction from exit and stair case landing for easy movement and safe discharge. Lights in storage area needed to be installed with protective covers and conduits.</p> <p>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.</p> <p>Ensure illuminated exit signs in floors so that it is visible from all positions.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Needs to have as built drawing with proper dimensions showing means of escape</p> <p>Factory Manager/Director needs to arrange fire safety training for the workers of the factory from proper authority time to time.</p> <p>Factory need to have proper testing plan & record for fire safety equipment.</p> <p>All the exit doors of staircase enclosure need to be replaced by side swinging fire rated doors so that the staircase remains free from smoke as well as the lockable doors can be opened easily in the direction of evacuation without the use of a key.</p> <p>Stairways serving as means of escape shall have continuous guards and handrails on both sides.</p>

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	<p>Ensure adequate illuminated emergency lighting in floors, every exit and stair case landing.</p> <p>Factory needs to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Factory needs to have a proper pre-plan for fire department. Factory needs to ensure minimum height 2.00 m and clear width 0.90 m for all exit as per minimum requirement.</p> <p>Factory needs to ensure minimum height 2.00 m and clear width 0.90 m for individual exit as well as total width as per occupant load and minimum requirement.</p> <p>Factory needs to have sufficient width of stair (8mm per occupant and 0.90 m minimum) at all floor of the building. Factory needs to have sufficient width of stair (8mm per occupant and 0.90 m minimum) at all floor of the building and total width also complies with the minimum requirements.</p> <p>Accessories store need to be fire separated with 2 hour rated construction wall and 1.5 hour rated composite door or opening.</p> <p>Generator room need to be fire separated with 4 hour rated construction wall and 2 hour rated composite door or opening. Storage area need to be protected with 2 hour rated construction & 1.5 hours rated opening or doors with other occupancy.</p> <p>Generator room needs to be fire separated with 4 hour fire rated enclosure and 2 hour rated opening having direct access from outside. Boiler room needs to be fire separated with 4 hour fire rated enclosure and 2 hour rated opening having direct access from outside.</p> <p>All the stairs need to be protected with fire and smoke resistant enclosures & opening (2 hours rated enclosure and 1.5 hour rated door)and provide a protected route from all though the stairway to the final exits.</p> <p>As the ceiling of the building is flat slab so detectors shall be installed at every 900 sq-ft from one detector.</p> <p>Factory need to install centralized and automatic fire detection & alarm system on all occupied floors, including other tenanted floors of the building as per NTPA Guideline.</p> <p>The factory need to install manually operated electrical fire alarm system and automatic fire alarm system with single or</p>

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	<p>multiple call boxes on all occupied floors, including other tenanted floors of the building.</p> <p>Factory needs to ensure two way communication systems in all floors.</p> <p>Install proper standpipe system having at least 100 mm dia of standpipe.</p> <p>First aid hose system (38 mm nominal) shall be provided (Ref. Fire Service Standard # 9) in addition to Fire Aid Fire Fighting Appliances in existing high rise NTPA (20 m) buildings. In addition 50 mm or larger hose connection facility shall be provided.</p> <p>Ensure the minimum pressure for standpipes supplying a 50 mm or larger hose shall be at least 300 Kpa. For standpipe supplying first aid hose (38mm nominal) may have a minimum pressure of 200 Kpa.</p> <p>Ensure Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection.</p> <p>Install dedicated fire pump with backup power system & sufficient capacity for achieve required pressure in the remote place of the factory</p>
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(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>	<p>Find out cause (improper cable selection, improper protective device selection, improper termination, rusted connection, heat source etc.) of burning sign/insulation damage and take proper action including replacing cable or equipment where necessary.</p>
<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>	<p>Provide two separate and distinct connections of earthing for each generator.</p> <p>Ensure all distribution boards (including panel door) are earthed properly.</p> <p>Provide additional insulation for wiring exposed to external heat sources to protect cable.</p> <p>Ensure overcurrent protection device (circuit breaker/fuse) for each circuit/branch circuit.</p> <p>Ensure proper earthing connections at all electrical equipment.</p>

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	<p>Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering.</p> <p>Provide provision for inspection of all earthing system and ensure inspection is being completed and documented</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Install appropriate number and type of safety signage and fire-fighting equipment at generator room. Also ensure graded rubber mats are provided in front of all distribution boards. Provide Instruction boards for first aid and artificial respiration in the generator room.</p> <p>Ensure the generator room has adequate illumination level as per standard.</p> <p>Ensure distribution boards have a minimum clearance of 1 m (39 in) in front.</p> <p>Install panel board in proper place to ensure safe installation. Provide dedicated & adequate size of earthing with proper identification for each circuit.</p> <p>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 and busbar.</p> <p>Replace wooden boxes with metal clad construction and avoid using wooden bases for mounting the lighting boards and switch controls.</p> <p>Ensure all electrical cables are sized according to capacity of circuit breakers.</p> <p>Provide adequate support or mechanical guards for electrical equipment and wiring where necessary.</p> <p>Ensure cable joints are made in respect of conductivity, insulation and mechanical strength.</p> <p>Provide individual fuse with suitable discrimination with backup fuse or miniature MCB for each 15/20A socket outlet.</p> <p>Connect all metal in the building to the building earthing system.</p> <p>Find out the cause (improper cable/over current selection, over loading, improper lug, improper cable joints, rusted connection, insulation damage, multiple cables at single point,) of</p>

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	overheating { ambient+(20°C-40°C)} and take proper action.
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system.</p> <p>Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data. Inspect electrical panel boards on an annual basis.</p> <p>Ensure overhead service connections to the building are led via adequate size and type of service masts.</p> <p>Ensure the generator room has adequate fire separation from the production area.</p> <p>Provide adequate means of ventilation for the generator room based on the installed equipment considering fire barriers.</p> <p>Ensure appropriate generator location inside the generator room in order to properly access the generator to perform routine maintenance activities.</p> <p>Ensure distribution boards have no opening and all live internal components are concealed properly.</p> <p>Ensure distribution boards are installed in compliant locations in terms of height, access and surrounding weather.</p> <p>Provide dedicated & adequate size of neutral with proper identification for each circuit.</p> <p>Ensure each distribution board is provided with a circuit list and means of identification is obtained as per list.</p> <p>Use noncombustible material to make cable channel and provide adequate covers on cable channel.</p> <p>Provide proper cable terminator/conductor for stranded conductors.</p> <p>Run cable in a designated route with mechanical protection and fire sealing of floor slab and wall penetrations Install separate distribution boards for lighting and power circuits.</p> <p>Install lightning protection system on the building.</p>