

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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| Name of the Factory | : Akik Apparels Ltd. |
| Address of the Factory | : 220/A, 1/1, West Kafrul, Begum Rokeya Sarani, Mirpur, Dhaka |
| Present status of the factory | : Under Operation |
| Structural Assessment Conducted by | : ACCORD |
| Date of Structural Inspection | : |
| Fire Assessment Conducted by | : VERITAS Engineering & Consultant |
| Date of Fire Inspection | : 2015-03-29 |
| Electrical Assessment Conducted by | : VERITAS Engineering & Consultant |
| Date of Electrical Inspection | : 2015-03-29 |
| BGMEA Membership No. | : 4174 |

BASIC INFORMATION: The present garment factory is an industrial non engineered single storied steel shed. The following general information was noted:

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| i. Building Usage Type | : Garment Factory |
| ii. Structural System | : RCC building |
| iii. Floor System | : RCC frame Building. |
| iv. Floor Area | : 1614 m ² (Main building Ground Floor, 2nd, 3rd, 7th, and 8 th floor). Ground floor=15.34 2nd floor=464.68 m ² 3 rd floor=464.68 m ² 7th floor=334.57 m ² 8th floor=334.57 m ² |
| v. No. of Stories | : 10-storied. |
| 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 Fire & Electrical Safety comprises in Short Term, Mid Term and Long Term basis.

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

(A): Recommendations for Fire Safety corrective actions:

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| Immediate <i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i> | <ul style="list-style-type: none">• Factory need to remove all cartoons from the escape route and means of escape should be kept unobstructed & free. |
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| <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"> • 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. • Factory need to have proper testing plan & record of fire safety equipment. • Ensure minimum width of aisles as follows: <ul style="list-style-type: none"> (a) Seats on both sides of the aisle 1 m (b) Seats on one side of the aisle 0.9 m • The factory needs to reduce the occupant load from the floor should keep it within allowable limit. • Lights in storage area needed to be installed with protective covers and conduits. • Combustibles are to be managed with good housekeeping. Storage facilities with no air-conditioning duct shall be minimum 2.9 m 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>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"> • Need to have as built drawing with proper dimensions showing means of escape. • Factory Manager or Director needs to arrange fire safety training for the workers of the factory from proper authority time to time. • All the exit doors of staircase enclosure need to be replaced by side swinging fire rated doors with self-closing mechanisms so that the staircase remains free from smoke and it needs to be opened in the direction of travel as well as the lockable doors can be opened easily in the direction of evacuation without the use of a key. • Provide handrail on both sides of all the stairways as mentioned. • Illuminated emergency light needs to be covered in all floors, exits, staircases and aisles of all the factory buildings or sheds. The intensity of illumination by means of escape lighting needs to be equal or more than 10 lux. The aisles need to be illuminated with escape lighting to a level of not less than 2.5 lux at floor level. • Install suitable public address system having communication to all floors as well as facilities to receive messages from all floors. |
| <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"> • Factory needs to have a proper pre-plan for fire service & civil department. • Factory need to have the minimum width of exit door at least 0.9 m. • Factory need to have the minimum width of stair-3 at least 0.9m. • Final exit route-1&2(Stair-1 & Stair-2 escape route) need to be protected (4 hours rated lobby with 2 hours rated door) at each floor level entrance including ground floor and need to be protected from the |

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| | <p>generator at ground floor by 4 hours rated construction with 2 hours rated door/opening, also need to have a protected escape route till to reach safe refuse area.</p> <ul style="list-style-type: none">• Bonded warehouse and accessories store of 3rd floor need to be separated from the sewing section by 2 hours rated construction & 1.5 hours rated door.• Generator, room needs to be fire protected by 4 hours fire rated enclosure and 2 hours fire rated opening from the final exit route 1 & 2, also need to have direct access from outside.• Boiler room needs to be protected by 4 hours fire rated enclosure and 2 hours rated door/opening from the iron section of 8th floor• All the stairs need to be protected with a 4 hours fire resistant and smoke proof lobby (4 hours rated enclosure and 2 hour rated door) at each floor entrance and provide the protected route from all though the stairway to the final exits• Factory need to install fire lift with backup power including having 1 hour fire rated & auto closing fire door in 2 hours fire rated lift core with backup power & having minimum capacity of 545 kgs.• Factory need to constructed fire separated lobby with 4hours rated wall and 2 hours rated fire door and smokeproof lobby near to exit leading to staircase.• 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.• 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.• Factory needs to install control panel for detection and alarm system at required location.• Factory needs to install proper standpipe system with having at least 100 mm dia of riser.• Factory need to ensure the minimum pressure for standpipes supplying a 50mm or larger hose shall be at least 300 kPa and standpipe supplying first aid hose (38mm nominal) may have a minimum pressure of 200 kPa.• Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire |
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| | <p>department connection.</p> <ul style="list-style-type: none"> • Factory needs to have dedicated fire pump with backup power system & sufficient capacity for achieve required pressure in the remote place of the factory. • Factory need to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900ltr x 75min=142500 liters water storage tank. • Factory needs to establish command station on the entrance lobby and equipped with detailed floor plans along with clearly demarcated locations of fire detection and fighting devices and through the panel board able to detect fire alarm from any floor. It needs to be manned with properly trained personnel having responsibility of maintenance and operating firefighting facilities within the building. |
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(B): Recommendations for Electrical Safety corrective actions:

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| <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"> • 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>Short Term <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"> • Ensure panel door of distribution boards are earthed properly. • Ensure all cables are properly terminated at its point of termination using appropriate size and type of lug. • Clean interior components from dust and debris and seal all openings of the distribution boards to prevent dust and debris from entering. • Provide provision for inspection of all earthing system and ensure inspection is being completed and documented. |

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| <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"> • Ensure graded rubber mats are provided in front of all distribution boards. • Provide Instruction board for first aid and artificial respiration in the generator room. • Ensure adequate illumination level of all working place, exit light and escape light in the generator room as per standard. • Provide two separate and distinct connections of earthing for each generator. • Ensure distribution boards have a minimum clearance of 1 m (39 in) in front. • Provide dedicated & adequate size of earthing with proper identification for each circuit and ensure continuous earth path is back to main building intake. • Rewire to avoid the use of multiple cables from incoming and outgoing side of MCB's. • Replace wooden base with metal clad construction for mounting the lighting boards and switch controls. • Ensure electrical wiring/cables are sized according to capacity of circuit breakers. • Use noncombustible material to make channel and provide adequate covers on cable channel. • Ensure all cable joints are made in respect of conductivity, insulation and mechanical strength. • Connect all metal in the building to the building earthing system. • 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 overheating { ambient+(200C-400C)} 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> | <ul style="list-style-type: none"> • Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system. • Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data. • Inspect electrical switchgear and panel boards on an annual basis. |

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| | <ul style="list-style-type: none">• Ensure overhead service connections to the building are led via adequate size and type of service masts.• Provide fire rated door in the generator room to ensure fire separation from the production area/main building.• Ensure appropriate generator room size in order to properly access the generator to perform routine maintenance activities.• Ensure distribution boards have no opening and all live internal components are concealed properly.• Provide dedicated & adequate size of neutral with proper identification for each circuit.• Ensure each distribution board is provided with a circuit list and means of identification is obtained as per list.• Provide proper cable terminator/conductor for stranded conductors within distribution boards. Run cables 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. Install lightning protection system on the building. |
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