

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Amrjin Apparels Ltd.
Address of the Factory	: 2861, FIDC Road, Kalurghat, Chittagong.
Present status of the factory	: Under Operation.
Structural Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Structural Inspection	: 2015-12-29
Fire Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Fire Inspection	: 2015-12-29
Electrical Assessment Conducted by	: TÜV SÜD Bangladesh (Pvt.) Ltd.
Date of Electrical Inspection	: 2015-12-29
BGMEA Membership No.	: 4588

BASIC INFORMATION: The following general information was noted:

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| i. Building Usage Type | : Garment Factory. |
| ii. Structural System | : RCC Beam Slab Frame |
| iii. Floor System | : RCC Beam Slab. |
| iv. Floor Area | : Ground floor = 3200 sft , Entire building = 15360 sft (Approx.). |
| v. No. of Stories | : 4 floors + GF (5 Storey) |
| vi. Construction Year | : Construction started in 2002. |
| vii. Foundation Type | : Individual column footing |
| viii. Design Drawings | : Not available. |
| ix. Soil Investigation Report | : Not available. |
| x. construction Materials | : Brick aggregate in all columns, beams and slabs in all floors |
| xi. Generator | : Generator is present at outside the building. |

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:

No critical or high risk observation was found during the day of assessment in the factory. During the assessment, A non-conformity was found for which mid-term corrective action has been recommended. There is no need to suspend operation in the factory.

Short Term (Immediate) : N/A

Mid Term (6-weeks) : 1. As-built architectural and engineering drawing to be prepared for entire building and submitted for approval by appropriate authorities. As part of this process the building engineer will be required to make a number of checks on the structural design and as-built construction.

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Long Term (6-months)

: N/A

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>	<ul style="list-style-type: none"> • The minimum clear width of the pathway should be 0.9 meter. • Remove all temporary items from all escape routes, aisles and passageway. • Factory management should be checked alarm call points, alarm & detection system periodically and maintained the record properly. • The first aid hose and standpipe performance should be checked periodically and properly tagged. • Provide additional firefighting equipment like sand & water buckets near exit or easily accessible area for first phase firefighting.
<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"> • Replace all existing exit doors on evacuation routes, exit doors with side hinged type door, which swing outward and in the direction of travel. Swinging of the door should not constrict the width of the corridor / passage below 0.9 meter. • Remove all locking device from all egress door. All exit doors should be open-able from the side they serve without the use of a key. • Provide handrails on both side of each stairway with height of 0.9m measured from the nose of stair to the top of the handrail. • Doors in stair should be outward opening, side-swing, self closing, non-lockable 1.5 hours fire rated doors in all stair way encloses. • The egress paths should be illuminated with emergency lighting with power back-up supply & illumination should be a minimum of 10 lux for all corridors & exit doors. Aisles should be provided with a minimum 2 lux. • The stairway should be illuminated with emergency lighting with power back-up supply & illumination should be a minimum of 10 lux for stairway. • Install Manual activation call point at all exit routes. • Provide adequate nos. of smoke detectors to cover the whole factory building.

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	<ul style="list-style-type: none"> • Visual alarm should be placed at the generator room. • Obtain building approval from issuing authority. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator shed, which located at the adjacent to final evacuation route. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated door at 2nd floor boiler room, which located at the adjacent to operational area. • Produce design and plan for automatic detection system with automatic fire alarm and control panel. • Prepare proper design and plan for dedicated fire pump with alternate backup power supply. • Prepare plan and design for dedicated water storage tank for firefighting operation as per RMG guideline.
<p>Long Term</p> <p>(The remedial works indicated must be carried out within a period of 6 months)</p>	<ul style="list-style-type: none"> • Provide 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator shed, which located at the adjacent to final evacuation route. • Provide 4 hours fire rated barriers with 2 hours fire rated door at 2nd floor boiler room, which located at the adjacent to operational area. • Install automatic detection system with automatic fire alarm and control panel. • Install dedicated fire pump with alternate backup power supply. • Stand pipe supplying first aid hose should have minimum pressure of 200 KPa. • Provide dedicated storage tank for firefighting operation.

(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>N/A</p>
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<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>	<p>N/A</p>
<p>Mid Term <i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<ul style="list-style-type: none"> • 1. Provide updated SLD matching the existing installation at the factory. 2. SLD to indicate exact positions of all points of switch boxes and other outlets. 3. SLD to be approved by the engineer-in-charge. • 1. Provide updated Electrical layout drawing prepared after proper locations of all outlets for lamps, fans, fixed and transportable appliances, motors etc. 2. Drawings to indicate exact positions of all points of switch boxes and other outlets to match existing installation. 3. As built drawing to be approved by the engineer-in-charge. • 1. All stranded conductors > 6mm² to be provided with cable sockets. 2. All stranded conductors < 6 mm², at exposed end should be soldered / crimped. • 1. Overhead service connections should be covered and meet the requirements mentioned in RMG Guidelines. 2. Provide supports for main service line complete with adequate insulation. • The electrical panels to be of metal case and should be marked with “Danger 415 Volts” and identified with proper phase marking and danger signage. • Provide proper clearance of 0.8 - 1.0 m in front of distribution panel. • Avoid bunch of cable at bus bar terminal, use individual circuit and over current device for every incoming and outgoing circuit at the distribution boards. • Provide circuit diagram /circuit list with proper current ratings and fuse size, marking for DBs identifying end use load, voltage, number of phases. • Provide proper separate earthing/grounding to generator. Ensure that

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	<p>generator body frame to have two separate and distinct connections to the earth / ground.</p> <ul style="list-style-type: none"> • Provide separate earthing connection to electrical equipment's. Ensure that earth potential provided for all parts of equipment / installation (other than live parts) and that continuous earth connection is provided back to the main intake supply earth. • Provide adequate earthing to body and doors to DB. Ensure that all electrical panels provided with proper and separate earth potential.
<p>Long Term <i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<ul style="list-style-type: none"> • 1. Remove all the inflammable materials from surrounding of electrical circuitry. 2. Ensure that all electric circuitry clean of inflammable materials. 3. Conduct periodic maintenance and maintain the records. • Each circuit should have a separate neutral (use of common neutral for more than one circuit shall not be permitted). • Seal the cable entry-exit points of DB's with non-flammable materials. In addition: <ol style="list-style-type: none"> 1. Ensure that DB panels / Switchgears to be vermin / damp proof. 2. Ensure all unused holes / openings in DBs to be blocked properly. • Provide adequate protection against lightning depending on the probability of a strike and acceptable risk levels at roof top of building.