

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: VIRGIN FASHION LTD.
Address of the Factory	: Chowdhury Mansion, 26 Kutipara, Tanbazar, Narayanganj.
Present Status of the Factory	: Closed.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 08th June, 2015.
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 08th June, 2015.
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 08th June, 2015.
BGMEA Membership No.	: 5918
BKMEA Membership No.	: 1421

BASIC INFORMATION:

The assessed factory is a 5- storey RCC factory building with beam column frame structural system. The following information was noted:

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| i. Building Usage Type | : Garment factory |
| ii. Structural System | : R.C.C. Beam Column Frame. |
| iii. Floor System | : Beam Slab. |
| iv. Floor Area | : Total floor area is 5,000 sq. ft. approx. |
| v. No. of Stories | : 5 storeys. |
| vi. Construction Year | : Not identified. |
| vii. Foundation Type | : Not identified |
| viii. Design Drawings | : Unavailable. |
| ix. Soil Investigation Report | : Unavailable. |
| x. Construction Materials | : Brick Aggregated |
| xi. Generator | : Roof top |

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) : None.

Mid Term (6-weeks) :

- i. As built architectural and engineering drawing to be prepared and submitted for approval by appropriate authority. As part of this process building engineer will be required to make a number of checks on the as-built construction.
- ii. Factory management to take necessary steps to remove generator from roof floor and relocate the generator installation at the ground floor level.

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Long Term (6-months) : None.

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"> • Rearrange the evacuation pathway to ensure the minimum width. • Provide aisle marking with arrow guiding. Provide directional signs wherever necessary. • Factory management should be checked alarm call points, alarm & detection system periodically and maintained the record properly. • Factory management should be checked alarm call points, alarm & detection system periodically and maintained the record properly. • Provide fire extinguisher at 3rd and 4th floor and to keep the record for re filling & properly tagged. • Place the extinguisher near the path of exit travel & easily accessible • The first aid hose and standpipe performance should be checked periodically and properly tagged. • The first aid hose and standpipe performance should be checked periodically and properly tagged.
<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.(Also require fire rated door at the

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	<p>floor occupied by other tenants)</p> <ul style="list-style-type: none"> • Provide 2h fire rated wall with 1.5 hour fire rated door at both side store room. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated door at 3rd floor boiler room, which located at the adjacent to operational area. • 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. • Produce design and plan for automatic detection system with automatic fire alarm.(Also needs to cover the floors occupied by other tenants) • 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. • Power backup supply should be provided for fire alarm system. • Visual alarm should be placed at the generator room. • Obtain fire license / permit from issuing authority. • Obtain building approval from issuing authority. • Implement to a single fire safety management system with approvals from all tenants in the factory building. • Obtain the boiler license from the proper issuing authority. • Obtain the boiler operator license from the proper issuing authority.
<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"> • Provide 4 hours fire rated barriers with 2 hours fire rated door at 3rd floor boiler room, which located at the adjacent to operational area. • Install automatic detection system with automatic fire alarm (Also needs to cover the floors occupied by other tenants). • 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

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	<p>operation</p> <ul style="list-style-type: none"> • Provide obstacle free and wide roads for fire-fighting trucks.
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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>	<ul style="list-style-type: none"> • Over current protection devices (Circuit breakers) should be installed at distribution panels for outgoing circuit.
<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"> • All strands cables at exposed ends should be properly soldered / crimped and insulated.
<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"> • 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. • All unwanted materials should be removed from Generator room. • Provide rubber mats of adequate size in front of distribution boards. • Install smoke detection and provide firefighting equipment in the generator room. • Individual Fuse protection should be provided to every 15/20 a socket. • 1. All stranded conductors > 6mm² to be provided with cable sockets.

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	<p>2. All stranded conductors < 6 mm², at exposed end should be soldered / crimped.</p> <ul style="list-style-type: none"> • 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. • Select conductors and MCCB/MCB with adequate sizing without exceeding permissible current carrying capacity for insulation. • Provide circuit diagram /circuit list with proper current ratings and fuse size, marking for DBs identifying end use load, voltage, number of phases. • Provide cable joints of porcelain / PVC connectors with PIB tape wound around before placing the cable in the box. • Provide proper separate earthing/grounding to generator. Ensure that generator body frame to have two separate and distinct connections to the earth / ground. • Provide adequate earthing to body and doors to DBs. Ensure that all electrical panels provided with proper and separate earth potential.
<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"> • Relocate generator set in ground floor as early as possible. • Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 30m², or relocate the generator room. • Provide and maintain proper clearance in all sides of generator for ease of maintenance. • 1. Design to have proper segregation of different end used loads. 2. Wiring design to have separate and distinct sub-circuits for power and heating system. 3. All DBs to be placed conveniently. 4. Wiring to be neat, tidy and located near ceiling. • Provide calibrated Ammeters at distribution board. • 1. Wooden boards should be replaced by non-

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	<p>flammable materials.</p> <p>2. Prefer switchboards made of non-flammable materials.</p> <ul style="list-style-type: none">• 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/SDB)'s with non-flammable materials. In addition: 1. Ensure that DB panels / Switchgears to be vermin / damp proof. 2. Ensure all unused holes / openings in DBs to be blocked properly.• 1. Provide the ECC to meet minimum cross-sectional area as per table 4.5. <p>2. Ensure that connections between conductors / equipment provided to durable electrical continuity and adequate mechanical strength and protection.</p> <p>3. The continuous earth connection is provided back to the main intake supply earth.</p> <ul style="list-style-type: none">• Provide adequate protection against lightning depending on the probability of a strike and acceptable risk levels at roof top of building.
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