

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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| Name of the Factory | : Oba Apparels Limited |
| Address of the Factory | : 1111, Biswamber Nag Lane, Goshail Danga, Chittagong. |
| Present Status of the Factory | : shutdown |
| Structural Assessment Conducted by | : TÜV SÜD Bangladesh (Pvt.) Ltd. |
| Date of Structural Inspection | : 2015-06-25 |
| Fire Assessment Conducted by | : TÜV SÜD Bangladesh (Pvt.) Ltd. |
| Date of Fire Inspection | : 2015-06-25 |
| Electrical Assessment Conducted by | : TÜV SÜD Bangladesh (Pvt.) Ltd. |
| Date of Electrical Inspection | : 2015-06-25 |
| BGMEA Membership No. | : 2492 |

BASIC INFORMATION:

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| i. Building Usage Type | : Woven Garments Factory. |
| ii. Structural System | : RCC Beam slab frame |
| iii. Floor System | : Beam slab floor system |
| iv. Floor Area | : Plinth area 4408 sq.ft and total 17632 sq. feet (including all floor) |
| v. No. of Stories | : 4 Storey |
| vi. Construction Year | : 1st phase in 1980 and 2nd phase in 1996. |
| vii. Foundation Type | : Footing foundation |
| viii. Design Drawings | : Available. (Not as build) |
| ix. Soil Investigation Report | : Not available |
| x. construction Materials | : Brick Aggregated |
| xi. Generator | : Available at ground floor of another building. |

RECOMMENDATIONS FOR CORRECTIVE ACTION: Columns E1, F4, E4, E3 and C1 were found in highly stressed condition due to small section of column in big tributary area and toilet block area which may pose high risk to operation in the factory. Due to this the factory is rated as AMBER. Detailed Engineering Assessment (DAE) is recommended.

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| Short Term (Immediate) | : 1. Identified areas not to be used for storage. 2. Factory Engineer to review design, loads and columns stresses in all column. 3. Verify insitu concrete stresses by taking 100mm diameter cores from ground floor columns of E1, F4, E4, E3 and C1. Verify reinforcement grade, diameter and number of bars in column. 4. A Detail Engineering Assessment of Factory to be commenced, see attached Scope. |
| Mid Term (6-weeks) | : 1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity. 2. Detail Engineering Assessment to be completed |

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Long Term (6-months)

: 1. Continue to implement load plan.

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

(A): Recommendations for Fire 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> | <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"> • Provide proper arrow guiding and exit signage on all Evacuation pathways or provided with overhead signage fixed at ceiling level. <ul style="list-style-type: none"> - Illuminated exit sign should be posted above the exit door, - It should be clearly visible at all time, - Provide directional signs wherever necessary. - All exit doors should be clearly marked for easy identification. • Factory management should be checked alarm call points, alarm & detection system periodically and maintained the record properly. |
| <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"> • Prepare proper plan and design for one more exit in a way not to exceed the maximum travel distance. • 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. • Prepare proper plan & design for another staircase. - Minimum clear width should be 0.9 meter. • 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 to encloses. (Also require fire rated door at the floor occupied by other tenants). |

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| | <ul style="list-style-type: none"> • 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. • Obtain fire license from issuing authority with full coverage area. • Implement to a single fire safety management system with approvals from all tenants in the factory building. |
| <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"> • Implement the plan and design for one more exit. • Install another staircase as per plan and design. - Minimum clear width should be 0.9 meter. • Install another staircase as per plan and design. - Minimum clear width should be 0.9 meter. • 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. • Provide sufficient number of hose pipe with respect to area and travel distance as per RMG guideline. • Provide dedicated storage tank for firefighting operation. |

(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> | N/A |
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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> | <ul style="list-style-type: none"> • Re-locate oil / fuel tanks away from control panels in generator room. • All strands cables at exposed ends should be properly soldered / crimped and insulated. |
| <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"> • All unwanted materials should be removed from Generator room. • Provide rubber mats of adequate size in front of all distribution panels. • Install smoke detection and provide firefighting equipment in the substation and generator room. • 1. Exit signs should be illuminated either by lamps external to the sign or by lamps contained within the sign. 2. The source of illumination should be providing not less than 50 lux. • 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 cable connections with properly soldered / welded lugs at DB's. Ensure that all the electrical connections are properly secured with lugs and glands. • Select conductors and MCCB/MCB with adequate sizing without exceeding permissible current carrying capacity for insulation. • Avoid looping and bunch of cable at MCCB/MCB or 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 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 all DBs. Ensure that all electrical panels provided with proper and separate earth potential. |

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| <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">• 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. • Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 26 m², 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. • Review capacity of standby generator on basis of loads for essential lighting / AC / Equipment / Services. Replace generator with larger capacity or install second generator if review indicates existing unit is too small. • Provide and maintain easy access and proper height of switchboard / panel boards (< 2m from floor level). • 1. Wooden panel boards should be replaced by non-flammable materials.• 2. Prefer switchboards made of non-flammable materials. • Power cables/ telecommunication cables / antenna cables should be laid separately. • 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:<ul style="list-style-type: none">1. Ensure that DB's 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 |
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| | <p>table 4.5.</p> <ol style="list-style-type: none">2. Ensure that connections between conductors / equipment are provided to durable electrical continuity and adequate mechanical strength and protection.3. The continuous earth connection is provided back to the main intake supply earth. <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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