

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: CUTE DRESS INDUSTRY
Address of the Factory	: B-489-490, BSCIC I/A, Fatullah, Narayanganj, Bangladesh.
Present Status of the Factory	: Under Operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 2 nd March, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 2 nd March, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 2 nd March, 2015
BGMEA Membership No.	: 5908
BKMEA Membership No.	: 1531

BASIC INFORMATION:

There is one 5 storey and one 6 storey RCC building. In this report, the 5 storied RCC building (Building 1) and 6 storied RCC building (Building 2). One vertical extension has been found at the top of Building 1. These two buildings were adjacent to each other and connected by side ramp with all floors except ground floor. All floors of both buildings were occupied as rental basis except ground floor and few portion of 1st floor of Building 1. The following general information were noted:

i. Building Usage Type	: Garment Factory.
ii. Structural System	: RCC beam column frame system for Building-2 and Flat plate system for Building-1.
iii. Floor System	: RCC beam slab floor system for Building-2 and Flat plate floor system for Building-1.
iv. Floor Area	: The typical plinth area is 1480 sft. and total production floor is 7500 sft.(Building 1) The typical plinth area is 1582 sft. and total production floor is 9496 sft.(Building 2).
v. No. of Stories	: 5 Storey (Building 1) (No Basement) 6 Storey (Building 2) (No Basement)
vi. Construction Year	: 2000, 1998.
vii. Foundation Type	: Both are Shallow Foundation
viii. Design Drawings	: Available
ix. Soil Investigation Report	: Available.
x. Construction Materials	: Brick aggregate. (Identified by removing plaster)
xi. Generator	: Ground floor at Building 2.

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)	: None.
Long Term (6-months)	:

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

- Building Engineer needs to check existing flat slab system. Lateral system is required to ensure stability of the structure.

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>	<ul style="list-style-type: none"> • None.
<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. • Provide aisle marking with 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. -Signage should be uniform. • Factory management should be checked alarm call points, alarm & detection system periodically and maintained the record properly. • Provide additional fire extinguisher at 5th floor and to keep the record for re filling & 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

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>height of 0.9m measured from the nose of stair to the top of the handrail.</p> <ul style="list-style-type: none"> • 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 floor occupied by other tenants) • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated door at generator room, which located at the adjacent to loading unloading 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. • Produce design and plan for automatic detection system with automatic fire alarm and control panel.(Also needs to cover the floors occupied by other tenants) • Prepare proper design and plan for dedicated fire pump with alternate backup power supply. • Replace existing 1 inch hose pipe with 1.5 inch hose pipe to meet the requirement of RMG guideline. • Prepare plan and design for dedicated water storage tank for firefighting operation as per RMG guideline. • Visual alarm should be placed at the generator room. • Implement to a single fire safety management system with approvals from all tenants in the factory building.
<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 generator room, which located at the adjacent to loading unloading area. • Install automatic detection system with automatic fire alarm and control panel.(Also needs to cover the floors occupied by other tenants) • Install dedicated fire pump with alternate backup power supply. • Provide dedicated storage tank for firefighting operation.

(B): Recommendations for Electrical Safety corrective actions:

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

<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 all distribution panels..
<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"> • Re-locate oil tanks away from control panels in generator room. • All strands cables at exposed ends should be properly soldered / crimped and insulated. • 1. Disconnect the loads from cable of signs of overloading / abnormal temperature found. • 2. Make necessary repairs to avoid further accidents.
<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"> • All unwanted materials should be removed from transformer and Generator room. • Provide rubber mats of adequate size in front of all distribution panels. • Provide smoke detector at the substation and generator room. • Provide and maintain clear and legible identifications numbers & names on all incoming and outgoing circuits of LT panels. • Adequate number of caution boards should be kept in the substation room. • 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. Remove all the inflammable materials from surrounding of electrical circuitry at MDBs/SDBs. • 2. Ensure that all electric circuitry clean of inflammable materials. • 3. Conduct periodic maintenance and maintain the records. • 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 all

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>distribution panels/switchboards.</p> <ul style="list-style-type: none"> • Provide cable connections with properly soldered / welded lugs at (LT/MDB/DB/SDB)'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. • Seal the cable penetrations through walls adequately with fire resistive elements. • Provide proper separate earthing/grounding to transformer. Ensure that transformer body frame to have two separate and distinct connections to the earth / ground. • 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 MDBs / 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"> • 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,

	<p>fixed and transportable appliances, motors etc.</p> <p>2. Drawings to indicate exact positions of all points of switch boxes and other outlets to match existing installation.</p> <p>3. As built drawing to be approved by the engineer-in-charge.</p> <ul style="list-style-type: none">• Area of substation / transformer to meet requirements of Table 4.3 of RMG Guideline; the area should be 42m², or relocate the substation room.• Provide 4 hour fire rated walls all around the transformer and generator room on ground level.• Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 40m², or relocate the generator room.• Provide and maintain proper clearance in all sides of generator for ease of maintenance.• 1. Wooden switchboards boards should be replaced by non-flammable materials.• Each circuit should have a separate neutral (use of common neutral for more than one circuit shall not be permitted).• Provide the wiring in PVC conduits or in metallic GI pipes. Ensure that all electrical wiring should be covered in proper conduit pipes.• Seal the cable entry-exit points of (LT/MDB/DB/SDB)'s with non-flammable materials. In addition:<ol style="list-style-type: none">1. Ensure that LT 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.<ol style="list-style-type: none">2. Ensure that connections between conductors / equipments provided to durable electrical continuity and adequate mechanical strength and protection. <p>3. The continuous earth connection is provided back to</p>
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Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>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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