

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Dips Apparel Ltd.
Address of the Factory	: Karnaphuli Arcade (1st Floor), 152/153, New Chaktai, Chittagong
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 28 December, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 28 December, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 28 December, 2015
BGMEA Membership No.	: 5567

BASIC INFORMATION:

Dips Apparel Ltd. is running its operation in two buildings. The main building is a 5- story RCC building. The following information was noted:

i. Building Usage Type	: Garment Factory.
ii. Structural System	: RCC Beam-Column & Flat Slab Frame.
iii. Floor System	: RCC Beam-Column & Flat Slab Frame.
iv. Floor Area	: Ground floor = 4368sft, Entire building = 22152 sft (Approx.)
v. No. of Stories	: 4 floors + GF (5 Storey), No Basement
vi. Construction Year	: Construction started in 2009.
vii. Foundation Type	: continuous column footing foundation
viii. Design Drawings	: Available (approval for 5 storey RCC building from CDA on 12th June, 2005 for commercial use)
ix. Soil Investigation Report	: Available
x. Construction Materials	: Brick aggregate in all columns, beams and brick aggregate in all slabs in all floors.
xi. Generator	: Generator is present at ground floor of the building at west side.

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)	: N/A
Mid Term (6-weeks)	: N/A
Long Term (6-months)	: 1. Building engineer to verify strength and stiffness of lateral stability system for lateral loads.

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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>	<p><input type="checkbox"/> Provide additional firefighting equipment like sand & water buckets near exit or easily accessible area for first phase fire fighting.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Doors in stair should be outward opening, side-swing, self closing, non-lockable 1.5 hours fire rated doors in all stair way encloses.</p> <p><input type="checkbox"/> The stairway should be illuminated with emergency lighting with power back-up supply & illumination should be a minimum of 10 lux for stairway.</p> <p><input type="checkbox"/> Install Manual activation call point at all exit routes</p> <p><input type="checkbox"/> Provide adequate nos. of smoke detectors to cover the whole factory building.</p> <p><input type="checkbox"/> Replace existing 1 inch hose pipe with 1.5 inch hose pipe to meet the requirement of RMG guideline.</p> <p><input type="checkbox"/> Implement to a single fire safety management system with approvals from all tenants in the factory building.</p> <p><input type="checkbox"/> Prepare proper plan and design for one more exit in a way not to exceed the maximum travel distance</p> <p><input type="checkbox"/> Prepare proper plan and design for fire rated barrier for 2 hour fire rating separated corridor at ground floor.</p> <p><input type="checkbox"/> Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator room, which located at the adjacent to the final evacuation route.</p> <p><input type="checkbox"/> Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated door at 1st floor boiler room, which</p>

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	<p>located at the adjacent to operational area.</p> <ul style="list-style-type: none"> <input type="checkbox"/> 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) <input type="checkbox"/> Prepare proper design and plan for dedicated fire pump with alternate backup power supply. <input type="checkbox"/> Prepare plan and design for dedicated water storage tank for firefighting operation as per RMG guideline.
<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"> <input type="checkbox"/> Implement the plan and design for one more exit <input type="checkbox"/> All stairway to have direct access to outside of the factory building, which requires 2 hour fire rated construction at ground floor for fire separated corridor. <input type="checkbox"/> Provide 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator room, which located at the adjacent to the final evacuation route. <input type="checkbox"/> Provide 4 hours fire rated barriers with 2 hours fire rated door at 1st floor boiler room, which located at the adjacent to operational area. <input type="checkbox"/> Install automatic detection system with automatic fire alarm and control panel.(Also needs to cover the floors occupied by other tenants) <input type="checkbox"/> Install dedicated fire pump with alternate backup power supply. <input type="checkbox"/> Stand pipe supplying first aid hose should have minimum pressure of 200 KPa. <input type="checkbox"/> 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>	<ul style="list-style-type: none"> <input type="checkbox"/> Over current protection devices (Circuit breakers) should be installed at 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"> <input type="checkbox"/> 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</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> 1. Provide updated SLD matching the existing installation at the factory. <input type="checkbox"/> 2. SLD to indicate exact positions of all points of switch boxes

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<p><i>carried out within a period of 6 weeks)</i></p>	<p>and other outlets.</p> <p>3. SLD to be approved by the engineer-in-charge.</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1. Provide updated Electrical layout drawing prepared after proper locations of all outlets for lamps, fans, fixed and transportable appliances, motors etc. <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"> <input type="checkbox"/> 1. All stranded conductors > 6mm² to be provided with cable sockets. <input type="checkbox"/> 2. All stranded conductors < 6 mm², at exposed end should be soldered / crimped. <input type="checkbox"/> 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. <input type="checkbox"/> Provide proper clearance of 0.8 - 1.0 m in front of distribution panel. <input type="checkbox"/> Avoid bunch of cable at MCCB/MCB terminal, use individual circuit and over current device for every incoming and outgoing circuit at the distribution boards. <input type="checkbox"/> Provide circuit diagram /circuit list with proper current ratings and fuse size, marking for DBs identifying end use load, voltage, number of phases. <input type="checkbox"/> Provide cable joints of porcelain / PVC connectors with PIB tape wound around before placing the cable in the box. <input type="checkbox"/> Provide proper separate earthing/grounding to generator. Ensure that generator body frame to have two separate and distinct connections to the earth / ground. <input type="checkbox"/> Provide adequate earthing to body and doors to all 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"> <input type="checkbox"/> Provide 4 hour fire rated walls & fire door in the generator room on ground level. <input type="checkbox"/> Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 36m², or relocate the generator room. <input type="checkbox"/> Each circuit should have a separate neutral (use of common neutral for more than one circuit shall not be permitted). <input type="checkbox"/> Seal the cable entry-exit points of (DB)'s with non-flammable materials. In addition: <p>1. Ensure that DB panels / Switchgears to be vermin / damp proof.</p>

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	<p>2. Ensure all unused holes / openings in DBs to be blocked properly.</p> <ul style="list-style-type: none"><input type="checkbox"/> 1. Provide the ECC to meet minimum cross-sectional area as per table 4.5.2. Ensure that connections between conductors / equipment 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.<input type="checkbox"/> 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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