

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Atd Garments Co. Ltd.
Address of the Factory	: Hossain Court, (5th floor), 75, Agrabad C/A, Chittagong.
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 30 December, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 30 December, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 30 December, 2015
BGMEA Membership No.	: 3258

BASIC INFORMATION:

The factory building is a six storied RCC building with beam and column system. The following information was noted:

i. Building Usage Type	: Garment Factory.
ii. Structural System	: RCC beam column system.
iii. Floor System	: RCC Beam slab.
iv. Floor Area	: Ground floor = 7056 sft , Entire building = 49756 sft (Approx.)
v. No. of Stories	: 5 floors + GF (6 Storey)
vi. Construction Year	: 1st phase construction started in 1985 and 2nd phase construction started in 1992
vii. Foundation Type	: Individual column footing
viii. Design Drawings	: Available
ix. Soil Investigation Report	: Not Available
x. Construction Materials	: Brick aggregate.
xi. Generator	: Generator is present at outside the building at south 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. Sections of plaster finish to concrete beam to be removed to investigate if cracks penetrate the building structure. Investigation needed to determine why cracks occurring.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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"> <input type="checkbox"/> The minimum clear width of the pathway should be 0.9 meter <input type="checkbox"/> Provide aisle marking with arrow guiding and exit signage on all Evacuation pathways or provided with overhead signage fixed at ceiling level. - 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 <input type="checkbox"/> Combustible materials should keep away from electrical appliances and all the lighting in storage area must have protecting covers and wiring must be in conduits. <input type="checkbox"/> Fire drill should be conducted quarterly (4 times a year) in existing buildings as detailed under the Fire Safety Plan & should kept 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"> <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. <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. <input type="checkbox"/> Provide handrails on both side of each stairway with height of 0.9m measured from thenose of stair to the top of the handrail. <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.(Also require fire rated door at the floor occupied by other tenants) <input type="checkbox"/> Provide 2 hour fire rated construction at unprotected opening window, which is adjacent

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>to external staircase.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated door at 5th floor boiler room, which located at the adjacent to operational area. <input type="checkbox"/> 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. <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. <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"/> An automatic alarm systems must be provided throughout the factory; the alarm must be automatically triggered on detection of a fire. <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. <input type="checkbox"/> Visual alarm should be placed at the generator room. <input type="checkbox"/> Implement to a single fire safety management system with approvals from all tenants in the factory building. <input type="checkbox"/> Obtain the boiler license from the proper issuing authority. <input type="checkbox"/> 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"> <input type="checkbox"/> Provide 4 hours fire rated barriers with 2 hours fire rated door at 5th 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"/> Provide sufficient number of hose pipe with respect to area and travel distance as per RMG guideline. <input type="checkbox"/> Provide dedicated storage tank for firefighting operation

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

(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>
<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>	<p><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.</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"/> 1. Provide updated SLD matching the existing installation at the factory.</p> <p>2. SLD to indicate exact positions of all points of switch boxes and other outlets.</p> <p>3. SLD to be approved by the engineer-in-charge.</p> <p><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> <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> <p><input type="checkbox"/> Provide adequate illumination for Generator room.</p> <p><input type="checkbox"/> All unwanted materials should be removed from Generator room.</p> <p><input type="checkbox"/> Provide rubber mats of adequate size in front of distribution panel.</p> <p><input type="checkbox"/> Install smoke detection and provide firefighting equipment in the generator room.</p> <p><input type="checkbox"/> 1. Exit signs should be illuminated either by lamps external to the sign or by lamps contained within the signage.</p> <p>2. The source of illumination should be providing not less than 50 lux.</p> <p><input type="checkbox"/> Individual Fuse protection should be provided to every 15/20 A socket.</p> <p><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.</p> <p><input type="checkbox"/> Provide cable connections with properly soldered / welded lugs at (DB)'s. Ensure that all the electrical connections are properly secured with lugs and glands.</p> <p><input type="checkbox"/> Select conductors and MCCB/MCB with adequate sizing</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>without exceeding permissible current carrying capacity for insulation.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Avoid looping at MCCB/MCB terminal, use individual circuit and over current device for every incoming and outgoing circuit at the distribution board. <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 separate earthing connection to electrical equipment. 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.
<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 adequate ventilation arrangements for Generator room. <input type="checkbox"/> Provide 1.5 hour fire rated 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 24m², or relocate the generator room. <input type="checkbox"/> Provide and maintain proper clearance in all sides of generator for ease of maintenance. <input type="checkbox"/> Provide calibrated Ammeter & Voltmeter at distribution board. <input type="checkbox"/> Review capacity of standby generator on basis of loads for essential lighting. Replace generator with larger capacity or install second generator if review indicates existing unit is too small. <input type="checkbox"/> 1. Wooden switchboards / panel boards should be replaced by non-flammable materials. 2. Prefer switchboards made of non-flammable materials. <input type="checkbox"/> Provide the wiring in PVC conduits or in metallic GI pipes. Ensure that all electrical wiring should be covered in proper conduit pipes. <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

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	of building.
--	--------------