

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Zafa Garments & Textiles Ltd.
Address of the Factory	: 92, Batali Road, Enayet Bazar, Chittagong
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 22 February, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 22 February, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 22 February, 2015
BGMEA Membership No.	: 396

BASIC INFORMATION:

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

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| i. Building Usage Type | : Garment Factory. |
| ii. Structural System | : RCC beam column system. |
| iii. Floor System | : RCC Beam slab. |
| iv. Floor Area | : Production area is 9,000 sq. ft.(approx.) |
| v. No. of Stories | : Ground Floor + 4-storey |
| vi. Construction Year | : 1980 - 1982 |
| vii. Foundation Type | : Spread footing (As per structural drawing) |
| viii. Design Drawings | : Available (Signed by Authorization Committee of the 1952 Construction Act, on 15th June, 1979) |
| ix. Soil Investigation Report | : Not Available |
| x. Construction Materials | : Brick aggregate. |
| xi. Generator | : Separate shed approx. 50 yards from factory building |

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:

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| Short Term (Immediate) | : N/A |
| Mid Term (6-weeks) | : 1. Factory Engineer to review design, loads and columns stresses in area identified above.
2. Verify in-situ concrete stresses by 100mm dia. cores for A9 column. |
| Long Term (6-months) | : 1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
2. 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. |

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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>	<ul style="list-style-type: none"> • The minimum clear width of the pathway should be 0.9 meter.
<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. • Prepare proper plan & design for additional exit door at ground floor. - 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 encloses.(Also require fire rated door at the floor occupied by other tenants) • Prepare proper plan and design for fire rated barrier for 2 hour fire rating separated corridor with 1.5 hrs fire rated door at ground floor. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at 4th floor boiler room, which located at the adjacent to production area • 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 tfor dedicated fire pump with alternate backup power supply. • Replace existing 1 inch hose pipe replace 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. • Cover all units / floors in a valid fire license • Implement to a single fire safety management system with

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	<p>approvals from all tenants in the factory building.</p> <ul style="list-style-type: none"> • 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"> • Install additional exit door as per plan and design. - Minimum clear width should be 0.9 meter. • All stairway to have direct access to outside of the factory building, which requires 2 hour fire rated construction with 1.5 hrs fire rated door at ground floor for fire separated corridor. • Provide 4 hours fire rated barriers with 2 hours fire rated doors at 4th floor boiler room, which located at the adjacent to production 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:

<p>Immediate</p> <p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	N/A
<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>	N/A
<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 / Generator room. • Provide and maintain clear and legible identifications numbers & names on all incoming and outgoing circuits of LT panel. • 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. • Provide cable connections with properly soldered / welded lugs at MDB's. Ensure that all the electrical connections are properly secured with lugs.

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	<ul style="list-style-type: none"> • Avoid looping and bunch of cable at MCCB/MCB and bus bar terminal, use individual circuit and over current device for every incoming and outgoing circuit at the distribution boards. • Seal the cable penetrations through walls adequately with fire resistive elements. • Provide proper separate earthing/grounding to generator. Ensure that generator body frame to have two separate and distinct connections to the earth / ground. • 1. Provide sufficient and separate earthing for LT panels in substation/transformer room 2. Provide adequate number of earth electrodes
<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"> • Substation should be on lowest floor level, with easy access for maintenance. • Area of substation / transformer to meet requirements of Table 4.3 of RMG Guideline; the area should be 32m², or relocate the substation/ transformer room. • Maintain the minimum height of 3.6 m for the substation room. Increase the height or relocate it. • Provide 4 hour fire rated walls all around the transformer / generator room on ground level. • Provide adequate cable trenches with non-flammable covers at substation areas. • Relocate generator set in substation building / adjacent to substation room. • Provide the wiring in PVC conduits or in metallic GI pipes. Ensure that all electrical wiring should be covered in proper conduit pipes. • Provide adequate protection against lightning depending on the probability of a strike and acceptable risk levels at roof top of building