

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Al-Ittefaq Textiles Ltd.
Address of the Factory	: Plot # 11, Mohara I/A, Chandgaon, Chittagong-4221, Bangladesh.
Present Status of the Factory	: Under Operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 18 th May, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 18 th May, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 18 th May, 2015
BGMEA Membership No.	: 5982.

BASIC INFORMATION:

The assessed factory is a single storied pre-fabricated shed supported on circular steel column and another ancillary 2 storied RCC building has been found (under construction). The pre-fabricated shed has been used as warehouse and knitting production. Building is owned by factory owner. The following general information were noted:

i. Building Usage Type	: Garment factory.
ii. Structural System	: Pre-fabricated shed supported on circular steel column.
iii. Floor System	: Roof shed floor system.
iv. Floor Area	: Total area of the building is 23000 sft.
v. No. of Stories	: Single Storey.
vi. Construction Year	: 2013-2014 (One phases).
vii. Foundation Type	: Unknown.
viii. Design Drawings	: Only approval drawing available Not Available: Structural drawing, Architectural design drawing, material test report soil test report.
ix. Soil Investigation Report	: Available.
x. Construction Materials	: Circular steel column, truss, pre-fabricated shed.
xi. Generator	: None.

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)	: <ul style="list-style-type: none">• Building engineer to confirm requirement for lateral bracing in long direction and install horizontal bracing at the roof system if required.• Building engineer should have to check the design and then develop set of as-built structural drawing.

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

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(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"> • Ensure adequate numbers of fire drills under the Fire Safety Plan. • All the firefighting equipment need to be tested with proper documents. • Factory needs to have sufficient number & width (0.9 m) of marked aisles at working floor. • Factory needs to have sufficient total width of marked aisles (5 mm per occupant) at working floor. • Lights in storage area need to be installed with protective covers and conduits. • Kitchen area needs to be equipped with fire extinguisher & only fixed temperature type detector. • Combustibles are to be managed with yarn store. Storage facilities with no air-conditioning duct shall be minimum 2.9 m and when used as a storage facility there shall be a minimum clearance of one third the floor height from the ceiling to the top of the storage stack. • Illuminated emergency light needs to be covered in floor, exits and aisles. The intensity of illumination by means of escape lighting needs to be equal or more than 10 lux. The aisles need to be illuminated with escape lighting to a level of not less than 2.5 lux at floor level. • (a) The color and design of lettering, arrows and other symbols on exit signs shall be in high contrast with their background. (b) The source of illumination, contrast, intensity and luminance needs to be at least 50 lux, 0.5, 5.0 foot-candles and 0.2cd/m² respectively.
<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"> • Factory needs to have as built drawing with proper dimensions showing all the means of escape • Factory needs to have a fire training certificate from fire service & civil defense. • All the exit doors need to be replaced by side swinging

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	<p>so that un-lockable doors can be opened easily in the direction of evacuation without the use of a key.</p> <ul style="list-style-type: none"> • Emergency back-up power needs to be connected for critical fire safety system and not less than 30 minutes in case of failure of power supply.
<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"> • Factory needs to have a proper pre-plan for fire department • Storage area need to be protected with 2 hours rated construction and 1.5 hours rated opening or doors. • Factory need to install centralized and automatic fire detection & alarm system on all occupied floors, including other tenanted floors of the building as per NTPA Guideline. • Factory needs to install manual as well as automatic fire alarm system with control panel for centralized automatic fire detection and alarm system in the command station at the entrance lobby of the factory premises. • Factory needs to install control panel for detection and alarm system at required location. • Install proper standpipe system having at least 75 mm dia of standpipe. First aid hose system (38 mm nominal) shall be provided (Ref. Fire Service Standard # 9) in addition to Fire Aid Fire Fighting Appliances in existing high rise NTPA (20 m) buildings. In addition 50 mm or larger hose connection facility shall be provided. • Factory needs to install 1 riser per 1000 m² of floor area & 38 mm diameter of hoses with variable nozzle. • Install standard standpipe and hose system as well as fire pump system to ensure required hose pressure at the highest and most remote part of the building. • Factory need to installed Siamese connection after installation of stand pipe system, hose system and fire pump • Needs to have a standby generator with required backup power. • Factory needs to install dedicated fire pump with

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	sufficient capacity and backup power.
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(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"> • None.
<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"> • Ensure all switchboards and/or distribution boards (including panel door) are earthed properly. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Ensure overcurrent protection device (circuit breaker/fuse) for each circuit/branch circuit. • Provide provision for inspection of all earthing system and ensure inspection is being completed and documented.
<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"> • Ensure graded rubber mats are provided in front of all distribution boards. • Provide dedicated & adequate size of earthing with proper identification. • Rewire to avoid the use of multiple cables on incoming and outgoing side of MCB's and Bus-bar. • Ensure all electrical wiring/cables are sized according to capacity of circuit breakers. • Connect all metal to the factory earthing system. • Ensure Lighting fixtures are supported from the structure properly and if flexible cords are used to support light fixture then make sure it has enough strength to carry the weight. • Find out the cause (improper cable/over current selection, over loading, improper lug, improper cable joints, rusted connection, insulation damage, multiple cables at single point,) of overheating { ambient+(20⁰C-40⁰C)} and take proper action.
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6</i></p>	<ul style="list-style-type: none"> • Develop an electrical layout diagram and an as-built single line diagram detailing key components and

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<p>months)</p>	<p>capacity of the electrical system.</p> <ul style="list-style-type: none">• Establish a periodical Insulation and earth Resistance Measurement• Program and record the related testing data.• Inspect electrical panel boards on an annual basis to ensure that the equipment is in good working condition.• Ensure overhead service connections are led into the shed via service masts.• Provide dedicated & adequate size of neutral with proper identification for each circuit.• Ensure each distribution board is provided with a circuit list and means of identification is obtained as per list.• Provide adequate support or mechanical guards for electrical wiring where necessary.• Provide proper cable terminator/conductor for stranded conductors.• Provide an emergency power generator with adequate capacity for the factory.• Install separate distribution boards for lighting and power circuits.• Install lightning protection system on the shed.
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