

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Zest Knitwear Ltd.
Address of the Factory	: 5/6/A,Gobindapur,Chamurkhan,Uzampur,Uttarkhan
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 19 May, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 19 May, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 19 May, 2015
BGMEA Membership No.	: 6032

BASIC INFORMATION:

The building is a One (01) storied non-engineered corrugated iron shed supported by RCC column, brick column and circular steel pipe. The following information was noted:

i. Building Usage Type	: Garment Factory.
ii. Structural System	: RCC column and truss corrugated PEB shed.
iii. Floor System	: N/A.
iv. Floor Area	: 9700 sft
v. No. of Stories	: Single storied
vi. Construction Year	: 2012
vii. Foundation Type	: Unknown
viii. Design Drawings	: Not Available
ix. Soil Investigation Report	: Not Available
x. Construction Materials	: Brick aggregate.
xi. Generator	: Outside of the building (Not installed).

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)	: 1. Design should be checked by the Building Engineer to verify the lateral stability of the shed and confirm the requirement of any bracing in the long direction.
Long Term (6-months)	: 1. Install horizontal and vertical bracing at the roof system if required. 2. Develop set of as-built Architectural drawings showing Plan of all floor with roof plan. Dimensions, levels, Section and Elevations of the shed..

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>	<p>Ensure adequate numbers of fire drills under the Fire Safety Plan.</p> <p>All the firefighting equipment need to be tested with proper documents.</p> <p>Factory needs to have sufficient number and width (0.9 m) of marked aisles in the factory.</p> <p>Factory needs to have sufficient total width of marked aisles (5 mm per occupant) of the factory.</p> <p>Combustibles are to be managed with good housekeeping. 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.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Needs to have 'As Built Drawing' with proper dimensions showing means of escape.</p> <p>Factory need to have a valid fire license with covering full occupied area & clearly mention the coverage area in the license.</p> <p>Factory manager or director needs to arrange fire safety training for the workers of the factory from proper authority time to time.</p> <p>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.</p> <p>Emergency back-up power needs to be connected for (a) exit sign, (b) fire alarm and detection system, (c) emergency lighting, (d) automatic fire detection and alarms systems. Needs to have 'As Built Drawing' with proper dimensions showing means of escape.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be</i></p>	<p>Factory needs to have a proper pre-plan for fire department. Yarn store need to be separated with 2hours rated construction</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

<p><i>carried out within a period of 6 months)</i></p>	<p>& 1.5 hours rated door.</p> <p>Each bay shall be considered as separate compartment and detectors shall be installed considering each bay an independent compartment.</p> <p>Automatic fire detection (AFD) and alarm system needs to be installed in all types of Shed.</p> <p>Factory needs to install control panel for detection and alarm system at required location.</p> <p>Factory needs to install with proper standpipe system having at least 100 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.</p> <p>Factory needs to install 1 riser per 1000 m2 of floor area and 38 mm dia of hoses with variable nozzle.</p> <p>Factory needs to install standard standpipe, hose and fire pump system to ensure required hose pressure.</p> <p>Factory needs to install Siamese connection after installation of stand pipe and hose system and fire pump.</p> <p>Factory need standby generator with required backup power Factory needs to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900 ltr x 75 min=142500 liters water storage tank.</p>
--	---

(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>Find out cause (improper cable selection, improper protective device selection, improper termination, rusted connection) of burning sign and insulation damage and take proper action including replacing cable or equipment where necessary.</p> <p>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+ 40°C) and take proper action.</p>
---	--

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

<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>Ensure all distribution boards (including panel door) are earthed properly.</p> <p>Remove all unused cables from distribution boards and make sure all necessary cables are properly terminated at its point of termination using appropriate size and type of lug.</p> <p>Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering.</p> <p>Provide provision for inspection of all earthing system and ensure inspection is being completed and documented</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Ensure graded rubber mats are provided in front of all electrical panel boards.</p> <p>Ensure distribution board has a minimum clearance of 1 m (39 in) in front.</p> <p>Provide dedicated & adequate size of earthing with proper identification for each circuit and ensure continuous earth path is back to main building intake.</p> <p>Rewire to ensure each incoming supply to an MCB has a dedicated supply from busbar.</p> <p>Avoid the use of multiple cables on outgoing side of MCB's and busbar. Replace wooden base with metal clad construction for mounting circuit breaker.</p> <p>Ensure all electrical cables are sized according to capacity of circuit breakers.</p> <p>Ensure cable joints are made in respect of conductivity, insulation and mechanical strength.</p> <p>Ensure overcurrent protection device (circuit breaker/fuse) for each circuit or branch circuit.</p> <p>Connect all metal in the building to the factory earthing system. Ensure flexible cords have enough strength to carry the light fixture weight.</p> <p>Find out the cause (improper cable/over current selection, over loading, improper lug,</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>improper cable joints, rusted connection, insulation damage, multiple cables at single point,) of overheating { ambient+(20°C-40°C)} and take proper action.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system.</p> <p>Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data.</p> <p>Inspect electrical panel boards on an annual basis.</p> <p>Ensure distribution boards have no opening and all live internal components are concealed properly.</p> <p>Provide dedicated & adequate size of neutral with proper identification for each circuit.</p> <p>Ensure each distribution board is provided with a circuit list and means of identification is provided as per list.</p> <p>Provide proper cable terminator/connector for stranded conductors at its point of termination.</p> <p>Provide an emergency power generator with adequate capacity for the factory.</p> <p>Install separate distribution boards for lighting and power circuits.</p> <p>Install lightning protection system on the shed.</p>