

## **Summary of Preliminary Assessment on Structural, Fire and Electrical Safety**

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Name of the Factory	: TEXMARK KNITWEARS.
Address of the Factory	: 652, Zirabo, Ashulia, Savar, Dhaka
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 6 June, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 6 June, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 6 June, 2015
BKMEA Membership No.	: 1968

### **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:

i. Building Usage Type	: RMG factory.
ii. Structural System	: Truss supported tin shed.
iii. Floor System	: N/A.
iv. Floor Area	: 8183sft.
v. No. of Stories	: Single storied shed.
vi. Construction Year	: 2013
vii. Foundation Type	: Isolated column footing
viii. Design Drawings	: Available :Soil test report, structural design drawing Not Available: Approval Drawing, Architectural design drawing
ix. Soil Investigation Report	: Available
x. Construction Materials	: Brick chips (Column).
xi. Generator	: Ground Floor.

### **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. Use base plate on the column top for resting the truss on it. 2. Develop set of as-built drawings showing architectural details and take approval from concern authority

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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>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<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"> <li>• Fire drill shall be conducted quarterly (4 times a year) under the Fire Safety Plan. A record of such drills shall be kept in writing for at least 3 years for the inspection of fire brigade whenever called for.</li> <li>• All the firefighting equipment's need to test with proper documents.</li> <li>• Factory needs to have marked aisles in all working floor according to 0.9m for one side seat and 1.0m for both side seat.</li> <li>• Lights in storage area needed to be installed with protective covers and conduits.</li> <li>• 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.</li> <li>• All required means of exit or exit access in buildings or areas requiring more than one exit shall be signposted. The signs shall be clearly visible at all times, where necessary supplemented by directional signs.</li> </ul>
<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"> <li>• Factory needs to have as built drawing with proper dimensions showing all the means of escape.</li> <li>• Fire manager/Director need to have safety training from proper authority &amp; worker of the factory should as far as possible be trained for use fire extinguisher.</li> <li>• All the exit doors need to be replaced by side swinging so that un-lockable doors can be opened easily in the direction of evacuation without the use of a key.</li> <li>• 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.</li> <li>• 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.</li> </ul>
<p>Long Term</p>	<ul style="list-style-type: none"> <li>• Factory needs to have a proper pre-plan for fire</li> </ul>

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<p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>department.</p> <ul style="list-style-type: none"> <li>• Final exit need to be protected by separating the shed-2(gen &amp; transformer)with 4 hours fire rated construction and 2 hours fire rated opening/door.</li> <li>• Storage area need to be protected with 2 hours rated construction and 1.5 hours rated opening or doors.</li> <li>• Shed-2(Generator,substation &amp; transformer room) needs to be fire separated with 4 hours fire rated enclosure and 2 hours rated opening having direct access from outside.</li> <li>• Factory need to install centralized and automatic fire detection &amp; alarm system on all occupied floors, including other tenanted floors of the building as per NTPA Guideline.</li> <li>• The factory need to install manually operated electrical fire alarm system and automatic fire alarm system with single or multiple call boxes on all occupied floors, including other tenanted floors of the building.</li> <li>• Factory needs to install control panel for detection and alarm system at required location.</li> <li>• Factory need to install proper standpipe system having at least 75 mm diameter of riser.</li> <li>• Factory need to ensure the minimum pressure for standpipes supplying a 50mm or larger hose shall be at least 300 Kpa. For standpipe supplying first aid hose (38mm nominal) may have a minimum pressure of 200 Kpa.</li> <li>• Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection.</li> <li>• Factory needs to have dedicated fire pump with backup power system &amp; sufficient capacity for achieve required pressure in the remote place of the factory.</li> <li>• Factory need to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900ltr x 75min=142500 liters water storage tank.</li> </ul>
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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"> <li>• Make sure cables are properly terminated at its point of termination using appropriate size and type of lug.</li> </ul>
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<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"> <li>• Ensure panel door of distribution boards are earthed properly.</li> <li>• Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering.</li> <li>• Provide provision for inspection of all earthing system and ensure inspection is being completed and documented</li> </ul>
<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"> <li>• Ensure appropriate type of safety signage and graded rubber mats at required location.</li> <li>• Provide Instruction board for first aid and artificial respiration in the substation room and generator room.</li> <li>• Provide two separate and distinct connections of earthing for the generator.</li> <li>• Ensure substations room, generator room, working place, exit light and escape light have adequate illumination level as per standard.</li> <li>• Fill the transformer breather with fresh silica gel and oil cup with fresh Oil.</li> <li>• Provide dedicated &amp; adequate size of earthing with proper identification for each circuit.</li> <li>• Rewire to avoid the use of multiple cables from incoming and outgoing side of MCB's/MCCB's</li> <li>• Ensure all electrical cables are sized according to capacity of circuit breakers/fuse.</li> <li>• Ensure cable joints are made in respect of conductivity, insulation and mechanical strength.</li> <li>• Avoid flexible cables for fixed wiring unless contained in an enclosure affording mechanical protection.</li> <li>• Ensure overcurrent protection device (circuit breaker/fuse) for each circuit/branch circuit.</li> <li>• Connect all metal in the building to the building earthing system.</li> </ul>
<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"> <li>• Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system.</li> <li>• Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data.</li> <li>• Inspect electrical switchgear and panel boards on an</li> </ul>

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	<p>annual basis.</p> <ul style="list-style-type: none"><li>• Ensure the substation room has adequate fire separation from the production area/main building.</li><li>• Ensure the generator room has adequate fire separation from the production area/main building.</li><li>• Provide adequate covers on cable trenches.</li><li>• Ensure appropriate generator room size in order to properly access the generator to perform routine maintenance activities.</li><li>• Ensure distribution boards have no opening and all live internal components are concealed properly.</li><li>• Provide dedicated &amp; adequate size of neutral with proper identification for each circuit.</li><li>• Ensure each distribution board is provided with a circuit list and means of identification is obtained as per list.</li><li>• Provide adequate support or mechanical guards for electrical equipment and wiring where necessary.</li><li>• Ensure surface/exposed wiring are run either horizontally or vertically with proper mechanical support and avoid wiring at an angle or hanging way with improper support.</li><li>• Provide proper cable terminator/connector for stranded conductors at its point of termination.</li><li>• Install separate distribution boards for lighting and power circuits.</li><li>• Install lightning protection system on the building</li></ul>
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