

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Syed Knit Wears Ltd.
Address of the Factory	: 227/B, Ehasn Tower (2nd Floor), Hafez Nagar, Bakolia, Chittagong.
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: Alliance
Date of Structural Inspection	:
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 4 September, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 4 September, 2015
BGMEA Membership No.	: 4054

BASIC INFORMATION:

The factory consists one number of six (06) storied reinforced concrete building. The following information was noted:

- i. Building Usage Type : Garment Factory.
- ii. Structural System :
- iii. Floor System :
- iv. Floor Area :
- v. No. of Stories :
- vi. Construction Year :
- vii. Foundation Type :
- viii. Design Drawings :
- ix. Soil Investigation Report :
- x. Construction Materials :
- xi. Generator :

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) | : |
| Mid Term (6-weeks) | : |
| Long Term (6-months) | : |

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>Lights in storage area needed to be installed with protective covers and conduits.</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>Factory needs to have as built drawing with proper dimensions showing all the means of escape.</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>All the exit doors of staircase enclosure need to be replaced by SIDE SWINGING FIRE FATED doors so that the staircase remains free from smoke as well as the lockable doors can be opened easily in the direction of evacuation without the use of a key.</p> <p>Illuminated emergency light needs to be covered in all floors, exits, staircases and aisles of all the factory buildings or sheds.</p> <p>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 critical fire safety system and not less than 30 minutes in case of failure of power supply.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Factory needs to have a proper pre-plan for fire department. Final exit route-1 (stair-2 and stair-3 route) needs to be protected with generator room by 4 hours rated construction with 2 hours rated door/opening and also need to have a protected escape route till to reach safe refuse area.</p> <p>Child care room is needed to be separated from other occupancies with 3 hours fire rated construction with 2 hours fire rated door or need to transfer in a safe location.</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>Storage area need to be protected with 2 hours rated construction and 1.5 hours rated opening or doors.</p> <p>Generator room need to be protected by 4 hours rated construction with 2 hours rated opening / door from the final exit-1 at ground floor.</p> <p>Boiler room need to be protected with 4 hours rated construction with 2 hours rated opening / door from finishing section.</p> <p>All the exits connecting to the staircases need to be protected with 2 hours fire rated constructions/enclosures and 1.5 hour rated doors.</p> <p>Centralized fire detection system needs to comply with the followings: (a) Every portion of building needs to be covered and all effectively enclosed spaces need to be considered separately based on the limits of spacing for types of detectors concerned. (b) Staircases need to be covered by detectors on each floor. (c) Each bay needs to be considered as separate compartment and detectors needs to be installed considering each bay an independent compartment. (d) Hoist, elevators and similar openings, windows, doors, ventilators and inlet ducts of an air-conditioning system needs to be covered by detector.</p> <p>Factory needs to install manually operated electrical fire alarm system with single or multiple call boxes as well as automatic fire alarm system including other tenants of the factory for centralized automatic fire detection and alarm system.</p> <p>Factory needs to install control panel for centralized automatic fire detection and alarm system in the command station at the entrance lobby of the factory premises.</p> <p>Install proper standpipe system having at least 75 mm diameter of standpipe. First aid hose system (38 mm nominal) needs to be provided</p> <p>(Ref. Fire Service Standard # 9) in addition to first aid fire-fighting appliances in existing high rise buildings. In addition 50 mm or larger hose connection facility needs to be provided. Install 1 riser per 1000 m² of floor area & Install adequate number of hose in floor area and the minimum hose diameter is 38 mm, or 1.5" preferably fabric hose with variable nozzle to be used in both of the stairways covering the floor area.</p> <p>Factory need to ensure the minimum pressure for standpipes supplying a 50 mm or larger hose shall be at least 300 Kpa. For standpipe supplying first aid hose (38 mm nominal) may have a minimum pressure of 200 Kpa.</p>
--	--

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection.</p> <p>Factory needs to install dedicated fire pump with sufficient capacity and backup power.</p> <p>Factory needs to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900×75 = 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>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>Find out cause (improper cable selection, improper protective device selection, improper termination, rusted connection, heat source etc.) of burning sign/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>
<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>Ensure over current protection device (circuit breaker/fuse) for each circuit.</p> <p>Ensure proper earthing connections at all electrical equipment. Isolate the panel from the electrical service and clean interior components from dust and debris. 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>Install appropriate number and type of safety signage at generator room. Also ensure graded rubber mats are provided in front of all distribution boards.</p> <p>Provide Instruction board for first aid and artificial respiration in</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>the generator room.</p> <p>Provide two separate and distinct connections of earthing for generator.</p> <p>Ensure distribution boards are installed in compliant locations in terms of height, access.</p> <p>Provide dedicated & adequate size of earthing with proper identification for each circuit from the earth bus bar of distribution boards 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 bus bar. Avoid the use of multiple cables on outgoing side of MCB's.</p> <p>Ensure all electrical cables are sized according to capacity of circuit breakers.</p> <p>Provide adequate mechanical guards for electrical equipment and wiring where necessary.</p> <p>Ensure cable joints are made in respect of conductivity, insulation and mechanical strength.</p> <p>Seal the openings remaining after wiring system passes through the elements of building construction according to the degree of fire resistance.</p> <p>Ensure discrimination is achieved between circuit breakers used for protection of main circuit and the sub-circuits derived there from.</p> <p>Connect all metal in the building to the building earthing system.</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+(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>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>Inspect electrical panel boards on an annual basis.</p> <p>Ensure the generator room has adequate fire separation from the production main building.</p> <p>Ensure appropriate generator room size in order to properly access the generator to perform routine maintenance activities.</p> <p>Ensure panel 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 adequate covers on cable channels.</p> <p>Provide proper cable terminator/connector for stranded conductors at its point of termination.</p> <p>Install separate distribution boards for lighting and power circuits.</p> <p>Install lightning protection system on the building.</p>
--	---