Name of the Factory	:	ASS KNITWEAR LTD.
Address of the Factory	:	Near Quaite Mosjid, Dhawar, Turag, Dhaka-1230, Bangladesh.
Present Status of the Factory	:	Under Operation.
Structural Assessment Conducted by	:	VEC
Date of Structural Inspection	:	15th March, 2015
Fire Assessment Conducted by	:	VEC
Date of Fire Inspection	:	15th March, 2015
Electrical Assessment Conducted by	:	VEC
Date of Electrical Inspection	:	15th March, 2015
BKMEA Membership No.	:	1850.

BASIC INFORMATION:

The assessed factory building was a single storied non-engineered building with steel truss and corrugated Iron (CI) shed roofing. There are both RCC columns and brick columns in the building. Presently the building is rented to ASS KNITWEAR LTD. and they operate in the entire building. The following information was noted:

i.	Building Usage Type	:	Garments Factory.
ii.	Structural System	:	Non-engineering steel CI (Corrugated iron) shed with RCC and brick column.
iii.	Floor System	:	N/A (as it is single storied roof truss Corrugated iron (CI) shed)
iv.	Floor Area	:	Total floor area 5350 sft.
v.	No. of Stories	:	Single storey.
vi.	Construction Year	:	2011-2012.
vii.	Foundation Type	:	Individual Column Footing foundation.
viii.	Design Drawings	:	Available- Approval plan, architectural design drawing, as built machine layout plan, Not Available-full set of structural drawing, soil test reports and material test report.
ix.	Soil Investigation Report	:	Unavailable.
x.	Construction Materials	:	Brick aggregate.
xi.	Generator	:	Not available.

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) :

- Building Engineer to show calculations in support of the lateral stability system of the building and assess the need to provide additional steel bracing elements.
- Building Engineer to survey the building and prepare as-built drawing accordingly.

Long Term (6-months) :

- Building Engineer to confirm that bracing addition has been carried out if required.
- Continue to monitor for corrosion of steel truss on an on-going basis.
- Continue to monitor for dampness on wall on an on-going basis.

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

(A): Recommendations for Fire Safety corrective actions:

Immediate (*the factory should not continue to be occupied until these non-conformities have been rectified*):	N/A
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (1 ~ 2 weeks) and should be a regular activity*	• Need to be lighting arrangement with wiring protected in conduits and covers to light fittings of storage area. • Combustibles are to be managed with good housekeeping. Storage facilities with no air-conditioning duct shall be minimum 2.9m 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. • 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. • Ensure adequate exit signs in all floors so that it is visible from all positions.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Prepare detail as built drawing for every floor showing machine layout and means of escape. • Fire manager/Director need to have safety training from proper authority & worker of the factory should as far as possible be trained for use fire extinguisher. • Factory need to have proper testing plan & record for fire safety equipment. • 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. • Factory needs to have marked aisles at required location

	and required minimum width of at 0.9 m. • Total width of aisles need to comply with table 4.2. • Ensure adequate illuminated emergency lighting in floors, exit. • Ensure adequate illuminated emergency lighting in floors, exit. • Each bay shall be considered as separate compartment and detectors shall be installed considering each bay an independent compartment. • Install 1 riser per 1000 m2 of floor area & 38 mm dia of hoses with variable nozzle need to be installed.
Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	• Fire department pre-plan needs to be developed. • Fire department pre-plan needs to be developed. • Storage area need to be protected with 2 hours rated construction & 1.5 hours rated opening or doors. • Boiler room needs to be fire separated with 2hours fire rated enclosure and 1.5 hours rated opening having direct access from outside. • Ensure 2 hour fire rated walls and doors between office & Production floor. • For Low-rise: An auto AFD and alarm system need to be installed. For High rise building The factory with shall be equipped with manually operated electrical fire alarm system and automatic fire alarm system. Manually operated electrical alarm system shall be installed in a building with single or multiple call boxes located on each floor. • Install automatic fire and smoke detection system throughout the building to cover every portion in that building. • Need to Install 75mm dia Standpipe and hose system in the factory building. • Provide the required flow of 1900 liter/min and minimum pressure of 200 Kpa for supplying first aid hose (38 mm nominal) or hydraulically design the standpipe and hose system to get the required pressure. • Ensure Siamese connection for existing standpipe &

	hose system. • Need to be install standby generator with required backup power. • Install dedicated fire pump with backup power system & sufficient capacity for achieve required pressure in the remote place of the factory. Required for adequate pressure of hose. • Factory need 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.

(B): Recommendations for Electrical Safety corrective actions:

Immediate (*the factory should not continue to be occupied until these non-conformities have been rectified*):	• N/A
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity*	• Ensure all distribution boards (including panel door) are earthed properly. • 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. • Ensure overcurrent protection device (circuit breaker/fuse) for each circuit/branch circuit. • Ensure proper earthing connections at all electrical equipment. • Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering. • Ensure inspection for all earthing system is being completed and documented.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Install graded rubber mats in front of all distribution boards. • Ensure distribution boards have a minimum clearance of 1 m (39 in) in front. • Install circuit breaker in proper way using metal enclosure.

	• Provide dedicated & adequate size of earthing with proper identification for each circuit and ensure continuous earth path is back to main building intake. • Rewire to avoid the use of multiple cables from incoming and outgoing side of MCB's/MCCB's. • Ensure all electrical cables are sized according to capacity of circuit breakers. • Make cable channel dust free and provide adequate covers on it. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Connect all metal in the building to the building earthing system. • Ensure Lighting fixtures are supported properly from the structure. • 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+(20^0C-40^0C)} and take proper action.
Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	• Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system. • Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data. • Inspect electrical panel boards on an annual basis. • Ensure distribution boards have no opening and all live internal components are concealed properly. • 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 provided as per list. • Provide proper cable terminator/connector for stranded conductors at its point of termination. • Provide an emergency power generator with adequate

	capacity for the building. • Install separate distribution boards for lighting and power circuits. • Install lightning protection system on the building.