Name of the Factory	:	Asr Computerized Sweater (Ind) Ltd. (Shed-1)
Address of the Factory	:	Mulaied, Maona, Sreepur, Gazipur, Dhaka, Bangladesh.
Present Status of the Factory	:	Under Operation.
Structural Assessment Conducted by	:	VEC
Date of Structural Inspection	:	22nd February, 2015
Fire Assessment Conducted by	:	VEC
Date of Fire Inspection	:	22nd February, 2015a
Electrical Assessment Conducted by	:	VEC
Date of Electrical Inspection	:	22nd February, 2015
BGMEA Membership No.	:	5606.

BASIC INFORMATION:

The factory comprises of five separate sheds- all are single storied pre-engineered building sheds with steel column. Asr Computerized Sweater (Ind) Ltd. currently operates in four of the sheds i.e. shed 1, 2, 3 and 5. Shed-4 is not in operation at present, because of the construction work that is going on in this shed. In addition, there are two ancillary small sheds in the factory premises, which are used as generator and maintenance room. The following information was noted:

i.	Building Usage Type	:	Knitting Garments Factory.
ii.	Structural System	:	Pre-engineered building shed.
iii.	Floor System	:	N/A (as it is single storied Pre-engineered building)
iv.	Floor Area	:	Total floor area for Shed-5 is 20,344 sft.
v.	No. of Stories	:	Single storey.
vi.	Construction Year	:	2012-2013.
vii.	Foundation Type	:	Isolated column footing
viii.	Design Drawings	:	Available- Approval drawing, structural design drawing, architectural design drawing, machine layout plan, soil test report and material test report.
ix.	Soil Investigation Report	:	Available.
x.	Construction Materials	:	Brick aggregate and steel frame
xi.	Generator	:	Separate structure.

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 survey and prepare drawings showing the correct as constructed layout.
- 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) :

- Install horizontal and vertical bracing if required.

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*	• Factory needs to have proper testing plan & record of fire safety equipment. • Lights in storage area need to be installed with protective covers and conduits.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Factory needs to have as built drawing with proper dimension at present situation in every floor showing 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. • 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. • Factory need to have emergency backup power for critical fire safety system with sufficient capacity & arrangement according to NTPA Guideline.
Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	• Factory needs to have a proper pre-plan for fire department. • At the south-middle (Final exit-4 escape routes need to protect from generator and sub-station room to provide protected paths of travel (4 hours fire rated construction with 2 hours fire rated opening) till to reach safe refuse area. • Childcare room needs to be separated with 3 hour fire rated construction with 3 hour fire rated door from jacquard section. • Storage area need to be protected with 2 hours rated construction & 1.5 hours rated opening or doors. • Generator room & sub-station room needs to be fire separated with 4 hours fire rated enclosure and 2 hours rated opening having direct access from outside. Furnace oil tank in an adjacent room shall be separated by a 4 hour fire resistance wall. • Factory needs to follow 16 MSDS for good housekeeping policy of each flammable liquid. • 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. • 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. • Factory needs to install control panel for centralized automatic smoke detection & fire alarm system according to NTPA Guideline. • Factory needs to install proper standpipe system with having at least 75 mm dia of riser. • Factory need to be installed by 1 riser per 1000 sqm of floor area with at least 38 mm dia of hoses. • 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. • Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection. • Factory needs to have dedicated fire pump with backup power system & sufficient capacity for achieve required pressure in the remote place of the factory. • 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 overcurrent protection device (circuit breaker/fuse) for each circuit/branch circuit. • Ensure inspection of earthing system is being completed and documented.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Ensure graded rubber mats are provided in front of all distribution boards. • Provide Instruction board for first aid and artificial respiration in substation room and generator room. • Provide two separate and distinct connections of

	earthing for each generator. • 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 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. • Ensure all electrical cables are sized according to capacity of circuit breakers. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Connect all metal in the building to the building earthing system. • 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. • Install lightning protection system on the building.