Name of the Factory	:	Apt Garments Ltd.
Address of the Factory	:	Palli Biddut Road, Mulaid, Sreepur, Gazipur
Present Status of the Factory	:	Under operation.
Structural Assessment Conducted by	:	VEC
Date of Structural Inspection	:	9 April, 2015
Fire Assessment Conducted by	:	VEC
Date of Fire Inspection	:	9 April, 2015
Electrical Assessment Conducted by	:	VEC
Date of Electrical Inspection	:	9 April, 2015
BGMEA Membership No.	:	5566

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	:	Garment Factory.
ii.	Structural System	:	Non Engineering single storey steel shed (truss-column steel frame).
iii.	Floor System	:	Roof truss.
iv.	Floor Area	:	Shed -1 is 1620 sft.Shed -2 is 1400 sft.Shed -3 is 4186 sft.
v.	No. of Stories	:	Single storied
vi.	Construction Year	:	2013
vii.	Foundation Type	:	Isolated footing
viii.	Design Drawings	:	Available: Approval plan, structural drawing and soil test report. Not available: Architectural drawing, machine layout plan and material test report.
ix.	Soil Investigation Report	:	Available
x.	Construction Materials	:	Brick aggregate.
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)	:	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 lateral bracing if required. 2. Prepare related structural as built document and building engineer to calculate the structural Integrity of the existing structure against wind load.

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*	• Ensure adequate numbers of fire drills under the fire safety plan. • Factory needs to have sufficient number and width (0.9 m) of marked aisles in the factory. • Factory needs to have sufficient total width of marked aisles (5 mm per occupant) of the factory. • Lights in storage area needed to be installed with protective covers and conduits. • 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. • 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)*	• Needs to have as built drawing with floor machine layout showing means of escape with proper dimension. • Factory need to have valid fire license covering the full occupied area. • Factory needs to have proper testing plan & record for fire safety equipment. • Minimum width of door shall be at least 0.9 m & height shall be 1 m. • Provide continuous guards and handrails on both sides of the stairs. • Ensure adequate illuminated emergency lighting in floors, exits & staircases. • All the exit doors need to be replaced by side swinging so that unlockable doors can be opened easily in the direction of evacuation without the use of a key. • This is a shed. So detectors shall be installed by 900 sq-ft in one detector. • 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. • Factory needs to install control panel for detection and alarm system at required location.
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 service & civil department. • North-east exit-1 passes beside generator room and south-middle. Exit-1 passes beside generator room. • Generator, substation & transformer room needs to be fire separated with 4hours fire rated enclosure and 2 hours rated opening having direct access from outside. • Boiler room needs to be separated with 4 hours fire rated enclosure and 2 hours rated door/opening. • Install proper standpipe system having at least 75 mm dia of standpipe. • Factory needs to install 1 riser per 1000 m2 of floor area and 38 mm dia of hoses with variable nozzle. • 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 (38mm nominal) may have a minimum pressure of 200 Kpa. • Factory needs to install Siamese connection after installation of stand pipe system, hose system and fire pump. • Factory needs to install dedicated fire pump with sufficient capacity and backup power. • Factory needs 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.

(B): Recommendations for Electrical Safety Corrective Actions:

Immediate (*the factory should not continue to be occupied until these non-conformities have been rectified*):	• 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+ 40C) and take proper action
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a*	• Discharge the generator exhaust to the exterior of the shed in a safe location. • Provide two separate and distinct connections of earthing for eachgenerator.

regular activity	• Ensure all panel 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 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. • Install earthing pit for the factory with adequate provision for inspection of the earthing system and ensure inspection is being completed and documented
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Install appropriate number and type of safety signage and fire-fighting equipment at substation and generator room. Also ensure graded rubber mats are provided in front of all panel boards. • Provide Instruction board for first aid and artificial respiration in the generator room. • Provide dedicated & adequate size of earthing with proper identification for each circuit and ensure continuous earth path is back to main shed intake. • Rewire to avoid the use of multiple cables from incoming and outgoing side of MCB's/MCCB's and busbar. • Replace wooden bases with metal clad construction for mounting the switch controls. • Provide adequate support or mechanical guards for electrical equipment and wiring where necessary. • Provide adequate and noncombustible covers on cable channel. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength • Provide emergency power connection for life safety loads temporarily within 6 weeks and find out a permanent solution within 6 months. • Connect all metal in the shed to the shed earthing system. • Ensure Lighting fixtures are supported from the structure properly. • 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+(20C-

	40C)} 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 switchgear and panel boards on an annual basis. • Ensure overhead service connections to the shed are led via adequate size and type of service masts. • Ensure the generator room has adequate fire separation from the production area. • Ensure appropriate generator is housed in a room confirming it has enough space surrounding as per NTPA, table-4. • Replace wooden base with metal enclosed body for installing distribution boards. • Ensure panel 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. • 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. • Provide proper cable terminator/connector for stranded conductors at its point of termination. • Install separate distribution boards for lighting and power circuits. • Install lightning protection system on the building