Name of the Factory	: A.B.M Apparels Ltd.
Address of the Factory	: 177, Dakkhin khan, P.O Azampur, Uttara, Dhaka-1230, Bangladesh
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.	: 1283

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	: RCC beam column system.
iii.	Floor System	: RCC Beam slab.
iv.	Floor Area	: A.B.M. Apparels Ltd used 28500 sft floor which is full area of the floors of building
v.	No. of Stories	: 5 storied with undocumented corrugated shed
vi.	Construction Year	: Building was built in three (3) phases. Constructed in year (1990-1991 up to 2nd floor), (1992-1994 2nd floor to 4th floor),(2011-roof shed
vii.	Foundation Type	: Isolated footing
viii.	Design Drawings	: Available- Approval drawing and soil test, Not Available- Structural drawing, Architectural drawing, Floor load plan, as-built machine load 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)	: 1. Over loading should be reduce upto 40 psf until DEA is completed
	2. A Detail Engineering Assessment of Factory to be commenced
Mid Term (6-weeks)	: 1. Factory Engineer to cheek that floors and carry out the repair work as required.
	2. Detail Engineering Assessment to be completed.
Long Term (6-months)	: 1. Continue to implement load plan.

2. A qualified engineer should be involved for maintenance of dampness by correcting the identified issues

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 need to have proper testing plan & record of fire safety equipment. • Lights in storage area needed to be installed with protective covers and conduits. • Factory needs to have sufficient number & width (0.9m) of marked aisles at all floors. • Factory needs to remove all kinds of temporarily goods and masonry brick works from escape route for free evacuation and movement also. • 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. • 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)*	• Factory needs to have as built drawing with proper dimensions showing all the means of escape. • All the exit doors need to be installing side swinging so that un-lockable doors can be opened easily in the direction of evacuation without the use of a key. • Factory needs to ensure minimum clear width of stair at least 0.90 m as per guideline. • Factory needs to provide both side hand rails on every stair. • Ensure adequate illuminated emergency lighting in floors, exits & staircases. • Ensure adequate illuminated emergency lighting with backup power in all floors, exit & stair.
Long Term	• Factory needs to have a proper pre-plan for fire

(*The remedial works indicated must be carried out within a period of 6 months)*	department. • Factory needs to ensure fire protected route from both stairs to both final exits safely outside of the building. • Child care needs to be separated with cutting section and spot removing room minimum 1.5 hours and should have direct discharge to outside of the building or need to relocate the child care at ground floor level providing a safe exit to outside of the building. • Storage area need to be protected with 2 hour rated construction & 1.5 hour rated opening or doors. • Generator room needs to be fire separated with 2 hour fire rated enclosure and 2 hour rated opening having direct access from outside. Boiler room is to have a 2 hour fire resistance construction. • All the exits connecting to the staircase-1 & 2 need to be protected with fire and smoke resistant enclosures and opening (1.5 hours rated enclosure and 1 hour rated door)and provide a protected route from all though the stairway to the final exits. • Bonded ware house need to be protected with 2 hour rated construction & 1.5 hours rated opening or doors with other occupancy and generator room need to be separated 2 hour with other occupancy. • Each bay shall be considered as separate compartment and detectors shall be installed considering each bay an independent compartment. • Automatic fire detection (AFD) and alarm system needs to be installed in all types of buildings. • Factory needs to install control panel for detection and alarm system at required location. • Factory needs to ensure two way communication systems in all floors. • Install proper standpipe system having at least 100 mm dia of standpipe. First aid hose system (38 mm nominal) shall be provided (Ref. Fire Service Standard # 9) in addition to Fire Aid Fire Fighting Appliances in existing high rise NTPA (20 m) buildings. In addition 50 mm or larger hose connection facility shall be provided. • Factory needs to install standard standpipe, hose and fire pump system to ensure required hose pressure. • Ensure Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection. • 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.

(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+ 400C) and take proper action
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity*	• Provide two separate and distinct connections of earthing for the generator. • 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. • Install earthing system providing continuity of earthing cables up to earthing pit and ensure inspection is being completed and documented.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Ensure appropriate type of safety signage and graded rubber mats at required location. • Provide Instruction board for first aid and artificial respiration in the generator room. • Install circuit breakers in proper way using metal enclosure to ensure safe installation. • 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.

	• Provide adequate covers on cable channels. • 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℃-40℃)} 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 overhead service connections to the building are led via adequate size and type of service masts. • Ensure the generator room has adequate fire separation from the production area. • Provide adequate means of ventilation for the generator room based on the installed equipment considering fire barriers. • 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 separate distribution boards for lighting and power circuits. • Install lightning protection system on the building