Name of the Factory	:	RJ FASHION LTD.
Address of the Factory	:	Tayebpur, Zirabo, Ashulia, Savar, Dhaka
Present Status of the Factory	:	Under operation.
Structural Assessment Conducted by	:	VEC
Date of Structural Inspection	:	6 June, 2015
Fire Assessment Conducted by	:	VEC
Date of Fire Inspection	:	6 June, 2015
Electrical Assessment Conducted by	:	VEC
Date of Electrical Inspection	:	6 June, 2015
BKMEA Membership No.	:	1980

BASIC INFORMATION:

The present garment factory is four storied RCC flat plate system. The following information was noted:

i.	Building Usage Type	:	Garment Factory.
ii.	Structural System	:	RCC column and flat plate slab system.
iii.	Floor System	:	RCC flat plate slab system.
iv.	Floor Area	:	Floor area is (6000 sft x 4) = 24000 sft for main factory building
v.	No. of Stories	:	4- storied
vi.	Construction Year	:	2004
vii.	Foundation Type	:	Unknown (as no documents)
viii.	Design Drawings	:	Available document: Approval plan Not available: Architectural drawing, structural drawing, soil test report, machine layout plan floor load plan, material test report has not been found.
ix.	Soil Investigation Report	:	Not 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. Plaster on beam and slab to be removed to investigate if cracks penetrate deeply. Building Engineer to review further if cracks are found. Carry out repair remedial works as required. 2. Produce and actively manage a loading plan for all floors within the factory giving consideration to the floor capacity and column capacity and post it at appropriate locations.
Long Term (6-months)	:	1. Continue to monitor for cracking on an on-going basis 2. Develop set of as-built drawings showing structure details, loading, dimensions, levels, foundations and framing on Plan, Section and Elevation drawings. Prepare controlled loading

plans for all floors designating where storage can be placed and cannot be placed.

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*	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. Factory need to have proper testing plan & record for fire safety equipment. Ensure minimum width of aisles as follows: (a) Seats on both sides of the aisle 1 m (b) Seats on one side of the aisle 0.9 m. 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. 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.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	Factory needs to prepare as built drawing (Including machine layout) with proper dimensions showing means of escape. Factory manager or director needs to arrange fire safety training for the workers of the factory from proper authority time to time. All the exit doors of staircase enclosure need to be replaced by side swinging fire rated 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. Provide continuous guards and handrails on both sides of the stairs.

	Factory needs to be installed with adequate illuminated emergency lighting in floors, exits & stairs.(Escape route). Ensure emergency backup power for critical fire safety system.
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-west (final exit-1), escape routes need to protect from ground floor area to provide protected paths of travel (2 hours fire rated construction with 1.5 hours fire rated opening) till to reach safe refuse area. Storage area need to be protected with 2 hours rated construction & 1.5 hours rated opening or doors. Boiler: Factory need to protect the boiler room from the finishing section of 3rd floor of the building by 4 hours rated construction with 2 hours fire rated door/opening. Generator: Factory need to protect the generator room from final exit-1 located at ground floor of the building by 4 hours rated construction with 2 hours fire rated door/opening. The entire exits connecting to the staircases(2 numbers staircase) need to be protected with fire and smoke resistant enclosures and opening (2 hour rated enclosure and 1.5 hour rated door)and provide a protected route from all though the stairway to the final exits. 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 and automatic fire detection and alarm system at required location. The **Size of Standpipe** should be 75mm for standpipe and hose system for below 10 stories or building height below 33 m in accordance with the table 3.2 of NTPA guideline or BNBC 2006,Article No. 4.2.3, Page 1043 Factory need to ensure the minimum pressure for standpipes

	supplying a 50mm or larger hose shall be at least 300 kPa and 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 have dedicated fire pump with backup power system & sufficient capacity for achieve required pressure in the remote place of the factory. Factory needs to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900liter 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*):	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. 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+ 40ºC) 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 each generator. Ensure panel doors are earthed properly using appropriate type and size of cables and the earthing cables have continuity up to main earth /earthing pit. 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. Provide provision for inspection of all 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)*	Fix appropriate type of safety signage at generator room and ensure graded rubber mats are provided in front of all distribution 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 building intake. Rewire to avoid the use of multiple cables from incoming and outgoing side of MCB's/MCCB's. Ensure all electrical wiring/cables are sized according to capacity of circuit breakers. Avoid flexible cables for fixed wiring unless contained in an enclosure affording mechanical protection. Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. Provide individual fuse with suitable discrimination with backup fuse or miniature MCB for each 15/20A socket outlet. Connect all metal in the building to the building earthing/grounding 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+(20ºC-40ºC)} 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 panel boards on an annual basis to ensure that the equipment is in good working condition. Ensure the generator room has adequate fire separation from the production area. 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 mechanical guards for electrical equipment where necessary. Provide noncombustible and adequate covers on cable channel.. 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