Name of the Factory	: A. K FASHIONS LTD
Address of the Factory	: Mojib Bhaban, Mizmizi, Shiddhirgonj, Narayangonj, Bangladesh,
Present Status of the Factory	: Under Operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 12th March, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 12th March, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 12th March, 2015
BKMEA Membership No.	: 286.

BASIC INFORMATION:

The assessed factory building was a 6 Storey RCC building. The structural system of the building is RCC beam column frame and beam slab floor system. A.K Fashions Ltd. has occupied this building as rental basis. The following general information were noted:

i.	Building Usage Type	: Knit garments Factory.
ii.	Structural System	: RCC beam column frame system.
iii.	Floor System	: RCC beam slab floor system.
iv.	Floor Area	: The typical plinth area is 8544 sq. ft. and total production floor is 56,064 sq. ft.
v.	No. of Stories	: 6 Storey.
vi.	Construction Year	: 2004.
vii.	Foundation Type	: Shallow foundation.
viii.	Design Drawings	: Available (Approval for 6 storey building from Siddhirganj Pouroshova on 27th March, 2006).
ix.	Soil Investigation Report	: Available.
x.	Construction Materials	: Brick aggregate.
xi.	Generator	: Outside of main building at North-East corner of the building.

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) :

- Area around the identified columns should not be used for storage, water tanks to be emptied, telecom tower to be removed, and loading in east and west sides to be reduced to minimum
- Building Engineer to review design, loads and columns stresses in area identified above.
- Verify in-situ concrete stresses either by 100mm dia. cores or existing cylinder strength data for the identified columns
- A Detail Engineering Assessment of Factory to be commenced, see attached Scope.

Mid Term (6-weeks) :

- Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
- Detail Engineering Assessment to be completed.

Long Term (6-months) :

- Continue to implement loading plan.
- Sections of plaster finish of slab and beam to be removed to investigate if cracks penetrate the building structure. Investigation needed to determine why cracks occurring. Carry out any remedial actions as directed by the Building Engineer.
- Sections of plaster finish to brick wall to be removed to investigate if dampness penetrates into the building wall. Investigation needed to determine the source of the damp and way to prevent it re-occurring. Carry out any remedial actions as directed by the Building Engineer.

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*):	• None.
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (1 ~ 2 weeks) and should be a regular activity*	• The minimum clear width of the pathway should be 0.9 meter • Direct route of access to required exits should be provided through stairway which is maintained free of obstructions. • Factory management should check alarm call points, alarm & detection system periodically and maintained the record properly. • The first aid hose and standpipe performance should be checked periodically and properly tagged.

Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Replace all existing exit doors on evacuation routes, exit doors with side hinged type door, which swing outward and in the direction of travel. Swinging of the door should not constrict the width of the corridor / passage below 0.9 meter. • Remove all locking device from all egress door. All exit doors should be open-able from the side they serve without the use of a key. • Exit door should have minimum clear width 0.9 meter. • Prepare proper plan & design for staircase. - Minimum clear width should be 0.9 meter. • Provide handrails on both side of each stairway with height of 0.9m measured from the nose of stair to the top of the handrail. • Doors in stair should be outward opening, side-swing, self-closing, non-lockable 1.5 hours fire rated doors in all stair way encloses. • Provide 2 hour fire rated construction at unprotected opening window, which is adjacent to external staircase. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated door at ground floor generator room, which located at the adjacent to knitting Section. • The egress paths should be illuminated with emergency lighting with power back-up supply & illumination should be a minimum of 10 lux for all corridors & exit doors. Aisles should be provided with a minimum 2 lux. • The stairway should be illuminated with emergency lighting with power back-up supply & illumination should be a minimum of 10 lux for stairway. • Produce design and plan for automatic detection system with automatic fire alarm. • Install Manual activation call point at all exit routes • Provide adequate nos. of smoke detectors to cover the whole factory building. • Prepare proper design and plan for dedicated fire pump

	with alternate backup power supply. • Prepare plan and design for dedicated water storage tank for firefighting operation as per RMG guideline. • Power backup supply should be provided for fire alarm system. • Visual alarm should be placed at the generator room.
Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	• Install staircase as per plan and design. - Minimum clear width should be 0.9 meter. • Provide 4 hour's fire rated barriers with 2 hours fire rated door at ground floor generator room, which located at the adjacent to knitting Section. • Install automatic detection system with automatic fire alarm. • Install dedicated fire pump with alternate backup power supply. • Stand pipe supplying first aid hose should have minimum pressure of 200 KPa. • Provide dedicated storage tank for firefighting operation

(B): Recommendations for Electrical Safety corrective actions:

Immediate (*the factory should not continue to be occupied until these non-conformities have been rectified*):	• None.
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity*	• Re-locate oil / fuel tanks away from control panels in generator room.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Install smoke detection and provide firefighting equipment in the substation and generator room. • Provide suitable & non-flammable protected supports and shades for hanged light fittings/fixtures. • 1. Overhead service connections should be covered and

	meet the requirements mentioned in RMG Guidelines. 2. Provide supports for main service line complete with adequate insulation. • Provide proper clearance of 0.8 - 1.0 m in front of all distribution panels/switchboards. • Provide cable connections with properly soldered / welded lugs at (MDB/DB/SDB)'s. Ensure that all the electrical connections are properly secured with lugs and glands. • Select conductors and MCCB/MCB with adequate sizing without exceeding permissible current carrying capacity for insulation. • Avoid looping and bunch of cable at MCCB/MCB or bus bar terminal, use individual circuit and over current device for every incoming and outgoing circuit at the distribution boards. • Provide circuit diagram /circuit list with proper current ratings and fuse size, marking for DBs identifying end use load, voltage, number of phases. • Provide cable joints of porcelain / PVC connectors with PIB tape wound around before placing the cable in the box. • Provide proper separate earthing/grounding to generator. Ensure that generator body frame to have two separate and distinct connections to the earth / ground. • Provide adequate earthing to body and doors to all MDBs / DBs. Ensure that all electrical panels provided with proper and separate earth potential.
Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	• 1. Provide updated SLD matching the existing installation at the factory. 2. SLD to indicate exact positions of all points of switch boxes and other outlets. 3. SLD to be approved by the engineer-in-charge. • 1. Provide updated Electrical layout drawing prepared after proper locations of all outlets for lamps, fans, fixed and transportable appliances, motors etc. 2. Drawings to indicate exact positions of all points of

	switch boxes and other outlets to match existing installation. 3. As built drawing to be approved by the engineer-in-charge. • Make suitable arrangements to prevent storm water to enter substation / transformer / switch rooms. • Provide adequate clearance in all sides of main HT/LT panel boards/transformer for easy maintenance. • Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 48m2, or relocate the generator room. • Provide and maintain proper clearance in all sides of generator for ease of maintenance. • 1. Design to have proper segregation of different end used loads. 2. Wiring design to have separate and distinct sub-circuits for power and heating system. 3. All DBs to be placed conveniently. 4. Wiring to be neat, tidy and located near ceiling. • Provide calibrated Ammeters / Voltmeters at distribution boards (MDBs). • Each circuit should have a separate neutral (use of common neutral for more than one circuit shall not be permitted). • Seal the cable entry-exit points of (MDB/DB/SDB)'s with non-flammable materials. In addition: 1. Ensure that HT / LT panels / Switchgears to be vermin / damp proof. 2. Ensure all unused holes / openings in DBs to be blocked properly. • 1. Provide the ECC to meet minimum cross-sectional area as per table 4.5. 2. Ensure that connections between conductors / equipments provided to durable electrical continuity and adequate mechanical strength and protection. 3. The continuous earth connection is provided back to

	the main intake supply earth. • Provide adequate protection against lightning depending on the probability of a strike and acceptable risk levels at roof top of building.