

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Amex Apparel Ltd.
Address of the Factory	: BSCIC, Shampur, Kadomtoli, Dhaka, Bangladesh.
Present Status of the Factory	: Under Operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 19 th April, 2015.
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 19 th April, 2015.
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 19 th April, 2015.
BGMEA Membership No.	: 3978

BASIC INFORMATION:

The assessed factory building is a 6 storied RCC building. The structural system of the building is beam column frame and beam slab floor system. Amex Apparel Ltd is located on 2nd to 5th floor and Amex knitting is located on ground & 1st floor of the building. The following general information was noted:

i. Building Usage Type	: Garment Factory.
ii. Structural System	: RCC beam column frame system structure.
iii. Floor System	: RCC Beam-slab floor system.
iv. Floor Area	: Floor area is 32500 sft (Amex apparels ltd). Total floor area 52,800 sft.
v. No. of Stories	: 6 Storey.
vi. Construction Year	: Building was built in one phase (2014-15).
vii. Foundation Type	: Pile foundation.
viii. Design Drawings	: Available (Structural design drawing, architectural design drawing, as built drawing, approval drawing, soil test report and test report of construction materials and machine layout plan have been found.)
ix. Soil Investigation Report	: Available.
x. Construction Materials	: Stone Aggregated in columns.
xi. Generator	: At 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)	: None.
Mid Term (6-weeks)	: None.
Long Term (6-months)	: <ul style="list-style-type: none">• Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor Capacity and column capacity.• Continue to implement load plan.

The recommendations for **Fire & Electrical Safety** corrective action are:

(A): Recommendations for Fire Safety corrective actions:

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

<p>Immediate</p> <p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	<ul style="list-style-type: none"> • None.
<p>Short Term</p> <p><i>(Actions that must be incorporated into a Fire Safety Management Plan immediately (1 ~ 2 weeks) and should be a regular activity</i></p>	<ul style="list-style-type: none"> • Lights in storage area needed to be installed with protective covers and conduits. • All openings in floors shall be protected by vertical enclosures extending above and below such openings. Walls of such opening enclosure shall have at least 2 hour fire resistance rating or close the opening with 2hr rated construction. • 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.
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<ul style="list-style-type: none"> • 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. • Provide handrail on both sides of stairways.
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<ul style="list-style-type: none"> • Fire department pre-plan needs to be developed. • Final exit 04, needs be to separate with chemical store by 4 hr rated construction & 2 hr rated door opening. • Childcare needs to be at ground floor directly to the final exit. Separation walls need to be 3hrs fire rated with same rated opening. • Storage area needs to be protected with 2 hours rated construction & 1.5 hours rated opening or doors. • All the stairs need to be protected with fire and smoke resistant enclosures & opening (2 hours 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

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>single or multiple call boxes on all occupied floors, including other tenanted floors of the building.</p> <ul style="list-style-type: none"> • Factory needs to install control panel for detection and alarm system at required location. • Install proper standpipe system having at least 100 mm dia of standpipe. First aid hose system (38 mm nominal) needs to be provided In addition 50 mm or larger hose connection facility needs to be provided. • Factory needs to install 1 riser per 1000 m2 of floor area & 38 mm dia of hoses with variable nozzle. • Provide the required flow of 1900 liter/min and minimum pressure of 200 kPa for supplying first aid hose (38 mm nominal) OR Hydraulically design the standpipe and hose system to get the required pressure. • 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 install dedicated fire pump with sufficient capacity & backup power.
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(B): Recommendations for Electrical Safety corrective actions:

<p>Immediate</p> <p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	<ul style="list-style-type: none"> • 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.
<p>Short Term</p> <p><i>(Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity</i></p>	<ul style="list-style-type: none"> • Ensure all distribution boards (including panel door) are earthed properly. • 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.
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<ul style="list-style-type: none"> • 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 distribution boards. • Provide Instruction boards for first aid and artificial

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>respiration in the substation room and generator room.</p> <ul style="list-style-type: none"> • Fill the transformer breather with fresh Silica gel and oil cup with fresh Oil. • Provide two separate and distinct connections of earthing for each generator. • Ensure distribution board has a minimum clearance of 1 m (39 in) in front. • Provide dedicated & adequate size of earthing with proper identification for each circuit from the earth busbar of distribution boards 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 busbar. Avoid the use of multiple cables on outgoing side of MCB's. • Consult with a qualified electrical engineer and ensure all electrical wiring/cables are sized according to capacity of circuit breakers. • Provide adequate support or mechanical guards for electrical cables where necessary. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Connect all metal in the building to the building earthing/grounding system such as metal rebar in concrete, metal frame of building, or metal water pipe etc. • 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°C-40°C)} and take proper action.
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<ul style="list-style-type: none"> • 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.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<ul style="list-style-type: none">• Ensure the substation room has adequate fire separation from the production area/main building.• Ensure the generator room has adequate fire separation from the production area/main building.• 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 indicating current rating of circuit and size of fuse element/ breaker. Also ensure the means of identification (separate color coding, marking tape, tagging, or other approved means) of cable is provided as per circuit 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.
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