

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Atlantic Standard Time Co.(Bd) Ltd.
Address of the Factory	: Sector# 4, Plot# 19-20,CEPZ,Chittagong
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 26 October, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 26 October, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 26 October, 2015
BGMEA Membership No.	: 1922

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 frame with PEB roof shed and interconnected with non-engineered shed.
iii. Floor System	: RCC Beam column frame and pre-engineered steel frame.
iv. Floor Area	: Ground floor is 13,500 sq. ft. and 1st floor is 4200 sq. ft
v. No. of Stories	: 2 storied RCC building with pre-engineered roof shed and 1 storied non-engineered shed.
vi. Construction Year	: RCC portion 1994 and pre-engineered shed portion 2015
vii. Foundation Type	: Unknown
viii. Design Drawings	: Available :Structural drawing (PEB portion), Approval drawing Not Available : soil test report, as-built machine lay-out plan, materials test report
ix. Soil Investigation Report	: Not Available
x. Construction Materials	: Brick chips (Column, beam, slab), PEB steel columnrafter, steel angle bar.
xi. Generator	: Not Found.

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. 2. Building engineer to check, collect information and produce accurate and complete as-built documentation
Long Term (6-months)	: 1. Install lateral bracing if required.

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

(A): Recommendations for Fire 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>	<p>N/A</p>
<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>	<p>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.</p> <p>All the firefighting equipment's need to test with proper documents.</p> <p>Factory needs to have marked aisles in all working floor according to 0.9m for one side seat and 1.0m for both side seat. Factory needs to have sufficient total width of marked aisles (5mm per occupant) at the factory.</p> <p>All required means of exit or exit access in buildings or areas requiring more than one exit shall be signposted. The signs shall be clearly visible at all times, where necessary supplemented by directional signs.</p> <p>Potable fire extinguisher needs to be of an approved type and installed as per manufacturer's instruction and placed near the path of exit travel where easily accessible. Portable fire extinguisher needs to be installed in private and public buildings as per specification and requirements of BDS 825:1991 (BDS 825:91)</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Factory needs to prepare as built drawing with floor machine layout showing means of escape with proper dimension.</p> <p>Fire manager/Director need to have safety training from proper authority & worker of the factory should as far as possible be trained for use fire extinguisher.</p> <p>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.</p> <p>Factory needs to be installed with adequate illuminated emergency lighting in floor.</p> <p>Emergency back-up power needs to be connected for critical fire safety system and not less than 30 minutes in case of failure of power supply.</p>

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<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Factory needs to have a proper pre-plan for fire department. Sub-station room need to be protected with 4 hours rated construction with 2 hours rated opening / door from ground floor production area of the shed.</p> <p>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.</p> <p>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.</p> <p>Factory needs to install control panel for centralized automatic smoke detection & fire alarm system according to NTPA Guideline.</p> <p>Factory needs to install proper standpipe system with having at least 75mm diameter of riser.</p> <p>Factory needs to install 1 hose per 1000 m2 and the minimum hose diameter is 38 mm, or 1.5" preferably fabric hose with variable nozzle.</p> <p>Factory need to ensure the minimum pressure for standpipes supplying a 50mm 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.</p> <p>Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection.</p> <p>Factory needs to have dedicated fire pump with backup power system & sufficient capacity for achieve required pressure in the remote place of the factory.</p> <p>Factory need 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</p>
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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>	<p>Ensure there is no break in the neutral wire in the form of a circuit breaker throughout the wiring installation.</p>
<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>	<p>Ensure all distribution boards (including panel door) are earthed properly.</p> <p>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> <p>Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering.</p> <p>Provide provision for inspection of all earthing system.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Post appropriate number of safety signage and type of fire-fighting equipment at substation room.</p> <p>Provide Instruction boards for first aid and artificial respiration in the substation room.</p> <p>Ensure in the substation room has adequate illumination level as per standard.</p> <p>Fill the transformer breather with fresh Silica gel and oil cup with fresh Oil.</p> <p>Ensure distribution boards have a minimum clearance of 1 m (39 in) in front.</p> <p>Provide dedicated & adequate size of earthing with proper identification for each circuit and ensure continuous earth path is back to main building intake.</p> <p>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.</p> <p>Ensure all electrical cables are sized according to capacity of circuit breakers.</p> <p>Provide adequate support or mechanical guards for electrical wiring where necessary. Ensure cable joints are made in respect</p>

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	<p>of conductivity, insulation and mechanical strength.</p> <p>Connect all metal in the shed to the main 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°C-40°C)} and take proper action</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system.</p> <p>Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data.</p> <p>Inspect electrical panel boards on an annual basis.</p> <p>Ensure the substation room has adequate fire separation from the production area.</p> <p>Ensure overhead service connections to the building are led via adequate size and type of service masts.</p> <p>Ensure distribution boards have no opening and all live internal components are concealed properly.</p> <p>Provide dedicated & adequate size of neutral with proper identification for each applicable circuit.</p> <p>Ensure each distribution board is provided with a circuit list and means of identification is provided as per list.</p> <p>Provide adequate covers on cable channel.</p> <p>Ensure exposed wiring are run vertically with proper mechanical support. Provide proper cable terminator/connector for stranded conductors at its point of termination.</p> <p>Provide an emergency power generator with adequate capacity for the building.</p> <p>Install separate distribution boards for lighting and power circuits.</p> <p>Install lightning protection system on the sheds.</p>