

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Web Textile Mills.
Address of the Factory	: Bhagirathpur, Madhabdi, Narsingdi
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 7 May, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 7 May, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 7 May, 2015
BGMEA Membership No.	: 5952

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.
iii. Floor System	: RCC floor slab and steel deck.
iv. Floor Area	: Total floor area 7000 sq. ft.
v. No. of Stories	: 02 storey
vi. Construction Year	: 2008-2009
vii. Foundation Type	: Isolated column footing
viii. Design Drawings	: Available- Approval drawing, partial structural design drawing and Soil test report. Not available: full set of structural and Architectural drawing, as built drawing as built machine layout plan, test report of construction materials.
ix. Soil Investigation Report	: Available
x. Construction Materials	: Brick aggregate.
xi. Generator	: Separated structure.

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. Building Engineer to review the adequacy of the steel roof structure above the dining area and stairs to ensure that it is designed to resist code specified live and wind loads
Long Term (6-months)	: 1. Develop set of as-built drawings showing structure details, loading, dimensions, levels, foundations and framing on Plan, Section and Elevation drawings

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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>	<ul style="list-style-type: none"> • N/A
<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"> • Ensure adequate numbers of fire drills under the Fire Safety Plan. • Factory need to have proper testing plan & record of 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. • Factory needs to be installed with adequate illuminated emergency lighting in floors, exits & stairs.(Escape route). • Ensure illuminated exit signs in floors so that it is visible from all positions.
<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"> • Needs to have as built drawing with proper dimensions showing means of escape. • 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. • All the exit doors need to be replaced by side swinging so that unlockable fire rated doors can be opened easily in the direction of evacuation without the use of a key. • Provide handrail on both sides of stairways Ensure adequate illuminated emergency lighting with backup power in all floors, exit & stair. • Install standby generator with required backup power.
<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. • Factory need to protect the boiler room from the finishing section of 1st 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

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	<p>detection & alarm system on all occupied floors, including other tenanted floors of the building as per NTPA Guideline.</p> <ul style="list-style-type: none"> • 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. • Factory need to install 75mm diameter of standpipe system in the building • 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 be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection. • 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.
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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"> • Isolate/make safe all unused cables first and then remove from distribution boards. If necessary make sure cables are properly terminated at its point of termination using appropriate size and type oflug.
<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</i></p>	<ul style="list-style-type: none"> • Ensure graded rubber mat is provided in front of the distribution board.

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<p><i>carried out within a period of 6 weeks)</i></p>	<ul style="list-style-type: none"> • Provide dedicated & adequate size of earthing with proper identification for each circuit. • 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. • Use metal enclosure for installation of circuit breakers. Replace wooden bases with metal clad construction for mounting the lighting boards and switch controls. • Ensure all electrical cables are sized according to capacity of circuit breakers. • Use noncombustible material to make cable channel and provide adequate covers on cable channel. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Provide emergency power connection for life safety loads (fire pump, emergency lighting and exit signage) temporarily within 6 weeks and find out a permanent solution within 6 months. • Ensure Lighting fixtures are supported from the structure properly. • 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+(20C-40C)} and take proper action..
<p>Long Term <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 panel boards on an annual basis. • Ensure overhead service connections to the building are led via adequate size and type of service masts. • Ensure distribution boards have no opening and all live internal components are concealed properly. • Install circuit breakers in proper way to ensure safe installation. • 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 obtained as per list. • Provide proper cable terminator/conductor for stranded

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	<p>conductors.</p> <ul style="list-style-type: none">• Provide an emergency power generator with adequate capacity for the building.• Install lightning protection system on the building.
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