

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: YORK COMPOSITE LTD.
Address of the Factory	: Plot A-9, A-10, BSCIC I/A, Kantchpur, Sonargaon, Narayanganj.
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 11 June, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 11 June, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 11 June, 2015
BKMEA Membership No.	: 1106

BASIC INFORMATION:

The building is a 4 storied RCC beam column frame structure attached with two single storied roof truss corrugated iron shed (Dyeing and Knitting shed). The following information was noted:

i. Building Usage Type	: Garment Factory.
ii. Structural System	: RCC beam column frame system and attached Pre Engineered building sheds are also steel truss-column frame system.
iii. Floor System	: Roof truss (for PEB shed) and beam slab.
iv. Floor Area	: 26005 sq. ft.
v. No. of Stories	: 4 storied RCC frame structure attached with two single storied roof truss corrugated iron shed (Dyeing and Knitting shed).
vi. Construction Year	: 2001
vii. Foundation Type	: Unknown
viii. Design Drawings	: Available: Approval drawing (without shed), soil test report Not Available: Architectural drawing, Structural design drawing, floor load plan and material test report have not been found.
ix. Soil Investigation Report	: Available
x. Construction Materials	: Steel and Bricks.
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)	: 1. A Detail Engineering Assessment of Factory to be commenced.
Mid Term (6-weeks)	: 1. DEA must be completed 2. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
Long Term (6-months)	: 1. Install lateral bracing if required. 2. Continue to implement load plan.

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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>Remove all the cartons and relocate combustible from exit and aisles so that exit access, aisles and exit discharge remains unobstructed.</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>Ensure adequate numbers of fire drills under the Fire Safety Plan.</p> <p>All the firefighting equipment's need to test with proper documents.</p> <p>Factory needs to have sufficient number and width (0.9 m) of marked aisles at all floor of the building. Kitchen area needed to be installed with fire protection and also installed fixed temperature type detectors and portable fire extinguisher.</p> <p>Lights in storage area needed to be installed with protective covers and conduits.</p> <p>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> <p>Factory needs to ensure adequate numbers of exit signs which need to be visible from any positions and comply with the following conditions:</p> <p>(a) The color and design of lettering, arrows and other symbols on exit signs needs to be in high contrast with their background; (b) Words on the signs needs to be at least 150 mm with a stroke of not less 20 mm; (c) The source of illumination, contrast, intensity and luminance needs to be at least 50 lux, 0.5, 5.0 foot-candles and 0.2 cd/m² respectively.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Needs to have as built drawing with proper dimensions showing means of escape.</p> <p>Factory Manager or Director needs to arrange fire safety training for the workers of the factory from proper authority time to time.</p> <p>All the exit doors of staircase enclosure need to be</p>

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	<p>replaced by SIDE SWINGING FIRE FATED 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.</p> <p>Provide handrail on both sides of stairways. Illuminated emergency light needs to be covered in all floors, exits, staircases and aisles of all the factory buildings or sheds. The intensity of illumination by means of escape lighting needs to be equal or more than 10 lux. The aisles need to be illuminated with escape lighting to a level of not less than 2.5 lux at floor level.</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>
<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.</p> <p>Final exit route-1 need to be protected(2 hours rated construction with 1.5 hours rated door) at entrance in ground floors, also need to be protected by 4 hours fire rated construction with 2 hours fire rated doors/opening from the transformer room and provide the escape route till to reach safe refuse area.</p> <p>Storage area need to be protected with 2 hours rated construction and 1.5 hours rated opening or doors. Generator room needs to be fire separated with 4 hours fire rated enclosure and 2 hour rated opening having direct access from outside.</p> <p>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.</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 and automatic fire detection and alarm system at</p>

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	<p>required location.</p> <p>Factory needs to install separate standpipes in each exit stairway with minimum 38 mm diameter of 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 and 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>
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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>Find out cause (improper cable selection, improper protective device selection, improper termination, rusted connection, heat source etc.) of burning sign/insulation damage and take proper action including replacing cable or equipment where necessary.</p> <p>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+ 40°C) and take proper action.</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 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>Ensure overcurrent protection device (circuit breaker/fuse) for each circuit/branch circuit.</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 and ensure</p>

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	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>	<p>Install appropriate number and type of safety signage and fire-fighting equipment at generator room. Also ensure graded rubber mats are provided in front of all distribution boards.</p> <p>Provide Instruction board for first aid and artificial respiration in the generator room.</p> <p>Provide two separate and distinct connections of earthing for each generator.</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 from the earth busbar of distribution boards and ensure continuous earth path is back to main building intake.</p> <p>Rewire to avoid the use of multiple cables from incoming and outgoing side of MCB's/MCCB's.</p> <p>Replace wooden base with metal clad construction for mounting the lighting boards and switch controls.</p> <p>Ensure all electrical cables are sized according to capacity of circuit breakers.</p> <p>Provide adequate mechanical guards for electrical wiring where necessary.</p> <p>Ensure cable joints are made in respect of conductivity, insulation and mechanical strength.</p> <p>Connect all metal in the building to the building earthing system.</p> <p>Ensure Lighting fixtures are supported from the structure properly and if flexible cords are used to support light fixture then make sure it has enough strength to carry the weight.</p> <p>Find out the cause (improper cable/over current selection, over loading, improper lug, improper cable joints, rusted connection,</p>

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	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>	<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. Ensure the generator room has adequate fire separation from the production area.</p> <p>Ensure appropriate generator room size in order to properly access the generator to perform routine maintenance activities. Ensure distribution boards have no opening and all live internal components are concealed properly.</p> <p>Ensure distribution boards are installed in compliant locations in terms of access and surrounding weather.</p> <p>Install Circuit breaker in proper way to ensure safe installation. Provide dedicated & adequate size of neutral with proper identification for each 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 proper cable terminator/connector for stranded conductors at its point of termination.</p> <p>Install separate distribution boards for lighting and power circuits.</p> <p>Install lightning protection system on the building.</p>