

## **Summary of Preliminary Assessment on Structural, Fire and Electrical Safety**

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Name of the Factory	: ANOWARA FASHIONS LTD
Address of the Factory	: 35/A, Hajiganj road, Narayanganj.
Present status of the factory	: <b>Under Operation</b>
Structural Assessment Conducted by	: <b>VERITAS Engineering&amp; Consultant</b>
Date of Structural Inspection	: 2015-07-26
Fire Assessment Conducted by	: <b>VERITAS Engineering&amp; Consultant</b>
Date of Fire Inspection	: 2015-07-26
Electrical Assessment Conducted by	: <b>VERITAS Engineering&amp; Consultant</b>
Date of Electrical Inspection	: 2015-07-26
BKMEA Membership No.	: 1889

### **BASIC INFORMATION:**

The building is a 6 storied RCC beam column frame structure. The following general information wer noted:

i. Building Usage Type	: Garment Factory.
ii. Structural System	: RCC beam column frame.
iii. Floor System	: RC Beam slab.
iv. Floor Area	: 16,600 sq. ft per floor. total=99600 sft
v. No. of Stories	: 6- storied.
vi. Construction Year	: 2010 to 2011.
vii. Foundation Type	: Pile foundation.
viii. Design Drawings	: Available - Approval drawing, Structural design drawing, Soil test report, Machine layout plan, Materials test report. Not available- Floor load plan.
ix. Soil Investigation Report	: Available.
x. construction Materials	: Stone chips (column).
xi. Generator	: Separate 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) : N/A

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Mid Term (6-weeks) : N/A

Long Term (6-months) : 1. Building engineer prepare as built structural drawing and floor load plan. Prepare/update calculations showing the structural adequacy of the floor system taking into account the factory design imposed loading and the as built structure.

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>	<ul style="list-style-type: none"> <li>• Factory need to have proper testing plan &amp; record of fire safety equipment.</li> <li>• Factory needs to close all the opening in the rated wall of the mezzanine stair ways by 2 hours rated construction/enclosure or 1.5 hours rated doors.</li> <li>• 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.</li> </ul>

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<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"> <li>• Factory needs to prepare as built drawing with floor machine layout showing means of escape with proper dimension.</li> <li>• Factory needs to provide handrail on both sides of all the stairways.</li> </ul>
<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"> <li>• Fire department pre-plan needs to be developed.</li> <li>• Factory needs to maintain minimum width of exit 0.9 m and height 2m.</li> <li>• Factory need to be protected final exit -3,4,7,14 and 15 with generator &amp; sub-station room at ground floor by 4hours rated construction with 2 hours rated door/opening, also need to have a protected escape route till to reach safe refuse area.</li> <li>• Storage area need to be protected with 2 hours rated construction &amp; 1.5 hours rated opening or doors.</li> <li>• All the stairs need to be protected with fire and smoke resistant enclosures and opening (2 hours rated enclosure and 1.5 hour rated door) and provide theprotected route from all though the stairway to the final exits.</li> <li>• Generator &amp; sub-station room need to be protected with 4 hours rated construction &amp; 2 hours rated opening / door of the building.</li> <li>• 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.</li> </ul>

### ***(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"> <li>• 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.</li> </ul>
<p>Short Term <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"> <li>• Ensure all distribution boards (including panel door) are earthed properly.</li> <li>• Ensure inspection is being completed and documented.</li> </ul>

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<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"> <li>• Provide Instruction board for first aid and artificial respiration in the substation room and generator room.</li> <li>• Provide two separate and distinct connections of earthing for each generator.</li> <li>• Provide dedicated &amp; adequate size of earthing with proper identification for each circuit and ensure continuous earth path is back to main building intake.</li> <li>• 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.</li> <li>• Ensure all electrical cables are sized according to capacity of circuit breakers.</li> <li>• Ensure cable joints are made in respect of conductivity, insulation and mechanical strength.</li> <li>• Seal the openings remaining after wiring system passes through the elements of building construction according to the degree of fire resistance.</li> <li>• 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+( 200C-400C) } and take proper action.</li> </ul>
<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"> <li>• Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system.</li> <li>• Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data.</li> <li>• Inspect electrical panel boards on an annual basis.</li> <li>• Ensure the substation room has adequate fire separation from the remainder part of the building.</li> <li>• Ensure underground cables for electrical distribution in the premises are encased in GI or PVC pipes and laid in earth trenches of sufficient depth as per mentioned standard.</li> <li>• Ensure distribution boards have no opening and all live internal components are concealed properly.</li> <li>• Ensure distribution boards are installed in compliant locations in terms of height, access.</li> <li>• Provide dedicated &amp; adequate size of neutral with proper identification for each circuit.</li> <li>• Ensure each distribution board is provided with a circuit list and means of identification is provided as per list.</li> <li>• Provide adequate covers on cable channel.</li> <li>• Provide proper cable terminator/connector for stranded conductors at</li> </ul>

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	<p>its point of termination.</p> <ul style="list-style-type: none"><li>• Install separate distribution boards for lighting and power circuits.</li><li>• Install lightning protection system on the building confirming its requirements and adequacy.</li></ul>
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