

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

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| Name of the Factory                | : A & A Fashion Sweaters Ltd.      |
| Address of the Factory             | : Naljani (Wireless Gate), Gazipur |
| Present status of the factory      | : Under Operation.                 |
| Structural Assessment Conducted by | : VERITAS Engineering& Consultant  |
| Date of Structural Inspection      | : 2015-05-06                       |
| Fire Assessment Conducted by       | : VERITAS Engineering& Consultant  |
| Date of Fire Inspection            | : 2015-05-06                       |
| Electrical Assessment Conducted by | : VERITAS Engineering& Consultant  |
| Date of Electrical Inspection      | : 2015-05-06                       |
| BGMEA Membership No.               | : 3968                             |

**BASIC INFORMATION:** The present garment factory is using entire building which is pre engineered Steel frame roof structure on RCC beam column structure.

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| i. Building Usage Type        | : Sweater factory   |
| ii. Structural System         | : RCC beam column system  |
| iii. Floor System             | : pre-engineered steel frame roof structure on RCC beam Column structure  |
| iv. Floor Area                | : 33400sft all floor .  |
| v. No. of Stories             | : 1   |
| vi. Construction Year         | : 2007-2008.  |
| vii. Foundation Type          | : Unknown   |
| viii. Design Drawings         | : Available: Approval plan, Structural drawing& soil test Report. Not Available: architectural design drawing, machine layout plan. |
| ix. Soil Investigation Report | : Available.  |
| x. construction Materials     | : Brick chips concrete(Column& beam), steel Profile sheet,  |
| xi. Generator                 | : Ground floor.   |

### **RECOMMENDATIONS FOR CORRECTIVE ACTION:**

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| Short Term (Immediate) | : N/A  |
| Mid Term (6-weeks)     | : N/A  |
| Long Term (6-months)   | : 1. Protective coating should be applied on the exposed steel frame to protect them from corrosion.<br>2. Continue to monitor corrosion on an on-going basis. |

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

**(A): Recommendations for Fire Safety corrective actions:**

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| <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>• All the firefighting equipment's need to test with proper documents.</li> <li>• Lights in storage area needed to be installed with protective covers and conduits.</li> <li>• Combustibles are to be managed with good housekeeping.</li> <li>• 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> <li>• Ensure adequate exit signs in all floors so that it is visible from all positions</li> </ul>   |
| <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 have as built drawing with proper dimensions showing all the means of escape.</li> <li>• Factory need to have a valid fire license with covering full occupied area &amp; clearly mention the coverage area in the license.</li> <li>• Factory Manager/Director needs to arrange fire safety training for the workers of the factory from proper authority time to time.</li> <li>• 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.</li> <li>• Illuminated emergency light needs to be covered in floor, exits and aisles. 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.</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>• Factory needs to have a proper pre-plan for fire department.</li> <li>• Childcare needs to be separated from finishing section with 3 hours rated construction and 2 hours rated opening or door.</li> <li>• Storage area need to be protected with 2 hours rated construction and 1.5 hours rated opening or doors.</li> </ul>  |

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|  | <ul style="list-style-type: none"><li>• Boiler room needs to be fire separated with 4 hours fire rated enclosure and 2 hours rated opening having direct access from outside.</li><li>• Generator room needs to be fire separated with 4 hours fire rated enclosure and 2 hours rated opening having direct access from outside.</li><li>• Factory need to install centralized and automatic fire detection &amp; alarm system on all occupied floors, including other tenanted floors of the building as per NTPA Guideline.</li><li>• 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.</li><li>• Factory needs to install dedicated fire pump with sufficient capacity &amp; backup power</li><li>• Factory needs to install control panel for detection and alarm system at required location.</li><li>• Install proper standpipe system having at least 75 mm diameter of standpipe. First aid hose system (38 mm nominal) shall be provided. In addition 50 mm or larger hose connection facility shall be provided.</li><li>• Install 1 riser per 1000 m2 of floor area &amp; 38 mm diameter of hoses with variable nozzle need to be installed.</li><li>• Install standard standpipe and hose system as well as fire pump system to ensure required hose pressure at the highest and most remote part of the building.</li><li>• Factory need to installed Siamese connection after installation of stand pipe system, hose system and fire pump.</li><li>• Factory needs to have dedicated fire pump with backup power system &amp; sufficient capacity for achieve required pressure in the remote place of the factory.</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> |
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### (B): Recommendations for Electrical Safety corrective actions:

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| <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>• Find out cause (improper cable selection, improper protective device selection, improper termination, rusted connection) of insulation damage and take proper action including replacing cable or equipment where necessary.</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 (&gt; ambient+ 400C) and take proper action.</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>• Provide two separate and distinct connections of earthing for each generator.</li> <li>• Ensure all distribution boards (including panel door) are earthed properly.</li> <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> <li>• Provide additional insulation for wiring exposed to external heat sources to protect cable.</li> <li>• Ensure overcurrent protection device (circuit breaker/fuse) for each circuit/branch circuit.</li> <li>• Ensure proper earthing connections at all electrical equipment.</li> <li>• Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering.</li> <li>• Ensure inspection of earthing system is being completed and documented.</li> </ul> |
| <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>• Ensure adequate sized and graded rubber mats are provided in front of all distribution boards.</li> <li>• Provide Instruction board for first aid and artificial respiration in the generator room.</li> <li>• Ensure in the generator room have adequate illumination level as per standard.</li> <li>• Ensure distribution boards have a minimum clearance of 1 m (39 in) in front.</li> </ul>  |

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|   | <ul style="list-style-type: none"> <li>• Provide dedicated &amp; adequate size of earthing with proper identification for each circuit from the earth bus-bar of distribution boards 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.</li> <li>• Avoid the use of multiple cables on outgoing side of MCB's.</li> <li>• Replace wooden bases with metal clad construction for mounting the tube light ballast and sockets.</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>• Connect all metal in the building to the building earthing system.</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 switchgear and panel boards on an annual basis.</li> <li>• Ensure overhead service connections to the building are led via adequate size and type of service masts.</li> <li>• Ensure the generator room has adequate fire separation from the production area.</li> <li>• Ensure panel boards have no opening and all live internal components are concealed properly.</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 support or mechanical guards for electrical</li> </ul>   |

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|  | <p>equipment.</p> <ul style="list-style-type: none"><li>• Provide adequate covers on cable channels.</li><li>• Provide proper cable terminator/connector for stranded conductors at its point of termination.</li><li>• Install separate distribution boards for lighting and power circuits.</li><li>• Install lightning protection system on the building.</li></ul> |
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