

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Alliance Garments Ltd.
Address of the Factory	: Plot # 8 & 10, Road # 3, Section # 7, Mirpur Industrial Area, Dhaka-1216
Present Status of the Factory	: Under Operation
Structural Assessment Conducted by	: BUET
Date of Structural Inspection	: 19 th November 2013
Fire & Electrical Assessment Conducted by	: BUET
Date of Fire & Electrical Inspection	: 15 th November 2013

BASIC INFORMATION:

The garments factory consists of two separate six- storied (G+5) R.C. frame buildings constructed on plot Nos. 8 and 10 and separated by an expansion joint. The following information was noted:

i. Building Usage Type	: Garments Factory.
ii. Structural System	: R.C. frame Building.
iii. Floor System	: Edge supported R.C. solid floor slab system with R.C. beam at the edges.
iv. Floor Area	: Approx. 1829 sft per floor for each building (as per architectural drawing).
v. No. of Stories	: Six.
vi. Construction Year	: 1990-1994.
vii. Foundation Type	: Individual column footing on stiff silt trace fine sand and clay (as per foundation drawing and geotechnical investigation report).
viii. Design Drawings	: Available.
ix. Soil Boring Report	: Two reports available for plot Nos. 8 and 10, both prepared by Bishal Business Syndicate in April, 1998.
x. Construction Materials	: Reinforced Concrete (stone chips were used for all structural members, e.g., foundation, columns, floor beams, floor slabs, stair case, etc.) of the building (as reported).
xi. Generator	: Located outside the factory building.

ACTIONS AND TIMESCALES:

- Due to concerns of inadequate factor of safety in columns, a Detailed Engineering Assessment (DEA) shall be commenced within 6 weeks from issue date of this report.
- A minimum of four numbers of 4 inch/3 inch diameter cores shall be taken to assess the concrete strength of column. Besides, scanning of all columns shall be conducted to verify the number of rebars in the columns. The results of these tests will be used in the Detailed Engineering Assessment (DEA).
- Other than the ground floor, that intensity of loading due to storage of finished goods in carton boxes, finishing material, fabrics, and accessories at any place of the building shall not exceed 60 psf (2.87 kN/m²).
- Efflorescence/damp in several small areas of plasters of the exterior walls of 1st floor, 2nd floor and 3rd floor of the building shall be repaired as soon as possible to restore the aesthetic appearance and to improve the life span of these affected non-structural members of the building.
- The cracked and partially damaged neat cement finished surfaces of the floors should be repaired as soon as possible by appropriate method to restore the performance of the topping and also to restore the normal aesthetic look.
- Expansion joint of the two buildings were sealed using improper sealing material. Although, the improper sealing of expansion joint may not affect the structural performance of the building, but this expansion gap should be filled with appropriate sealing material as soon as possible.
- No further construction is to be carried out on this building until Detailed Engineering Assessment (DEA) is completed.

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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) : None
 Mid Term (6-weeks) : A Detail Engineering Assessment (DEA) has to be completed.
 Long Term (6-months) : Necessary remediation's after completion of DEA

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>	N/A
<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>Remove all temporary obstructions from all escape routes, aisles and passageways.</p> <p>Remove all combustible materials from substation/generator room.</p> <p>Ensure minimum width of corridors, passageways and aisles.</p> <p>Ensure adequate numbers of fire drills.</p> <p>Ensure easy access to portable extinguishers and monitor and maintain the same at required interval as per guidelines.</p> <p>Provide proper directional sign and exit sign in Bangla and English as per guidelines.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Produce proper drawing and plans to create horizontal and vertical fire-rated separation for stairways of appropriate specifications, grills, storage and assembly areas, offices, work areas. Also design to ensure proper separation of high risk areas (e.g., generator, boiler, transformer and substation rooms) as per guidelines.</p> <p>Remove all collapsible gates. Produce design drawings to demonstrate how stairways are to be made of adequate dimensions and appropriate specifications and to be converted into fire-rated enclosures equipped with fire-rated side swinging doors of required dimensions opening in the direction of travel at each floor.</p> <p>Provide design to install proper detection and alarm system.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6</i></p>	<p>Install horizontal and vertical fire-rated separation for stairways of appropriate specifications, grills, storage and assembly areas, offices, work areas.</p>

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<i>months)</i>	<p>Ensure proper fire separation of high risk areas (e.g., generator, boiler, transformer and substation rooms) as per approved design.</p> <p>Install fire rated enclosure and doors of appropriate dimensions at exit to the stairs to prevent smoke and fire propagation as per approved design.</p> <p>Install proper detection and alarm system.</p> <p>Provide fire rated enclosure, install self closing fire rated door as per guidelines.</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>	N/A
<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>Provide instructions for first aid and artificial respiration from exposure to electrical shock.</p> <p>Provide cover on the cable trench and rubber mat in front of the panel.</p> <p>Ensure well-dressed cabling with lugs and remove loose cabling.</p> <p>Ensure earthing of panel body & door with fitted condition.</p> <p>Provide distribution board as per guideline and put identification mark on distribution panel.</p> <p>Remove broken/loose MCB/MCCB box/socket.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Provide separate service ducts for electrical cables.</p> <p>Provide new Emergency Lighting system.</p> <p>Provide appropriate Lightning Protection System as per guidelines.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	N/A