

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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| Name of the Factory | : That's It Knit Ltd |
| Address of the Factory | : 59 South Panishail, Zirani Bazar, Kashimpur, Gazipur Sadar, Gazipur, Bangladesh |
| Present Status of the Factory | : Under Operation |
| Structural assessment conducted by | : Alliance |
| Date of Structural Inspection | : 27 Oct 2014 |
| Fire & Electrical assessment conducted by | : Alliance |
| Date of Fire & Electrical Inspection | : 27 Oct 2014 & 02 Apr 2014 |
| BGMEA Membership No | : 3593 |

BASIC INFORMATION:

The present garment factory is comprises of a 1 Main Building. The following general information was noted:

- i. Building Usage Type : Garments Factory.
- ii. Structural System : Main Building: 5-Storied RCC Flat Plate with Drop Panel Frame System Structure. Ancillary Building: Single Storied RCC Beam Column Frame System Structure.
- iii. Floor System : RCC Flat Plate with Drop Panel Frame System Structure.
- iv. Floor Area : 146,000 SF.
- v. No. of Stories : 5-Storied RCC Building.
- vi. Construction Year : 2006
- vii. Foundation Type : Available
- viii. Design Drawings : Available.
- ix. Soil investigation Report : Available
- x. Construction Materials : RCC (stone chips).
- xi. Generator : Ground Floor

RECOMMENDATIONS FOR CORRECTIVE ACTION:

The recommendations of corrective action for Structural, Fire and Electrical Safety comprises of Short Term, Mid Term and Long Term basis are as follows:

The recommendations for Structural Safety corrective actions are:

Immediate : NA

Short Term: (3 Weeks) :

- i. Develop a program to ensure that all live loads for which a floor or roof has been designed for will not be exceeded. The designated Load Manager shall oversee this program and ensure it is enforced.
- ii. Designate a representative as the Factory Load Manager. The Factory Owner shall ensure that at least one individual, the Factory Load Manager who is located onsite full time at the factory, is trained in calculating operational load characteristics of the specific factory. The Factory Load Manager shall serve as an ongoing resource to RMG vendors and be responsible to ensure that the factory operational loads

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

do not at any time exceed the factory floor load limits as described on the Floor Load Plans.

Mid Term (6 Weeks)

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- i. Under guidance from a qualified structural engineer arrange an assessment of the in-situ concrete compressive strength to reassess column FoS. Concrete strength shall be assessed by taking at least 4 nos. of 4 inch diameter cores from the area of concern. If cores are to be taken from column, it is advisable to take it from an upper level where the stresses are low (for practical reasons 3 inch cores may be taken from columns).
- ii. Engage a qualified structural engineer to confirm and document that provisions have been made to accommodate concentrated loads. If provisions have not been made, have a qualified structural engineer develop a remediation plan.
- iii. Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.
- iv. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.
- v. In conjunction with the assessment of in-situ concrete strength indicated elsewhere via the FoS question, use ferro-scanning to confirm the as-built reinforcing configuration within all columns.
- vi. "Engage a qualified structural engineer to develop the required documents to confirm the structural integrity of the buildings. Documents must comply with Alliance Standard Part 8 Section 8.19 and 8.20
- vii. Have a qualified structural engineer complete further analysis of the structure and develop a remediation plan if required.
- viii. "Have a qualified structural engineer prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard.
- ix. Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3.
- x. "Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard. Floor load plans should be visibly posted on all levels of all buildings.
- xi. Provide signage or the appropriate markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load Plan.

Long Term (6 months)

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- i. Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.
- ii. Provide Occupancy Certificate for Review

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

The recommendations for Electrical Safety corrective actions are:

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| Immediate (3 to 6 Days) | <p>Find out the cause of overheating and take proper action.</p> <p>Ensure the generator room clean and free of dirt, debris, and improperly stored materials.</p> |
| Short Term (3 Weeks) | <p>As per BNBC section 2.11.5.4 ensure clear and permanent identification marks are painted in all distribution boards, switchboards, sub main boards and switches.</p> <p>Provide electrical insulation mats in front of distribution boards.</p> <p>Provide two separate points earthing (grounding) provided for generator.</p> |
| Mid Term (6 Weeks) | <p>Provide covers or blanks to conceal all live internal components of switchboards.</p> <p>Need to separate the multiple and looping cables either using proper size of circuit breakers or connecting separately on bus bars as per requirements.</p> <p>Provide dedicated neutral for each circuit.</p> |
| Long Term (6 Months) | <p>Complete thermo graphic scans at least on a three year cycle.</p> <p>Thermo graphic scans should be completed in accordance with the Standard for Infrared Inspection of Electrical Systems & Rotating Equipment and NFPA70B or a comparable standard.</p> <p>Have a qualified Electrical Engineer design a lightning protection system according to the BNBC requirements. Have a licensed electrician install the designed sys.</p> |

The recommendations for Fire Safety corrective actions are:

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| Immediate | N/A |
| Short Term (3 Weeks) | Remove all hasps, locks, slide bolts, or other locking devices at the noted locations. |
| Mid Term (6 Weeks) | <p>Arrange for direct connection of the system to a central station monitoring service or the Fire Service and Civil Defense as per Alliance Standard Part 5 Section 5.7.5 Monitoring. Until that time that a central station monitoring service or direct connection to the Fire Service and Civil Defense can be set up, a person shall be assigned to contact the fire department in the event of fire alarm activation. An annunciator shall be located in a constantly attended location (such as a fire control room) to alert this person</p> <p>Develop an emergency evacuation plan which includes all components required by the Alliance Standards and</p> |

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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| | <p>communicate the plan to all employees. The evacuation plan shall include provisions to assist physically disabled persons. A list of all employees with physical disabilities shall be kept by the Fire Service Director.</p> <p>Fire drills shall be conducted under the direction of a Fire Safety Director. All other requirements for fire drills shall be conducted in accordance with BNBC Part 4 Appendix A.</p> <p>Impart training in accordance with Alliance Safety Training Curriculum and keep record with proper documentation.</p> <p>Develop a testing and maintenance program that ensures the emergency power for exit signs is tested at least once per year. If battery operated signs are used, these lights are tested on a monthly basis. Functional testing of battery powered signs is provided for a minimum 90 min once per year.</p> <p>Develop a testing and maintenance program that ensures the operation of all exit signs is verified at least once per year. If battery-operated signs are used, these lights shall be tested on a monthly basis. Functional testing of battery powered signs shall be provided for a minimum 30 min once per year.</p> <p>Complete fire department pre-planning activities with the local Fire Service and Civil Defense.</p> <p>Apply to BERC for waiver certificate for 464 KW(580 KVA) for 2 nos generator capacity.</p> <p>Install signage adjacent to each stair door indicating the stair name and the floor level at the noted locations.</p> |
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Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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| <p>Long Term (6 Months)</p> | <p>Replace all non-compliant doors and frames in the means of egress with doors that are listed, approved, automatic-closing, side-swinging, fire rated doors in compatible fire rated frames with latching panic hardware.</p> <p>Provide 1.5 hr fire protective opening assemblies in 2 hr rated exit enclosure.</p> <p>Provide opening protectives at all windows and other openings on all the fire rated wall across the entire premises. If these openings are not required, close these.</p> <p>Install standpipe system at required locations. Standpipe system must comply with NFPA 14.</p> <p>Install a pump dedicated for fire fighting or fire protection following the requirements of NFPA 20 as mentioned in Alliance Standard Section 5.5.1. Fire pump installation is to be tested for final acceptance in presence of Alliance and a final inspection of the installation shall be conducted by the Alliance prior to final acceptance of the installation by the Alliance as per clause 5.5.5. Acceptance testing of the installation shall be in accordance with NFPA 20, 22, and 24 testing requirements. Documentation of all testing shall be submitted to the Alliance for review prior to final acceptance by the Alliance. This pump is to be connected to alternative power source like generator. And the generator is to be connected with ATS (auto starter).</p> <p>Provide fire-resistive rated construction barriers between floors following Section 4.4 and Table 4.4.1 of Alliance Standard or Table 3.3.1 (page 10383) and Table 4.1.1 (page 10409) from BNBC Part 4. Consult a qualified fire protection engineer to design the rated construction barriers.</p> <p>Get at least 25 percent worker trained and certified in fire fighting, first aid and rescue training by the proper authority.</p> <p>Provide a shaft enclosure of required rating by constructing the enclosure with rated material of required thickness. Protect the openings of shaft enclosure by providing rated opening protectives.</p> <p>Pull stations at egress points, smoke detectors in air handling equipment, visual and audible devices must be spaced appropriately and directly connected to the fire alarm system for automatic activation based on occupancy type in accordance with NFPA 72.</p> <p>Provide 2 hr fire-resistive rated construction barriers at exit enclosures. Fit outward opening, side-swinging, self-closing, non-lockable fire doors of 1 1/2 hr rating in all stairwell enclosures. Consult a qualified fire protection engineer to design the required rated construction barriers.</p> <p>Provide fire-resistive rated construction barriers between hazard types following Table 4.4.1 of Alliance Standard or Table 4.1.1 from BNBC Part 4. Consult a qualified fire protection engineer to design the required rated construction barrier.</p> |
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Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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| | <p>Install fire department connections where required and in compliance with the standard as per Alliance Standard Part 5 Section 5.5.4 which states that According to Alliance Standard,Part-5, Section-5.5.4, fire department (Siamese) inlet connections shall be provided to allow fire department pumper equipment to supplement the fire protection systems. Fire department outlet connections shall be provided to allow fire department pumper vehicles to draw water from ground-level or underground water storage tanks. Connections shall match the Fire Service and Civil Defense hose thread standard.</p> <p>Select fire extinguishers based on potential fire class and hazards following NFPA 10 Chapter 5.</p> <p>Fire extinguishers are to be inspected, tested, and maintained in accordance with NFPA 10 Chapter 7 as demanded in Alliance Standard Part 13 Section 13.10.3.</p> <p>Provide handrails on both side of each stairway. Provide handrail of height between the range 865 mm (34 in.) and 965 mm (38 in.).</p> <p>Install appropriate means of illumination at the noted locations. The means of egress paths shall be illuminated at all times the building is occupied. Illumination shall be a minimum of 10 lux for all corridors, exit doors, and stairways. Aisles shall be provided with a minimum 2.5 lux.</p> <p>Install Illuminated exit signs at entrances to exits and along the path of egress anywhere the continuation of egress is not obvious or there is a change in the direction of the path of travel.</p> <p>Create a Fire Safety Director position and fill the position with an individual that has had sufficient training to be able to carry the required duties. The duties of the Fire Safety Director shall include the following:</p> <ol style="list-style-type: none">(1) Establish internal and external rally points and communicate to all employees in the building.(2) Fire department pre-planning.(3) Conduct safety inspections as outlined in Alliance standard 13.9.(4) Ensure all testing of fire protection equipment is conducted in accordance with Alliance standard 13.10. <p>Establish written corporate and plant policies on housekeeping to ensure scheduled cleaning for floor, wall, ceiling, supply and return air ventilation systems. Promptly reschedule skipped cleanings. Provide a documented line of authority for authorizing a cleaning delay and rescheduling. As a general rule the maximum tolerable deposit thickness for loose fluffy lint is 13 mm (½ in.) over a maximum of 46.5 m² (500 ft²). Limit dense deposits to 6 mm (¼ in.) and oil saturated deposits to 3.2 mm (⅛ in.).</p> |
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