

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

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Name of the Factory	: <b>That's It Sports Wear Ltd</b>
Address of the Factory	: 147-148 East Narasinghpur, Ashulia, Savar, Bangladesh
Present Status of the Factory	: <b>Under Operation</b>
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 26 Feb 2014
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 26 Feb 2014 & 26 Jun 2013
BGMEA Membership No	: 4041

## **BASIC INFORMATION:**

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

- i. Building Usage Type : Garments Factory.
- ii. Structural System : Monolithic concrete flat slabs with peripheral beams.  
Concrete columns.
- iii. Floor System : Monolithic concrete flat slabs with peripheral beams.
- iv. Floor Area : 420,000 SF.
- v. No. of Stories : Single storied Prefab Building, 2 Storied Prefab Building, 3 Storied RCC Building and others are single storied building.
- vi. Construction Year : 2003-2004 (Ground to Level 3), 2004-2007 (Level 4 to Level 10)
- vii. Foundation Type : foundation system consisting of piles.
- 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.

Mid Term (6 Weeks) :

- i. Engage qualified structural engineering consulting to conduct investigation of the strength of the concrete. 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

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to take it from an upper level where the stresses are low (for practical reasons 3 inch cores may be taken from columns). In addition, ultrasonic pulse velocity test (UPV)& Rebound Hammer shall be used to have concrete strength in sufficient number of columns in the lower tiers so that a level of confidence is achieved. Develop a combined method as per ACI 228.1R-03. The calibrated results of core tests and UPV & Hammer combined method shall be used to determine a reliable value of concrete strength in columns. Maintain current use of the floors and don't change use or increase occupation, either of which could increase loading. Ensure no floor has more than 2kN/m<sup>2</sup> (42 psf) live load (Occupancy or storage) at any time.

- ii. Have a qualified structural engineer confirm that capacity to support the load is available. Load Plans complying with Alliance Standard Part 8 Section 8.20.4.3 should also be developed
- iii. Have a qualified structural engineer to prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard.
- iv. Develop engineered plans to brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard. Install anchor and braces as shown on approved plans.
- v. Replace damaged and missing floor tiles throughout the building.
- vi. Under guidance from a qualified structural engineer arrange geotechnical investigation at close vicinity of the structure and make the report available for review.
- vii. Have a qualified structural engineer to develop Floor Loading Plans as per the requirements of Part 8 Section 8.20.5.3
- viii. Have a qualified structural engineer to 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.
- ix. 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) :

- i. Provide Certificates of Occupancy for review

### The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	Find out the cause of overheating and take proper action.
Short Term (3 Weeks)	<p>Develop and implement an electrical safety program. Include key topics such as lock out tag out procedures, personal protective equipment requirements, etc. Keep records of completed training available on site.</p> <p>All boxes and enclosures (including transfer switches, generators, and power panels) for emergency circuits shall be permanently marked so they will be readily identified as a</p>

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	<p>component of an emergency circuit or system. The required marking can be by color code, the words “emergency system,” or any other method that identifies the box or enclosure as a component of the emergency system.</p>
Mid Term (6 Weeks)	<p>All Phase conductors, Neutral and Earth should follow the color code. Maintain color code (Red, Yellow, Blue) for Phase Cables, Black for Neutral cables and Green dotted yellow for Grounding cables. .Have a qualified Electrical Engineer develop an as-built single line diagram detailing key components and capacity of the electrical system.</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>
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 &amp; Rotating Equipment and NFPA70B or a comparable standard.</p>

### The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	<p>Remove all storage from egress paths and stairs. Install compliant ramps instead of thresholds. Remove sliding gates and tracks, and any other impediments or foreign objects from the stairs.</p> <p>Remove all temporary and permanent storage from the stairs. Remove electrical panels and locate them in rated electrical rooms. Remove all foreign objects and equipment from the means of egress.</p> <p>Remove all storage from under cutting tables and similar obstructions.</p>
Short Term (3 Weeks)	<p>Remove all chains, hasps, locks, sliding doors and roll up doors.</p>
Mid Term (6 Weeks)	<p>Post the occupant load for all assembly and production floor areas in a conspicuous space near the main exit or exit access doorway for the space.</p> <p>Install signage adjacent to each stair door indicating the stair name and the floor level in both English and Bengali.</p> <p>Certificates of Occupancy for each building and ancillary structures should be issued by the respective authority such as RAJUK, Local Government agency, etc.</p>

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Long Term (6 Months)	<p>Provide required fire rated construction 10 ft beyond the ends of the exterior stairs. Enclose any openings (windows, etc.) with required fire rated construction within that 10 ft wall section.</p> <p>Install listed firestop systems at every penetration through floors.</p> <p>Provide fire-resistive rated opening doors in accordance with Alliance Standard.</p> <p>Install listed firestop systems at every penetration through fire rated walls and assemblies.</p> <p>Comply with NFPA 14 standards for design and installation of Class I standpipe systems. Submit plans and calculations for review and approval before installation.</p> <p>Provide automatic sprinkler protection throughout the facility. The installation of sprinkler protection should be conducted in phases. The first phase would be to protect all storage areas. Prior to installation, the system should be properly designed by a qualified fire protection engineer and plans should be submitted to the Alliance for review.</p> <p>Install fire doors at the stairs that are listed, labeled and approved. Door hardware shall be part of the listed door system and shall include panic hardware, automatic closing with coordinators and latching.</p> <p>Remove all sliding and rolling doors and associated hardware.</p> <p>Protect all egress stairs with a shaft enclosure including 2-hour fire-rated construction. Install fire doors at the stairs that are listed, labeled and approved. Door hardware shall be part of the listed door system and shall include panic hardware, automatic closing and latching.</p> <p>Comply with NFPA 20 standards for design and installation of fire pumps. Submit plans and calculations for review and approval before installation.</p> <p>Install fire alarm system per NFPA 72. Include pull stations at all entrances to exit stairs. Install strobes and horns for complete coverage on all floors. Install smoke detectors that are part of the fire alarms system in locations required by Alliance standards.</p> <p>Create and maintain clear aisles for egress that are at least 36 inches wide.</p> <p>Install approved, labeled, listed fire doors with approved hardware. Provide re-entry to floor levels from the stairwells according to the standard.</p> <p>Provide fire-resistive rated construction barriers between hazard types in accordance with Alliance Standard Sections 3.4.2 and 4.5. Consult a qualified fire protection engineer to design the required rated construction barrier.</p> <p>Replace steep ramps with compliant ramps of 1:8 or replace</p>
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	<p>with compliant stairs. Install handrails on both sides.</p> <p>Provide handrails on both sides of each stairway. Intermediate handrails shall be provided when the stair width exceeds 2.2 m (87 in.). Mount handrails at a height between 30 in. and 44 in.</p> <p>Provide parapets or guards with a minimum height of 1067 mm (42 in.) for all occupiable roof areas in accordance with Alliance Standard Section 6.12.</p> <p>Provide continuously illuminated exit signs. Signs shall be placed at all required exits and along egress paths, especially where there is a change in direction for the path of travel.</p> <p>Install emergency lighting for all paths of egress. Illumination needs to be a minimum of 10 lux for all corridors, exit doors and stairways. Illumination for aisles needs to be a minimum of 2.5 lux.</p> <p>Develop a hot work permit program. The program must comply with the requirements of NFPA 51B.</p> <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.</p>
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