

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

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Name of the Factory	: Children Place Ltd.
Address of the Factory	: 136, Lalchand Road, Chawk Bazar, Chittagong
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	:
Date of Structural Inspection	:
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 16 October, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 16 October, 2015
BGMEA Membership No.	: 3177

### **BASIC INFORMATION:**

The factory building is a three storied RCC building with beam and column system and flat slab system. The following information was noted:

- i. Building Usage Type :
- ii. Structural System :
- iii. Floor System :
- iv. Floor Area :
- v. No. of Stories :
- vi. Construction Year :
- vii. Foundation Type :
- viii. Design Drawings :
- ix. Soil Investigation Report :
- x. Construction Materials :
- xi. Generator :

### **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:

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|------------------------|---|
| Short Term (Immediate) | : |
| Mid Term (6-weeks)     | : |
| Long Term (6-months)   | : |

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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>	<p>Fire drill shall be conducted quarterly (4 times a year) under the Fire Safety Plan. A record of such drills shall be kept in writing for at least 3 years for the inspection of fire brigade whenever called for.</p> <p>Factory need to have proper testing plan &amp; record of fire safety equipment.</p> <p>Factory needs to have sufficient number and width (0.9 m) of marked aisles at all occupied floors.</p> <p>Lights in storage area need to be installed with protective covers and conduits.</p> <p>Combustibles are to be managed with good housekeeping. Storage facilities with no air-conditioning duct shall be minimum 2.9m 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 and need to reduce or minimize fire hazard, good housekeeping within and outside shall be strictly maintained by the occupants and owner of the building.</p> <p>All required means of exit or exit access in buildings or areas requiring more than one exit shall be signposted. The signs shall be clearly visible at all times, where necessary supplemented by directional signs.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Factory needs to prepare as built drawing with floor machine layout showing means of escape with proper dimension.</p> <p>Fire manager/Director need to have safety training from proper authority &amp; worker of the factory should as far as possible be trained for use fire extinguisher. Factory needs to provide at least TWO EXITS in each floor of the factory building including basement of an industrial building to discharge safely from upper floors to outside of the building.</p> <p>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.</p> <p>Factory needs to provide handrail on both sides of all the</p>

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	<p>stairways.</p> <p>Factory needs to ensure minimum of 2.3 m<sup>2</sup> of space per occupant; or reduce the occupants from the 4th floor of building or shift occupants from 4th floor of building to another floors.</p> <p>Factory needs to be installed with adequate illuminated emergency lighting in floors, exits &amp; stairs. (Escape route).</p> <p>Public address system needs to have communicated to all floors as well as facilities to receive messages from all floors.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Fire department pre-plan needs to be developed.</p> <p>Factory needs to maintain minimum width of exit 0.9 m and height 2 m.</p> <p>Factory needs to ensure total width of stairs at all floor levels as minimum either two numbers of stairs or 8 mm per occupant, the largest one of those for type RMG industrial buildings.</p> <p>Final exit-01 needs to be fire separated by 4 hours rated construction and 2 hours fire rated opening with the bonded ware house of this factory.</p> <p>Final exit-02 needs to be fire separated by 4 hours rated construction and 2 hours fire rated opening with the generator room of this factory.</p> <p>Final exit-03 needs to be fire separated by 4 hours rated construction and 2 hours fire rated opening with the bank ATM booth, shop/market.</p> <p>Storage area need to be protected with 2 hours rated construction and 1.5 hours rated opening or doors.</p> <p>Boiler room needs to be fire separated with iron and finishing section by 4 hours rated construction and 2 hours rated opening.</p> <p>Generator room needs to be fire separated with stair and final exit-2 by 4 hours rated construction and 2 hours rated opening.</p> <p>All the exits connecting to the staircase-1, 2, 3 &amp; 4 need to be protected with fire and smoke resistant enclosures and opening (2 hours rated enclosure and 1.5 hours rated door) and provide a protected route from all through the stairway to the final exits.</p> <p>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</p>

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	<p>NTPA Guideline.</p> <p>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. Factory needs to install control panel for centralized automatic smoke detection &amp; fire alarm system according to NTPA Guideline.</p> <p>Factory needs to install proper standpipe system with having at least 100 mm diameter of riser. Install 1 riser per 1000 m<sup>2</sup> of floor area &amp; Install adequate number of hose in floor area and the minimum hose diameter is 38 mm, or 1.5" preferably fabric hose with variable nozzle to be used in both of the stairways covering the floor area.</p> <p>Factory need to ensure the minimum pressure for standpipes supplying a 50 mm or larger hose shall be at least 300 Kpa. For standpipe supplying first aid hose (38 mm nominal) may have a minimum pressure of 200 Kpa. Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection.</p> <p>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.</p> <p>Factory needs to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900×75 = 142500 liters water storage tank</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>	<p>Ensure there is no break in the neutral wire in the form of a fuse unit throughout the wiring installation.</p> <p>Find out cause (improper cable selection, improper protective device selection, improper termination, rusted connection, etc.) of insulation damage and take proper action including replacing cable or equipment where necessary.</p>
<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>Ensure all panel boards (including panel door) are earthed properly.</p> <p>Remove all unused cables from distribution boards and make sure all necessary cables are properly terminated at its point of termination using</p>

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	<p>appropriate size and type of lug.</p> <p>Provide additional insulation for wiring exposed to external heat source to protect cable/conduit.</p> <p>Ensure overcurrent protection device (circuit breaker/fuse) for each circuit.</p> <p>Ensure proper earthing connections at all electrical equipment. Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering.</p> <p>Provide provision for inspection of all earthing system and ensure inspection is being completed and documented</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Install appropriate number and type of safety signage at generator room. Also ensure graded rubber mats are provided in front of all distribution boards.</p> <p>Provide Instruction board for first aid and artificial respiration in the generator room.</p> <p>Provide two separate and distinct connections of earthing for generator.</p> <p>Ensure switchboards have a minimum clearance of 1 m (39 in) in front.</p> <p>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. Rewire to ensure each incoming supply to an MCB has a dedicated supply from bus-bar.</p> <p>Avoid the use of multiple cables on outgoing side of MCB's. Replace wooden base with metal clad construction for mounting the Circuit Breaker and MK Socket.</p> <p>Ensure all electrical cables are sized according to capacity of circuit breakers.</p> <p>Provide adequate support or mechanical guards for electrical equipment and wiring where necessary.</p> <p>Ensure cable joints are made in respect of conductivity,</p>

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	<p>insulation and mechanical strength.</p> <p>Connect all metal in the building to the building earthing system.</p> <p>Ensure Lighting fixtures are supported from the structure properly</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system.</p> <p>Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data.</p> <p>Inspect electrical switchgear and panel boards on an annual basis.</p> <p>Ensure the generator room has adequate fire separation from the production building.</p> <p>Provide adequate means of ventilation for the generator room based on the installed equipment considering fire barriers.</p> <p>Ensure appropriate generator room size in order to properly access the generator to perform routine maintenance activities.</p> <p>Ensure panel boards have no opening and all live internal components are concealed properly.</p> <p>Provide dedicated &amp; adequate size of neutral with proper identification for each circuit.</p> <p>Ensure each distribution board is provided with a circuit list and means of identification is provided as per list.</p> <p>Run cable in a designated route with mechanical protection and fire sealing of floor slab and wall penetrations.</p> <p>Provide proper cable terminator/connector for stranded conductors at its point of termination.</p> <p>Install separate distribution boards for lighting and power circuits.</p> <p>Install lightning protection system on the building.</p>