

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Standard Group Ltd. (U-2).
Address of the Factory	: Master bari, Sreepur, Gazipur.
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 27 July, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 27 July, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 27 July, 2015
BGMEA Membership No.	: 6031

BASIC INFORMATION:

The factory building is a six storied RCC beam column frame structure. The following information was noted:

i. Building Usage Type	: Garment Factory.
ii. Structural System	: RCC beam column system.
iii. Floor System	: RCC Beam slab.
iv. Floor Area	: Floor area is 160000 sft for main factory building
v. No. of Stories	: 6 - Storied
vi. Construction Year	: 2013-2014
vii. Foundation Type	: Isolated column footing
viii. Design Drawings	: Available document: Approval plan, structural drawing, Architectural drawing, soil test report. Not available: Floor load plan, material test report has not been found.
ix. Soil Investigation Report	: Available
x. Construction Materials	: Stone aggregate.
xi. Generator	: Outside the factory (separate structure)..

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)	: N/A
Mid Term (6-weeks)	: N/A
Long Term (6-months)	: 1. Engineer to inspect whether waterproofing material is applied or where it can be maintained. For both durability and serviceability, waterproofing on the roof slab is recommended. Moreover, the roof slab drainage system and leakage of pipes should be investigated.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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>Factory needs to conduct fire drill quarterly (4 times a year) under the fire safety plan and needs to kept the written record of such drills for at least 3 years for the inspection of fire brigade whenever called for.</p> <p>Factory needs to have marked aisles in all working floor according to 0.9m for one side seat and 1.0m for both side seat.</p> <p>All the firefighting equipment need to be tested with proper documents.</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>Propagation of fire, smoke, gas or fume through the opening of fire resistive floors and walls need to be restricted by sealing such opening with an approved material which needs to have a minimum 2 hours fire resistance rating of the walls.</p> <p>Potable fire extinguisher needs to be of an approved type and installed as per manufacturer's instruction and placed near the path of exit travel where easily accessible. Portable fire extinguisher needs to be installed in private and public buildings as per specification and requirements of BDS 825:1991 (BDS 825:91).</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>Factory need to fire license with area mention of full factory Fire manager/Director need to have safety training from proper authority & worker of the factory should as far as possible be trained for use fire extinguisher.</p> <p>All the exit doors need to be install 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>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>stairways.</p> <p>Factory needs to be installed with adequate illuminated emergency lighting in floors, exits & stairs.(Escape route). Emergency back-up power needs to be connected for critical fire safety system and not less than 30 minutes in case of failure of power supply.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Factory needs to have a proper pre-plan for fire department. Stairs need to be protected with 2 hour fire rated and smoke resistant lobby and enclosure, also having 1.5 hour rated opening or door and provide a protected route from all though the stairway to the final exits.</p> <p>Factory needs to protect the lift with 2 hours rated enclosure & 1hour rated auto closing fire door.</p> <p>Factory need to install centralized and automatic fire detection & alarm system on all occupied floors, including other tenanted floors of the building as per 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.</p> <p>Factory needs to install control panel for centralized automatic smoke detection & fire alarm system according to NTPA Guideline.</p> <p>Factory need to install 100 mm diameter of standpipe system in the building.</p> <p>Install 1 riser per 1000 m2 of floor area & 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 50mm or larger hose shall be at least 300 kPa and standpipe supplying first aid hose (38mm nominal) may have a minimum pressure of 200 kPa.</p> <p>Factory needs to be installed with Siamese connection for to the standpipe system located outside the buildingand accessible to the fire department connection.</p> <p>Need to be install Standby generator with required backup power Factory needs to have dedicated fire pump with backup power system & sufficient capacity for achieve required</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>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 1900ltr x 75min=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>N/A</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>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 and fire-fighting equipment at substation and 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 substation room.</p> <p>Connect all metal in the building to the building earthing system.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Ensure the substation room has adequate fire separation from the production area.</p> <p>Ensure underground cables for electrical distribution in the premises / garden / compound of the building are encased in GI or PVC pipes and laid in earth trenches of sufficient depth as per mentioned standard.</p> <p>Ensure all high tension cables are laid following standard cable laying techniques.</p> <p>Provide adequate covers on cable trenches.</p> <p>Install lightning protection system on the building.</p>