

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Dishang Sweater Limited.
Address of the Factory	: Hatimara, Kashimpr, Joydebpur Gazipur Dhaka Bangladesh.
Present Status of the Factory	: Under Operation.
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: Mar 12, 2014.
Fire & Electrical assessment conducted by:	Alliance
Date of Fire & Electrical Inspection	: Mar 12 2014

BASIC INFORMATION:

The present garment factory is a single storied building RC column supported M.S truss. The following general information was noted:

i.	Building Usage Type	: Garments Factory
ii.	Structural System	: In factory building - RC column supported M.S truss. In office building - RC flat plate slab
iii.	Floor System	: Factory building is a one storied sloped metallic roof structure. Office building: Flat slab
iv.	Floor Area	: Factory Building = 39,000 Sft; Office building = 2500 Sft
v.	No. of Stories	: Factory Building = 1 storied; Office building = 2 storied
vi.	Construction Year	: 2010.
vii.	Foundation Type	: Isolated Spread Footing (Individual)
viii.	Design Drawings	: Available
ix.	Soil investigation Report	: Available
x.	Construction Materials	: Brick aggregate with 40 grade rebar
xi.	Generator	: Ground floor, inside the building

RECOMMENDATIONS FOR CORRECTIVE ACTION:

The recommendations of corrective action for both Structural, Fire and Electrical Safety comprises in Short Term, Mid Term and Long Term basis.

The recommendations for Structural Safety corrective actions are:

Immediate (3 to 6 Days) : Removing of standing water from the roof top

Short term (3 Weeks) :

Painting the Structural steel trusses shall be after removal of corrosion.

Mid Term (6 Weeks):

- i. Floor load Plans developing, Calculation of FoS of Internal column and Edge column by qualified structural engineer.
- ii. Providing of signage or the markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load plan.
- iii. Engaging a qualified structural engineer to confirm satisfactory structural performance of the building.
- iv. Floor load Plans developing,
- v. Bracing in water tanks.

Long Term (6 Months) : NA

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The recommendations for Fire Safety corrective actions:

Immediate (3 to 6 Days)	Means of egress must be full free and clear from impediments, obstructions, and stored materials immediately.
Short Term (3 Weeks)	Remove all hasps, locks, slide bolts, or other locking devices at the noted locations.
Mid Term (6 Weeks)	<p>Occupancy certificate (mention occupancy type) for each building.</p> <p>Make aisles marking with proper direction and provide minimum clear width of 36 inch. Keep aisles free of obstruction.</p> <p>Training programs need to be implemented and documented in accordance with the Alliance Safety Training Curriculum.</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 exits 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 90 min once per year.</p> <p>Post occupant loads for every assembly and production floor in a conspicuous space near the main exit or exit access doorway for the space.</p> <p>Stair designation signs are provided at each floor entrance from the stair to the floor in English and Bengali. Signs indicate the name of the stair and the floor level. Signs are posted adjacent to the door.</p> <p>Complete and document fire department pre-planning activities with the local Fire Service and Civil Defense.</p>
Long Term (6 Months)	<p>Provide fire-resistive rated construction barriers at exit enclosures. Exits connecting three or fewer stories shall be enclosed with a minimum 1-hr fire resistance rating.</p> <p>Install Pull stations at egress points, smoke detectors in air handling equipment, visual and audible devices spaced appropriately based on occupancy type in the factory main building and ancillary shed building. Reference NFPA 72.</p> <p>Install a standpipe system at required locations designed by</p>

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	<p>a qualified fire protection engineer.</p> <p>Install fire extinguishers for the related areas. Also install fire extinguishers at appropriate locations and heights based on hazard type per BNBC Part 4 and NFPA 10. Extinguishers shall be placed so that maximum travel distance to the nearest unit shall not exceed 30 m (100 ft.).</p> <p>Set up a Fire alarm and detection system central station monitoring service or direct connection to the Fire Service and Civil Defense. Assign a person at the facility to contact the fire department in the event of fire alarm activation.</p> <p>Provide side-hinged swinging type doors for all means of egress.</p> <p>Provide fire-resistive rated construction barriers between hazard types. Minimum 1-hr fire-rated wall and door for boiler room and minimum 1-hr fire rated door for fabrics store room.</p> <p>Establish an inspection, testing, and maintenance program for all fire extinguishers in accordance with NFPA 10.</p> <p>Install appropriate means of illumination at the noted locations. The source of illumination shall provide not less than 50 lux at the illuminated surface with a contrast of not less than 0.5 lux. Approved self-luminous signs, which provide evenly illuminated letters having a minimum luminance of 0.2 cd/m², may also be used.</p> <p>Provide an emergency power source for illuminated exit signs, either by battery back-up or by connecting to the emergency power system.</p> <p>Install continuous illuminated exit sign at all exit points. The source of illumination shall provide not less than 50 lux at the illuminated surface with a contrast of not less than 0.5 lux. Approved self-luminous signs which provide evenly illuminated letters having a minimum luminance of 0.2 cd/sq.-m may also be used.</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 out the required duties.</p> <p>Providing handrails on the other side of each stairway.</p> <p>Separation of boiler rooms from the production floors with properly rated fire doors & protection of penetrations</p> <p>Need required number of people (trained and certified) in firefighting, first aid, and rescue training by the appropriate authority accordance with the Alliance Safety Training Curriculum.</p> <p>Installation of an electrically driven fire pump to replace the</p>
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	<p>non-compliant fire pump</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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The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	<p>Need to determine the cause of overheating, overloading, or signs of burning and take proper action.</p> <p>Switchboards and/or distribution boards need to be kept clean and free from dust and debris.</p>
Short Term (3 Weeks)	<p>Provide electrical insulation mats in front of all switchboards and distribution boards.</p> <p>Instruction board should be displayed for restoration of persons suffering from electrical shock and “artificial respiration” in case of electric shock at any place in the factory.</p> <p>Document on inspection, maintenance, and testing procedures of the generator need to be documented.</p>
Mid Term (6 Weeks)	<p>Phase separator need to provide for the terminals of circuit breakers to prevent arcing and short circuit between phases. All Phase conductors, Neutral and Earth should follow the color code.</p> <p>Ensure proper grounding (earthing) connection for all switchboards and/or distribution boards.</p> <p>A qualified electrical engineer develops as-built electrical drawings providing detailing key components of the electrical system.</p>
Long Term (6 Months)	<p>Electrical wiring/cables sized should be Standard according to capacity of circuit breakers (No higher rated circuit breakers with lower rated wiring).</p> <p>Periodical insulation resistance test (IR test) shall have to be carried out for all electrical equipment's with Meggar 0.5 KV or 1 KV (according to the voltage rating of equipment).</p>