

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Tarasima Apparels Ltd
Address of the Factory	: Vill: Golora, Post: Kaitta,P.S. Sauria, Manikgonj.
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 14-Sep-2013
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 13-June-13 & 31-May-14
BGMEA Membership No	: 4306

BASIC INFORMATION:

There is one building in the factory premises. The following general information was noted:

- i. Building Usage Type : Garments Factory.
- ii. Structural System : RCC moment resisting frame structure .
- iii. Floor System : Beam- slab.
- iv. Floor Area : 457,100 sft
- v. No. of Stories : Five storied
- vi. Construction Year : 2007
- vii. Foundation Type : Unknown
- viii. Design Drawings : Available.
- ix. Soil investigation Report : Available
- x. Construction Materials : RCC brick chips.
- xi. Generator : Unknown

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. 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 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. Have a qualified structural engineer provide further analysis of the identified cracks to determine the appropriate course of corrective action.
- ii. Complete further testing on areas of deterioration and have a qualified structural engineer develop a remediation plan.
- iii. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.
- iv. Engage a qualified structural engineer to develop the required documents to confirm the structural integrity of the buildings. Documents must comply with the Alliance Standard Part 8 Sections 8.19 and 8.20
- v. Have a qualified structural engineer complete further analysis of the structure and develop a remediation plan if required.
- vi. The tension-only rod bracing in Building B should be repaired and/or replaced as required. Conditions where the rods are sagging and/or lacking tautness shall be corrected such that the braces comply with the original construction drawings.
- vii. Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3.
- viii. Have a qualified structural engineer provide further testing and analysis of cracking in columns and provide a remediation plan to correct noted issues.
- 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 occupancy certificate for review.
- ii. Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.

The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	Remove all dirt, debris and improperly stored materials from the substation room.
Short Term (3 Weeks)	<p>Ensure light fixtures without protective covers are not installed in storage areas or in any area where the Inspector of the Factories Rules (1.5.3.5) Part 53 disallows these fixtures.</p> <p>Develop and implement an electrical safety program. Include key topics such as lock out tag out procedures, personal protective equipment requirements, etc. Reference NFPA 70e for example program requirements.</p>
Mid Term (6 Weeks)	<p>Have a qualified electrical engineer develop an electrical layout diagram detailing key components with indicating exact location of electrical panel boards.</p> <p>Ensure overcurrent protection device (circuit breaker) for each and every loads.</p> <p>Consult with a qualified electrical engineer to ensure electrical cables are sized according to capacity of circuit breakers.</p>

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	<p>Connect all metal in the building to the building earthing system such as metal rebar in concrete, metal frame of building, or metal water pipe.</p> <p>Ensure Fuel storage tanks located within the building have a maximum combined capacity of 2500L (660 gal) or less.</p> <p>Ensure proper identification of emergency power switchboards, distribution boards, and circuits.</p> <p>Provide clearance of at least 1 m (39 in) in front of distribution boards.</p> <p>Remove bunching of cables at circuit breakers within distribution boards.</p> <p>Provide dedicated neutral for each circuit.</p> <p>Ensure the means of identification is obtained by separate color coding, marking tape, tagging, or other approved means.</p>
Long Term (6 Months)	<p>Consult with an expert electrical engineer to prepare drawing for lightning protection including risk index and make sure your system is secured against lightning.</p> <p>Develop an Insulation Resistance Measurement Program that ensures deterioration of insulation resistance will be identified quickly. Testing should be in compliance with International Electrical Testing Association (NETA). All transformers, switchgears etc. shall be subject to an insulation resistance measurement test to ground after installation but before any wiring is connected. Insulation tests shall be made between open contacts of circuit breakers, switches etc. and between each phase and earth.</p> <p>Inspect electrical switchgear and panel boards on an annual basis to ensure that the equipment is in good working condition.</p> <p>Complete thermographic scans at least on a three year cycle. Thermographic scans should be completed in accordance with the Standard for Infrared Inspection of Electrical Systems & Rotating Equipment and NFPA70B or a comparable standard.</p>

The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	Remove all combustibles and other storage from under the cutting tables and all similar obstructions.
Short Term (3 Weeks)	Remove all existing gates and doors in the egress stairs. Install automatic-closing, side-swinging, fire rated doors in fire rated frames with latching panic hardware. These doors should be a minimum of 39 inches wide with a total opening of at least half the width of the stair. Doors should swing in the direction of egress from the floors into the stair. Remove all existing gates and doors in Ground floor exits. Install side-swinging doors with panic hardware. Doors should swing in the direction of egress out of the building.
Mid Term (6 Weeks)	Arrange for direct connection of the fire alarm and detection 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

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	<p>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>Install occupant load signs at every floor landing in each stair.</p> <p>Install stair designation signs at all stair landings.</p>
<p>Long Term (6 Months)</p>	<p>Remove all existing gates and doors in the egress stairs. Install automatic-closing, side-swinging, fire rated doors in fire rated frames with latching panic hardware. These doors should be a minimum of 39 inches wide with a total opening of at least half the width of the stair. Doors should swing in the direction of egress from the floors into the stair.</p> <p>Remove all existing gates and doors in Ground floor exits. Install side-swinging doors with panic hardware. Doors should swing in the direction of egress out of the building.</p> <p>Protect all required egress stairs with a shaft enclosure including 2-hour fire-rated construction. Install fire rated doors in doorways through these walls. Install listed, labeled, approved, automatic-closing, side-swinging, fire rated doors in fire rated frames with latching panic hardware. These doors should be a minimum of 39 inches wide with a total opening of at least half the width of the stair. Doors should swing in the direction of egress from the floors into the stair.</p> <p>Cutting and Finishing Buildings - Separate the mezzanine from the ground level with 2-hour fire-rated construction.</p> <p>Remove the existing unlisted fire alarm systems. Install listed fire alarm systems per NFPA 72. Install pull stations at each entrance to an exit. Install notification horns and strobes so that all occupants are notified in an alarm. Replace single station smoke alarms at specific hazards with smoke detectors connected to the fire alarm system. Submit plans and calculations for approval.</p> <p>Where stairs discharge into a building, install a rated exit passageway from the bottom of the stair to an exterior discharge.</p> <p>Egress stairs shall discharge to the exterior. Where stairs end inside the building, construct a 2-hour fire-resistance rated corridor from the bottom of the stair to an exterior discharge door. Protect all required egress stairs with a shaft enclosure including 2-hour fire-rated construction. Install fire rated doors in doorways through these walls.</p> <p>Install additional exits and egress stairs to increase egress capacity to 700 persons per floor.</p> <p>Fill windows that are within 10 feet of exterior stairs with 2-hour fire-rated construction.</p> <p>Where exit doors lead directly onto discharge stairs, install a landing immediately outside the doors.</p> <p>Install listed firestop systems at every penetration through floors and fire rated walls. Protect all required egress stairs with a shaft enclosure including 2-hour fire-rated construction. Install fire rated</p>

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	<p>doors in doorways through these walls. Cutting and Finishing Buildings - Separate the mezzanine from the ground level with 2-hour fire-rated floor construction.</p> <p>Install a Class III standpipe system in the Sewing Building with fire department valves at the floor landings in each stair.</p> <p>Design and install a fire pump system that delivers the most demanding requirement of the standpipe systems.</p> <p>Separate storage areas and hazardous areas including elevator machine rooms from the rest of the building with 1-hour fire-rated construction. Install fire rated doors in doorways through these walls. Separate adjacent buildings with exposure protection. Install exposure protection sprinkler systems to protect against exposure fire from adjacent buildings. Alternately, fill all exposed openings with 2-hour fire-rated construction, or install fire shutters which automatically close when the fire alarm system is activated.</p> <p>Install handrails on both sides of all stairs.</p> <p>Rework stairs so that tread heights are uniform.</p> <p>Create a smooth walking surface according to the standard. Remove tripping hazards including thresholds. Install 1:12 ramps instead of thresholds.</p> <p>Provide continuously illuminated exit signs at all required exits and along egress paths, especially where path has a change of direction.</p> <p>Provide illumination of egress paths at all times the building is occupied. 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>Remove all excess storage from office and production areas.</p>
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