

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: UNIMAS SPORTSWEAR, LTD.
Address of the Factory	: Bagbari, Kashimpur, Gazipur Sadar Gazipur Dhaka Bangladesh
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 16-Aug-2015
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 10-Sep-2015 & 16-Aug-2015

BASIC INFORMATION:

There are two main buildings. The following general information was noted:

- i. Building Usage Type : Garments Factory
- ii. Structural System : Reinforced concrete moment resisting frames with slabs between beams and beams between columns.
- iii. Floor System : RCC
- iv. Floor Area : 253,138 sft
- v. No. of Stories : Two 8 storied RCC
- vi. Construction Year : 2010-2012 & 2013-2014
- vii. Foundation Type : Isolated Footing Foundation for both main buildings
- viii. Design Drawings : Available
- ix. Soil investigation Report : Available
- x. Construction Materials : RCC
- 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 over see this program and ensure it is enforced."
- ii. 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. Engage a qualified structural engineer to prepare structural documents to confirm the structural integrity of the buildings. Documents must comply with Alliance Standard Part 8 Section 8.19 and 8.2.
- ii. Have a qualified structural engineer provide further testing and analysis of cracking in walls.
- iii. Engage a qualified structural engineer to confirm and document that provisions have been made to accommodate concentrated loads. If provisions have not been made, have a qualified structural engineer develop a remediation plan.
- iv. Properly brace and anchor all the racks to resist earthquake forces to comply with the BNBC and Alliance Standard.
- v. Have a qualified structural engineer develop Floor Loading Plans for all the three buildings as per the requirements of Part 8 Section 8.20.5.3
- vi. Have a qualified structural engineer prepare load plans for all the three buildings including the information required in Section 8.20 of the Alliance Standard.
- vii. Provide signage or the appropriate markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load Plan.
- viii. Under guidance from a qualified structural engineer, address all areas of needed maintenance.

Long Term (6 Months) :

- i. Factories should apply for Certificate of Occupancy to proper authority.
- ii. Provide a protective coating to MCAC exposed to rainfall or other sources of water. Have protective coating approved by the Alliance or a qualified structural engineer. Or provide 2% slope on the expanse surface to prevent accumulation of water.

The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	<p>Find out the cause of overheating and consider replacement of conductors & equipment.</p> <p>Generator room need to clean and free of dirt, debris, and improperly stored materials.</p>
Short Term (3 Weeks)	<p>Establish a periodic inspection program to ensure the electrical systems are free from damage, debris, dirt, lint, etc. Maintain records concerning inspections and follow up actions.</p> <p>Light fixtures without protective covers (otherwise known as naked lights) shall not be allowed in storage areas or in any area where the Inspector of the Factories Rules (1.6.3.7) Part 53 disallows these fixtures. Install signs posted in Bengali and English, indicating this prohibition at all entrances to these areas.</p> <p>Review previous assessment report and complete identified action items beginning with highest priority items.</p>

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Mid Term (6 Weeks)	<p>Provide means of ventilation for the substation room. Consult a qualified electrical engineer to determine the required ventilation rates based on the installed equipment.</p> <p>Clear & Permanent identification marks should be printed in all DBs, Switchboards, Sub-distribution boards & switches as necessary. BNBC- Part 8 section 2.11.5.4.</p> <p>All cable trenches should be covered by noncombustible materials.</p> <p>Provide electrical insulation mats in front of distribution boards, substation room etc.</p>
Long Term (6 Months)	<p>Bond the ground terminals of the lightning protection system to the building or structure grounding. Alliance standard art. 10.11.4.2.</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>

The recommendations for Fire Safety corrective actions are:

Immediate	NA
Short Term (3 Weeks)	
Mid Term (6 Weeks)	<p>Ensure proper certification for the fire doors and obtain approval from the Alliance. Replace any non-compliant doors and frames in the means of egress with side-swinging doors. Replacement doors shall be a minimum width of 0.8 m (32 in), and are listed, approved, self-closing, fire rated door assemblies (door and frame) with latching panic hardware.</p> <p>Provide fire-resistive rated construction barriers and associated opening protection for exit enclosures in accordance with Alliance Standard Sections 4.5 and 4.6. Consult a qualified fire protection engineer to design the required rated construction barrier and opening protection.</p> <p>Provide fire-resistive rated construction barriers between floors in accordance with Alliance Standard Section 4.5. Consult a qualified fire protection engineer to design the rated construction barriers</p> <p>Develop a testing and maintenance program that ensures the emergency power for all egress lighting is verified at least once per year. If battery-operated lights are used, these lights shall be tested on a monthly basis. Functional testing of battery powered lights shall be provided for a minimum 90 min once per year.</p> <p>Provide continuously illuminated exit signs per Alliance Standard Section 6.11. 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>Develop a testing and maintenance program that ensures the</p>

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	<p>emergency power for exit signs is verified at least once per year. If battery-operated signs are used, these signs 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>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>Complete Fire Department pre-planning activities with the local Fire Service and Civil Defence in accordance with Alliance Standard Section 13.1.1(2).</p> <p>Develop a hot work permit program. The program must comply with the requirements of NFPA 51B</p>
Long Term (6 Months)	<p>Adjust door location, and associated wall ratings, back from the stair enclosure (back onto the occupied floor) so that the door does not swing out over the stairs.</p> <p>Provide training and certification for the required number of people (25% of total workers) in fire fighting, first aid, and rescue training by an appropriate authority in accordance with the Alliance Safety Training Curriculum.</p> <p>Provide fire-resistive rated penetration protection for rated walls and assemblies in accordance with Alliance Standard Section 4.7. Consult a qualified fire protection engineer to design the required penetration systems.</p> <p>Provide storage racks and shelves compliant based on class of commodity storage. Provide shelves in accordance with Alliance Standard Section 5.3.6.2. If needed, provide sprinkler protection in accordance with Alliance Standards and NFPA 13.</p> <p>Verify that the dedicated fire pump for the facility is installed in accordance with NFPA 20 and capable of supplying the demands of the connected fire protection systems along with a stored source of water sufficient to meet the demands in accordance with NFPA 22. Provide design documentation and hydraulic calculations in accordance with Alliance Standard Section 5.5.1.1. All documents shall be submitted for Alliance review in accordance with Section 5.5.1.2 prior to any modifications.</p> <p>Install standpipe system at required locations in accordance with Alliance Standard Section 5.4 and NPFA 14. Standpipe system must comply with NFPA 14. The hydraulic calculations should be submitted and reviewed by Alliance prior to start of work. All standpipe system installation activities shall be submitted for reviewed by the Alliance prior to commencement of installation in accordance with Section 5.4.3.2.</p> <p>Have the system inspected and/or repaired by a qualified fire alarm installation company.</p> <p>Install initiating devices for electrical supervision of all valves controlling fire protection systems (sprinklers, fire pumps, water supplies, etc.). Connect devices to the automatic fire alarm and detection system for the facility. All fire alarm modifications shall be submitted for review by the Alliance prior to commencement of installation.</p>

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	<p>Provide fire-resistive rated construction barriers for elevator shafts in accordance with Alliance Standard Section 4.4. Provide associated opening protection in accordance with Alliance Standard Section 4.6. Consult a qualified fire protection engineer to design the required rated construction barrier and associated opening protection.</p> <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 in accordance with Alliance Standard Section 6.4.4.</p> <p>Provide electrically supervised devices on the valves controlling the automatic sprinkler systems. Devices are to be supervised by a listed fire alarm system control unit. Install initiating devices as required by the Alliance Standard and NFPA 72 for electrical supervision of all valves controlling fire protection systems (sprinklers, fire pumps, water supplies, etc.). Connect devices to an automatic fire alarm and detection system for the facility. All fire alarm installations or modifications shall be submitted for review by the Alliance prior to commencement of installation.</p> <p>Provide proper clearance between storage and sprinkler deflectors in accordance with Alliance Standard Section 5.3.6.1.</p> <p>Provide fire-resistive rated construction barriers (with associated opening protection) between hazard types in accordance with Alliance Standard Sections 3.4 and 4.5. Consult a qualified fire protection engineer to design the required rated construction barrier.</p> <p>Implement and make a document for the Training programs in accordance with the Alliance Safety Training Curriculum.</p> <p>Provide re-entry to floor levels from the stairwells in accordance with Alliance Standard Section 6.8.3.</p> <p>Provide handrails on both sides of each stairway. Mount new handrail at a height consistent with existing height (between 30 in. and 44 in).</p> <p>Provide handrails on both sides of the ramp</p> <p>Clearly identify and label the fire department connections. Ensure that the connections match the Fire Service and Civil Defence hose thread standard.</p> <p>Once Class I system is installed, establish an inspection, testing, and maintenance program for the standpipe system. Program must comply with NFPA 25. Any newly installed standpipe system needs to be evaluated for compliance with the design pressure and flow demands of NFPA 14 or BNBC Section 5.4.3.</p> <p>Establish an inspection, testing, and maintenance program for the fire pump. Program must comply with NFPA 25.</p> <p>Install an approved audible device connected to the automatic sprinkler system for each building. Activation of the water flow shall activate the fire alarm system.</p> <p>Provide continuously illuminated exit signs at all required exits and along egress paths, especially where path has a change of direction. Exit signs may be illuminated either by lamps exterior to the sign or contained within the sign. The source of illumination shall provide</p>
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	<p>not less than 50 lux at the illuminated surface with a contrast of not less than 0.5. Approved self-luminous signs which provide evenly illuminated letters having a minimum luminance of 0.2 cd/m² may also be used.</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> <p>Apply to appropriate authority in an expeditious manner for issuance of the Certificates of Occupancy for each building and ancillary structure according to building use.</p> <p>Install signage at required locations and on required equipment. Signage must comply with NFPA 14.</p> <p>Smoking is prohibited in garment factory buildings or similar uses. Post "No Smoking" signs in English and Bengali at all building entrances. If the Owner designates a smoking area outside the building, information on the location of these areas shall be posted on the "No Smoking" signs.</p> <p>Establish an inspection, maintenance and testing program for the sprinkler system. Program needs to comply with the requirements of NFPA 25.</p> <p>Provide identification signs with permanently marked water-proof metal or rigid plastic for the required components of sprinkler system as per NFPA 13.</p>
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