Name of the Factory	: **AMANTEX LIMITED**
Address of the Factory	: Boiragirchala, Sreepur, Gazipur, Bangladesh
Present Status of the Factory	: **Under Operation**
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 19-Apr-2014
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 16-Apr-2014
BGMEA Membership no	: 4808
BKMEA Membership no	: 1631

BASIC INFORMATION:

There are 02 main buildings. The following general information was noted:

i.	Building Usage Type	: Garments Factory
ii.	Structural System	: RC frame structure
iii.	Floor System	: Beam slab
iv.	Floor Area	: 308,865 Sft & 70,994 Sft
v.	No. of Stories	: 06 Storied RCC + Roof Top Shed & 08 Storied RCC
vi.	Construction Year	: 2009
vii.	Foundation Type	: RC foundation
viii.	Design Drawings	: Available
ix.	Soil investigation Report	: Available
x.	Construction Materials	: RC
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) :

i. Engage a qualified structural engineer to develop credible 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 cracks.
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.

The recommendations for Electrical Safety corrective actions are*:*

Immediate (3 to 6 Days)	Find out the cause of overheating and burning and take proper action including replacing cable or equipment where necessary.

Short Term (3 Weeks)	Develop and implement an electrical safety program. Include key topes such as lock out tag out procedures, personal protective equipment requirements, etc. Reference NFPA 70e for example program requirements. 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. 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.
Mid Term (6 Weeks)	Provide means of ventilation for the substation room. Consult a qualified electrical engineer to determine the required ventilation rates based on the installed equipment. 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. Provide electrical insulation mats in front of distribution boards, substation room etc.
Long Term (6 Months)	Bond the ground terminals of the lightning protection system to the building or structure grounding. Alliance standard art. 10.11.4.2. 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.

The recommendations for Fire Safety corrective actions are:

Immediate	NA
Short Term (3 Weeks)	Develop an emergency evacuation plan which includes all components required by the Alliance Standards and communicate the plan to all employees.
Mid Term (6 Weeks)	Post the occupant load for every assembly and production floor in a facility in a conspicuous space near the main exit or exit access doorway for the space. 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 must be tested on a monthly basis. Functional testing of battery powered signs must be conducted for a minimum 90 min

	once per year. Develop a testing and maintenance program that ensures the operation of all exit 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 minutes once per year. Store chemicals and all flammable materials in approved enclosure in a safe manner. An appropriate standpipe system needs to be installed at required locations designed by a qualified fire protection engineer. The system is to be compliant with the requirements of NFPA 14. Also install required identification signs at the noted locations. Signage must comply with NFPA 14 Chapter 6. Complete Fire Department pre-planning activities with the local Fire Service and Civil Defense. Install signage adjacent to each stair door indicating the stair name and the floor level at the noted locations in accordance with Section 6.9.3.1.
Long Term (6 Months)	Provide 1.5 hour fire-rated opening assemblies in 2 hour fire-rated exit enclosure. Increase door width to 0.8m or greater by demolishing wall adjacent to the door. If this door is not required to satisfy the requirement of total exit width (based on occupant load) and maximum travel distance, eliminate this door. Provide side-swinging, self-closing and latching non-lockable certified 1.5 hour fire-rated doors that open in the direction of egress in 2 hour rated exit enclosures. Exits shall be enclosed with the same fire-resistance rating as the floor penetrated but will not need to exceed 2 hour. Replace all collapsible, sliding gates and shutters in means of egresses with side-hinged swinging, self-latching doors of proper width and rating to comply with Section-6.8.1. Provide 2 hr fire-resistive rated construction barriers at exit enclosures. Fit outward opening, side-swinging, self-closing and latching, non-lockable certified fire doors of 1.5 hr rating in all stairwell enclosures. Consult a qualified fire protection engineer to design the required rated construction barriers. Install a pump dedicated for firefighting or fire protection. Should follow the requirements of NFPA 20. Pump design should also account for 5th floor which is under construction. Fire pump installation is to be tested for final acceptance in presence of Alliance and a final inspection of the installation shall be conducted by the Alliance prior to final acceptance of the installation. Acceptance testing of the installation shall be in accordance with NFPA 20, 22, and 24 testing requirements. Documentation of all testing shall be submitted to the Alliance for review prior to final acceptance. This pump is to be connected to an alternative power source like a generator and the generator is to be

	connected with ATS (auto starter). Provide fire-resistive rated construction barriers between hazard types following Table 4.4.1 of Alliance Standard or Table 4.1.1 from BNBC Part 4. Consult a qualified fire protection engineer to design the required rated construction barrier. Install a standpipe system at required locations which are to be designed by a qualified fire protection engineer. The system must be compliant with the requirements of NFPA 14. The hydraulic calculations should be reviewed by Alliance and review to be completed prior to start of work. All standpipe system installations shall be submitted for review by the Alliance for review prior to commencement of installation according to 5.4.3.2. Testing of the installation shall be conducted in accordance with NFPA 14 acceptance testing requirements. Documentation of all testing shall be submitted for review by the Alliance. Final inspection and testing of the installation shall be witnessed by the Alliance as per clause 5.4.3.3. Every door in a stair enclosure serving more than 5 stories shall be provided with re-entry unless it meets the following requirements. Stair doors may be permitted to be locked from the stair (ingress) side that prevents re-entry to the floor provided at least two floors allowing re-entry to access another exit are provided, there are not more than 4 stories intervening between re-entry floors, re-entry is allowed on the top or next to top level, reentry doors are identified as such on the stair side, and locked doors shall be identified as to the nearest re-entry floors. When the discharge floor is determined to be a required re-entry floor using the above requirements, re-entry does not have to be provided back into the building on this level. Fire extinguishers are to be inspected, tested, and maintained in accordance with NFPA 10 Chapter 7. Implement training program with proper documentation in accordance with the Alliance Safety Training Curriculum on fire safety. Arrange for direct connection of the fire alarm system to a central monitoring station or Fire Service and Civil Defense. Until direct monitoring can be set up, a 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. An appropriate standpipe system needs to be designed by a qualified fire protection engineer and installed at required locations. The system must comply with the requirements of NFPA 14. An appropriate standpipe system needs to be installed at the required locations designed by a qualified fire protection engineer. The system is to be compliant with the requirements of NFPA 14. Also, install required identification signs at the noted locations. Signage must

	comply with NFPA 14 Chapter 6. Develop a hot-work permit program that complies with Section-9.1.7 and NFPA 51B. In general, this program should address the process of request and approval of authorities, necessary checks prior to approval, standby fire watch and firefighting equipment, sounding of alarm procedure, duration and expiry of permit, and re-approval procedures, etc. Install a pump dedicated for fire fighting or fire protection following the requirements of NFPA 20. Also Establish an inspection, maintenance, and testing program for the fire pump. Program must comply with NFPA 25.