Name of the Factory	: **Alif Print & EM (Embroidery Village).**
Address of the Factory	: Bangabandhu Road, Tongabari, (Alif Village), Ashulia Bazar, College Road, Savar, Dhaka, Bangladesh.
Present Status of the Factory	: **Under Operation**
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 27-Feb-14
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 18-May-14

BASIC INFORMATION:

There are two building in the factory. Building 1: RC Concrete Frame; Building 2: Structural Steel Frame with Steel Beams and Columns. The following general information was noted:

i.	Building Usage Type	: Garment Factory
ii.	Structural System	: RCC frame structure
iii.	Floor System	: Beam column system
iv.	Floor Area	: Unknown
v.	No. of Stories	: Six story RCC building
vi.	Construction Year	: 2012
vii.	Foundation Type	: Unknown.
viii.	Design Drawings	: Available.
ix.	Soil investigation Report	: Available.
x.	Construction Materials	: Reinforced Concrete
xi.	Generator	: Ground level

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 oversee 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. Perform a detailed assessment that includes the above identified items not included in the Preliminary Structural Assessment.
ii. Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.
iii. Have a qualified structural engineer complete further analysis of the structure and develop a remediation plan if required.
iv. Have a qualified structural engineer prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard.
v. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.
vi. Engage a qualified structural engineer to develop the required documents to confirm the structural integrity of the buildings. Documents must comply with Alliance Standard Part 8 Section 8.19 and 8.20
vii. 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.
viii. Have a qualified structural engineer confirm that capacity to support the load is available. Load Plans complying with Alliance Standard Part 8 Section 8.20.4.3 should also be developed.
ix. Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC.
x. Have a qualified structural engineer provide further analysis of the identified cracks to determine the appropriate course of corrective action.
xi. to RMG vendors and be responsible to ensure that the factory operational loads do not at any time exceed the factory floor loading limits as described on the Floor Loading Plans."
xii. Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3
xiii. Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard.
xiv. 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 a protective coating at the structural elements constructed with MCAC exposed to rainfall or other sources of water. Have protective coating approved by the Alliance or a qualified structural engineer.
ii. Retrofitting is recommended as per DEA
iii. Provide Certificates of Occupancy for review.

The recommendations for Electrical Safety corrective actions are*:*

Immediate (3 to 6 Days)	Ensure light fixtures without protective covers are not installed in storage areas or in any area where the Inspector of the Factories Rules disallows these fixtures. Find out the cause of overheating and take proper action including replacing cable or equipment where necessary.

	Need to remove combustible inside the panel board.
Short Term (3 Weeks)	
Mid Term (6 Weeks)	Ensure distribution boards are metal enclosed with a dead front construction and remove combustible material. Provide clearance of at least 1 m (39 in) in front of distribution boards. Provide covers or blanks to conceal all live internal components of switchboards and/or distribution boards. Ensure clear and permanent identification marks are painted in all distribution boards, switchboards, sub main boards and switches. Ensure the means of identification is obtained by separate color coding, marking tape, tagging, or other approved means. Provide grounding (earthing) for distribution boards as per BNBC. Ensure Lighting fixtures is supported from the structure and seismic bracing is installed as required. Provide adequate covers for electrical devices. Provide mechanical guards for electrical equipment and wiring where necessary. 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 disallows these fixtures. Install signs posted in Bengali and English, indicating this prohibition at all entrances to these areas. Install phase separators between terminal connections. Verify phase separators are installed at all remaining locations.
Long Term (6 Months)	Develop and implement an electrical safety program. Include key topics such as lock out tag out procedures, personal protective equipment requirements, etc. Remove multi looping of cables at circuit breakers within switchboards and distribution boards. Install distribution boards in compliant locations so that operation is not hampered due to limited access. Ensure overcurrent protection device (circuit breaker) for each and every loads. Install changeover switches with interlocking capabilities. Ensure switchboards and distribution boards provided with physical means to prevent the installation of more over current devices than that number for which the panel board was designed, rated, and listed. Provide capacity information labels (Maximum current rating, no of circuit breakers etc.) for distribution boards. 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. 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. Consider replacing transformers with harmful substances to reduce health hazards. Lead telecommunication or antenna cables separately to the main point of service. Power and telecommunications cables must have separate entrance. Consult with an expert electrical engineer and prepare drawing for lightning protection including risk index and make sure your system is secured against lightning. Consult with an expert electrical engineer to make sure your system have appropriate numbers of down conductors are installed based on the building size. The lightning protection ground terminals need to bond with building or structure grounding. Provide dedicated neutral for each circuit. Ensure cable joints through porcelain/ PVC connectors with PIB tape wound around joint. Have a qualified electrical engineer develop an as-built single line diagram detailing key components and capacity of the electrical system.

The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	
Short Term (3 Weeks)	
Mid Term (6 Weeks)	Remove all sliding doors from in front of newly installed fire doors. 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. Provide copies of appropriate licenses for review to the Alliance.

Long Term (6 Months)	Install initiating devices and notification appliances as required by the Alliance Standard and NFPA 72. Devices should be part of an automatic fire alarm and detection system for the facility. Install standpipe system with proper hose connections at required locations. Standpipe system must comply with NFPA 14. Provide hydraulic calculations and detailed plans to the Alliance for review to determine if the sprinkler system can adequately protect against the occupancy hazard. Verify pump has automatic start operation on water pressure drop or water flow from the automatic protection systems. Install automatic jockey pump to maintain small pressure loss in the systems.