Name of the Factory	: **Birds Fadrex Ltd.**
Address of the Factory	: 113, Baipail, Ashulia, Savar, Dhaka, Bangladesh.
Present Status of the Factory	: **Under Operation**
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 8-May-14
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 8-May-14
BGMEA Membership No	: 2163

BASIC INFORMATION:

There are 2 buildings in the factory premises out of which one is main production building and another one is ancillary building. The buildings are named as: 1) Six story RCC main production building, 2) Two story RCC day care building. During structural assessment we visualized that the building consists of three parts joint by an expansion joint: Building-1, building 2 & Building-3; Among which, building-1 is 6 storied, building-2 is five storied and building-3 is 5 storied. The following general information was noted:

i.	Building Usage Type	: Garments Factory
ii.	Structural System	: RCC frame structure with in filled masonry
iii.	Floor System	: RCC Structure with beam and column
iv.	Floor Area	: 195156 SF
v.	No. of Stories	: 1) Six story RCC main production building: Stories above grade: 6, Stories below grade: 0, Occupied levels: 6, 2) Two story RCC day care building: Stories above grade: 2, Stories below grade: 0, Occupied levels: 2.
vi.	Construction Year	: 1) Six story RCC main production building: Started in 2009 and finished in 2011, 2) Two story RCC day care building: Started in 2009 and finished in 2011.
vii.	Foundation Type	: Isolated Footing
viii.	Design Drawings	: Available.
ix.	Soil investigation Report	: Available.
x.	Construction Materials	: Reinforced Concrete
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 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 loading limits as described on the Floor Loading Plans.

Mid Term (6 Weeks) :

i. Review as-built structural drawing under the guidance of qualified structural engineer.
ii. Engage a qualified structural engineer to confirm and document that provisions have been made to accommodate these water tanks. If provisions have not been made, have a qualified structural engineer develop a remediation plan.
iii. 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.
iv. Apply protective coating on steel members.
v. A qualified structural engineer should be involved for maintenance by correcting the identified issues.
vi. Anchor and brace all non-structural elements perfectly to resist earthquake forces and to comply with the BNBC and Alliance Standard.
vii. Have a qualified Structual Engineer prepare the design report and submit to Alliance for review.
viii. Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard.
ix. Have a qualified structural engineer prepare a load plan for each floor and have the floors marked for designating storage area as per the developed load plan.
x. "Remove deteriorated expansion joint material and provides new approved material at the expansion joint."

Long Term (6 Months) :

i. Provide Certificates of Occupancy for review.

The recommendations for Electrical Safety corrective actions are*:*

Immediate (3 to 6 Days)	Remove all combustible materials within the substation room. 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. Find out the cause of overheating, overloading, or signs of burning and take proper action.
Short Term (3 Weeks)	
Mid Term (6 Weeks)	Provide switchboards and/or distribution boards are metal

	enclosed with a dead front construction. Ensure the generator room properly rated and physically separated from the remainder of the building. Provide clearance of at least 1 m (39 in) in front of switchboards and/or distribution boards. Install switchboards and/or 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. Ensure proper identification of emergency power switchboards, distribution boards, and circuits. Provide capacity information labels (Maximum current rating, no of circuit breakers etc.) for distribution boards. Ensure switchboards and/or 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 following NFPA 70 section 408.54. Provide additional light fixtures to increase illumination levels provided in the BNBC.
Long Term (6 Months)	Provide 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. Repair or replace leaking wet type transformer. Provide adequate fire rating/ protection for substation room and provide separation from rest of the building. Provide underground cables for electrical distribution in the premises / garden / compound of the building are encased in GI or PVC pipes and laid in earth trenches of sufficient depth as per BNBC 2.5.7.2. Consult with an expert electrical engineer and make sure your system is secured against lightning. Have a qualified electrical engineer develop an as-built single line diagram detailing key components and capacity of the electrical system. Connect all metal in the building to the building earthing/grounding system such as metal rebar in concrete, metal frame of building, or metal water pipe. Consult with a qualified Electrical Engineer and ensure electrical wiring/cables are sized according to capacity of circuit breakers. Ensure switchboards and/or panel boards are not installed above gas stoves or sinks or within 2.5m of any washing

	unit in washing rooms or laundries. Ensure wiring systems are selected and erected so that no damage is caused by the ingress of water. Provide dedicated neutral for each circuit. Provide 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. Provide routing of telecommunication or antenna cables separately to the main point of service. Power and telecommunications cables must have separate entrance.

The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	
Short Term (3 Weeks)	Remove all hasps, locks, slide bolts, or other locking devices at the noted locations. Doors may be locked where the latch and lock are disengaged with one motion where the occupant load does not exceed 49 persons. Turning a door handle and disengaging a lock is considered two motions. Doors may be provided with locking hardware from the ingress side provided that a panic bar is installed on any door with an occupant load exceeding 49 persons. The re-entry provisions of section 6.8.3 must be met.
Mid Term (6 Weeks)	Develop an emergency evacuation plan which includes all components required by the Alliance Standards and communicate the plan to all employees. 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 operation of all exist 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. Apply to Department of Explosive (In DC office) for permission of storage of class II petroleum (diesel) greater than 1000 liter individually.

Long Term (6 Months)	Provide 2-hr fire-rated construction barriers at exit enclosures. Fit outward opening, side-swinging, self-closing, non-lockable fire doors of 1.5 hr rating in all stairwell enclosures. Consult a qualified fire protection engineer to design the fire-rated construction barriers. Provide an automatic fire alarm and detection system per the Alliance Standard. Pull stations at egress points, smoke detectors in air handling equipment, visual and audible devices must be spaced appropriately based on occupancy type in accordance with NFPA 72. Install class III standpipe system at required locations designed by a qualified fire protection engineer. The system is to be compliant with the requirements of NFPA 14. Then establish an inspection, maintenance, and testing program for the standpipe and hose system. Program must comply with the requirements of NFPA 25 Chapter 6 Table 6.1.1.2. 1. All the spot removing rooms on 1st to 3rd floor are needed to be 1 hour fire separated with 45 minutes fire resistant certified doors. 2. Rooms used for storage of combustible materials shall be separated from the surrounding occupancy with a minimum 1 hour construction. 3. Provide 2 hour fire separation with 1.5 hour fire resistant doors at utility room (Generator, Transformer, Boiler). 4. Provide 4 hour fire separated between chemical store and production floor where no opening is allowed. Door can be provided toward outside of the building according to Alliance Standard Part 4 Section 4.5 and BNBC Table 3.2.1 (pg-10352). Consult a qualified fire protection engineer to design the required rated construction barriers. Install a pump dedicated for fire fighting or fire protection following the requirements of NFPA 20. 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 alternative power source such as a generator, and the generator is to be connected with ATS (auto starter).