Name of the Factory : **V & R Fashions Ltd.**

Address of the Factory : Plot No SA 434, RS No 567, Engr. Ashraful Bari Mansion Peyara Bagan, Vogra, Gazipur.

Present Status of the Factory : **Under Operation**

Structural assessment conducted by : Alliance

Date of Structural Inspection : 9-Apr-2014

Fire & Electrical assessment conducted by: Alliance

Date of Fire & Electrical Inspection : 9-Apr-2014

BASIC INFORMATION:

The present garment factory is an eight story building with beam-column frame system and Flat Plate at newer portion .The following general information was noted:

i.	Building Usage Type	: Factory building
ii.	Structural System	: RCC beam Slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Total approximate production building area is116226sft
v.	Construction Year	: 2009 to 2011
vi.	Foundation Type	: Isolated Footing
vii.	Design Drawings	: Available
viii.	Soil investigation Report	: Available
ix.	Construction Materials	: Brick aggregated with 72 grades rebar.
x.	Generator	: Main building (Ground floor).

RECOMMENDATIONS FOR CORRECTIVE ACTION:

The recommendations of corrective action for both Structural, Fire and Electrical Safety comprises in Short Term, Mid Term and Long Term basis.

The recommendations for Structural Safety corrective actions are:

Immediate : NA

Short Term (3 Weeks) : 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

Mid Term (6 Weeks):

i. Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.

i. Remove the water tanks. If the design report proves that these point loads are accommodated in the design then they can be retained.

ii. Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC. This should be reflected in the design report.

iii. Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading. This should be reflected in the design report.

Long Term : NA

The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	Remove all obstructions and uneven surfaces, or provide minimum required egress width next to obstructions and provide level surface for safe escape. Remove all stored materials in the stairwells at the noted locations.
Short Term (3 Weeks)	Remove all hasps, locks, slide bolts, or other locking devices at the noted locations. According to section 6.8.2.2 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.
Mid Term (6 Weeks)	Fire Department pre-planning has not been completed yet. Complete fire department pre-planning activities with the local Fire Service and Civil Defense in accordance with Alliance Standard, Part-13, Section-13.1.1(2). Central fire alarm and detector control panel is not available at the premises. As per section 5.7.5, until that time that a central station monitoring service or direct connection to the Fire Service and Civil Defense 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 to alert this person. Occupant loads were not posted in any assembly and production floor as demanded in Alliance Standard Part 6 Section 6.4.4. 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. Implement training program with proper documentation in accordance with the Alliance Safety Training Curriculum on fire safety. 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 are tested on a monthly basis. Functional testing of battery powered signs is provided for a minimum 90 min once per year or, since battery back up is used, these lights are

	required to be tested on a monthly basis. Develop an emergency evacuation plan which includes all components required by the Alliance Standards and communicate the plan to all employees in accordance with Alliance Standard, Part-13, Section-13.3. Install signage adjacent to each stair door indicating the stair name and the floor level at the noted locations. Install required identification signs at the noted locations. Signage must comply with NFPA 14. Occupancy certificates are not available. Apply to LGED for issuance of occupancy certificate and pursue the matter to expedite. Post emergency egress maps/fire evacuation maps at the entrance to each exit stair or main point of egress. BERC certificate, Boiler operator and electrician license were not available. Apply to Bangladesh Energy Regulatory Commission for waiver certificate, Boiler Department for boiler operator license and Electricity license issuing Board for electrician license.
Long Term (6 Months)	Provide a fire pump for the facility designed by a qualified fire protection engineer. All new installations and design requirements outlined in BNBC Part 4 Chapter 4 for water supplies shall be replaced by the requirements of NFPA 20 (fire pumps), NFPA 22 (water tanks), and NFPA 24 (underground water mains). The Owner shall contact the Alliance prior to conducting the final acceptance testing of the fire pump installation to allow the Alliance to witness this test. A final inspection of the installation shall be conducted by the Alliance prior to final acceptance of the installation by the Alliance. Provide 1.5 hr fire protective certified opening assemblies in 2 hr rated exit enclosure. Provide fire-resistive rated assemblies at the required exit access corridors. The rated assembly should be approved and/or designed by a qualified fire protection engineer. Window and Glass Block Assemblies are to be tested fire rating following NFPA 257. Replace all collapsible, sliding, roll-down gates and shutters in means of egresses with side-hinged swinging type doors of proper width and rating in accordance with Alliance Standard, Part-6, Section -6.8.1. No landing was available at the exit of north-west stair case (floor 7 & floor 6) Rework the exits from Floors 6 and 7 to provide a landing on either side of door. Install new side-hinged, swinging fire doors set back from current sliding door location and provide 2-hr. rating from current enclosure around new door location to maintain the integrity of the exit stair rating.

	Provide fire rated opening protection for all the fire rated walls/assemblies for the entire premise. Protect the penetrations of fire restrictive rated assemblies with a listed through penetration fire stop system tested in accordance with ASTM E814. Install a standpipe system at required locations designed by a qualified fire protection engineer. The system should 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. 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. Protect the penetrations of fire restrictive rated assemblies with a listed through penetration fire stop system tested in accordance with ASTM E814. The building has 8 stories, but doors are not provided with re-entry. Stair doors with re-entry are required on at least 2 floors according to Alliance Standards Part 6 Section 6.8.3. 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. Provide re-entry doors at 7th and 2nd floor or 6th and 1st floor. The certain number of people is trained but no certification was available from appropriate authority. Arrange fire fighting training with appropriate authority (like Fire service & civil defense dept.) and get certification. 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 handrails on both sides of the stair in accordance with Alliance Standard, Part-6, Section-6.9.2.4, 6.12.1.1 and 6.12.1.2. 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.

	No fire department connections provided in the factory building. According to Alliance Standard, Part-5, Section-5.5.4, fire department (Siamese) inlet connections shall be provided to allow fire department pumper equipment to supplement the fire protection systems. Fire department outlet connections shall be provided to allow fire department pumper vehicles to draw water from ground-level or underground water storage tanks. Connections shall match the Fire Service and Civil Defense hose thread standard. Install Illuminated exit signs at entrances to exits and along the path of egress anywhere the continuation of egress is not obvious or there is a change in the direction of the path of travel. Fire extinguishers shall be inspected, tested, and maintained in accordance with NFPA 10 Chapter 7 as demanded in Alliance Standard Part 13 Section 13.10.3. Establish an inspection, maintenance, and testing program for the standpipe and hose system. Program must comply with the requirements of NFPA 25. Establish an inspection, maintenance, and testing program for the fire pump. Program must comply with NFPA 25. According to Alliance Standard, Part-13, Section-13.1 and 13.1.1, create a Fire Safety Director position and fill the position with an individual that has had sufficient training to be able to carry the required duties. According to Alliance Standard, Part-9, Section-9.1.7, develop a hot work permit program. The program must comply with the requirements of NFPA 51B. In general, this program should address process of request and approval authorities, necessary checks prior approval, standby fire watch and firefighting equipment, sounding of alarm procedure, duration and expiry of permit and re-approval procedure etc. According to Alliance Standard,Part-13,Section-13.6, 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. As a general rule the maximum tolerable deposit thickness for loose fluffy lint is 13 mm (½ in.) over a maximum of 46.5 m2 (500 ft2). Limit dense deposits to 6 mm (¼ in.) and oil saturated deposits to 3.2 mm (⅛ in.).

The recommendations for Electrical Safety corrective actions are*:*

Immediate (3 to 6 Days)	Ensure the generator room clean and free of dirt, debris, and improperly stored materials. Remove all dirt, debris, lint, water, oil, and improperly stored materials from the substation room. Ensure instruction board for first aid and artificial respiration is located in the generator room. Ensure Signage indicating the prohibition of light fixtures without protective covers is installed at required locations.
Short Term (3 Weeks)	Ensure proper identification of emergency power switchboards, distribution boards, and circuits. 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. Ensure earthing connections at electrical equipment.
Mid Term (6 Weeks)	Provide mechanical guards for electrical equipment where necessary. Ensure proper ventilation for generator room. Provide Shielding/ additional insulation for wiring exposed to external heat sources. Ensure wiring systems are selected and erected so that no damage is caused by the ingress of water.
Long Term (6 Months)	Ensure the generator room properly rated and physically separated from the remainder of the building.