Name of the Factory	:	Corona Fashion Ltd.
Address of the Factory	:	Ka-220/12, Khilkhet (Nama Para), Dhaka-1229, Bangladesh.
Present Status of the Factory	:	Under Operation.
Structural Assessment Conducted by	:	ACCORD
Date of Structural Inspection	:	2nd June, 2014
Fire Assessment Conducted by	:	VEC
Date of Fire Inspection	:	12th April, 2015
Electrical Assessment Conducted by	:	VEC
Date of Electrical Inspection	:	12th April, 2015
BGMEA Membership No.	:	3748

BASIC INFORMATION:

The factory consists of a 5 storied reinforced concrete building with a basement. Factory individually uses basement to 1st floor only. The structural system of the building is beam column frame and beam slab floor system. The following information was noted:

i.	Building Usage Type	:	Garment factory.
ii.	Structural System	:	RCC beam column frame structure.
iii.	Floor System	:	RCC beam slab floor system.
iv.	Floor Area	:	Approximate 9943 sft. per floor.
v.	No. of Stories	:	5 Storey + one basement
vi.	Construction Year	:	Not identified in ACCORDs report.
vii.	Foundation Type	:	Not identified in ACCORDs report.
viii.	Design Drawings	:	Available. (Not as build)
ix.	Soil Investigation Report	:	Not identified in ACCORDs report.
x.	Construction Materials	:	Not identified in ACCORDs report.
xi.	Generator	:	At ground floor.

RECOMMENDATIONS FOR CORRECTIVE ACTION:

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

The recommendations for **Structural Safety** corrective action are:

Short Term (Immediate) :

- Decide if the 7th and 8th floors are to be constructed. If so an Engineering Assessment will need to be carried out to establish if the building is structurally safe.

Mid Term (6-weeks) :

- Carry out an Engineering Assessment on the columns, taking 100mm core samples where necessary to establish the strength and determine if the additional floors can be built.
- Carry out an Engineering Assessment on the building to verify that it is stable under lateral loading.
- Re-survey the building, paying particular attention to slab thicknesses and location of down stand beams. Produce accurate as built drawings based on the site survey.

- Survey the second floor highlighting any structural defects. Prepare a repair schedule as required. Update the column calculation based on the imposed loading.
- Provide suitable edge protection to the perimeter of the roof.
- Provide suitable edge protection to the perimeter of the roof.
- Apply waterproofing to upper level. Install temporary waterproofing system on the existing roof if additional storeys are going to be built within 1 year. Or install a permanent waterproofing membrane to the present roof if construction is to stop for more than one year.

Long Term (6-months) :

- Base any future extensions on the advice and recommendations highlighted in the Engineering Assessment.
- Carry out all recommendations of the Engineering Assessment.

The recommendations for **Fire & Electrical Safety** corrective action are:

(A): Recommendations for Fire Safety corrective actions:

Immediate (*the factory should not continue to be occupied until these non-conformities have been rectified*):	• None.
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (1 ~ 2 weeks) and should be a regular activity*	• Factory need to have proper testing plan & record of fire safety equipment. • Lights in storage area needed to be installed with protective covers and conduits. • Factory need to close the opening and seal the penetration with 2 hours fire rated construction materials for rated walls (Toward generator room) & slab (Basement & ground floor). • Combustibles are to be managed with good housekeeping. • Storage facilities with no air-conditioning duct shall be minimum 2.9m and when used as a storage facility there shall be a minimum clearance of one third the floor height from the ceiling to the top of the storage stack. • Ensure adequate illuminated emergency lighting in floors, exit and stair cases. • Ensure adequate exit signs in all floors so that it is visible from all positions.
Mid Term	• Factory needs to have as built drawing with proper

(*The remedial works indicated must be carried out within a period of 6 weeks)*	dimensions showing all the means of escape. • All the exit doors need to be install side swinging so that unlockable doors can be opened easily in the direction of evacuation without the use of a key • Provide handrail on both sides of stairways. • Factory need to have emergency backup power for critical fire safety system with sufficient capacity & arrangement according to NTPA Guideline.
Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	• Factory needs to have a proper pre-plan for fire department. • Factory needs to maintain minimum width of exit 0.9 m and height 2m. • The north stairs escape routes need to protect from basement area with 2 hours rated lobby with 1.5 hours fire rated door and also need to provide protected paths(2 hours fire rated construction with 1.5 hours fire rated opening) of travel from the stair entrance at each floor level(2 hours rated enclosure with 1.5 hours rated opening/doors) till to reach safe refuse area • The south-west middle stairs escape routes need to protect from basement area with 2 hours rated lobby with 1.5 hours fire rated door and also need to provide protected paths of travel(2 hours fire rated construction with 1.5 hours fire rated opening) from the stair entrance & lift opening(2 hours rated enclosure with 1 hours rated automatic opening/doors) at each floor level) till to reach safe refuse area • Child care needs to be separated from sewing section in 1st floor. Exit excess will be directly to final exit. Separation wall needs to be 3 hours fire rated and also fire doors will be 3 hours fire rated. • Bonded ware house need to be separated with the winding section by 2 hour rated construction & 1.5 hour rated door. • Boiler: Factory need to protect the boiler room from the finishing section of 1st floor of the building by 4 hours rated construction with 2 hours fire rated door/opening • Generator: Factory need to protect the generator room from the bonded warehouse, car parking & south west middle stair located at basement floor of the building by 4 hours rated construction with 2 hours fire rated door/opening • The entire exits connecting to the staircases(3 nos

	staircase) need to be protected with fire and smoke resistant enclosures and opening (2 hour rated enclosure and 1.5 hour rated door)and provide a protected route from all though the stairway to the final exits. • Walls enclosing the lift core shall have a fire resistance rating of 2 hours and lift car doors shall have a fire resistance rating of at least 1 hour. • Factory need to protect the basement area by providing 2 hours fire & smoke proof lobby with 1.5 hours rated door/opening, also need to protect from the lift by providing 1 hours fire rated automatic door/opening in the lift core • Factory need to install centralized and automatic fire detection & alarm system on all occupied floors, including other tenanted floors of the building as per NTPA Guideline • The factory need to install manually operated electrical fire alarm system and automatic fire alarm system with single or multiple call boxes on all occupied floors, including other tenanted floors of the building • Factory needs to install control panel for centralized and automatic fire detection and alarm system at required location. • Factory needs to install two ways communication systems at all floor level to send as well as receive messages. • Factory need to install 75mm diameter of standpipe system in the building. • Factory needs to install 1 riser per 1000 m2 of floor area and 38 mm diameter of hoses with variable nozzle. • Ensure the minimum pressure for standpipes supplying a 50mm or larger hose shall be at least 300 Kpa. For standpipe supplying first aid hose (38mm nominal) may have a minimum pressure of 200 Kpa. • Ensure Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection • Factory needs to install dedicated fire pump with sufficient capacity and backup power. • Factory needs to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900liter x 75min=142500 liters water storage tank.

(B): Recommendations for Electrical Safety corrective actions:

Immediate (*the factory should not continue to be occupied until these non-conformities have been rectified*):	• Find out the cause (improper cable/over current selection, over loading, improper lug, improper cable joints, rusted connection, insulation damage, multiple cables at single point,) of overheating (> ambient+ 40^0C) and take proper action.
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity*	• Discharge the generator exhaust to the exterior of the building in a safe location. • Ensure all distribution boards (including panel door) are earthed properly. • Remove all unused cables from distribution boards and make sure all necessary cables are properly terminated at its point of termination using appropriate size and type of lug. • Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering. • Provide provision for inspection of all earthing system and ensure inspection is being completed and documented.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Install appropriate number and type of safety signage and fire-fighting equipment at substation room. Also ensure graded rubber mats are provided in front of all distribution boards. • Provide Instruction board for first aid and artificial respiration in the substation room and generator room. • Ensure in the substations room and generator room, all working place, exit light and escape light have adequate illumination level as per standard. • Fill the transformer breather oil cup with fresh oil. • Provide two separate and distinct connections of earthing for each generator. • Ensure distribution board has a minimum clearance of 1 m (39 in) in front. • Provide dedicated & adequate size of earthing with proper identification for each circuit from the earth busbar of distribution boards and ensure continuous earth path is back to main building intake. • Rewire to avoid the use of multiple cables from

	incoming and outgoing side of MCB's/MCCB's. • Replace wooden piece with metal clad construction for mounting circuit breakers and switch controls. • Ensure all electrical cables are sized according to capacity of circuit breakers. • Install switchboards and circuit breaker in proper way or proper place to ensure secure operation. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Connect all metal in the building to the building earthing system. • Find out the cause (improper cable/over current selection, over loading, improper lug, improper cable joints, rusted connection, insulation damage, multiple cables at single point,) of overheating { ambient+(20^0C-40^0C)} and take proper action.
Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	• Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system. • Establish a periodical Insulation and earth Resistance Measurement • Program and record the related testing data. • Inspect electrical switchgear and panel boards on an annual basis. • Ensure the substation room has adequate fire separation from the mail building. • Provide adequate means of ventilation for the substation room based on the installed equipment considering fire barriers. • Ensure the generator room has adequate fire separation from the production area. • Provide adequate means of ventilation for the generator room based on the installed equipment considering fire barriers. • Replace distribution board with metal enclosed body. • Ensure distribution boards have no openings and all live

	internal components are concealed properly. • Ensure distribution boards are installed in compliant locations in terms of height, access and surrounding weather. • Provide dedicated & adequate size of neutral with proper identification for each circuit. • Ensure each distribution board is provided with a circuit list and means of identification is provided as per list. • Use non-combustible material to make channel and provide adequate covers on cable channel. • Provide proper cable terminator/connector for stranded conductors at its point of termination. • Install separate distribution boards for lighting and power circuits. • Install lightning protection system on the building.