

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: 4 YOU CLOTHING LTD
Address of the Factory	: 367/1 Senpara Parbata, Mirpur-10, Dhaka, Bangladesh
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 1-June-14
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 27-May-14
BGMEA membership No	: 2914

BASIC INFORMATION:

There is 01 main production building. The following general information was noted:

- i. Building Usage Type : Garments Factory.
- ii. Structural System : This building is a Moment Resisting RCC structure. The foundation type of the building is piles interconnected by mat foundation.
- iii. Floor System : Beam supported slab
- iv. Floor Area : 86176.75 sft.
- v. No. of Stories : 10 story RCC Main Production Building.
- vi. Construction Year : December-1995
- vii. Foundation Type : Mat foundation.
- viii. Design Drawings : Available.
- ix. Soil investigation Report : Available
- x. Construction Materials : For RCC buildings of all member stone chip aggregate has been used.
- 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 :
- i. The density of operation in 9th floor exceeds 42 psf. The estimated live load in 9th floor is 105 psf but as per design report the live load should not exceed 80 psf. reduce the load.
- 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.
- Mid Term (6 Weeks) :

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- i. Have a qualified structural engineer complete an analytical evaluation of the structural impact of the addition.
- 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. Construction Practices and Safety requirements of Section 9 should be followed for any kind of construction work
- iv. Provide the full credential of the Architect of Record.
- v. Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.
- vi. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and the Alliance Standard.
- vii. Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3.
- viii. Have a qualified structural engineer prepare load plans including the information required in Section 8.20 of the Alliance Standard and post them in all required location.
- ix. Have a qualified structural engineer prepare a Load Plan for each floor and have the floors marked for designated storage areas as per the developed Load Plan.

Long Term (6 Months) :

- i. Apply for a certificate of occupancy and obtain it as soon as possible from the authority.

The recommendations for Electrical Safety corrective actions are:

Immediate	N/A
Short Term (3 Weeks)	<p>Ensure proper identification of emergency power switchboards, distribution boards, and circuits.</p> <p>Ensure signage indicating the prohibition of light fixtures without protective covers is installed at required the locations.</p>

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Mid Term (6 Weeks)	<p>Have a qualified electrical engineer develop an as-built single line diagram detailing key components and capacity of the electrical system.</p> <p>As per BNBC section 2.11.5.4, ensure clear and permanent identification marks are painted in all distribution boards, switchboards, sub main boards, and switches.</p> <p>Provide electrical insulation mats in front of distribution boards.</p> <p>Provide capacity information labels (maximum current rating, number of circuit breakers, etc.) for switchboards and/or distribution boards.</p>
Long Term (6 Months)	<p>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 and NFPA70B or a comparable standard.</p> <p>Provide cable shaft for the whole building for ease of inspection and maintenance.</p> <p>Consult with an expert electrical engineer and ensure your system is secured against lightning.</p> <p>Ensure that the generator room is appropriately sized in order to gain proper access to the generator to perform routine maintenance activities.</p>

The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	Remove all combustibles stored underneath the cutting tables at the noted locations as soon as possible.
Short Term (3 Weeks)	Remove all locking devices from all egress doors and means of egress components in accordance with Alliance Standard Section 6.8. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.
Mid Term (6 Weeks)	<p>Develop an emergency evacuation plan which includes duties and responsibilities of various people/groups, interfacing between groups and fire brigade, headcount and identification of trapped victims, physically disabled people and their rescue, etc. See guidelines of the BNBC in the Appendix.</p> <p>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 to be tested on a monthly basis. Functional testing of battery powered signs is provided for a minimum 90 minutes once</p>

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	<p>per year.</p> <p>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.</p> <p>Arrange for direct connection of the fire alarm system to a central monitoring station or Fire Service and Civil Defense. Until that time when 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.</p> <p>Emergency power for egress lights shall be verified at least once per year. If battery operated lights are used, test them monthly. Provide functional testing of battery powered lights a minimum of 30 min once per year. Ref. 10.12.2.3.</p> <p>Impart training in accordance with the Alliance Safety Training Curriculum and keep records with proper documentation.</p> <p>Complete fire department pre-planning activities with the local Fire Service and Civil Defense.</p> <p>Install signage adjacent to each stair door indicating the stair name.</p>
<p>Long Term (6 Months)</p>	<p>Close all openings across the span of the stair and 10 feet on each side from the ground level to roof or 10 ft above the topmost landing with fire rated construction. Install fire rated doors in doorways.</p> <p>Replace all collapsible and sliding doors, roll-down gates, and shutters in the means of egress with side-hinged swinging type doors of the proper width and rating.</p> <p>Provide 1.5 hr fire protective opening assemblies in 2 hr rated exit enclosures. Exits connecting four or more stories shall be enclosed with a minimum 2 hr fire-resistance rating.</p> <p>Construct an exit passageway to provide a protected egress path from the stairs to an exterior exit discharge. Walls, floors and ceilings of the passage shall be fire rated, equal to the stair.</p> <p>Install fire rated exit passageways to connect stair shafts with exterior discharge exits. Submit plans and secure Alliance approval before construction.</p> <p>Provide opening protective at all windows and other openings on the entire fire rated wall across the entire premises. Close these openings if they are not required.</p> <p>Install an automatic sprinkler system throughout the building designed by a qualified fire protection engineer. The hydraulic design of the sprinkler system must be pre-approved by CoE of the Alliance. All installation and design requirements outlined in BNBC Part 4 Chapter 4 shall be replaced by the requirements of NFPA 13. Pipe</p>

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schedules shall not be used to size pipe. All systems shall be hydraulically calculated to meet the required NFPA 13 design requirements. Installation of new automatic sprinkler systems shall require that shop drawings and hydraulic calculations be provided as outlined in NFPA 13. The test and performance report of the installed system has to be submitted to the Alliance for review. Final inspection and testing shall be witnessed by the Alliance.

Install a standpipe system at required locations designed by a qualified fire protection engineer. The system is to be compliant with the requirements of NFPA 14. The hydraulic calculations should be reviewed by the Alliance, with the review to be completed prior to start of work. All standpipe system installations shall be submitted to the Alliance for review prior to commencing installation, according to 5.4.3.2.

Provide 2 hr fire-resistive 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 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 the presence of the Alliance and a final inspection of the installation shall be conducted by the the Alliance prior to final acceptance. 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.

Install an automatic sprinkler system designed by a qualified fire protection engineer.

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 four stories intervening between re-entry floors, re-entry is allowed on the top or next to top level, re-entry 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 handrails on both side of each stairway. Provide handrail at a height between the range 865mm (34in.) and 965mm (38in.).

Fire extinguishers are to be inspected, tested, and maintained in accordance with NFPA 10 Chapter 7.

Install a standpipe system at required locations designed by a qualified fire protection engineer. The system is to be

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	<p>compliant with the requirements of NFPA 14.</p> <p>Establish a written housekeeping policy. 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.</p> <p>Develop a hot-work permit program. The program must comply with the requirements of NFPA 51B. In general, this program should address process of requests and approval by 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.</p> <p>Establish an inspection, maintenance, and testing program for the fire pump. Program must comply with NFPA 25.</p>
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