

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Cortz Apparels Ltd- Unit 2.
Address of the Factory	: Nawjor, Kadda Bazar, Gazipur, Bangladesh.
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 5-July-2014
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 5-July-2014

BASIC INFORMATION:

The present garment factory comprises of one main factory building and four ancillary buildings (Generator and Sub-station Room, Hydrant Room, Driver and Ansar Room and Guard Room). The following general information was noted:

i.	Building Usage Type	: Garments Factory
ii.	Structural System	: Reinforced concrete moment resisting frame with beams between columns at the Ground Level and a flat slab with edge beams at all other levels.
iii.	Floor System	: Beam supported slab in ground floor and flat slab in other floors.
iv.	Floor Area	: 97,944 sft.
v.	No. of Stories	: 6 (Ground+5) storied main factory building and one storied ancillary buildings.
vi.	Construction Year	: 2008-2009
vii.	Foundation Type	: Isolated spread column footings.
viii.	Design Drawings	: Available but not fully credible.
ix.	Soil investigation Report	: unknown
x.	Construction Materials	: Reinforced Concrete for RCC building
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

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do not at any time exceed the factory floor loading limits as described on the Floor Loading Plans.

Mid Term (6 Weeks)

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- i. "Repair Have a qualified structural engineer provide further testing and analysis of cracking in walls and provide a remediation plan to correct noted issues.
- ii. Have a qualified structural engineer prepare credible as-built documents based on the requirements of Part 8 Section 8.19 of the Alliance Standard. This should be completed for all buildings.
- iii. Under guidance from a qualified structural engineer, address all areas of needed maintenance by correcting the identified issues.
- iv. Adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC and Alliance Standard.
- v. Have a qualified structural engineer complete further analysis of the structure and develop a remediation plan if required.
- 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. Have a qualified structural engineer complete an analytical evaluation of the structural impact of the addition.
- viii. 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.
- ix. Have a qualified structural engineer document compliance with the seismic and wind requirements stated in the 2006 BNBC.
- x. Engage a qualified structural engineer to confirm satisfactory structural performance of the buildings under wind loading.
- xi. Have a qualified structural engineer review the prepared load plans to ensure they are accurate and also that they conform to the requirements of Part 8 Section 8.20.5.3. If they do not conform, have the structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3.
- xii. Have a qualified structural engineer review the posted load plans to ensure they are accurate and also that they conform to the requirements of Part 8 Section 8.20.5.3. If they do not conform, have the structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3, and post these revised floor load plans in visible locations at each level of the building.
- xiii. Provide signage or the appropriate markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load Plan.
- xiv. Repair the exterior façade system to prevent water intrusion.

Long Term (6 Months)

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- i. Provide Certificates of Occupancy for review.

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- ii. 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. Alternatively, provide a 2% slope on the exposed surface and drainage pipe with downspouts at low points to prevent accumulation of water.

The recommendations for Electrical Safety corrective actions are:

Immediate (3 to 6 Days)	Consult with a qualified electrical engineer to determine the cause of the overheating and identify the required remediation work based on the qualified electrical engineer's findings.
Short Term (3 Weeks)	<p>Develop 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.</p> <p>Remove all dirt, debris, lint, water, oil, and improperly stored materials from the substation room.</p>
Mid Term (6 Weeks)	<p>Consult with a qualified Electrical Engineer and ensure electrical wiring/cables are sized according to capacity of circuit breakers.</p> <p>Ensure the means of identification is obtained by separate color coding, marking tape, tagging, or other approved means.</p> <p>Provide capacity information labels (Maximum current rating, no of SP, TP or DP circuit breakers etc.) for Switchboards and/or distribution boards. And avoid paper or scotch tape for labels.</p> <p>Ensure clear and permanent identification marks are painted in all distribution boards, switchboards, sub main boards and switches.</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>Establish a routine maintenance and testing program for the emergency generator. The program shall be based on all of the following:</p> <ol style="list-style-type: none"> (1) Manufacturer's recommendations (2) Manufacturer's Instruction manuals (3) Requirements of NFPA 110 Chapter 8

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The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	Remove all storage from under tables and similar obstructions.
Short Term (3 Weeks)	Remove all hasps, locks, slide bolts, or other locking devices from all egress doors.
Mid Term (6 Weeks)	<p>Install an automatic fire alarm and detection system for the facility. System shall comply with the Alliance Standard and NFPA 72. Consult with a qualified fire protection engineer or authorized fire alarm company to design and install the system.</p> <p>Impart training in accordance with Alliance Safety Training Curriculum and keep records with proper documentation.</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>Provide an automatic fire alarm and detection system per NFPA 72 and arrange for direct connection of the system to a central station monitoring service or the Fire Service and Civil Defense. 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 (such as a fire control room) to alert this person.</p> <p>Post emergency egress maps/fire evacuation maps at the entrance to each exit stair or main point of egress.</p> <p>Complete fire department pre-planning activities with the local Fire Service and Civil Defense.</p> <ol style="list-style-type: none"> 1) Collect BERC Certificate from Bangladesh Energy Regulatory Commission. 2) Collect Trade License from Municipal Office. 3) Collect electrician license from Bidyut License Pradan Board. <p>Install a standpipe system compliant with the requirements of NFPA 14. Install required identification signs at the noted locations. Signage must comply with NFPA 14 Chapter 6.</p>
Long Term (6 Months)	<p>Provide fire-resistive rated assemblies at the required exit access corridors. The rated assembly should be approved and designed by a qualified fire protection engineer. Exit access corridors serving an occupant load exceeding 30 are to be separated by walls having a fire resistance rating of 1 hr in accordance with 4.5 unless provided with automatic sprinkler protection throughout the story or building. Window and Glass Block Assemblies are to be tested fire rating following NFPA 257.</p> <p>Replace all non-compliant doors with required fire rated</p>

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	<p>doors and ensure that the fire doors are self-closing and positive latching and that they are provided with fire exit (panic) hardware where serving production floors. If fire doors are required to be held open for functional reasons, provide automatic closing devices tied to the fire in means of egresses with side-hinged swinging type doors of proper width and rating.</p> <p>Provide fire resistive rated opening protectives at all doors and other openings on all the fire rated walls throughout the entire premises. Close openings that are not required. Consult a qualified fire protection engineer to design the rated construction barriers.</p> <p>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 prior to start of work.</p> <p>Provide minimum 1.5-hr fire rated doors and seal all unprotected openings to separate the exit stairs from work areas and other building spaces on all floor levels. Ensure that the fire doors are self-closing and positive latching and that they are provided with fire exit (panic) hardware where serving production floors. If fire doors are required to be held open for functional reasons, provide automatic closing devices tied to the fire alarm.</p> <p>Install initiating devices and notification appliances as required by the Alliance Standard and NFPA 72. This includes electrical supervision of all valves controlling fire protection systems (sprinklers, fire pumps, water supplies, etc.). Connect devices to an automatic fire alarm and detection system for the facility. All fire alarm installations shall be submitted for review by the Alliance prior to commencement of installation.</p> <p>Have a qualified fire protection engineer to review the pump capacity and ensure hydraulic calculation is done that can be supported by this pump. Also, identify all other performance data and ensure conformity to NFPA 14, 20, 22 and 25 standards.</p> <ol style="list-style-type: none">1) Remove gas cylinder from the kitchen to keep the exit passageway safe.2) Provide rated exit passageway of egress from the day care to the public way. The rating of the exit passageway is to be equal to fire rating requirement of the exit that is being served and shall not be less than 1 hr fire-resistance rated. <p>Train and certify at least 25 percent of workers in firefighting, first aid and rescue training by the proper authority.</p> <p>Provide all openings into the exit passageways with fire-resistance rated opening protective.</p>
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	<p>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.</p> <p>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.</p> <p>Provide handrail on both sides of stairs at a height between the range 865 mm (34 in.) and 965 mm (38 in.).</p> <p>Repave the surface to make the slope of the surface 1 in 2 or make the change in elevation less than 1/4 inch.</p> <p>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.</p> <p>Install class III standpipe system 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.</p> <p>Install a pump dedicated for firefighting or fire protection following the requirements of NFPA 20. Then continue the inspection, maintenance, and testing program for the fire pump. Program must comply with NFPA 25.</p>
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