

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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Name of the Factory	: ALFA TEXTILE LIMITED
Address of the Factory	: 49 NP Kalurghat H/I/A, Mohora, Chittagong, Bangladesh
Dhaka Present Status of the Factory	: <b>Under Operation</b>
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 15 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 3 May, 2014

**Basic Information:** The present garment factory is a commercial building with beam-column frame system. The following general information was noted:

i.	Building Usage Type	: Garment factory
ii.	Structural System	: R.C. Beam and column frame with 2-way spanning solid slabs
iii.	Floor System	: Beam slab
iv.	Floor Area	: Each floor in the building measures a total area of 30831sqft.
v.	No. of Stories	: 7 storied
vi.	Construction Year	: 2010
vii.	Foundation Type	: Piled foundation
viii.	Design Drawings	: Available (Approved by the Chittagong Development Authority in January 2007)
ix.	Soil investigation Report	: Available (Dated July, 2006)
x.	Construction Materials	: Unavailable
xi.	Generator	: Located on the ground floor

**Recommendations for Corrective Action:** The recommendations of corrective action for both Structural and Fire & Electrical Safety are as follows:

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

Immediate (Now): NA

Mid Term (Within 6 Weeks):

1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
2. Sections of plaster finish to beams to be removed to investigate if cracks penetrate the building structure. Building Engineer to review further if cracks are found to penetrate into building structure.
3. Carry out repair remedial works as required.
4. Building Engineer to survey as constructed building. Updated drawings to be prepared showing the correct as constructed layout.
5. Building Engineer to carry out design calculations to verify that roof beam/slab and columns have sufficient capacity to support helicopter landing pad loads.

Long Term (Within 6 Months):

1. Continue to implement load management plan.

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2. Continue to monitor for cracking on an on-going basis.
3. Prepare/update calculations showing the structural adequacy of the building structure taking into account the factory design imposed loading and the as built structure.
4. Prepare controlled loading plans for all floors designating where storage can be placed and cannot be placed.
5. Building Engineer to review column design and potential for vehicle impact to columns at southern end of factory adjacent to material delivery area. If appropriate impact protection to be provided.

### **The recommendations for Fire Safety corrective actions are:**

#### Immediate (Within 1 month):

1. Remove locking features from all egress doors / gates. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.
2. Remove all storage from exit stairs and egress paths.
3. Replace all sliding doors along the means of egress with side-hinged, swinging egress doors. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.

#### Short Term (Within 3 Months):

1. Provide dedicated storage rooms separated by minimum 1-hr fire-rated construction. Where separate storage rooms may not be feasible, provide defined storage areas and limit the storage arrangement as follows:
  - Maximum height of 2.4m and maximum area of 23m<sup>2</sup>
  - If sprinkler protected: maximum height of 3.66m and maximum area of 93m<sup>2</sup>.Separate areas of unenclosed combustible storage by a minimum clear distance of 3m.
2. Separate the boiler and generator rooms by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
3. Provide minimum aisle widths of 36-in.
4. Reduce occupant load to not more than available exit capacity.
5. Provide handrails on at least one side of exit stair.
6. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
7. Test the emergency lighting system on each floor and provide additional emergency fixtures to provide adequate illumination along the means of egress. Provide a minimum illumination of 10 lux at the floor level within exit stairs and exit discharge paths and minimum 2.5 lux along exit access aisles.
8. Inspect, test and maintain the emergency lighting system in accordance with The ACCORD standard. Keep written records on-site.
9. Remove manual on/off switches from [emergency lighting / exit signage] units to prevent them from being switched off.
10. Regularly inspect all exit signage and replace/install lights as needed to illuminate signs. Replace double sided exit signs with single sided exit signs.

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### Mid Term (within 6 Months):

1. Seal all penetrations and openings to the interior of the building along the discharge path, up to a height of 10 ft., to provide a minimum 1-hr fire separation. Alternatively, provide a second remote discharge path to the public way (only include this if feasible).
2. Provide 2-hr fire-rated exit passageway leading directly outside (vestibules to separate any storage areas) or provide sprinkler protection for discharge floor in accordance with NFPA 13.
3. Replace the single-station smoke alarms with automatic smoke detectors tied into the fire alarm system. Configure the fire alarm system to initiate occupant notification upon activation of any two smoke detectors in addition to the manual fire alarm stations.

### Long Term (More than 6 months):

1. Replace the fire alarm system with a new, listed addressable fire alarm system in accordance with NFPA 72.
2. Provide automatic sprinkler protection throughout the building in accordance with NFPA 13.

### **The recommendations for Electrical Safety corrective actions are:**

#### Immediate (Within 1 month):

1. Replace silica gel and must include in routine maintenance to check and maintain. Breather oil cup must be filled with transformer oil to required level.
2. Indicating lamps in panels must connect through fuse or MCBs to bus bar terminal.
3. Service cable must be supported on tray or riser.

#### Short Term (Within 3 Months):

1. Install a ladder/pipe made properly supported with pole for supporting the service cables in order to protect the cables' insulation from any physical damage.
2. All the cable passing through permanent wall must be protected in metallic/steel pipes and remaining holes around the pipe must be sealed. And HT cable should be laid in cable trench covered with concrete slab or checkered plates.
3. Excess length of HT cables near transformer must be protected and laid safely. Cable may be supported /laid outside building at safe location or must be laid inside the cable trench.
4. Remove the wire mesh fencing and provide brick wall up to the ceiling.
5. Clean the lint and dust in cable trench and cover with concrete slab or checkered plates of required strength.
6. Ducts should be properly covered and cables arranged inside the ducts.
7. The required size of cable trench must be constructed and the cable trench must be properly covered to avoid physical damage to the cables.
8. Service cables must be supported on trays/risers and must be protected.
9. Electrical room not allowed using as maintenance room.

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10. Arrange periodic inspection & thermal scan to identify the overloading, loose connection, unbalanced load which may cause the excessive heat-rise and take action accordingly.
11. Cables must be drawn in a rigid conduit or the cable must be laid in the cable duct.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA