

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

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Name of the Factory	: CROWN FASHION AND SWEATER INDUSTRY LTD.
Address of the Factory	: Plot 781/782, Vogra, Joydevpur, Gazipur
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	: 12 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 16 March, 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	: RC beam slab, RC flat slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 7 & 8 storied
vi.	Construction Year	: 2000-2006
vii.	Foundation Type	: Pad foundation
viii.	Design Drawings	: Available (Dated November, 2000)
ix.	Soil investigation Report	: Available (Dated November, 2000)
x.	Construction Materials	: Unavailable
xi.	Generator	: On ground floor at exterior walls

**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):

1. Maintain current use of the floors in each building and don't change use or increase occupation, either of which could increase loading.
2. Building Engineer to review design, loads and stresses in all columns.
3. A Detail Engineering Assessment of Factory to be commenced, see attached Scope.
4. As part of the Detail Engineering Assessment of Factory required for Item 1, the change in structural system should be assessed in terms of the overall lateral stability of the building.
5. As part of the Detail Engineering Assessment required for Item 1, the lateral stability of Building 2 to be assessed given its significant height to width ratio.

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. Detail Engineering Assessment to be completed.
3. Verify in-situ concrete strengths either by 100mm diameter cores or existing cylinder strength data for cores from 4 columns.
4. Complete Detail Engineering Assessment and identify adequacy or otherwise of the lateral stability system.

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5. As part of DEA required under Item 1, confirm that cracks are predominantly in the thin screed and that, if reflected in the structural slab, the cracks are within acceptable limits for normal structural behavior.
6. Detail Engineering Assessment to be completed.
7. As part of the DEA required under Item 1. the cracking in the slabs shall be investigated to confirm that the cracking comes within acceptable limits for normal structural behavior of flat slabs.

### Long Term (Within 6 Months):

1. Continue to implement load plan.
2. Implement strengthening measures where required.

### **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. Keep egress paths and stairs clear of storage.
3. Remove all storage from exit stairs and egress paths.
4. Replace all gates / 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. Separate the boiler / generator / transformer rooms by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
2. 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 system.
3. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
4. Provide a minimum 2-hr fire-rated shaft to separate the utility risers from each floor level. Seal all penetrations and openings in floor/ceiling assemblies to maintain the fire separation.
5. 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.
6. Provide minimum aisle widths of 36-in.
7. Reconfigure the egress arrangement to reduce the maximum common path of travel to not more than 30 m.

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8. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.

### Mid Term (within 6 Months):

1. Provide additional exit.

### 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.

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

#### Immediate (Within 1 month):

1. Leakage must be checked during maintenance and repaired as necessary.
2. Cable trench must protect cables in it throughout its length.
3. Cable trench should be covered with concrete slab.
4. Multiple cable connecting at a MCCB terminal must be disconnected. Existing multiple circuits may be distributed through bus bars.
5. Install separators between different phases of MCCB. Standard separators provided by the MCCB manufacturer must be used.
6. Multiple cables terminating at a terminal in bus bars must be separated.
7. Bearing grease applied on Change-Over-Switch contacts for mobility must be cleaned. For lubricating, thin layer of contact grease may be used.
8. Generator Battery must be placed on the acid proof battery stand.

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

1. Cables connecting to transformer must be supported on risers.
2. Service cables (existing cables) may be extended using standard straight through jointing kits and protected.
3. Existing panel installed near exit may be relocated to prevent obstruction to emergency exits, as required by fire safety regulations.
4. Cables behind panel must be supported and arranged on cable trays or ladder.

#### Mid Term (Within 6 months):

1. Minimum safety clearance maintained around the existing power transformer must be notified with danger signs.
2. Cables of different voltage levels must be separated in different trays.
3. HT cable dropping from 11kV pole must be protected in steel pipe of required size at least 2m from the ground level to protect from physical injury by moving objects.

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4. HT cable termination may be lowered to position the cable termination accessories/facilities as per designed purpose.
5. HT cable dropping from 11kV pole must be firmly fixed to the pole with supports and clamps.
6. Panel base plates must be installed, at all time, and cable(s) entering panel must be firmly fixed with cable gland.

Long Term (More than 6 months): NA