

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

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Name of the Factory	: TEMAKAW FASHION LTD.
Address of the Factory	: 808/1, Shewrapara, Begum Rokeya Sarani, Mirpur, Dhaka-1216
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	: 6 May, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 26 April, 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. Beams and 2-way spanning solid slabs
iii.	Floor System	: Beam slab
iv.	Floor Area	: Total floor area is 60,382 sq-ft.
v.	No. of Stories	: 6 storied
vi.	Construction Year	: 1990
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Approved by the Local Municipality in June 1993)
ix.	Soil investigation Report	: Available (Dated March, 1993)
x.	Construction Materials	: Brick aggregated
xi.	Generator	: 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):

1. Factory Engineer to review design, loads and column stresses in all columns in Building 2.
2. Verify insitu concrete strength either by 100mm diameter cores or existing cylinder strength data for cores from 4 columns. Verify grade of steel reinforcement used.
3. A Detail Engineering Assessment of Building 2 to be commenced, see attached Scope.

Mid Term (Within 6 Weeks):

1. Detail Engineering Assessment for Building 2 to be completed.
2. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
3. Building Engineer to review design, loads and column stresses in area identified above.
4. Verify insitu concrete strength either by 100mm diameter cores or existing cylinder strength data for cores from 4 columns.
5. Produce and actively manage a loading plan for all floor plates and the roof within the factory giving consideration to floor capacity and column capacity.
6. Commence check of survey of as constructed building.

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### Long Term (Within 6 Months):

1. Continue to implement load plan.
2. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
3. The steel roofs in Buildings 1 and 2 should be designed by the Building Engineer and, if required, upgraded to support code vertical and wind loads.
4. Building Engineer to update survey of as constructed building. Updated drawings to be prepared showing the correct as constructed layout.
5. Prepare controlled loading plans for all floors designating allowable storage density and where storage may be placed.

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

#### Immediate (Within 1 month):

1. Immediately remove all combustible liquid storage from under the fire escape. Move all flammable and combustible liquid storage to a separate room with a minimum 2-hr fire-rated construction. Seal and/or protect all openings to maintain the required fire separations.
2. Remove locking features from all egress doors and gates. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.
3. Remove all curtains from exit stairs, as they are combustible and can impede egress.
4. Keep egress paths and stairs clear of storage.
5. 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. Provide dedicated storage rooms separated by minimum 1-hr fire-rated construction. Where separate storage rooms are not feasible, provide defined storage areas and limit the storage to a maximum height of 2.4m and maximum area of 23m<sup>2</sup>.
2. Separate the boiler by a minimum 2-hr fire-rated construction. Seal and/or protect all openings to maintain the required fire separations.
3. 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.
4. Modify the egress door to swing in the direction of egress travel.
5. Provide minimum aisle widths of 36-in.
6. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.

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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. Remove manual on/off switches from emergency lighting units to prevent them from being switched off.
9. Inspect, test and maintain the emergency lighting system in accordance with the ACCORD standard. Keep written records on-site.

### Mid Term (within 6 Months):

1. 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.

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

#### Immediate (Within 1 month):

1. Transformer must be cleaned regularly and establish a periodic cleaning program and maintain records of the activities. Provide cover made of noncombustible material on the channel for preventing ingress of dust and debris in future. Care must be taken to completely disconnect the transformer from the electrical system.
2. Control panel must be cleaned regularly and establish a periodic cleaning program and maintain records of the activities.
3. Make circular hole at the base plate/top plate of panels and provide cable gland according to the respective cable size for cable entry and exit so that the cables are not stressed on the sharp edges of the hole of panels. Provide covers (of noncombustible material) if any additional gap remains after installing cable glands.
4. Install separators between different phases of MCCB. Standard separators provided by the MCCB manufacturer must be used.
5. Disconnect the power source of the cable laid into channel and clean dust and debris of all interior components. Establish a periodic cleaning program and maintain records of the activities. Provide cover made of noncombustible material on the channel for preventing ingress of dust and debris in future.
6. Install metallic (non-combustible) cable duct over the floor and provide metallic cover on it to keep it dust and vermin proof. Establish a periodic cleaning program to keep all the duct/trays/channel dust-free.
7. Provide earth connection for body and doors of metallic distribution boards using green cables preferably braid so that the metallic door remains at zero potential all the time.
8. Cables must be terminated to MCCB providing lugs of required size according to the size of the respective cable.

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Short Term (Within 3 Months):

1. HT cable dropping from HT pole must be firmly fixed to the pole with supports and clamps.

Mid Term (Within 6 months):

1. Safe working space must be kept surrounding the existing generator.

Long Term (More than 6 months): NA