

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: BHML SWEATERS LTD.
Address of the Factory	: Sharifpur, National University, Gazipur, Bangladesh
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 5 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 15 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	: R.C Flat slab structural system
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 5 storied
vi.	Construction Year	: 2007
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Permit drawing)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: 2 generators in exterior room on North side of building, One is primary, one is backup for emergency systems

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. As the design floor load for the storage areas in the commercial / industrial building is believed to 4.0kPa, the stacking of the fabric rolls should ideally not exceed 9 layers, based on a package of yarn to have a maximum weight of 23kg (approximately 50 lbs) each.

Mid Term (Within 6 Weeks):

1. Carry out concrete cores in slab and column to determine concrete strength.
2. Determine rebar provisions in this area for both the slab and column to determine actual structural capacity.

Long Term (Within 6 Months):

1. Update structural drawings.
2. Factory Engineer to review design, loads and column stresses in all columns.
3. Verify insitu concrete stresses either by carrying out concrete cores and compressive strength tests.
4. Produce and manage a loading plan for all floor plates within the factory.

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. Replace all gates and 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 room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
2. 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 arrangement as follows:

-Maximum height of 2.4m and maximum area of 23m²

-If sprinkler protected: maximum height of 3.66m and maximum area of 93m²

Separate areas of unenclosed combustible storage by a minimum clear distance of 3m.

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. Reconfigure the egress arrangement to reduce the maximum common path of travel to not more than 30 m.
5. Modify the egress door to swing in the direction of egress travel.
6. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
7. Regularly test the emergency lighting system on each floor and replace/repair lights as needed.

Mid Term (within 6 Months):

1. Remove single-station smoke alarms. Provide automatic smoke detection throughout the building, tied into the fire alarm system, in accordance with NFPA 72.

Long Term (More than 6 months): NA

The recommendations for Electrical Safety corrective actions are:

Immediate (Within 1 month):

1. Leakage must be identified during maintenance (after shutting the power off) and repaired it as soon as possible. Preferably, assign the supplier company to take necessary steps as soon as possible.

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2. Transformer oil must be filled to the required level. Preferably, assign Supplier Company to take necessary steps as soon as possible.
3. The oil container attached below breather must be filled with transformer oil to trap moisture in air. Make sure power of transformer is disconnected before maintenance.
4. Use steel pipe/cable tray to ensure the mechanical protection of the cable laid on floor otherwise cable insulation may damage due to falling object or stepping of occupants onto it.
5. Cables behind panel must be supported and latched into cable trays or ladders. The device (in picture) must be installed rigidly inside the panel.
6. 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.
7. Install separators between different phases of MCCB. Standard separators provided by the MCCB manufacturer shall be used.
8. Provide earth connection for body and doors of metallic distribution boards using green cables preferably braid so that the metallic door & body remain at zero potential all the time.
9. Disconnect the power source of the cable and remove debris & combustible materials. Establish a periodic cleaning program and maintain records of the activities.
10. Establish a routine cleaning program to keep neat and clean the transformer room. Shut the power of the transformer and clean the exterior of the transformer at scheduled period.
11. Cables shall be connected to terminals only by soldered/welded lugs according to the size of the respective cables. Proper crimping tools must be used to punch the socket.
12. Cables/wirings passing through permanent wall/floor must be protected installing pipes and remaining gaps must be sealed with fire resistant materials. Cable tray /raceway shall be installed for the support of the cable throughout its length (instead of using flexible pipes).

Short Term (Within 3 Months):

1. Provide cable gland to the circular hole at the base plate/top plate of panels, 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.
2. Make circular hole at the 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.
3. Use single (individual) cables from the bus bar to MCB input or use plug-in bus bar for MCB input to avoid loose connection and ease of maintenance work.
4. Keep at least 25mm clearance between the MCCBs for better heat dissipation and perform maintenance work. Assign an electrical engineer to determine the capacity of the installation and redesign the wirings of the panel. If the wirings and loads exceed the capacity of the panel, install additional panel. Install PVC slotted wiring duct inside the panel to latch the cables.
5. Metallic cover should be provided on cable duct to prevent the damage of cable insulation and ingress of dust.

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Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA