

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: BANDO DESIGN LTD.
Address of the Factory	: Purbo Narshingpur, Earpur Union, Panshad Road, Ashulia, Dhaka, Bangladesh.
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 29 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 29 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 and column frame with 2-way spanning solid slabs from 1st floor to roof levels.
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 6 storied
vi.	Construction Year	: 2004
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (but not available for building no. 2 & 3)
ix.	Soil investigation Report	: Available
x.	Construction Materials	: Stone aggregated
xi.	Generator	: Ground floor adjacent building

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. Construction of roof Garden to be halted.

Mid Term (Within 6 Weeks):

1. Building engineer to check the structures and made proposals for the reduction of loads, if required Engineer to carry out assessment for slab and columns to carry roof garden (not on permit drawings) no further development to be carried out until study is completed.
2. Building engineer to check the structures and propose additional strengthening and bracing as required of Building 3.

Long Term (Within 6 Months):

1. Monitor cracks on beams of Building 1. Engage an engineer to investigate if cracks are only in the plastering.
2. Engage an engineer to advice on load reduction and repair and strengthening of the beams if required of Building 1.
3. Engage an engineer to investigate if cracks are only in the plastering of Building 2.

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4. Engage an engineer to advice on load reduction and repairs and strengthening if required of Building 2.

The recommendations for Fire Safety corrective actions are:

Immediate (Within 1 month):

1. 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.
2. Reduce the number of occupants to no more than the exit capacity immediately. In the future, if the greater occupant load is desired, add additional exits.
3. Regularly test the emergency lighting system on each floor and replace/repair lights as needed.

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 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 combustibile storage by a minimum clear distance of 3m.

2. Separate the boiler by a minimum 2-hr fire-rated construction. Seal and/or protected 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. Provide minimum aisle widths of 36-in.
5. Reconfigure the egress arrangement to reduce the maximum common path of travel to not more than 30 m.
 - Provide additional exit(s).and/or
 - Provide sprinkler protection in accordance with NFPA 13.

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

7. Provide exit signs above all exits to the exterior and all doors to the exit stairs.

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.

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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. Install the cable tray/ladder/ duct upto the cable entry of the panel in order to support the cables. Ensure the cables are tightly latched with the ladder and provide covers made of non-combustible material preferably metallic sheet to protect the cables' insulation from any physical damage as well as prevent ingress of debris, dust and lint.
2. Install cable tray/duct for supporting the cables. Use industrial graded flexible pipes(if required) with clamped with saddle at a spacing not exceeding 600 mm.
3. Provide phase separators between poles of MCCB made of non-combustible materials. Preferably, use separator provided by manufacturer.
4. Cables must be protected, supported and installed through safe routes. Cables passing through window and ventilators must be removed immediately. Install the cables on the ladder/tray. Ensure the cables are tightly latched inside the ladder and provide covers made of non-combustible material.
5. 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. Establish a load management program for avoiding any installation exceeding its capacity in future. Install PVC wiring duct inside the panel to latch the haphazard cables inside the duct.
6. Cable must be arranged and latched properly on the cable tray. Provide cover made of non-combustible material preferably metallic sheet to protect the cables' insulation from physical damage as well as prevent the ingress of debris, dust and lint.
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.

Short Term (Within 3 Months):

1. 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.
2. Ensure the cables are tightly latched inside the ladder through-out its length and provide covers made of noncombustible material preferably metallic sheet to protect the cables' insulation from physical damage as well as prevent ingress of debris, dust and lint.
3. Remove the obstacle from the access-way of the panel. Every item of installation shall be arranged so as to facilitate its operation, inspection, maintenance & access. Access of the panels must be kept obstacle free for easy operation & maintenance.
4. Install cable tray to provide support & put covers made of non-combustible material preferably metal to protect the cables' insulation from any physical damage as well as prevent the ingress of debris, dust and lint.

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Mid Term (Within 6 months):

1. Construct a wall upto the ceiling keeping the provisions for installing necessary ventilation fan at suitable location.
2. Every item of installation shall be arranged so as to facilitate its operation, inspection, maintenance & access. Keep the provision for appropriate door while constructing the wall.

Long Term (More than 6 months): NA