

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: BABYLON GARMENTS & DRESSES LTD
Address of the Factory	: 2-B/1, Darusalam Road, Mirpur, Dhaka
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 30 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 13 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. Beam and column frame with 2-way spanning solid slabs
iii.	Floor System	: Beam slab
iv.	Floor Area	: The total area is 15226.66sqm
v.	No. of Stories	: 11 Storied
vi.	Construction Year	: 1999
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Ashulia Union Porishod local authority, 1999)
ix.	Soil investigation Report	: Available (March, 1999)
x.	Construction Materials	: Concrete
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): NA

Mid Term (Within 6 Weeks):

1. Building Engineer to provide calculations showing the structural adequacy of all columns, taking into account the loading plans and all built structure including additions beyond the original design.
2. Verify insitu concrete stresses either by cores (min of 4 no. 100mm dia.) or existing cylinder strength data for ground floor columns.
3. Building Engineer to provide calculations showing the structural adequacy of all Slab/Beams to take point loading of columns, taking into account the proposed loading and all built structure including additions beyond the original design. Verify insitu concrete stresses either by 4 cores or existing cylinder strength data for the slabs.
4. The steel roof over the Dining Area should be reviewed by the Building Engineer and, if required, upgraded to support code vertical and wind loads or the area should be vacated and removed.
5. Lightweight canopies over stair-cores access to roofs to be strengthened or removed.
6. The connection of the mast to the roof structure is to be assessed by the building engineer for stability.

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7. Building Engineer to review all of the above and provide calculations and drawings demonstrating the adequacy of the structure/connections and /or evidence of how the structures are made safe.
8. Column to be protected from vehicle impact.

Long Term (Within 6 Months):

1. Create controlled loading plans for all floors, designating where storage can be placed and cannot be placed.
2. Building Engineer to monitor these elements of the structure for signs of further cracking/movement and take preventative action if necessary.
3. Building Engineer to identify locations/sources of water ingress and remove/divert source to avoid contact with concrete/reinforcement of structure.
4. Building Engineer to monitor the structure for signs of water ingress and take preventative action if necessary.

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. Reduce occupant load to not more than available exit capacity or provide additional exits.
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.
5. Keep egress paths and stairs clear of storage. Separate the storage room from the egress path using minimum 1-hr fire rated construction.
6. Provide exit signs above all exits to the exterior and all doors to the exit stairs.
7. Regularly inspect all exit signage and replace/install lights as needed to illuminate signs.

Short Term (Within 3 Months):

1. Separate the boilers, generator, transformer, and diesel pump from adjacent areas 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 on the ground floor including fire rated doors and a corridor at the exit access. On the second floor 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 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.

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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.
4. Provide minimum 1.5-hr fire rated doors and seal all unprotected openings to elevator shafts and utility risers.
5. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
6. 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. Prove a 2-hr fire-rated exit passageway from the exit stairs leading directly outside.
2. 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. Transformer neutral earth must be separated from equipment body earthing.
2. Earthing bus must not be naked and exposed, it should be installed inside a rated electrical bus enclosure
3. Missing pairs of arcing horn must be installed.
4. Breather oil cup must be filled with transformer oil to required level as instructed by the manufacturer.
5. Replace silica gel and must include in routine maintenance to check and maintain.
6. HT cable terminating at transformer must be firmly supported on riser to avoid stress at the termination (transformer bushing).
7. HT cable must be supported in cable trays or laid in trenches. The cable must be protected against physical injury.
8. Clean regularly and protect the panel from ingress of lint and dust by closing all sides and doors.
9. Duct covers must be regularly checked and tightly placed. Damaged (broken or buckled) covers must be repaired or replaced immediately.

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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.
2. Cables entering base plates without glands leaving opening gaps around cables must be sealed with metal plates. Compression glands may be used to fix existing cables to the base plates.
3. Paint coating in the bus bar must be removed only at the contacting surface area and it must be securely fastened with the copper connection strip.
4. Adequate cross ventilation system must be installed in the generator and transformer room to avoid heat accumulation.
5. Flexible PVC conduits cut (slit) open at one side must be removed. Cables must be supported on cable ducts, trays or ladders and must be securely clamped at regular intervals.
6. Existing power cables installed alongside the steam line must be covered to protect against external heat from the steam lines. Adequate clearance may be provided from the steam lines.
7. Cables supported in tray must be securely laid in the tray and fixed securely.
8. Cables in trench must be supported on trays inside trench and should be protected with covers with ample strength and rigidity.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA