

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: DIVINE FABRICS LTD.
Address of the Factory	: Chandra (Pallibiddut), Kaliakoir, 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	: 26 April, 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 concrete frame and 2 way solid concrete slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Building-1: Per floor area 11957sq.m.
v.	No. of Stories	: Multi-storied
vi.	Construction Year	: Under construction
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Permit drawing)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: The generator is located in Shed 1

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. Demolish the brick steps on the 6th floor of building.
2. Immediately reduce stacking height of fabric rolls to ensure total load does not exceed 3.0kPa.

Mid Term (Within 6 Weeks):

1. Mark the maximum allowable height of fabric stacking to ensure full compliance.

Long Term (Within 6 Months):

1. Provide the supporting system for fire water pipe system.

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. Remove all storage from exit stairs and egress paths.

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3. 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. 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 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.

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. Reconfigure the egress arrangement to reduce the maximum common path of travel to not more than 30 m.
4. Provide minimum aisle widths of 36-in.
5. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
6. Inspect, test and maintain the emergency lighting system in accordance with The ACCORD standard. Keep written records on-site.
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. Separate the hazardous materials / flammable liquid storage room by a minimum 2- hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
9. Separate the boiler and generator rooms by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.

Mid Term (within 6 Months):

1. Remove all single-station smoke alarms. Provide automatic smoke detection throughout the building in accordance with NFPA-72.

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):

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1. 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.
2. Cables/wirings passing through permanent wall 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.
3. Install cable duct to protect the generator output cables and clean dust and debris of all interior components. Provide 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.
4. Machine must be kept clean regularly from lint and dust. Establish a periodic cleaning program and maintain records of the activities.

Short Term (Within 3 Months):

1. Install covered cable tray (supported on wall) to support the service cables from pole mounted distribution transformer to LT panel in order to protect the cables' insulation from any physical damage. Ensure the insulation of the cable does not get damaged during installation work.
2. Cables behind panel must be supported and latched into cable trays or ladders. All cables must be supported placing inside covered tray/raceway.
3. Wires terminating to devices inside panel must be connected firmly and wires approaching devices must be securely fastened to avoid unintentional contact with live parts. Install slotted wiring duct to latch the cable inside the duct.
4. Wire joints in panels must be tightly connected using terminals or sockets crimped and insulated. Heat shrink tubes may be used for insulation.
5. Use steel pipe/covered cable tray to ensure the mechanical protection of the cable laid on floor otherwise cable insulation may damage due to falling object or any other means.
6. Sanitary pipes must not be used for power cable protection and supports. Install metallic (non-combustible) cable tray/duct over the floor and provide metallic cover on it to keep it dust and vermin proof. Cable must be arranged and latched properly on that cable tray/duct.
7. Remove all debris, and dust from those noted cable and use steel pipe (instead of flexible pipes), clamped with saddle on floor, to ensure the mechanical protection of the cable laid on floor otherwise cable insulation may damage due to falling object or stepping of occupants on it. Remove all debris, and dust from those noted cable.
8. Existing exposed wiring in PVC conduits fixed to ceiling/wall must be additionally clamped with saddle at regular interval (600 mm) or the cables may be supported on cable trays. Flexible conduit must not be used for long point wiring (except for special wirings).
9. Flexible PVC conduits on walls and column must be fixed to ceiling/wall must be additionally clamped with saddle at regular interval (600 mm) or the cables may be supported on cable trays. Flexible conduit must not be used for long point wiring (except for special wirings).
10. Cables touching the shaft's sharp edge may create leakage in cables. Cables must be protected inside the shaft. Electrical shaft must be repaired and it should be covered properly to protect the cable from physical damaged.
11. 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

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activities. Provide metallic cover (checkered plate) on the channel for preventing ingress of dust and debris in future.

12. Metallic cover (checkered plate) should be provided on cable trench to prevent the damage of cable insulation.
13. Metallic cover (checkered plate) should be provided on cable trench to prevent the damage of cable insulation or falling of operator and keep adequate walk way for operation and maintenance.
14. Panel base-plate must be installed. Make circular hole at the base-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.
15. Seal all the penetrations using appropriate fire rated material and ensure the cable insulation does not get damaged during sealing work. Cables/wirings passing through permanent wall must be protected installing pipes.

Mid Term (Within 6 months):

1. Existing panels may be rearranged to provide adequate working space, keep sufficient (1 meter preferably) area around the panels for ease of its maintenance and operation.

Long Term (More than 6 months): NA