

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: CORDIAL DESIGN LTD.
Address of the Factory	: 25/2 Shah Alibagh, Mirpur-1, Dhaka
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 16 September, 2013
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 15 July, 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 slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: The gross area of the factory premises is 90,000 sq-ft
v.	No. of Stories	: 9 storied
vi.	Construction Year	: 1999
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Dated approximately 2000)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: North side on the 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. Do not place storage on the lift shaft area.

Mid Term (Within 6 Weeks):

1. Design check all columns south of the joint between the original and extension buildings. Revise As-Built drawings showing actual column sizes. Propose strengthening as required.
2. Verify insitu concrete stresses either by cores or existing cylinder strength data for South of the joint between the original and extension.

Long Term (Within 6 Months):

1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
2. Addition structures should be Designed and upgraded to support code vertical and wind loads by the building Engineer, or they should be vacated and removed.
3. Engineer to inspect propose a suitable repair.
4. The building Engineer should verify this can carry code floor load, or design and construct a retrofit.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

The recommendations for Fire Safety corrective actions are:

Immediate (Within 1 month):

1. Remove locking features from all egress gates. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.
2. Remove all storage from exit stairs.
3. Replace all gates 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, generator, transformer and compressor 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 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. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
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.

Mid Term (within 6 Months):

1. Provide 2-hr fire-rated exit passageway leading directly outside (vestibules to separate any storage areas) or Provide sprinkler protection for discharge floor in accordance with NFPA 13.

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):

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

1. Replace silica gel and fill up that oil cup with transformer oil. This must include in routine maintenance to check and maintain log book.
2. Assign an electrical engineer to determine the capacity of the installation and redesign the wirings of the panel. Establish a load management program for avoiding any installation exceeding its capacity in future. Install slotted wiring-duct inside the panel to arrange and latch the haphazard cables.
3. It must be used cable tray to ensure the mechanical protection of the cables laid on floor otherwise cable insulation may damage due to falling object or stepping of occupants onto it.
4. Heat resistant flexible pipes should not be used for carrying cables through its whole length except at the bending point. Use PVC or steel pipes (preferably on floor) or battens for carrying cables attached to wall or ceiling. Support the conduits by using saddle clamp. Install PVC channel for cable routing inside the panels.
5. 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.
6. Must prepare the single line diagram and other diagram for electrical systems.

Short Term (Within 3 Months):

1. Clean the transformer's dust and keep in a record.
2. It must be used cable tray with cover to ensure the mechanical protection of the cables laid on floor otherwise cable insulation may damage due to falling object or stepping of occupants onto it.
3. The cover of cable duct should be installed to keep it free from the ingress of debris, dust and lint. Establish a periodic cleaning program to keep all the duct/trays/channel dust-free.
4. 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.
5. Rusted bus bar shall be cleaned. Terminate single cable (lugs/sockets) to a single point (single nut, bolt and washer) of bus-bar to get better electrical continuity and avoiding loose connection.
6. Provide cable lugs for terminating cables. Ensure the lug size is same as the respective cable. Properly fix lugs with proper size nuts, bolts and washers.
7. Remove all the multiple connections made at a single point of panel bus-bar and connect individual branch cables to individual panel bus-bar providing individual lug according to the respective cable size. Mixing of branch termination is not allowed.
8. Wiring in PVC flexible conduit entering panels must be firmly fixed at the panel (base / Top) using socket and check nuts.
9. Install panel base plate and make circular hole at the base plate and install cable glands according to the respective cable size for cable entry and exit.
10. Cables connecting to MCCB inside panel must be connected firmly with cable lugs according to cable size. Cable terminating to the MCCB must be fixed with proper size nuts and bolt.
11. Damaged conduit must be replaced and supported, clamped using saddle at regular interval (600 mm preferably).

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

12. 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.

13. Set up the above program and keep the test result.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA