

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: UNISON DESIGN LTD.
Address of the Factory	: Plot BB-365,386,367, BSCIC I/E Fatullah, Narayangonj
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 25 March, 2015
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 30 August, 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 framed building
iii. Floor System	: Beam slab
iv. Floor Area	: The factory has each floor area of 4,000 sqft
v. No. of Stories	: 8 storied
vi. Construction Year	: 2011
vii. Foundation Type	: Piled foundation
viii. Design Drawings	: Available (Permit drawing)
ix. Soil investigation Report	: Available (Dated October 2007)
x. Construction Materials	: Stone aggregated
xi. Generator	: Ground floor south side of the 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. Factory Engineer to review design, loads and columns stresses in all columns.
2. Verify insitu concrete stresses by taking 100mm diameter cores from a minimum of 4 columns. Verify grade of steel reinforcement used.
3. A Detail Engineering Assessment of Factory to be commenced.

Mid Term (Within 6 Weeks):

1. Make structural alterations as advised by Engineer.
2. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
3. Detail Engineering Assessment to be completed.
4. As noted in Item 1 assess the floor capacity as part of the Detailed Engineering Assessment. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.

Long Term (Within 6 Months):

1. Continue to implement load plan.

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. Keep egress paths and stairs clear of storage.
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. Provide exit signs above all exits to the exterior and all doors to the exit stairs.
6. Regularly inspect all exit signage and replace/install lights as needed to illuminate signs.
7. Regularly test the emergency lighting system on each floor and replace/repair lights as needed.

Short Term (Within 3 Months):

1. Separate the boiler and generator 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. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
5. Provide minimum aisle widths of 36-in.
6. Provide handrails on at least one side of exit stair.
7. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
8. Inspect, test and maintain the emergency lighting system in accordance with The ACCORD standard. Keep written records on-site.
9. 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.

Mid Term (within 6 Months):

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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):

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. DO fuse or any other HT switchgear must be used in transformer.
2. Generator Battery must be placed on the acid proof battery stand (may be steel fabricated).
3. Required length of cable may be used.
4. Earthing connection must be connected to the body in such a way that better earth continuity should be remaining.
5. Remove the extra wires from COS.
6. Place electrical graded rubber mat in front of all electrical panels.
7. Panel door(s) must be connected with earth bond connecting frame and door.
8. Heat resistant conduits may be used to protect wirings.
9. Cables connecting to bus bars inside panel must be connected firmly with cable lugs. Cable terminating to the bus bars must be fixed with proper size nuts and bolt with washers.
10. Earthing bus bar must be used.
11. Cables passing through permanent walls must be protected with rigid conduits/pipes. Remaining hole must be sealed by noncombustible materials.
12. Cables terminating at MCCBs must be installed with cable lugs/terminals of required size and rating.

Short Term (Within 3 Months):

1. Block all the openings by holed metal sheet so that it can prevent ingress of dirt, debris, lint etc. Provide cable gland for every cable entry and exit hole.
2. Construct covered cable trench or install cable tray to route and protect the entering and leaving cables of panel. Keep 1 m clearance around the LT and PFI plant for easy operation and maintenance.

Mid Term (Within 6 months): NA

Long Term (More than 6 months):

1. Overhead service cable must be firmly fixed at both ends and supported on cable shaft or tray.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

2. Enlarge the existing generator room to provide sufficient working clearance around or keep sufficient clearance around the generator (1 meter preferably).
3. 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.
4. Thermo graphic scanning of the entire electrical system must be performed on tri-annual basis and recorded.
5. Electrical safety training and awareness program for the electrical personal and workers must be initiated and recorded.
6. Insulation test must be done.
7. Assign a qualified electrical engineer for the drawing of as-built electrical Single Line Diagram.
8. Factory must have maintenance report.