

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Suman Fashion Garments Ltd.
Address of the Factory	: Cha-72/1/B, Moddha Badda, Holland Centre, Progoti Sarani, Dhaka
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Original report available at bangladeshaccord.org)
Date of Structural Inspection	: 21st June 2014
Fire & Electrical assessment conducted by:	Accord (Original report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: February 26, 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	: Garments Factory
ii.	Structural System	: RCC beam slab, RC Flat Slab at 3 rd floor
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 11 Storey
vi.	Construction Year	: 1999
vii.	Foundation Type	: Not Applicable
viii.	Design Drawings	: Available(Rajuk,1999)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
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:

- Maintain current use of the floors and do not change use or increase occupation, either of which could increase loading. 7th and 8th Floors to remain vacant
 - Reduce water level in tank at roof level to maximum of 1m
 - Factory Engineer to review design, loads and stresses in all columns.
 - Verify insitu concrete strength either by 100mm diameter cores or existing cylinder strength data for cores from 6 columns. Verify reinforcement within as built columns.
 - A Detail Engineering Assessment of Factory to be commenced, see attached Scope.
 - As part of Detail Engineering Assessment, Building Engineer to commence survey of as-built structure and update drawings including a verification of the location of columns and beams at each floor level.
 - Survey to include the verification of beams on the soffit of ground, 1st and 2nd floors – checking that these beams are not penetrated by building services.
-

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Mid Term (Within 6 Weeks):

- Detail Engineering Assessment to be completed including a specific design check on columns at basement level which support roof level concrete water tank
- Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
- Complete as-built survey and Detail Engineering Assessment
- Produce and actively manage a loading plan for all floors within the Factory giving consideration to floor capacity and column capacity.(Refer to Item 1)
- Steel roofs to dining area should be assessed by the Building Engineer including the provision of a lateral stability system and, if required, upgraded to support code vertical and wind loads.
- Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity. (Refer to Item 1)

Long Term (Within 6 Months):

- Continue to implement load plan
- Implement recommendations for roof structure as required by the Building Engineer.

The recommendations for Fire Safety corrective actions are:

Immediate:

1. Remove all lockable gates and doors at exits and along the means of egress. 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.
3. Configure the fire alarm system to initiate automatic occupant notification on all floor levels to facilitate whole building evacuation upon any manual fire alarm station activation.
4. Remove any manual on/off switches in public areas to prevent accidental deactivation.
5. Regularly test the emergency lighting system on each floor and replace/repair lights as needed.

Short Term (Within 3 Months):

1. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
 2. Separate the boiler room 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 dedicated storage rooms separated by minimum 1 hr fire-rated construction on all production floors where transient storage is required for operations. Where separate storage rooms are not feasible, provide defined storage areas and limit the storage arrangement as follows:
 - Maximum height of 2.4 m 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.
-

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

5. Separate the transformer room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
6. Gates and other obstructions in the southeast stairwell are not permitted and need to be removed, doing so will provide the required exit capacity for the fourth floor.
7. Modify the stair door to swing in the direction of egress travel.
8. Provide minimum aisle widths of 36-in.
9. 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. Relocate detectors closer to the ceiling and provide additional detectors, where needed, to provide appropriate spacing.
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:

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:

1. Install a riser or tray to support the entering and leaving cables of changeover switch to reduce cable strain on the termination point. Provide metallic cover on the riser or tray to avoid the physical damage of cables due to moving objects. Cable terminating at the panel must be firmly fixed with glands into base plates, to prevent damaging of cable insulation due to the sharp edge of panel at the entry.
 2. Provide cable glands 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 and it will be supported additionally. Provide covers (of noncombustible material) if any additional gap remains after installing cable glands to make the panel dust and vermin proof.
 3. Support the HT cable attach to the pole by using suitable fittings. HT cable dropping from HT pole must be protected in steel pipe of required size at least 2m high from the ground level to protect the cable from physical injury by moving objects.
 4. The HT cable should be routed and arranged avoiding acute bend throughout its whole length.
 5. Disconnect the Transformer from the feeder and clean the transformer room. Establish a routine cleaning program to keep the transformer room neat and clean.
 6. Construct a cable trench or cable tray with protective cover to route and protect the HT cable. In case of cable trench: metallic cover (checkered plate) should be provided on cable trench to prevent the damage of cable insulation from falling of operator and keep the trench dust and vermin proof.
-

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

7. Clean transformer periodically as part of routine maintenance 8. Transformer oil must be filled to the required level after shutdown. Periodic inspection and monitoring should be practiced to check the oil level in required level.
8. Disconnect the transformer from the feeder and replace the silica gel or perform maintenance to remove moisture from it.
9. Breather oil cup must be filled with transformer oil to the required level as instructed by the manufacturer.
10. Clean panel board periodically as part of routine maintenance. Seal all the unused openings of the panel to make the panel dust and vermin proof.
11. Install cable tray with protective cover to route and protect the cables in it. Arrange the cables (put tags on the cables) in the cable tray in such a way that they can be easily identified and ease for maintenance.
12. Multiple cables terminated to single poles of MCCB must be disconnected. Terminate proper sized single cable into each pole of MCCB by using proper cable lugs.
13. Install separators between different phases of MCCB to avert flashover. Standard separators provided by the MCCB manufacturer must be used.
14. Remove all the unused materials from the room and establish a cleaning program to keep the generator room neat and clean.
15. Collect a base plate for the terminal box and make circular hole into it and fit cable glands into the holes; select the glands 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 to make the box dust and vermin proof. Install a riser to support the output cables drawn from the terminal box.
16. Terminate each cable individually on the bus bar. Multiple cables shall not be terminated on same point of bus bar. Use proper sized cable lugs to terminate cables to the bus bar.
17. Shut down the power of the floor and clean the cable tary. Provide metallic cover on the cable tray throughout it's whole length to prevent the ingress of dust and lint. Establish a cleaning program to keep the tray neat and clean.
18. Remove the wooden board and reinstall the protective devices in a metal casing made of metal sheets of Thickness 20SWG with required size according to BNBC 2006, Section 2.5.5.2 (Table 8.2.7) and painted it with enamel paint.

Short Term (Within 3 Months):

1. Install separators between different phases of MCCB to avert flashover. Standard separators provided by the MCCB manufacturer must be used.
2. Cables passing through permanent walls must be protected in steel/PVC pipe and remaining gaps after the passage of pipe should be sealed with fire resistant materials.

Mid Term: NA

Long Term: NA

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety
