

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	:	T.J SWEATER LTD
Address of the Factory	:	16/7, Sataish Road, Gazipura, Tongi, Gazipur-1712, Bangladesh
Dhaka Present Status of the Factory	:	Under Operation
Structural assessment conducted by	:	Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	:	27 May, 2014
Fire & Electrical assessment conducted by	:	Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	:	13 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 and column frame with a 2-way cast in place slab
iii.	Floor System	:	Beam slab
iv.	Floor Area	:	Unavailable
v.	No. of Stories	:	5 storied
vi.	Construction Year	:	2009
vii.	Foundation Type	:	Unavailable
viii.	Design Drawings	:	Available
ix.	Soil investigation Report	:	Unavailable
x.	Construction Materials	:	Unavailable
xi.	Generator	:	Southeast corner of the factory site

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. Remove heavy storage loading in the area identified above.
2. Factory Engineer to review design and loads in the area identified above.
3. Factory Engineer to state the maximum weight that is allowed per square meter. Suggest that state the value on notice boards in this area.
4. Reduce stacking height to ensure total load does not exceed 3 kPa.

Mid Term (Within 6 Weeks):

1. Adopt some sort of signage/staff guidance to ensure that the maximum weight of storage is not exceeded. (Loading Plans).
2. The Factory Engineer to investigate the cause of cracks by appropriate methods.
3. The distress found is to be suitably rectified and then repaired.
4. Factory Engineer to survey the actual conditions and revise the drawings.
5. Factory Engineer to review design, loads and columns stresses to confirm suitability for loads applied.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

6. Produce and actively manage a loading plan for all floor plates within this area giving consideration to floor capacity and column capacity.
7. Request that the Detail Engineering Assessment of the overall building to be carried out and in particular, stability and foundation aspects should be investigated in detail.
8. Factory Engineer to inspect water damaged structures and repair with a suitable method.
9. Fireproofing material for structural steel element is recommended as suggested in BNBC Codes.

Long Term (Within 6 Months):

1. Maintain standards of quality control to ensure that storage procedures are correctly followed so that overloading problems do not arise in the future.
2. Implement Loading Plan.
3. Create loading plans for each floor level.
4. Waterproofing on the roof slab is recommended. Moreover the slab drainage system should be investigated.
5. Maintain standard of quality control.
6. For both durability and serviceability, rust proof paint or any appropriate methods is recommended.

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 and egress paths.
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 and generator rooms by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
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. 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.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

4. 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.
5. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
6. Provide minimum 2-hr fire rated construction walls and minimum 1.5-hr fire-rated doors for the continuous exit stairwell enclosure on each floor.
7. Provide a minimum 2-hr fire rated exit corridor between the day-care room and exit stair or Relocate day-care room to ground floor with maximum travel distance of 9m (30 ft).
8. Provide handrails on at least one side of exit stair.
9. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
10. Inspect, test and maintain the emergency lighting system in accordance with The ACCORD standard. Keep written records on-site.
11. 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):

1. Seal all penetrations and openings to the interior of the building along the discharge path, up to a height of 10 ft., to provide a minimum 1-hr fire separation.
2. 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.
3. Provide additional notification appliances such that the fire alarm system is audible throughout the building in accordance with NFPA 72.
4. 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. The factory must have as-built electrical SLD with electrical wiring layout designs and drawings. Any changes in load, protection system, conductors, generation and supply system must be reflected in the as-built SLD and drawings.
2. Check connections for tightness to prevent heating due to loose connection, and check unbalanced the each phase loads.
3. Arrange periodic inspection & thermal scan to identify the overloading, loose connection, unbalanced load which may cause the excessive heat-rise and take action accordingly.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

4. The rigid PVC (industrial graded) pipe used for surface wiring must be continuous throughout its length and properly supported (clamped with saddle clamp, at regular interval of 600 mm).The conduit shall run vertically or horizontally, shall never at angle.
5. Color code should be maintained as per standard. Earthing cable color should be green (Apply to all panels).
6. Panel door(s) must be connected with bonding connection.
7. Generator frame must be earthed providing two distinct earth connection of proper size earth conductor (minimum 35sqmm).
8. Generator Batteries must be placed on an acid proof, made of noncombustible material battery stand (battery rack).

Short Term (Within 3 Months):

1. Provide covers (of noncombustible material) if any additional gap remains after installing cable glands.
2. Power cable should be supported on cable rack. Install metallic (non-combustible) cable duct over the floor and provide metallic cover on it to keep it dust and vermin proof. Establish a periodic cleaning program to keep all the duct/trays/channel dust-free.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA