

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: BEST WOOL SWEATERS LTD.
Address of the Factory	: Jarun, Konabari, Gazipur, Dhaka, Bangladesh
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 15 June, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 26 June, 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. Beam and column frame with a 2-way solid slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 7 storied
vi.	Construction Year	: 2007
vii.	Foundation Type	: Pad foundation
viii.	Design Drawings	: Available (Approved by LGED)
ix.	Soil investigation Report	: Available (Dated April, 2007)
x.	Construction Materials	: Stone aggregated
xi.	Generator	: Ground floor of utility 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): NA

Mid Term (Within 6 Weeks):

1. Factory Engineer to review design, loads and column stresses in area of the building highlighted above.
2. Verify insitu concrete stresses either by 100mm diameter cores or existing cylinder strength data for cores from 4 columns.

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. Monitor cracks to beams and slab soffit. Engage an engineer to investigate if cracks are only in the plastering.
3. Engage a Building Engineer to advice on load reduction and repair and strengthening of the slab if required.
4. Engage a Building Engineer to review the design of all lightweight roof structures within the compound, and confirm their ability to withstand wind loading pressure, suctions and uplift forces, with special emphasis on connections and bracing.

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5. Building Engineer to implement any actions / supervise any remedial works as identified following the review.

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 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 combustibile 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. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
4. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
5. 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. Replace the single-station smoke alarms with automatic smoke detectors 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. Fill the Breather oil cup with transformer oil up to the required level as instructed by the manufacturer. Consult with transformer servicing company before performing the task.

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- Establish a routine maintenance & inspection program for transformer as well as all other electrical equipment to ensure any future repetition of the occurrence.
2. Cables must be supported and arranged on cable trays or ladder with proper clamping at regular intervals.
 3. Install separators between different phases of MCCBs. Standard separators provided by the MCCB manufacturer must be used.
 4. Remove all the multiple connections made at a single point of MCCB and connect individual branch cables to individual points on MCCB using individual lug according to the respective cable size.
 5. Sharp bends in cables, near termination points, must be prevented to avoid stress on cables termination, cable and on the cable insulation. Use cable lugs/sockets to terminate cables into the MCCB poles. Use single cable into single pole of MCCB to avoid loose connection.
 6. Incoming and outgoing cables terminating at MCCB must be of same size.
 7. Cables must be protected in heat resistant metallic conduits supported by a vertical cable ladder or cable tray, clamped at regular interval. Required length of cables may be used or provide necessary protection for the excess cable.
 8. 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.
 9. Arrange periodic inspection & thermal scan to identify the overloading, loose connection, unbalanced load which may cause the excessive heat-rise and take action accordingly.
 10. Wires close to boiler must be protected from external heat and moisture by metallic heat resistant conduits, keep sufficient clearance between heat source and cable/wires.

Short Term (Within 3 Months):

1. HT cable dropping from 11kV pole must be firmly fixed to the pole with supports and clamps.
2. HT cable bends shall be avoided such that no stress is imposed on the termination of the cable or insulation of the cable. Switch off the power and cut off the excess cable or lay the excess length of cable in cable trench with standard laying procedure.
3. Make an arrangement to enlarge the transformer spacing at HT side, as per standard (BNBC table 8.2.8) or maintain sufficient working space at HT side, i.e., 1.25 meters between wall and HT riser.
4. Use cable tray or conduit to pass cables through wall and seal the unused openings by fire rated materials.
5. Disconnect the supply for safety and clean all the dust and lint. Provide cover made of noncombustible material preferably a concrete slab with proper sealing of gaps to prevent ingress of dust and lint (top). Cables laid on ladder must be protected by cover to prevent physical damage to the cables (bottom).
6. Panel base plates must be installed, at all time, and cable(s) entering panel must be firmly fixed with cable glands of required size and seal the unused openings by suitable means to make the panel dust and vermin proof.
7. Thoroughly clean all the combustible materials like dust, lint and yarn from cable raceways, arrange the wires properly and the raceways must be covered with all its accessories like bends, junction and cover to prevent ingress of lint and dust.

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Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA