Name of the Factory	:	**BD. KNIT DESIGN LTD.**
Address of the Factory	:	Helal Complex, Shafipur, National University, Gazipur, Bangladesh
Dhaka Present Status of the Factory	:	**Under Operation**
Structural assessment conducted by	:	Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	:	9 March, 2014
Fire & Electrical assessment conducted by	:	Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	:	23 March, 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	: Each floor has the area of 10,184 sq ft.
v.	No. of Stories	: 6 storied
vi.	Construction Year	: 2001
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Permit drawing)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: South side of 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. Immediately reduce stacking height of boxes to ensure total load does not exceed 3.0kPa.

Mid Term (Within 6 Weeks):

1. Mark the maximum allowable height of fabric stacking to ensure full compliance with specified design loads.
2. Factory Engineer to review design, loads and columns stresses.
3. Verify insitu concrete stresses by 100mm dia. cores from 4 typical internal columns.
4. The factory engineer is to verify the stability of the telecommunication tower to prevent damage to the building.

Long Term (Within 6 Months):

1. Produce and actively manage a loading plan, ensuring maximum height of storage is adhered to in the long-term.
2. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.

3. Carry out any remedial measures that the factory engineer considers necessary to ensure the long term stability of both the tower and the building itself.

4. Consider applying a new waterproofing membrane.

The recommendations for Fire Safety corrective actions are:

Immediate (Within 1 month):

1. Keep egress paths and stairs clear of storage.

2. Remove locking features from all egress doors and gates. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.

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.

4. Remove all storage from exit stairs and egress paths.

Short Term (Within 3 Months):

1. Separate the boiler, generator, transformer and EMR room 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 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.

4. Seal all penetrations and openings in floor/ceiling assemblies to maintain the fire separation.

5. 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.

6. Modify exit arrangement or Provide additional exit.

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.

Mid Term (within 6 Months):

1. 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 (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. Insulate the battery terminals to avoid short circuit and clean the battery vent/plug clean to emit gas during over charging. Generator Batteries must be placed on a stand made of noncombustible material (steel fabricated, acid proof). Establish a maintenance checklist for the generator where the checking point of exciter battery should be included.

2. Two separate and distinct earth connections with required sized conductor should be connected to the generator frame with better earth continuity.

3. Install rigid PVC/steel pipes for surface or exposed wiring must be continuous through-out its whole length and properly supported (clamped with saddle, at regular interval of 600 mm).The conduit shall run vertically or horizontally, shall never at angle. The conduit should be prevailed when the cables passing through the wall and seal the openings after passage of conduit with proper fire rated materials.

4. Use steel pipe (instead of flexible pipes),clamped with saddle on floor, to ensure the mechanical protection of the cables laid on floor otherwise cable insulation may damage due to falling object or stepping of occupants on it.

5. Use flexible cord for the fan input power connection or encase the input cables in industrial graded flexible pipes to prevent it from physical damage as well as electric shock.

6. Establish a routine cleaning program as a part of maintenance to keep the boiler room neat and clean.

7. Install separators between different phases of MCCB to avert flashover. Standard separators provided by the MCCB manufacturer must be used.

8. Cables should be terminated to bus bar by using proper lugs; use good quality lugs and punches it by proper hydraulic puncher or hand puncher removing no air gaps. Use chromium plated nut, bolt and washer to terminate cables on bus bar tightly.

9. Provide earth connection to panel enclosure including its door of metallic distribution boards using green cables preferably braid so that the metallic door remains at zero potential all the time.

10. Seal all the unused openings of the panel to make it dust and vermin proof. Establish a routine cleaning program to keep the panel dust and vermin proof.

11. Reinstall the Earth Bus bar at least 1.5 feet above the floor and encased it inside metal casing made of metal sheet to protect the Bus bar from the effect of atmosphere. All the conductors should be securely connected to the bus bar for better earth continuity.

12. Incoming and outgoing cables must be terminated to the input and output terminals of MCCB respectively to use it as protective purpose. MCCB should be encased in metal casing made of 20 SWG thickness metal sheets.

13. Install rigid PVC/steel pipes for surface or exposed wiring must be continuous through-out its whole length and properly supported (clamped with saddle, at regular interval of 600 mm).The conduit shall run vertically or horizontally, shall never at angle. The conduit should

be prevailed when the cables passing through the wall and seal the openings after passage of conduit with proper fire rated materials.

14. Provide metallic cover on cable channel throughout it's whole length to prevent ingress of dust, lint and vermin. Establish a routine cleaning program to keep the channel neat and clean.

Short Term (Within 3 Months):

1. Shut down the floor electrical power and clean the cable tray. 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. Keep 30% free inside cable tray/channels/ducts for proper heat dissipation. Install another cable tray or channel to accommodate the excessive cables.

2. Remove the red cable from the pole. Terminate the branch circuit's power from the bus bar via MCB. Terminate proper sized single cable into single pole of MCCB to avoid loose connection.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA