

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: BOVS APPARELS LTD.
Address of the Factory	: Jamur Muchipara, Hemayetpur, Savar, Dhaka
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 26 April, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 13 April, 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 beam slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 8 storied
vi.	Construction Year	: Start-2010, Ongoing construction
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Permit drawing)
ix.	Soil investigation Report	: Available
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 (Now): NA

Mid Term (Within 6 Weeks):

1. Produce loading plans for all levels. Ensure these are displayed throughout the building and actively managed.
2. Carry out an Engineering Assessment of the roofs of the ancillary buildings.
3. Design Engineer to update record drawings to suit the as built conditions of the piles.

Long Term (Within 6 Months):

1. Maintain and enforce the loading plans.
2. Carry out any repairs highlighted in the Engineering Assessment.

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.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

2. 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.

Short Term (Within 3 Months):

1. Separate the hazardous materials / flammable liquid storage room by a minimum 2- hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
2. Separate the boiler, generator and transformer room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
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.

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. Provide a minimum 2-hr fire-rated shaft to separate the utility risers from each floor level.
6. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
7. 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.
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. Provide additional notification appliances such that the fire alarm system is audible throughout the building 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.
2. Provide automatic sprinkler protection throughout the building in accordance with NFPA 13.

The recommendations for Electrical Safety corrective actions are:

Immediate (Within 1 month):

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

1. Breather oil cup must be filled with transformer oil to the required level as instructed by the manufacturer.
2. Make circular hole at the base plate/top plate of panels and provide cable gland 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 panel dust and vermin proof.
3. Install the panel base plate to make it dust and vermin proof.
4. Panel enclosure including its door must be connected to earth using green cables preferably earth braid so that the metallic door remains at zero potential all the time. Practice earth continuity test to insure earth continuity to panel and loads enclosure and keep record.
5. Select proper sized single cable for each pole of MCCB. Select the protective device according to the cable size to be protected. Use proper sized lugs with respect to the cable size. Punch the lugs properly by using proper hand puncher or hydraulic puncher to remove loose connection.
6. Protective devices should be encased in metal casing made of 20 SWG thickness metal sheets.
7. Electric wires and cables must be installed at a safe distance from the sanitary pipes to avoid damages to electrical installation due to moistures and physical damages during works on sanitary pipes. Cables passing through permanent walls must be protected in covered cable tray/ steel pipe /PVC pipes and supported near the panel entry; the remaining gaps after the passage of conduits must be sealed with fire resistance materials.
8. The used cables on the ceiling must be tapped properly with electrical tape to avoid short circuit and electric shock. The cables must be protected and supported above floor.
9. Install standard separators provided by the MCCB manufacturer to avoid flashover.
10. Use Steel/covered cable tray pipe for carrying cables laid on the floor drawn from the panel to motor terminal box. Use industrial graded flexible pipe where the steel pipe unable to bend.

Short Term (Within 3 Months):

1. Install cable tray with protective cover to support and protect the cables laid on the floor and cables supported on the existing cable ladder.
2. Install a vertical cables tray or ladder with protective cover to lift the cables from the ground to ladder hung from the ceiling and fix and arrange the cables tightly.
3. Install a covered cables tray to route and protect the cables through window grill safely. Provide earth connection to the cable tray to keep it earth potential all the time (both the normal and abnormal condition).
4. Cables passing through permanent walls must be protected in covered cable tray/ steel pipe /PVC pipes and supported near the panel entry; the remaining gaps after the passage of conduits must be sealed with fire resistance materials.
5. Use rigid PVC/Steel pipe for carrying cables into the panel; run vertically or horizontally never at an angle and support them at regular intervals with saddle clamp.
6. Install covered cable tray to route and protect the cables hung from wall.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

7. Install separators between different phases of MCCB to avert flashover. Standard separators provided by the MCCB manufacturer must be used.
8. Additional panels may be installed to distribute to reduce wiring and protective devices from the existing panel. Design the electrical panels according to the number and size of protective devices and wiring to be installed inside it. Establish a load management plan to distribute load uniformly. Install slotted PVC channels for routing cables inside the panel in good fashion.
9. Clean the cable ladder. Provide metallic cover on the cable ladder to protect it from physical damage due to falling object. Establish a cleaning program to keep the ladder clean.

Mid Term (Within 6 months):

1. Construct a fire rated separate dedicated room for the transformers providing necessary clearance around it. Assign a qualified engineer to design a required transformer room according to BNBC 2006, Section-2.6.3.

Long Term (More than 6 months): NA