

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: CONTINENTAL APPARELS LTD.
Address of the Factory	: Plot # 145, Monipuripara (3rd Floor), Airport Road, Super Market,
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 20 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	: Rectangular Reinforced Concrete
iii.	Floor System	: Beam slab
iv.	Floor Area	: The Continental Apparels Ltd has occupied 39478 sq.ft.
v.	No. of Stories	: 6 storied
vi.	Construction Year	: 1983
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Permit drawing)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Brick aggregated
xi.	Generator	: Ground floor generator room

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. Suspend all activities at the roof floor level in the building 2.
2. Remove all live load from at least two floors of the building 2 to reduce loading to within 'AMBER' limits.

Mid Term (Within 6 Weeks):

1. Carry out intrusive testing of structure to determine actual concrete and rebar strength
2. A Structural Engineer is to carry out a thorough load check of the entire structure, including slabs, beams and columns.
3. Carry out intrusive testing of the structure to determine the actual concrete and rebar strengths.
4. Carry out a full survey of all structural elements to check the loading capacity of the structure.
5. Factory Engineer to review design, loads and columns stresses in the entire building.

Long Term (Within 6 Months):

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1. Consider whether to demolish the concrete roof to bring the unsafe columns back into a safe condition.
2. Produce and actively manage a loading plan for all floor plates, giving consideration to floor capacities and column strengths.
3. Consider removing the steel roof.
4. Repair any and all damaged concrete exposing reinforcement to check for corrosion if required.
5. Consider removing existing roof screed and apply a new waterproofing membrane then reapplying the screed.

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.
2. Keep egress paths and stairs clear of storage.
3. 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. 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.
2. Increase exit opening to a minimum of 32 inches.
3. Relocate day-care room to ground floor with maximum travel distance of 9m (30 ft).
4. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
5. 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. Provide minimum 1hr fire rated room and seal all unprotected openings to separate from work areas and other building spaces on all floor levels. Ensure that the fire doors are self-closing and fire rated for use.
2. Provide 2-hr fire-rated exit passageway leading directly outside, a vestibules to separate the staircase for the work area.

Long Term (More than 6 months):

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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. Remove combustible materials from generator room.
2. Generator Battery must be placed on the acid proof battery stand.
3. Cable must be supported in covered cable tray from generator terminal box to the change-over switch top plate.
4. Extending the existing concealed wiring points must be avoided for long points and higher loads. Wiring extended from existing points must be connected using connectors or ceiling rose.
5. Wires in wiring must be protected and supported throughout its length. Open junction box must be covered.
6. Damaged light fittings (or receptacles) not used must be with new one.
7. Damaged fittings must be replaced with new and safe fittings as required.
8. PVC conduit wiring systems must be installed in complete with accessories like junctions, joints, bends and reducers).
9. Combustible materials used as panel must be replace with metallic enclosure of minimum 20 SWG thickness.
10. Arrange periodic inspection & thermal scan to identify the overloading, loose connection, unbalanced load which may cause the excessive heat-rise and take action accordingly.
11. Install separators between different phases of MCCB. Standard separators provided by the MCCB manufacturer must be used.

Short Term (Within 3 Months):

1. HT cable dropping from HT pole must be firmly fixed to the pole with supports and clamps.
2. Existing HT cables raised to roof top must be supported and protected throughout length in cable trays, risers and ladder with protective cover.
3. Cables passing through permanent walls must be protected in steel pipes and remaining holes around the pipe must be sealed with fire rated materials.
4. Service cables passing through walls must be protected in steel pipes.
5. Cables supported on walls must be laid horizontal/vertical to the wall, supported in cable trays/ladder with protective cover.
6. HT cables must be laid into cable trays with protective cover. Existing cable may be protected and supported in cable trays through safe route.
7. Cables must be supported on cable trays and riser with protective cover. Cables may be laid in cable trench with covers.

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8. Water must be pumped out of the room. Existing transformer(s) in basement must be raised above minimum flood level.
9. Drainage in transformer room must be provided such as there is no ingress of water into the room.
10. Some of the existing panels near generator may be relocated to another room to provide adequate space around the generator.
11. Cables terminating at the generator output panel must be firmly fixed with cable glands and supported on cable trays (overhead).
12. Cables supported and arranged on tray or risers to provide protection from any physical damage.
13. Wiring must be supported and protected throughout the length providing rigid PVC conduits.
14. Rigid PVC conduits not adequately supported and protected, clamped with saddle at regular interval.
15. Cable near the panel must be supported in covered cable trays to prevent any physical damage.
16. Make circular hole at the 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.
17. Multiple cables connecting at a MCCB terminal must be removed. Individual circuit breaker must be used for each load according to the respective cable-size.
18. Terminate each cable individually on the bus bar (providing individual lug according to the cable size). Multiple cables shall not be terminated on same point of bus bar.
19. Cables terminating to Changeover Switch(s) must be protected and supported in cable trays, ladder or risers to prevent any physical damage.
20. Cables installed near panel(s) must be protected and supported in trays or ladders up to the panel base-plate. Cables must be securely fixed to the ladder/tray at regular intervals.
21. Wires terminating to devices inside panel must be connected firmly and wires approaching devices must be securely fastened to avoid unintentional contact with live parts. Install slotted wiring duct to latch the cable inside the duct.
22. Protective devices should be encased in metal casing made of 20 SWG thickness metal sheets.

Mid Term (Within 6 months):

1. Cables at noted location must be supported and arranged on cable trays or ladder.
2. Make circular hole at the base 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/to reduce stress at the termination point.

Long Term (More than 6 months): NA