

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: COLUMBIA APPARELS LTD.
Address of the Factory	: 228/1, Tin Sarak, Luxmipura, Joydevpur, Gazipur- 1700
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 2 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 2 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	: Unavailable
v. No. of Stories	: 5 storied
vi. Construction Year	: 1999-2004
vii. Foundation Type	: Piled foundation
viii. Design Drawings	: Available
ix. Soil investigation Report	: Available
x. Construction Materials	: Unavailable
xi. Generator	: Separate one-story building to the east of the factory 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):

1. Maintain current use of the floors and don't change use or increase occupation, either of which could increase loading.
2. Factory Engineer to review design, loads and columns stresses in all columns.
3. Verify insitu concrete stresses either by 100mm diameter cores or existing cylinder strength data for cores from 4 columns.
4. A Detail Engineering Assessment of Factory to be commenced, see attached Scope.

Mid Term (Within 6 Weeks):

1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
2. Detail Engineering Assessment to be completed.
3. Building Engineer to check that slab has sufficient capacity to support fully filled water tanks and relocate if necessary.
4. Ensure that stacks of materials are separated by a 0.5m gap all around.
5. Building Engineer to check capacity of existing structure to carry storage loads.

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6. Building Engineer to create controlled loading plans for all floors designating where storage can be placed.
7. Provide physical barrier or other protection to column to prevent vehicle impact.
8. Building Engineer to check the cantilever beams and slabs to ensure adequate load carrying capacity.
9. Building Engineer to check the supports and propose revised supports to ensure stability under dead, live and accidental loading.
10. Support details to be upgraded as per building engineer's design.
11. Factory engineer to check stability of wall and propose remedial actions.
12. Wall to be upgraded as per engineer's design.

Long Term (Within 6 Months):

1. Continue to implement load plan.
2. Manage drainage from above levels and water tanks to downpipes to avoid structural corrosion due to continuous moisture.
3. Exposed reinforcement not to be used for any structural applications.

The recommendations for Fire Safety corrective actions are:

Immediate (Within 1 month):

1. Reduce occupant load to not more than 650 each on 1st-4th floors immediately. In the future provide additional exits to serve the 1st-4th floors.
2. Remove locking features from all egress doors / gates. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.
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.
4. Remove all storage from exit stairs and egress paths.

Short Term (Within 3 Months):

1. 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.
2. 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.

3. 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)

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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.

4. Provide additional exits so that travel distance is 200 feet or less from all points of each floor.
5. Add additional exits so that no more than 50% of the total exit capacity can be compromised by a single fire.
6. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.

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. Panel base plates must be installed, at all time, and cable(s) entering panel must be firmly fixed with cable gland.
2. Panel door(s) must be connected with earth bond connecting frame and door.
3. Cables must be supported on cable trays and riser. Cables may be laid in cable trench with covers.
4. Flexible PVC conduits on walls and column must be additionally protected and supported on trays or risers.
5. Electrical room must have signs to identify it as substation/electrical room with high voltage danger signs.
6. Cables terminating at distribution board and installed between floor and panel base must be protected in rigid conduit or in covered ladder to protect physical damages.
7. Cable length must cover full length of cables installed to support cables till the last end of the panel rows.

Short Term (Within 3 Months):

1. Conservator tank (on transformer) must be checked and required oil level must be maintained.
2. Excess length of existing HT cables coiled near transformer must be protected and laid safely.
3. Cables passing through permanent walls must be protected in steel pipes and remaining holes around the pipe must be sealed.

Mid Term (Within 6 months):

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1. Transformer plinth must be raised above local flood level.
2. Transformer may be separated from panels by constructing barrier walls.
3. Transformer room may be rearranged or some of the panels may be relocated.

Long Term (More than 6 months): NA