

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: UPDATE APPARELS LTD
Address of the Factory	: Fuji Trade Centre, Cha-87/C, Pragatai Sarani, North Badda, Dhaka
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 4 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 4 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	: Multi-purpose
ii. Structural System	: RC flat slab
iii. Floor System	: Beam slab
iv. Floor Area	: Unavailable
v. No. of Stories	: 12 storied
vi. Construction Year	: 2003
vii. Foundation Type	: Unavailable
viii. Design Drawings	: Available (Approved by RAJUK in 1999)
ix. Soil investigation Report	: Available (Dated December 1998)
x. Construction Materials	: Unavailable
xi. Generator	: Basement

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. Reduce all loads in excess of 2 kPa.
2. Verify insitu concrete stresses either by 100mm cores from a minimum of 4 Non-critical columns or existing cylinder strength data for columns.
3. A Detail Engineering Assessment of Factory to be commenced, see attached Scope.
4. Reduce all storage loads to below 1.5 kPa at level 10.
5. Remove items stored in service zone above toilet areas.
6. Reduce all areas of high loading to 2.0 Kpa maximum until Detailed Engineering assessment and loading plans are complete. In particular remove the timber at ground level.
7. Reduce loading to 2.0 kpa maximum. Pay particular attention to loads on flat slab cantilevers. Large cracks noted in this report to be monitored using crack gauges.

Mid Term (Within 6 Weeks):

1. Create controlled loading plans for all floors, designating where storage can be placed and cannot be placed.

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2. Provide calculations showing the structural adequacy of all columns, taking into account the loading plans and all built structure including additions beyond the original design.
3. Detailed Engineering Assessment to be completed.
4. Factory Engineer to review design, loads and columns stresses in roof area. Flat Slab acting as transfer structure to be assessed.
5. Structural Design of roof additional building to be assessed.
6. Produce and actively manage a loading plan for roof giving consideration to floor capacity and column capacity.
7. Consider as part of Detail Engineering Assessment of Factory arising from Item 1.
8. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity in toilet block area.
9. Arising from Item 1 above, a Detail Engineering Assessment of Factory to be commenced.
10. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
11. Factory Engineer to review flat slab design, particularly in areas of cantilevered slabs. This should be undertaken as part of Detailed Engineering Assessment arising from Item 1 above.
12. Produce and actively manage a loading plan for all floor plates along cantilevered edge within the factory giving consideration to floor capacity and column capacity.
13. Building engineer to verify adequacy of flat slab strips around stair openings to support stair and slab loads.
14. Building Engineer to review the Geotechnical (Soils) Report by comparison with the construction drawings and the use of a raft foundation rather than piled foundations as recommended within the Soils Report.
15. Building Engineer to confirm by calculations and records of site construction that foundation bearing is adequate.

Long Term (Within 6 Months):

1. Carry out strengthening as required.
2. Continue to implement load plan.
3. Building engineer to check, collect information and produce accurate and complete as-built documentation.

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.

Short Term (Within 3 Months):

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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 combustible storage by a minimum clear distance of 3m.
2. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
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) 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. Separate the boiler and generator room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
5. Separate Electrical mains supply room by a minimum 2- hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
6. Specify appropriate upgrade based on conditions:
7. Provide a minimum 2-hr fire-rated exit corridor between the day-care room and exit stair.
8. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
9. Provide exit signs above all exits to the exterior and all doors to the exit stairs.
10. 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. 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.
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):

1. MCCB (electrical devices) mounted on the wall must be installed with protective enclosures.

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2. Clean regularly and protect the panel from ingress of lint and dust by closing all sides and doors.
3. Install separators between different phases of MCCB. Standard separators provided by the MCCB manufacturer must be used.
4. Install additional lights to illuminate the working areas.
5. Generator Battery must be placed on the acid proof battery stand.
6. Combustible materials covering power cables must be removed.
7. Remove reserved fuel and other combustible items stored in the generator room.
8. Provide additional lighting inside transformer room.
9. Cables connecting to bus-bars inside panel must be connected firmly with cable lugs. Cable terminating to the bus-bars must be fixed with proper size nuts and bolt with washers.
10. Junction boxes of concealed wiring must be covered and protected. Wires inside junction box must be safely arranged and must avoid wire joints.

Short Term (Within 3 Months):

1. HT cable dropping from HT pole must be firmly fixed to the pole with supports and clamps.
2. Cables below panels must be laid in trench and supported in cable trays.
3. Cable terminating at the panel must be firmly fixed with glands and at gland plates, to reduce stress at the termination point.
4. Cables inside panel must be securely fastened, through ducts or by ties, to avoid crossing live parts.
5. The cable trench must be tightly covered to avoid physical damage to the cables from falling objects. The cover must prevent the trench from falling debris, dust and lint.
6. Sanitary pipes must not be used for power cable protection and supports. Cables in conduit must be protected throughout its length.

Mid Term (Within 6 months):

1. Transformer must be separated from panels by constructing barrier walls.
2. HT and LV cables may be laid in different trays, in tiers, and in the same trench.
3. Cables passing through permanent walls must be protected in steel pipes and remaining holes around the pipe must be sealed.
4. Relocate some of the panels to create safe working space.
5. Flexible PVC conduits cut (slit) open at one side must be removed. Cables must be supported on cable ducts, trays or ladders and must be securely clamped at regular intervals.
6. Install additional lights in generator room.
7. Expand the existing generator room to provide safe working space. (1 meter preferable).

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Long Term (More than 6 months): NA