

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: UNISENSE APPARELS LTD.
Address of the Factory	: Anik Plaza, plot # 155, Road # 01, Block-A, Section- 12, Mirpur, Dhaka
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	: 6 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	: 11 storied
vi.	Construction Year	: 2003
vii.	Foundation Type	: Isolated pad foundation
viii.	Design Drawings	: Available (Signed by Engr Mozaharul Islam B. Sc. Engg (Civil) MIEB, M-9289)
ix.	Soil investigation Report	: Available (Dated July 2013)
x.	Construction Materials	: Unavailable
xi.	Generator	: Underground parking garage

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. Loading to be determined from accurate survey of building (see item 3 below)
3. Verify insitu concrete stresses either by 100mm diameter cores or existing cylinder strength data for cores from min. 4 columns. Core positions to be assessed by building engineer to ensure critical structure is not damaged
4. A Detail Engineering Assessment of Factory to be commenced, see attached Scope.
5. Detail Engineering Assessment of Factory to be commenced (refer item 1) and in particular Stability and foundation aspects to be investigated in detail.
6. Install Safety barrier to minimum 1.1m height.

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.

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2. Detail Engineering Assessment to be completed.
3. Building engineer to check, collect information and produce accurate and complete as-built documentation soonest. (refer Detail Engineering Assessment item 1 above).
4. Drawings to include accurate survey of partition walls, antennae, toilet floor buildup equipment & water tanks.
5. Install Balustrade at edge of Stairs.

Long Term (Within 6 Months):

1. Continue to implement load plan.
2. Roof moisture protection and drainage system to be installed in area where previous roof has been removed.
3. East Stairs to be protected from water ingress.
4. Downpipes to be repaired throughout.
5. Engineer to inspect water damaged structure including the exterior and propose a suitable repair.
6. Stairs to be checked by engineer for full emergency stair loading Item 6 and actions Safety Rail – Steel Stairs Level 3.

The recommendations for Fire Safety corrective actions are:

Immediate (Within 1 month):

1. 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.
2. Remove all storage from exit stairs and egress paths.
3. Replace all gates 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. Configure the fire alarm system to initiate automatic occupant notification on all floor levels to facilitate whole building evacuation upon any manual fire alarm station activation.
5. Remove manual on/off switches from emergency lighting units and exit signs to prevent them from being switched off.

Short Term (Within 3 Months):

1. Separate the boiler 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. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.

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4. 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.

5. Provide minimum aisle widths of 36-in.
6. Relocate day-care room with maximum travel distance of 9m (30 ft) to the exit access.
7. Modify the egress door to swing in the direction of egress travel.
8. Modify the stairs to provide a minimum stair width of 35-in.
9. 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 fire rated construction to separate the first and second floors from the exit stairs. Provide sprinkler protection for the ground floor in accordance with NFPA 13.
2. 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. Provide automatic sprinkler protection throughout the building in accordance with NFPA 13.
2. 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. Replace silica gel. This shall be included in routine maintenance checklist.
2. Flammable items stored near panel(s) must be removed immediately.
3. Install separators between different phases of MCCB. Standard separators provided by the MCCB manufacturer must be used.
4. Neutral bus bar that form part of the three phase system installed inside the panel must be arranged to be enclosed within the panel.
5. Install additional lighting after designing illumination requirement in the panel/electrical room.
6. Floor around electrical facilities must be maintained dry at all time.

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7. Arching horns shall be installed in order to avoid any flashing arc around the transformer bushings.
8. Install additional lights in generator room.
9. Clean the transformer(s) periodically as part of routine maintenance.

Short Term (Within 3 Months):

1. Overhead cables must be firmly fastened at both ends.
2. HT cable dropping from 11kV pole must be protected in steel pipe of required size at least 2m from the ground level to protect from physical injury by moving objects.
3. Rear of the panel(s), installed close to wall must be moved forward to provide minimum working space.
4. Wiring in PVC flexible conduit entering panels must be firmly fixed at the panel (base / Top) using socket and check nuts.
5. Wire terminating to devices inside panel must be connected firmly and wires approaching devices must be securely fastened to avoid unintentional contact with live parts.
6. Cable must be reconnected to the panel through designated entry plates (bottom or top) and securely fastened with cable glands.
7. Cables terminating at generator output panel must be supported on riser and securely fixed with cable glands.
8. Generator rooms must be provided with adequate ventilations.
9. HT and LV cables may be laid in different trays, in tiers, and in the same trench.
10. Cables passing through permanent walls must be protected in steel pipes and remaining holes around the pipe must be sealed.
11. Panel must not be crowded with devices and apparatus. Each panel must be installed with devices and apparatus to maintain safety clearances inside panel.
12. Some of the existing panels near generator may be relocated to another rooms.

Mid Term (Within 6 months):

1. Expand the existing generator room to provide safe working space.

Long Term (More than 6 months): NA