

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: SMH NEW GENERATION APPARELS LTD
Address of the Factory	: Dune Tower, 92, Kodda Bazar, Joydebpur, Gazipur
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 29 April, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 3 May, 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	: Column frame with a 2-way flat slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: The floor area of each floor of the main building is 14000 square feet
v.	No. of Stories	: 6 storied
vi.	Construction Year	: 2004
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Approved by Local Government Engineering Department (LGED) in 2004)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: Ground floor generator rooms

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. Drain the water tank between grid line J-J'/0-1 on the top of the staircase and remove all staff from this area of the building.
2. Maintain and control the loads in this same area so that they do not exceed 2.0kPa on any floor.
3. The Factory Engineer to review design, loads and columns stresses in all areas.
4. Verify in-situ concrete stresses either by cores or existing cylinder strength data for [the identified columns / cores from 4 columns min]. Core sizes to be a minimum of 100 mm diameter.
5. A Detailed Engineering Assessment of Factory to be commenced immediately.

Mid Term (Within 6 Weeks):

1. The recommendations of the Detailed Engineering Assessment are to be carried out.
2. If deemed necessary demolish the water tank.
3. Reduce stacking height to ensure total load does not exceed 2kPa.

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4. Adopt loading plans and signage/staff guidance to ensure that the maximum weight of storage is not exceeded.
5. Factory Engineer to survey the actual conditions and revise the drawings.
6. Factory Engineer to review design, loads and columns stresses to confirm suitability for loads applied.
7. Detail Engineering Assessment to be completed.
8. Produce and actively manage a loading plan for all floor plates within the storage building giving consideration to floor capacity and column capacity.
9. The Factory's Building Structural Engineer should carry out a Detailed Engineering Assessment to prove the capacity of the building in its existing state, a further building approval should be gained for the building as it exists, as altered since the original approval. Alternatively, the extension building should be separated by a non-structural joint and allowed to act as a fully structurally independent structure.
10. Factory Engineer to investigate the cause of cracks and recommend suitable methods of repair.
11. The distress found is to be suitably repaired.
12. Request that the Detailed Engineering Assessment of the overall building to be carried out and in particular, stability and foundation aspects should be investigated in detail.

Long Term (Within 6 Months):

1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor and column capacities.
2. Maintain and enforce the loading plans.
3. Maintain standards of quality control to ensure that storage procedures are correctly followed so that overloading problems do not arise in the future.
4. Implement Loading Plan.
5. Continue to implement load plan.
6. Do not construct any further buildings connected to the existing factory, without thorough structural design and full building approval.
7. Maintain standards of quality control to ensure that loading plan is correctly followed so that problems do not arise in the future.
8. For both durability and serviceability, rust proof paint or any appropriate methods is recommended.
9. Engineer to inspect water damaged structure including the exterior and propose a suitable repair.
10. For both durability and serviceability, waterproofing on the roof slab is recommended. Moreover the roof slab drainage system should be investigated.

The recommendations for Fire Safety corrective actions are:

Immediate (Within 1 month):

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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 combustibles and storage from exit stairs and egress paths.
3. Keep egress paths and stairs clear of storage.
4. 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.
5. Replace with directional exit sign and ensure the sign is directing egress in the proper direction.

Short Term (Within 3 Months):

1. Provide dedicated storage rooms separated by minimum 1-hr fire-rated construction.
2. Separate the boiler, generator, transformer rooms by a minimum 2-hr fire-rated construction. Seal and/or protect all openings to maintain the required fire separations.
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 combustible liquid storage by a minimum 2- hr fire-rated construction. Seal and/or protect all openings to maintain the required fire separations.
5. 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.

6. Provide minimum aisle widths of 36-in.
7. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
8. 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.
9. 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. 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.

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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. Breather oil cup must be filled with transformer oil to required level as instructed by the manufacturer.
2. Panel surroundings must be kept clear from obstructions at all time.
3. Panels located below stairs must be relocated to safe place.
4. Wiring in flexible PVC conduit must be supported near panel on tray/riser to prevent stress at the entry point (socket & check nuts).
5. Cables terminating at the generator panel must be firmly fixed at the panel with cable glands and supported on riser from the cable trench.
6. Check and tighten connections. Overloading may be one of the causes.
7. Multiple cable terminating at a terminal in busbars must be separated.
8. Every wire terminating must be installed using independent lug/terminal.
9. Panel door(s) must be connected with earth bond connecting frame and door.
10. Electrical room must be free from materials that are not required for regular operations.
11. Generator must be connected to earth securely at least two points.
12. Replace the weak cable trench with chequered plates or concrete slabs of required strength and rigidity.
13. Cable ducts must be cleaned regularly and covered to prevent ingress of dust and lint.
14. Existing cables with joints must be spliced using butt splicing kits and then should be insulated with electrical tapes. Joints must be supported and protected.
15. Cables enclosed in flexible PVC conduit must be additionally supported as the existing conduit does not have required strength and rigidity to protect and support cables in it.

Short Term (Within 3 Months):

1. Minimum safety clearance maintained around the existing power transformer must be notified with danger signs.
2. Cables passing through permanent walls must be protected in steel pipes and remaining holes around the pipe must be sealed.
3. Rear of the panel(s), installed close to wall must be moved forward to provide minimum working space.

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4. Panel base plates must be installed, at all time, and cable(s) entering panel must be firmly fixed with cable gland.
5. Cables joined to bypass control devices or to extend connection must be prevented.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA