

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: ATTIRES MANUFACTURING CO.
Address of the Factory	: 235/B, Bir Uttam Mir Shawkat Sarak, Tejgaon Industrial Area, Dhaka
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 12 August, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 10 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 beam slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: The building has total floor area of 86585 sft.
v.	No. of Stories	: 10 storied
vi.	Construction Year	: 1984 (original building) 2001 (new building)
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Permit drawing)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: Ground floor adjacent to the east staircase

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. Do not construct any further in each building.
2. Decide if the sheds are temporary or permanent.

Mid Term (Within 6 Weeks):

1. If sheds are permanent apply for permission for the additional storeys and carry out Engineering Assessment on buildings to verify they can support additional loading.
2. If sheds are temporary, then formulate a demolition plan for the structures to avoid collapse.
3. Carry out an Engineering Assessment on the building to verify that it is stable under lateral loading.
4. Carry out Engineering Assessment on steel roof to determine if any strengthening works are required.
5. Factory Engineer to assess the building and update the loading plans to reflect the design loads, not the actual loads.
6. Factory Engineer to survey steel escape stair to determine the extent of rust.

Long Term (Within 6 Months):

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1. Demolish sheds.
2. If shed is to be demolished the inadequate steel roofs highlighted in item 3 will be fixed by virtue of removing the sheds and roofs.
3. Keep sheds and act on item 3 further in the report.
4. Carry out all recommendations of the Engineering Assessment.
5. Remove rust using suitable methods and repaint staircase accordingly.
6. Monitor the staircase annually to establish condition of paint.
7. Cover the concrete roofs with a suitable waterproofing membrane, e.g. waterproof 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. Remove all storage from exit stairs and egress paths.
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. Modify the egress door to swing in the direction of egress travel.
5. Remove manual on/off switches from [emergency lighting / exit signage] units to prevent them from being switched off.
6. Regularly inspect all exit signage and replace/install lights as needed to illuminate signs.

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. Provide a minimum 2-hr fire rated shaft to separate the utility risers from each floor level. Seal all penetrations and openings in floor/ceiling assemblies to maintain the fire separation.
3. 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.

4. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
5. Inspect, test and maintain the emergency lighting system in accordance with The ACCORD standard. Keep written records on-site.

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6. 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. Provide automatic smoke detection throughout the building in accordance with NFPA 72.

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. Transformer room must be cleaned regularly.
2. Breather oil cup must be filled with transformer oil to required level as instructed by the manufacturer.
3. Generator frame must be connected to earth securely two points.
4. Wire of generator battery must be dressed properly and terminals must be covered.
5. Unused holes of the panel board must be closed to avoid lint/dust deposit inside the panel.
6. Water cooler must be moved to another place.
7. Wiring looped at MCB terminals must be separated.
8. Service cables installed on walls outside building must be supported on covered ladder/trays firmly fixed on wall at regular intervals.
9. Full length of Bus Bar Trucking (BBT) must be covered by proper way.
10. Cables/wirings passing through permanent wall must be protected and remaining gaps must be sealed with proper fire resistant materials.
11. Install separators between different phases of MCCB. Standard separators provided by the MCCB manufacturer must be used.

Short Term (Within 3 Months):

1. Service cables must be supported on trays or raisers in full length.
2. HT cable terminating at transformer must be firmly supported on riser to avoid stress at the termination (transformer bushing).
3. 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

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edges of the hole of panels. Provide covers (of non-combustible material) if any additional gap remains after installing cable glands.

4. Cables and Bus bar trunking riser (BBT) passing through permanent wall must be protected and remaining gaps sealed with fire resistant materials.
5. Cables terminating at distribution boards must be supported in cable tray and protected throughout its length till the panel base or top plate.
6. Provide earth connection for body and doors of metallic distribution boards using green cables preferably braid so that the metallic door remains at zero potential all the time.
7. Cables connecting to equipment must be supported to avoid stress on electrical connections.
8. Neutral and ground wire should be terminated one by one to the bus bar or MCB.
9. HT cable must be protected in steel sheet of required size at least 2m from the ground level to protect from physical injury by moving objects.
10. Clean the ducts regularly or cover tightly with noncombustible materials.
11. Cable tray must be connected below the beam with a wider tray.

Mid Term (Within 6 months):

1. Install cable tray with metallic cover to provide mechanical support to cables laid haphazardly on the floor.

Long Term (More than 6 months): NA