

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: ANANTA GARMENTS LTD
Address of the Factory	: Nischintapur, Ashulia, DEPZ Road, Savar
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 22 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 25 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	: RC beam slab, RC flat slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 9 storied
vi.	Construction Year	: 2004
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Signed by the Local Municipality in 2005)
ix.	Soil investigation Report	: Available (Dated May 2004)
x.	Construction Materials	: Unavailable
xi.	Generator	: Ground floor separate Services building adjacent to main 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): NA

Mid Term (Within 6 Weeks):

1. Factory Engineer to review design, loads and columns stresses.
2. Verify insitu concrete stresses either by 100mm diameter cores or existing cylinder strength data for cores from 4 columns.
3. Building Engineer to check that the columns have been adequately designed for impact loading.
4. Suitable column protection barriers to be designed and constructed.
5. The extent of storage areas and the weight are to be surveyed. The capacity of the floor structure is to be assessed to confirm that the structure is designed to carry these loads.
6. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity. Loading plans to be put on each factory floor.

Long Term (Within 6 Months):

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. Continue to implement the loading plan.
3. Building Engineer to confirm the capacity of the slab to support the combination of the floor loading and the façade loading.
4. Building Engineer to provide detailed calculations for the single storey structures and the associated light steel roofs. These should confirm their ability to withstand all wind loading pressure, suctions and uplift forces.
5. Building Engineer to organize exploratory opening up works to identify the cause. Remedial works to be carried out as appropriate.

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. Keep egress paths and stairs clear of storage.
3. Remove all storage from exit stairs and egress paths.
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.

Short Term (Within 3 Months):

1. Seal all penetrations and openings in walls and ceiling assemblies to maintain the fire separation.
2. 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.

3. Separate the hazardous materials / flammable liquid storage room by a minimum 2- hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
4. Separate the transformer room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
5. Modify the egress door to swing in the direction of egress travel.
6. Reconfigure the egress arrangement to reduce the maximum common path of travel to not more than 30 m.
7. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
8. Provide additional notification appliances such that the fire alarm system is audible throughout the building in accordance with NFPA 72.
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

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of 10 lux at the floor level within exit stairs and exit discharge paths and minimum 2.5 lux along exit access aisles.

10. 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.
2. Provide automatic door closer and shall be tested and inspected in accordance to NFPA-80.
3. Provide additional smoke detection appliances such that the fire alarm system is audible 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. Conservator tank (on transformer) must be checked and required oil level must be maintained as per the instruction of the manufacturer.
2. Establish a routine cleaning program to keep neat and clean the transformer room. Shut down the power of the transformer and clean the exterior of the transformer at scheduled period.

Short Term (Within 3 Months):

1. Main earth (dirty earth) strip must be securely fixed to the wall (electrically) separated from the structure and must be protected (cover).
2. Cable trenches inside building may be covered with protective covers (concrete slabs or checkered plates).
3. Clean the earth bus bar and put a protective cover for the bus bar.
4. 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 edges of the hole of panels. Provide covers (of noncombustible material) if any additional gap remains after installing cable glands.
5. Wires terminating to devices inside panel must be connected firmly and wires approaching devices must be securely fastened to avoid unintentional contact with live parts. Install slotted wiring duct to latch the cable inside the duct.
6. Clean the cable trench and provide cover (checkered plate) to prevent ingress of dust and debris.
7. Combustible materials beneath the roof must be removed to reduce the risk of spreading due to spark.

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8. The cables must be supported and arranged (throughout the length of the cable) inside the tray with a protective cover.
9. Cables connecting to equipment must be supported and protected in rigid pipe to prevent any physical damage due to stepping of worker.
10. Cables in electrical shaft must be securely clamped/tied to the tray/ladder and must be covered with a protective cover to prevent the risk of damage or ingress of the dust.
11. Disconnect the power source of the cable laid into channel and clean dust and debris of all interior components. Establish a periodic cleaning program and maintain records of the activities. Provide cover made of noncombustible material on the channel for preventing ingress of dust and debris in future.
12. Flexible PVC conduit wiring must be additionally supported on cable tray and risers. Flexible conduit must not be used for long point wiring (except for special wirings).
13. The openings remaining after passing of the cables should be sealed according to the degree of fire resistance prescribed for the respective element of building construction before penetration.
14. Proper PVC strip connector and PIB tape around the joint must be provided for every joint. Preferably, avert any joint in live conductor.
15. Cable terminating at the panel must be firmly fixed with glands at gland plates, to reduce stress at the termination point. The flexible pipes may be additionally supported on a cable tray up to the panel base plate.
16. Broken electric socket outlet must be replaced with a new one.
17. Electrical control devices left on the floor must be firmly fixed on wall at a reachable height from the floor level.

Mid Term (Within 6 months):

1. Cables/wirings passing through permanent wall must be protected in rigid pipes and remaining gaps must be sealed with fire resistant materials.

Long Term (More than 6 months): NA