

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: ANIKA GARMENTS (PVT.) LTD.
Address of the Factory	: I/1, Gha Part, 4th floor, Section-2, Mirpur
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 16 September, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 5 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
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 9 storied
vi.	Construction Year	: 1993
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Permit drawing)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: Ground floor, near east exit stair

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 in area identified above.
2. Verify in situ concrete stresses either by cores or existing cylinder strength data for the identified columns.

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.
2. Verify that beam/slab has sufficient capacity to support fully filled water tanks plus concrete plinth.
3. Provide calculations showing the structural adequacy of all columns taking into account the loading plans and reduction in capacity due to electrical boxes. This should be done for current 9 storey construction and for any future extension.
4. Provide as built drawings and design justification for additional structures. A building permit should be obtained.
5. Ensure that stacks of materials within the bonded warehouse are separated by a 0.5m gap all around

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6. Create controlled loading plans for all floors designating where storage can be placed and cannot be placed. Designated areas must be communicated to the factory management.

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. Replace all gates and 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. 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. Add fire-rated doors and fill in windows where appropriate to provide 2-hour separation from exit stairs.
3. Provide dedicated storage rooms separated by minimum 1-hr fire-rated construction.
4. Provide separate rooms for the generator and the transformer. Separate each room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
5. 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. Separate the boiler room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
7. Provide minimum aisle widths of 36-in.

Mid Term (within 6 Months): NA

Long Term (More than 6 months):

1. 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. Install arcing horn on the HT side of transformer to avert flashover.
2. Install additional lighting fittings inside the substation room for sufficient illumination (150 lux).

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3. Cable tray or conduit must be passed across the wall to support and protect the cables. The openings after the passage of cable tray or conduit (the wiring system) should be sealed with the fire rated materials.
4. PVC conduit should be supported with suitable fittings at regular intervals.
5. Standard phase separator (provided by the manufacturer) must be provided between the phases to prevent flashover.
6. Use proper sized cable according to the cable size to terminate cables to bus-bar. Use proper hand puncher or hydraulic puncher to punch the cables properly.
7. 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.
8. Provide mechanical support to the machine input cable (flexible cord) drawn from the socket mounted on channels.
9. MCBs (electrical devices) mounted on wall must be encased in metal enclosure made of steel sheet of thickness 18 SWG.
10. Use heat shrinkable PVC cape for tapping purpose.
11. Wooden planks must be removed from the panel and then fix the MCCB on metal rail inside panel.
12. All the unused openings must be sealed with suitable fittings to make the panel dust and vermin proof.
13. Make sure that plugs & sockets are inserted fully to avoid sparking due to loose contact. Establish a periodic program to check all the machine connection in the production floor and keep record.
14. Use rigid PVC pipes for surface or exposed wiring and support them at regular intervals.
15. Screwing the lighting fittings to channels tightly.
16. Color code should be maintained as per standard i.e. Red, Yellow and Blue Colors for phases; Black color for neutral and green color for earthing. Insulate the live bus bars by using heat shrinkable PVC sleeve.

Short Term (Within 3 Months):

1. Construct cable trench to protect the cables to ensure the mechanical protection of the cable laid on floor otherwise cable insulation may damage due to falling object or stepping of occupants onto it.
2. Cables below panels must be laid in trench and then support it on cable trays to enter and exit to panel.
3. Install a larger sized earth bus bar to terminate all the incoming and outgoing earth cables properly and encased the MET in a metallic enclosure made of metal sheet thickness of 20 SWG. Perform earth continuity test to ensure the earth connection is in zero potential.
4. Use single point (single nut, bolt and washer) of bus bar for single cable termination to avoid loose connection.

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5. Install vertical and horizontal cable tray from the generator terminal box to changeover switch (instead of using flexible pipes) to protect and support the generator output cables laid on the floor.
6. Install base plate of the panel and make hole into it then fit cable gland (required sized) for cable entry and exit to the panel and seal all the unused openings by suitable means to make the panel dust and vermin proof.
7. Install slotted PVC channel to route cables inside panel.
8. All the unused openings must be sealed with suitable fittings to make the panel dust and vermin proof.

Mid Term (Within 6 months): NA

Long Term (More than 6 months):

1. Panels must be rearranged in such a way that the opening of door of any panel must not be obstructed others panel. Provide 1 m clearance around LT panel for easy operation and maintenance.