Name of the Factory : **ARMANA APPAREL LTD.**

Address of the Factory : 232-234 Tejgaon I/A, Dhaka

Dhaka Present Status of the Factory : **Under Operation**

Structural assessment conducted by : Accord (Full report available at bangladeshaccord.org)

Date of Structural Inspection : 19 March, 2014

Fire & Electrical assessment conducted by: Accord (Full report available at bangladeshaccord.org)

Date of Fire & Electrical Inspection : 17 April, 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	: Garments Factory
ii.	Structural System	: RCC beam slab, Steel framed
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 11 Storey
vi.	Construction Year	: 1996
vii.	Foundation Type	: Not applicable
viii.	Design Drawings	: Available (Rajuk,1996)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: Ground floor (Outbuilding)

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:

• Reduce floor loads to 2.0 kN/m2 including all storage areas. Do not change use or increase occupation, either of which could increase loading.

• Building Engineer to review design, loads and columns stresses for all levels.

• Verify insitu concrete strength either by cores or existing cylinder strength data.

• A Detail Engineering Assessment of Factory to be commenced, see attached Scope.

Mid Term (Within 6 Weeks):

• Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.

• Install Loading Plans at all levels of the building and ensure that operatives understand plans.

• Column sizes indicated on Structural Drawings are not consistent with column sizes measured on site. Building engineer to survey building and update drawings to accurately reflect structural sizes as part of the Detailed Engineering Assessment.

• Detail Engineering Assessment to comment 180mm thick slab spanning >6.0m.

Long Term (Within 6 Months): NA

The recommendations for Fire Safety corrective actions are:

Immediate:

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. Reduce occupant load to not more than available exit capacity immediately. In the future, if a greater occupant load is desired, provide additional exits.

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. Separate the boiler & generator room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.

2. Provide dedicated storage rooms separated by minimum 1-hr fire-rated construction. Where separate storage rooms are not 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. 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. 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.

5. Provide minimum aisle widths of 36-in.

6. Provide a minimum 2-hr firerated exit corridor between the day-care room and exit stair.

7. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.

Mid Term (within 6 Months):

1. Provide 2-hr fire-rated exit passageway leading directly outside (vestibules to separate any storage areas).

Long Term:

1. Provide automatic sprinkler protection throughout the building in accordance with NFPA 13.

The recommendations for Electrical Safety corrective actions are:

Immediate:

1. Install separators between different phases of MCCB. Standard separators provided by the MCCB manufacturer must be used.

2. Cable laid or installed on roof must be removed and laid through safe route. Cables must be protected and supported on tray, duct or conduits.

3. Cables terminating at distribution boards must be supported in risers and protected throughout its length till the panel base or top plate.

Short Term (Within 3 Months):

1. Service cables passing through walls must be protected in steel pipes.

2. HT cable terminating at transformer must be firmly supported on riser to avoid stress at the termination (transformer bushing).

3. Panel surroundings must be kept clear from obstructions at all time.

4. Relocate some of the panels to create safe working space.

5. Cables terminating at MCCBs must be installed with cable lugs/terminals of required size and rating.

6. Cables terminating at generator output panel must be supported on riser and securely fixed with cable glands.

7. Cable ducts must be cleaned regularly and covered to prevent ingression of dust and lint.

8. Flexible PVC conduit wiring must be additionally supported on cable tray and risers.

9. Cables passing through permanent walls must be protected with rigid conduits/pipes and supported near entry point.

Mid Term: NA

1. Maintain safe working space surrounding the existing power transformer.

2. Service cables must be supported on trays or raisers in full length.

3. HT cable must be supported in cable trays or laid in trenches. The cable must be protected against physical injury.

4. Existing panel(s) installed near wall may be rearranged to provide accessibility from either/both sides for maintenance.

5. Existing wooden ducts supporting wiring may be replaced with non-combustible ducts, with ample strength and rigidity, supported at regular intervals.

Long Term: NA