Name of the Factory	:	**ABA FASHIONS LTD.**
Address of the Factory	:	Sena Kalyan Commercial Complex, Plot No. 9, Block F, Tongi, Gazipur, Bangladesh
Dhaka Present Status of the Factory	:	**Under Operation**
Structural assessment conducted by	:	Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	:	8 March, 2014
Fire & Electrical assessment conducted by	:	Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	:	16 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 flat slab, RC beam slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 9 storied
vi.	Construction Year	: 2003
vii.	Foundation Type	: Strips and isolated pads
viii.	Design Drawings	: Available
ix.	Soil investigation Report	: Available (Dated October, 1994)
x.	Construction Materials	: Brick aggregated
xi.	Generator	: Separate Structure

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. Reduce building loading including storage to 2.0 kN/m2 on all floors level 2 to roof.
2. Verify insitu concrete stresses either by cores (100mm diamter) or existing cylinder strength data for all the columns or cores from a minimum of 4 non-critical columns.
3. A Detail Engineering Assessment of Factory to be commenced, see attached Scope.
4. All Storage loading to be reduced to less than 2kN/m2 until completion of a Detail Engineering assessment.

Mid Term (Within 6 Weeks):

1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
2. Detail Engineering Assessment to be completed.
3. Create controlled loading plans for all floors, designating where storage can be placed and cannot be placed.
4. Provide calculations showing the structural adequacy of all columns, taking into account the loading plans and all built structure including additions beyond the original design.

5. Verify insitu concrete stresses either by cores or existing cylinder strength data for all the columns or cores from a non-critical column, beam and slab.
6. Building engineer to verify and produce calculations that columns and level 10 slab has sufficient capacity to support additional construction.
7. Qualified Engineer to assess columns and extent of damage assessed.
8. If damage is not extensive in situ repair may be feasible. If damage is extensive, columns will need to be propped and strengthening options will need to be developed.
9. Sections of plaster finish to beams, slabs and walls to be removed to investigate if cracks penetrate the building structure.
10. Building engineer to check and provide calculations showing the structural adequacy of supporting columns and slab.
11. Building engineer to check and provide calculations showing the structural adequacy of Triple Height columns, with appropriate checks and design for second order effects if required.
12. Sections of plaster finish to wall to be removed and extent of crack to be reviewed by Building Engineer.

Long Term (Within 6 Months):

1. Continue to implement load plan and manage floor loading.
2. Building engineer to check, collect information and produce accurate and complete as-built documentation soonest.
3. Carry out strengthening and repair as required.
4. Building Engineer to carry out design check on beams to confirm that these cracks are non-structural.
5. Building Engineer to consider effects of possible vehicle impact to column (progressive collapse / redundancy in structure) and provide adequate impact protection if deemed necessary.
6. Create Flexible seals when repairing cracks at the movement joint.
7. Ensure new finishes do not bridge the movement joint.
8. Investigate external façade cracks to confirm they are not structural.
9. Repair as required to avoid possible water ingress and deterioration.
10. Building Engineer to assess cause of cracking and ensure these are not of structural significance.

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. Create a 'no parking' lane so that exiting occupants may reach a safe area of refuge away from the building.

5. 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.

6. Configure the fire alarm system to initiate automatic occupant notification on all floor levels to facilitate whole building evacuation upon any manual fire alarm station activation.

7. Provide exit signs above all exits to the exterior and all doors to the exit stairs.

8. Regularly test the emergency lighting system on each floor and replace/repair lights as needed.

Short Term (Within 3 Months):

1. Separate the utility rooms by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.

2. 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.

3. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.

4. 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.

5. Provide an additional means of egress.

6. 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. Modify stair to discharge directly outside or provide 2-hr fire-rated exit passageway leading directly outside.

2. Provide additional notification 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. Clean the existing cable trench and keep the cable trench dry. Provision should be remained/ incorporated to prevent ingress of water into substation room or cable trench. Metallic cover (checkered plate) should be provided on cable trench to prevent the damage of cable insulation or falling of operator.

2. Cables must be supported on tray/raceway with protective cover, put tags on the cables for easy identification and arrange the cables in good fashion.

3. Oil leakage through bushings may be due to cable strain on bushing. Support the cables on riser properly to reduce cable strain on termination point (bushings). Leakage must be identified during maintenance and repaired it as soon as possible. Preferably, Assign Supplier Company to take necessary steps as soon as possible.

4. Provide earth connection for body and door of metallic electrical panel using green cables preferably earth braid so that the metallic door remains at zero potential all the time.

5. Install separators between different phases of MCCB to avert flashover. Standard separators provided by the MCCB manufacturer must be used.

6. Install cables tray/riser with protective cover to support the entering and leaving as well as to reduce strain on the termination point.

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

8. Terminate each cable individually on the bus bar. Multiple cables shall not be terminated on same point of bus bar. Use good quality lugs and punch it by proper hydraulic puncher or hand puncher removing air gaps to terminate cables to bus bar.

9. Shutdown the panel power and clean it. Establish a routine cleaning program to keep the panel dust and vermin proof. Seal all the unused openings to prevent ingress of dust, lint and vermin.

10. Use good quality lugs according to the respective cable size and punch it by proper hydraulic puncher or hand puncher removing air gaps to terminate cables to bus bar. Use chromium plated nut, bolt and washer to terminate cables to bus bar tightly.

Short Term (Within 3 Months):

1. Install cable tray with protective cover to route the HT cable as well as protect it from physical damage due to falling objects and stepping of occupants.

2. The rigid PVC/steel pipe used for surface wiring must be continuous through-out its length and properly supported (clamped with saddle, at regular interval of 600 mm).The conduit shall run vertically or horizontally, shall never at angle. The rigid conduit should be continuous through the wall to protect the cables and seal the openings after passage of conduit with fire rated materials.

3. Use proper cable joint method for joining the cables e.g. use ferrule or jointing kits for cable joint and use heat shrinkable PVC sleeve for tapping purpose.

4. Panel base plates must be installed. Make circular hole into it and fit cable glands into the holes; select the glands 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 as well as reduce strain on termination point. Provide covers (of noncombustible material) if any additional gap remains after installing cable glands to make the panel dust and vermin proof.

5. Bearing grease applied on Change-Over-Switch contacts for mobility must be cleaned. For lubricating, thin layer of contact grease may be used.

Mid Term (Within 6 months):

1. Collect a base plate for the panel and make circular hole into it and fit cable glands into the holes; select the glands 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 as well as reduce strain on termination point. Provide covers (of noncombustible material) if any additional gap remains after installing cable glands to make the panel dust and vermin proof.

Long Term (More than 6 months): NA