Name of the Factory	:	**CRYSTAL APPARELS PVT.**
Address of the Factory	:	52, Shahid Tajuddin Ahmed Sarani, Mohakhali, Dhaka 1213, Bangladesh
Dhaka Present Status of the Factory	:	**Under Operation**
Structural assessment conducted by	:	Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	:	3 March, 2013
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	: R.C Beam and column frame with a 2-way solid slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 9 storied
vi.	Construction Year	: 2000
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Permit drawing)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Brick aggregate
xi.	Generator	: Ground floor in a separate 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):

1. Suspend all activities in the building.
2. Discuss with owner on the possibility of shutting down at least 4 (four) floors of the building to reduce loading to within limits.
3. Immediately reduce stacking height of fabric rolls to ensure total load does not exceed 3.0kPa.
4. Carry out full building survey to identify all areas of concrete damage, and mark on site with colored spray paint.
5. Not required if done as part of Item 3.

Mid Term (Within 6 Weeks):

1. Building engineer to carry out thorough load checking of the entire structure, including slabs, beams and columns based on BNBC.
2. Carry out intrusive testing of structure to determine actual concrete and rebar strength.
3. Mark the maximum allowable height of fabric stacking to ensure full compliance.
4. Provide propping to the damaged concrete areas (if slab and beam and column).

Long Term (Within 6 Months):

1. Develop live load plans for each usable floor and incorporate fail safe indication system
2. Consider whether to demolish the unused floors.
3. Hack away the damaged concrete and expose reinforcement to check for corrosion.
4. Carry out replacement of reinforcement and proper regrouting of structural elements.
5. Hack away the damaged concrete and expose reinforcement to check for corrosion
6. Consider removing existing screed, applying a new waterproofing membrane and reapplying the 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 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.
4. Provide exit signs above all exits to the exterior and all doors to the exit stairs.

Short Term (Within 3 Months):

1. Separate the boiler 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 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. 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. 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. 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.

Long Term (More than 6 months):

1. Provide automatic sprinkler protection throughout the building in accordance with NFPA 13.
2. Replace the fire alarm system with a new, listed addressable fire alarm system in accordance with NFPA 72.

The recommendations for Electrical Safety corrective actions are:

Immediate (Within 1 month):

1. Clean regularly and protect the panel from ingression of lint and dust by closing all sides and doors.
2. Bearing grease applied on Change-Over-Switch contacts for mobility must be cleaned. For lubricating, thin layer of contact grease may be used.
3. Cables entering Change-Over-Switch must be installed using glands and through gland plates. The Change-Over-Switch must be covered to prevent ingression of lint and dust.
4. Panel door(s) must be connected with earth bond connecting frame and door.
5. Generator frame must be connected to earth with proper size earth conductor. Solid copper conductor connecting to earth must be connected securely with loops.
6. Clean the ducts and cover tightly with non-combustible materials.
7. Communication cables laid alongside the power cables or electric wiring must be protected and supported in trays to maintain safe clearance from the electrical facilities.
8. Electrical room must have signs to identify it as substation/electrical room with high voltage danger signs.
9. Existing PVC (large pipes) wiring ducts with ends open must be closed with end cover. Ends may be sealed to prevent ingression of lint and duct.

Short Term (Within 3 Months):

1. Cables supported on external walls must be laid horizontal/vertical to the wall, supported in cable trays/ladder.
2. HT cable termination may be lowered to position the cable termination accessories/facilities as per designed purpose.
3. Wooden plank/board used, as base, to mount MCCB/MCB on the wall must be removed. All control devices must be protected in non-combustible enclosures.
4. Cables entering base plates without glands leaving opening gaps around cables must be sealed with metal plates. Compression glands may be used to fix existing cables to the base plates.
5. Every wire terminating must be installed using independent lug/terminal.

6. Wooden planks or boards used for mounting electrical panels or apparatus must be removed and if necessary, must be of non-combustible materials.

7. Cables must be supported on cable trays and riser. Cables may be laid in cable trench with covers.

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

9. Existing joints must be checked and rejoined with standard jointing kits. Joints must be supported and protected against physical stress and damages.

10. Cables drawn in flexible PVC conduit not covering throughout cable length must be additionally protected and supported till the panel edge.

11. Replace rewire fuses (cut out fuse) mounted on the wiring ducts with MCBs installed in protective enclosure.

Mid Term (Within 6 months):

1. Overhead service cable must be firmly fixed at both ends and supported on catenary wire.

2. HT cable dropping from 11kV pole must be protected in steel pipe of required size at least 2m from the ground level to protect from physical injury by moving objects.

3. Generator room must be separated from the entrance with fire rated walls.

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

Long Term (More than 6 months): NA