

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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| Name of the Factory                       | : <b>BILLAH RESOURCES LTD.</b>  |
| Address of the Factory                    | : 17/1, Khataldia, Squid Road, Nishad Nagar, Tongi, Gazipur   |
| Dhaka Present Status of the Factory       | : <b>Under Operation</b>  |
| Structural assessment conducted by        | : Accord (Full report available at <a href="http://bangladeshaccord.org">bangladeshaccord.org</a> ) |
| Date of Structural Inspection             | : 26 April, 2014  |
| Fire & Electrical assessment conducted by | : Accord (Full report available at <a href="http://bangladeshaccord.org">bangladeshaccord.org</a> ) |
| Date of Fire & Electrical Inspection      | : 12 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       | : Garment factory                                  |
| ii.   | Structural System         | : R.C. Columns & Flat 2- Way Slab configuration    |
| iii.  | Floor System              | : Beam slab  |
| iv.   | Floor Area                | : Unavailable                                      |
| v.    | No. of Stories            | : 6 storied  |
| vi.   | Construction Year         | : 2008-2010  |
| vii.  | Foundation Type           | : Unavailable                                      |
| viii. | Design Drawings           | : Available (Signed by Local Building Authorities) |
| ix.   | Soil investigation Report | : Unavailable                                      |
| x.    | Construction Materials    | : Unavailable                                      |
| xi.   | Generator                 | : Ground floor auxiliary 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. A Detailed Engineering Assessment including verification of column reinforcing to be commenced.
2. The Factory Engineer to verify design, loads and column stresses.
3. Limit storage loads throughout the factory.
4. As part of the Detailed Engineering Assessment, evaluate the structure's lateral stability under wind and seismic loads.

**Mid Term (Within 6 Weeks):**

1. The Detailed Engineering Assessment to be completed.
2. The Factory Engineer is to produce and actively manage a loading plan for all floor plates giving consideration to slab, beam and column capacities.

**Long Term (Within 6 Months):**

1. Complete implementation of any works deemed necessary by the DEA.
2. Maintain and actively monitor loading plan.

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## **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 / 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. Remove manual on/off switches from emergency lighting units to prevent them from being switched off.

### 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.
2. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
3. Modify the egress door to swing in the direction of egress travel.
4. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
5. 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 of 10 lux at the floor level within exit stairs and exit discharge paths and minimum 2.5 lux along exit access aisles.

### Mid Term (within 6 Months):

1. Replace the single-station smoke alarms. Provide automatic smoke detection 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.

## **The recommendations for Electrical Safety corrective actions are:**

### Immediate (Within 1 month):

1. Bearing grease used on Change-Over-Switch contacts as lubricating purpose must be cleaned. For lubricating, thin layer of contact grease may be used.
2. Provide permanent tags (name plate) on the panel and provide caution & danger sign showing voltage presence inside it.
3. Install separators between different phases of MCCB to avert flashover. Standard separators provided by the MCCB manufacturer must be used.

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4. Inspection is needed to identify exact reason for creating high temperature. In case of overloading; select the power cables by calculating the connected load or in case of loose connection; tighten the loose connection.

### Short Term (Within 3 Months):

1. Use PVC or steel pipe for HT cable passing from the 11kV feeder to HT panel; make sure that the cable should be encased in pipe throughout its whole length for protecting the cable insulation from damage.
2. Install separators between different phases of MCCB to prevent flashover. Standard separators provided by the MCCB manufacturer must be used.
3. Construct cable trench to carry cable inside it and provide metallic covers on it.
4. Install cable tray or ladder or construct cable trench with cover (metallic) for the protection of the cable laid on floor. Ensure the cables are tightly latched inside the ladder/tray and provide covers made of non-combustible material preferably metallic sheet to protect the cables' insulation from any physical damage. Excessive length can be clamped on wall by using saddle.
5. Provide cover on the cable channel and establish a periodic cleaning program to keep all the cable channels free from dust and vermin.
6. Remove the wooden cable and install metallic covered cable duct or tray to route and arrange cables safely.
7. Use rigid PVC or steel pipe for cable laying on the floor as well as through wall to protect the cables (both insulated or bare conductor) from damage.
8. Install the MET in a metal casing and mount it at least 18 inches above the floor to make it free from dust and wet floor.
9. Install cable gland in the base plate hole for cable entry and exit into the panel and seal all the unused openings to make the panel dust and vermin proof.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA