

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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| Name of the Factory | : SINHA KNIT INDUSTRIES LIMITED |
| Address of the Factory | : Chamurkhan, P.O - Uttarkhan, P.S – Uttara, Dhaka, Bangladesh |
| Dhaka Present Status of the Factory | : Under Operation |
| Structural assessment conducted by | : Accord (Full report available at bangladeshaccord.org) |
| Date of Structural Inspection | : 29 April, 2014 |
| Fire & Electrical assessment conducted by | : Accord (Full report available at bangladeshaccord.org) |
| Date of Fire & Electrical Inspection | : 3 May, 2014 |

Basic Information: The present garment factory is a commercial building with beam-column frame system. The following general information was noted:

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| 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 | : The total floor area of the factory is 83,230 sq.ft. |
| v. | No. of Stories | : 6 storied |
| vi. | Construction Year | : 2006 |
| vii. | Foundation Type | : Unavailable |
| viii. | Design Drawings | : Available (Permit drawing) |
| ix. | Soil investigation Report | : Unavailable |
| x. | Construction Materials | : Unavailable |
| xi. | Generator | : Northwest corner of the ground floor |

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. Carry out a full Detailed Engineering Assessment of the entire building including any intrusive testing required.
2. Carry out full survey of all structural elements to check the loading capacity of the overall structural system.
3. The Factory Engineer to review design, loads and columns stresses in entire building in accordance with BNBC regulations.
4. Carry out the steps as noted in Item 1 for structural survey.

Long Term (Within 6 Months):

1. Develop and maintain a set of floor loading plans.
2. Based on the building survey, building engineer to develop full structural records and check for compliance with BNBC codes.
3. Any further extensions or structural modifications of the existing building needs to be investigated fully by a Structural Engineer and it should be in full compliance with the BNBC codes.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
2. Separate the flammable liquid storage room by a minimum 2- hr fire-rated construction.
3. Separate the boiler, generator and transformer room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
4. Provide dedicated storage rooms separated by minimum 1-hr fire-rated construction.
5. 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.
6. Provide fire-rated construction for all unprotected openings to separate the exit stairs from storage and work areas on all floor levels.
7. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
8. 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. Provide 2-hr fire-rated exit passageway leading directly outside (vestibules to separate any storage areas).
2. Provide additional notification appliances such that the fire alarm system is audible throughout the building in accordance with NFPA 72.
3. Provide additional automatic smoke detectors throughout the building in accordance with NFPA 72.

Long Term (More than 6 months): NA

The recommendations for Electrical Safety corrective actions are:

Immediate (Within 1 month):

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Short Term (Within 3 Months):

1. 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.
2. Generator battery must be placed into a covered box and on the acid proof stand.
3. Materials and wastage stored in generator room must be removed and cleared.
4. Flexible PVC conduit wiring must be additionally supported on cable tray and risers.
5. Shut down the transformer and replace the silica gel or perform maintenance to remove moisture from it. Consult with transformer servicing company before performing the task. Establish a routine maintenance & inspection program for transformer as well as all other electrical equipment to ensure any future repetition of the occurrence.
6. Cables passing through permanent walls must be protected in steel pipes and remaining holes around the pipe must be sealed.
7. Provide fire rated material to block the penetrations of the cable. Ensure the cables are not touched to the sharp edges of the concrete that could damage the insulation of the cable.
8. Use steel pipe/tray for carrying cable with cover (metallic) instead of using flexible pipes. Flexible conduit must not be used for long point wiring (use industrial graded flexible pipes, if required).
9. MCB (electrical devices) mounted on the wall must be installed with protective enclosures.

Mid Term (Within 6 months):

1. Generator room must be separated from the entrance with fire rated walls.
2. Cable terminating at Generator output terminal box must be supported on riser then passed through covered cable tray if it is laid on floor. Remove the spilled oil and keep the generator room dry and clean.
3. Remove combustible materials covering cables or used as tray/duct covers. Cable duct covers must be non-combustible, strong and rigid to protect cables inside.
4. Combustible materials covering power cables must be removed.
5. Cables supported in tray must be securely laid in the tray and fixed securely.
6. Make circular hole at the top plate of panels and provide cable gland 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. Provide covers (of noncombustible material) if any additional gap remains after installing cable glands.
7. Excess length of the cable may be laid and supported on tray outside the room.
8. HT Cables must be supported & arranged into cable riser or ladder with cover to ensure the mechanical protection of the cables from any physical damage or reduce the stress on termination point /bushing.
9. Construct a separate room for the transformer by constructing barrier (brick) walls (fire rated wall) up to the ceiling; the minimum area of the transformer room should be 10-13 sq m (according to BNBC 2006, Section-2.6.3).
10. Cables on floor may be supported on trays installed at safe locations.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

11. Panel must be closed and varmint & lint proof. Panel base must be installed.
12. Cables must be protected and supported and installed through a safe routes. Existing cables passing through window and ventilators must be removed immediately.
13. Clean the ducts and cover tightly with non-combustible materials.

Long Term (More than 6 months): NA