

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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| Name of the Factory | : DESH SWEATERS LTD. |
| Address of the Factory | : Shafipur (Sonda), National University, Gazipur |
| Dhaka Present Status of the Factory | : Under Operation |
| Structural assessment conducted by | : Accord (Full report available at bangladeshaccord.org) |
| Date of Structural Inspection | : 17 June, 2014 |
| Fire & Electrical assessment conducted by | : Accord (Full report available at bangladeshaccord.org) |
| Date of Fire & Electrical Inspection | : 7 August, 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 at some floors, flat slab with perimeter beams at others |
| iii. | Floor System | : Beam slab |
| iv. | Floor Area | : The floor area of the building is 8,000sqft each floor |
| v. | No. of Stories | : 5 storied |
| vi. | Construction Year | : 2005 |
| vii. | Foundation Type | : Unavailable |
| viii. | Design Drawings | : Available |
| ix. | Soil investigation Report | : Unavailable |
| x. | Construction Materials | : Unavailable |
| xi. | Generator | : 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. Bring down all the excess loading below 2.00Kpa.

Mid Term (Within 6 Weeks):

1. Factory engineer should produce a proper loading plan according to the capacity of the existing structure as built.
2. Implement training of factory personnel.
3. Produce proper structural documents for the sheds.
4. Factory engineer should verify all the members in terms of laterals stability and uplift wind pressure.
5. Perform a Detailed Engineering Assessment on the building to verify that it is stable under lateral loading specified by BNBC.

Long Term (Within 6 Months):

1. Strictly follow the loading plan.
2. Carry out any remedial work required by the Factory Engineer.

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3. Update the existing documents according to existing site conditions.
4. Carry out recommendations of engineering assessment.

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.
3. Regularly inspect all exit signage and replace/install lights as needed to illuminate signs.
4. Regularly test the emergency lighting system on each floor and replace/repair lights as needed.

Short Term (Within 3 Months):

1. 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.

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. Separate the gas fired dryer by a minimum 2-hr fire-rated construction.
4. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
5. Inspect, test and maintain the emergency lighting system in accordance with The ACCORD standard. Keep written records on-site.

Mid Term (within 6 Months):

1. Provide 2-hr fire-rated exit passageway leading directly outside (vestibules to separate any storage areas). Or Provide sprinkler protection for discharge floor in accordance with NFPA 13.
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.

The recommendations for Electrical Safety corrective actions are:

Immediate (Within 1 month):

1. Cables must be connected to terminals by cable lugs according to the cable size and put terminal cover.
2. Provide steel pipe for supporting the service line. Ensure the insulation of the cable does not get damage during installation. Seal the remaining penetrations by fire rated material.
3. Electrical device must be protected, installing it into a metallic enclosure.
4. Ensure the generator room clean and free of dirt, debris, and improperly stored materials. Establish a routine cleaning program to keep the generator room neat and clean.
5. Use steel pipe (instead of flexible pipes), clamped with saddle on floor, to ensure the mechanical protection of the cable laid on floor otherwise cable insulation may damage due to falling object or stepping of occupants on it.
6. Provide earth connection for body and doors of metallic distribution boards using green cables preferably braid so that the metallic door remains at zero potential all the time.
7. Remove all the combustible materials from the generator room.
8. Use industrial graded (heat resistant) pipe for control and power wiring of boiler.
9. Lighting fixtures must be supported by noncombustible material.

Short Term (Within 3 Months):

1. Generator frame must be connected to earth with proper size earth conductor. Solid copper conductor connecting to earth must be connected securely with loops.
2. Use flexible or PVC conduit for laying generator cable.
3. Install a cable tray (instead of using flexible pipes) or duct ranging from generator terminal (output) box to panel to provide support to the generator output cables.
4. Need to seal the provision of entering.
5. Connect single cable in a single point with proper size of cable lugs.
6. Replace the rusted nut-bolt-washer and cable accessories with good one.
7. Cables must be connected to terminals by cable lugs according to the cable size.
8. Remove lint and dust in the cable duct. Establish a periodic cleaning program and maintain records of the activities. Provide cover made of noncombustible material on the channel for preventing ingress of dust and debris in future.
9. Install distribution boards in compliant locations so that operation is not hampered due to limited access.
10. Ensure electrical connections at equipment, fixtures etc. are properly secured.
11. Make circular hole at the top and base plate of panels. Provide cable gland according to the respective cable size for cable entry and exit.

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12. Change the broken PVC & flexible conduit with good one.
13. Used steel or PVC conduit to ensure the mechanical protection of the cables laid on floor otherwise cable insulation may damage due to falling object or stepping of occupants onto it.
14. Maintenance program (periodic inspection and testing program).
15. Thermo graphic scanning of the entire electrical system must be performed on tri-annual basis and recorded.
16. Insulation resistant test of all the cables must be performed once every 5 year cycle and recorded.
17. Earth resistance test should be done in five years cycle.
18. Electrical safety training and awareness program for the electrical personal and workers must be initiated and recorded.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA