

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

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| Name of the Factory | : VIRTUAL KNIT & LEISUREWEAR LIMITED |
| Address of the Factory | : Karamtola, Plot # SA-07,08 ,R.S-11,12,13, Pubail, Gazipur Sadar |
| Dhaka Present Status of the Factory | : Under Operation |
| Structural assessment conducted by | : Accord (Full report available at bangladeshaccord.org) |
| Date of Structural Inspection | : 9 April, 2014 |
| Fire & Electrical assessment conducted by | : Accord (Full report available at bangladeshaccord.org) |
| Date of Fire & Electrical Inspection | : 26 April, 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 | : 1104 sq. meter |
| v. | No. of Stories | : 6 storied |
| vi. | Construction Year | : 2006 |
| vii. | Foundation Type | : Pad foundation |
| viii. | Design Drawings | : Available |
| ix. | Soil investigation Report | : Available (Dated July, 2004) |
| x. | Construction Materials | : Stone aggregated |
| xi. | Generator | : Ground floor adjacent to the south stairwell |

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. Sections of plaster finish to columns to be removed to investigate if cracks penetrate into the concrete structure.
2. Determine the remaining capacity of columns and whether these can resist any impact loads.
3. Design protection to column from vehicle impact loads.

Long Term (Within 6 Months):

1. Building Engineer to carry out design check on beams to confirm that these cracks are non-structural.
2. Building Engineer to prepare Allowable Floor Loading Plans.
3. Provide column impact protection.
4. Building Engineer to determine the ground conditions, foundation depth and load capacity of the foundations to ensure a 10-storey building can be supported.

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5. If construction continues beyond the current 6 storey building, a Building Engineer should verify the in-situ concrete strength of the ground floor columns either by taking 4 no. 100 diameter core samples or by using existing concrete data.
6. Building Engineer to create a set of as-built drawings and assess the impact that the in-situ column size has on the ability of the structure to support 10 storeys.

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. 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.
3. Modify the egress door to swing in the direction of egress travel.
4. Regularly inspect all exit signage and replace/install lights as needed to illuminate signs.

Short Term (Within 3 Months):

1. 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
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. 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.

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.
6. 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.

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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. Breather oil cup must be filled with new transformer oil to required level as instructed by the manufacturer.
2. HT cable terminating at transformer must be firmly supported on riser to avoid stress at the termination (transformer bushing).
3. Connect the Leakage current- collector of the HT cable to the earthing, otherwise, the insulation of the cable may get damaged due to leakage current.
4. 11kV HT cable must be supported in covered cable trays installed at safe location or laid into trenches. The cable must be protected against any physical injury.
5. Unused gland holes in base plates or top cover must be sealed with dummy cable gland or plugs.
6. Disconnect the power source of the panel and clean dust and debris of all interior components. Establish a periodic cleaning program and maintain records of the activities. Provide cover made of noncombustible material on the unused opening for preventing ingress of dust and debris in future.
7. Install separators between different phases of MCCB. Standard separators provided by the MCCB manufacturer must be used.
8. 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.
9. Generator frame must be earthed providing two distinct earth connection of proper size earth conductor (35 sqmm).
10. IPS must be relocated to a safe place and installed on stand made from non-acidic materials. Provide identification (i.e. EMERGENCY POWER: IPS) near the IPS.

Short Term (Within 3 Months):

1. HT Cable must be supported by 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.
2. Existing cable trench may be increased in size to accommodate all the cables into the trench. Cables may be arranged and supported in cable trays into the trench.
3. Install PVC slotted wiring-duct to support and latch the cable inside the duct.
4. Cables terminating at MCCBs must be installed with cable lugs/terminals of required size and rating.
5. Terminate each cable individually on the bus bar (providing individual lug according to the cable size). Multiple cables shall not be terminated on same point of bus bar.

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Mid Term (Within 6 months):

1. Construct a fire rated room for the transformers. Assign a qualified engineer to design a required transformer room according to BNBC, Section-2.6.3. The transformer must be installed with barrier walls between transformer and other panels. The walls must be fire resistant and should have height up to the ceiling. The wall should have the provision for necessary ventilation and fire rated on required side.

Long Term (More than 6 months): NA