

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: DINATEX INTERNATIONAL LTD.
Address of the Factory	: Landmark Complex, Sadhur Para, Baro Ashulia, Savar, 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	: 18 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 15 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	: RC beam slab, RC flat slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 2 storied
vi.	Construction Year	: 2008
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Approved in 2007 by Local Authorities)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: Generator 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): NA

Mid Term (Within 6 Weeks):

1. Detail Engineering Assessment of the factory to be carried out, and in particular column capacity and foundation aspects to be investigated in detail.
2. Fire proofing material for structural steel element is recommended based on the regulations.
3. Factory Engineer to review slab design and/or strengthening.
4. Reduce stacking height of fabric rolls to ensure total load does not exceed 3.0kPa.
5. Adopt some sort of signage/staff guidance to ensure that the maximum weight of storage is not exceeded.
6. Detail Engineering Assessment to be carried out, in particular considering the column capacities.
7. Repair column damage and also install column guard to protect previously damaged column corner.
8. Detail Engineering Assessment to be carried out, in particular stability and foundation aspects to be investigated in detail.

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Long Term (Within 6 Months):

1. Continue to implement loading plan. Detail Engineering Assessment to be completed.
2. Do not construct any further structural drawings without thorough structural design and full building approval.
3. Maintain standards of quality control.
4. Implement any changes deemed necessary through the aforementioned review.
5. Maintain standards of quality control to ensure that storage procedures are correctly followed so that overloading problems do not arise in the future.
6. Continue maintenance to column guard, to ensure that the column will not be further damaged in future.
7. Implement any structural changes or repair works deemed necessary by the aforementioned assessment.

The recommendations for Fire Safety corrective actions are:

Immediate (Within 1 month):

1. Remove all storage from exit stairs and egress paths.
2. 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.
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. Configure the fire alarm system to initiate automatic occupant notification on all floor levels to facilitate whole building evacuation upon any manual fire alarm station activation.
5. Remove wood cover from water supply pipes.
6. Keep egress paths and stairs clear of all objects.

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. If fire doors are required to be held open for functional reasons, provide automatic closing devices tied to the fire alarm system.
2. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
3. Provide a minimum 2-hr fire-rated shaft to separate the utility risers from each floor level. Seal all penetrations and openings in floor and ceiling assemblies to maintain the fire separation.
4. Separate the hazardous materials and flammable liquid storage room by a minimum 2- hr fire-rated construction. Seal and protected all openings to maintain the required fire separations.
5. Provide minimum aisle widths of 36-in.
6. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.

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7. Separate the EMR by a minimum 2-hr fire-rated construction. Seal and protected all openings to maintain the required fire separations.
8. Provide handrails on at least one side of exit stair.
9. Provide 2-hr continuous stairwell enclosure to exterior ground level.
10. Modify exit arrangement or provide additional exit(s) or provide sprinkler protection in accordance with NFPA 13.
11. 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.

12. 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.
13. Provide exit signs above all exits to the exterior and all doors to the exit stairs.
14. Regularly test the emergency lighting system on each floor and replace/repair lights as needed.

Mid Term (within 6 Months):

1. Remove single-station smoke alarms. Provide automatic smoke detection throughout the building, tied into the fire alarm system, 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.
2. Provide automatic sprinkler protection throughout the building in accordance with NFPA 13.

The recommendations for Electrical Safety corrective actions are:

Immediate (Within 1 month):

1. LT 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. Provide phase separators between poles of MCCB made of noncombustible materials preferably use rubber having enough dielectric strength to insulate phases from each other.
3. Multiple cables connecting at a MCCB terminal must be removed. Individual circuit breaker must be used for each load according to the respective cable-size.
4. Protective devices should be encased in metal casing made of 20 SWG thickness metal sheets.

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5. 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.
6. Some of the panels shall be relocated, to other location, to provide adequate and safe working space for ease of its operation.
7. Disconnect the panel from power source and clean the interior of the panel regularly and seal the opening to protect ingress of lint and dusts. Provide covers if any additional gap remains after installing cable glands.
8. Protective devices should be encased in metal casing made of 20 SWG thickness metal sheets.

Short Term (Within 3 Months):

1. Install cable duct to protect the LT cables and provide covers made of non-combustible material preferably metal to protect the cables' insulation from any physical damage due to stepping onto them.
2. Remove all the combustible materials from electrical cable. 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 as well as prevent the ingress of debris, dust and lint.
3. Panel base-plate must be installed. Make circular hole at the base-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.
4. Disconnect the panel from power source and remove all the multiple connections made at a single point of bus bar and connect individual branch cables to individual points on bus bar (a bigger bus bar may be used).
5. Power cables installed near steam lines must be protected from external heat and moisture (may keep sufficient clearance between steam pipes and duct/installing adequate thermal-insulation on the steam pipe).
6. Cables/wirings passing through permanent wall must be protected installing pipes and remaining gaps must be sealed with fire resistant materials. Covered cable tray/ladder shall be installed for the support of the cable throughout its length.
7. Excess length of cables must be trimmed and install cable tray with metallic cover (up to base-plate of panel) to provide mechanical support to cables laid haphazardly on the floor to protect the cable from any physical damage.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA