

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: TARGET FINE-WEAR INDUSTRIES LTD.
Address of the Factory	: Alauddin Chowdhury Tower, out para, Chandona Chowrasta, Joydebpur , Gazipur
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 11 May, 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:

i.	Building Usage Type	: Garment factory
ii.	Structural System	: R.C Flat Slab and column
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 8 storied
vi.	Construction Year	: 2008
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: Ground floor (south eastern zone)

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. Limit the average imposed load on the floor to a maximum of 1.5kPa (30 psf).
2. Limit all live load in this area to the absolute minimum.
3. Consider relocating some of the machines.
4. Immediately reduce stacking height of fabric bag to ensure total load does not exceed 3.0kPa (~60 psf).

Mid Term (Within 6 Weeks):

1. Carry out intrusive testing of the structure to determine the actual concrete strength, rebar strength and rebar layout.
2. Consider removing the raised floor, or constructing raised floor from lightweight fill, such as lightweight concrete or lightweight concrete block.
3. Mark the maximum allowable height of fabric stacking to ensure full compliance.
4. Factory Engineer to review design, loads and columns stresses in area identified above.
5. Verify insitu concrete stresses either by 100mm dia. cores or existing strength data.

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6. Building engineer to check and provide the solution for lateral resisting requirements of the structure.

Long Term (Within 6 Months):

1. Carry out the strengthening work to increase the punching shear capacity.
2. Carry out the strengthening work to provide the lateral load resistance system.
3. Introduce strengthening works under the slab (such as a steel beam support system) which can direct loads directly to the columns, and reduce loading burden to the slab.
4. Ensure continued compliance to the loading intensity limitations on a long-term basis.
5. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
6. As per the results of structural analysis, the building needs to be revised to accord with BNBC building codes with regard to lateral stability.

The recommendations for Fire Safety corrective actions are:

Immediate (Within 1 month):

1. Remove and relocate the appliances to the exterior of the stair well.
2. Remove locking features from all egress doors / gates. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.
3. Remove all storage from exit stairs and egress paths.
4. 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.
5. Provide readily visible/identifiable emergency evacuation plans within/next to all exit stairs.
6. Remove single-station smoke alarms. Provide automatic smoke detection throughout the building in accordance with NFPA-72.

Short Term (Within 3 Months):

1. Separate the boiler, generator and transformer rooms from the working areas and egress routes by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
2. Provide dedicated storage rooms separated by minimum 1-hr fire-rated construction.
3. 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.
4. Seal all penetrations and openings in exit stair enclosure walls to maintain the fire separation.
5. Provide a minimum 2-hr fire-rated shaft to separate the elevator shaft from each floor.

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6. 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.

7. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
8. 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.

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. Provide earth connection to panel door using green cables preferably using earth braid so that the metallic door remains at zero potential all the time.
2. Install separators/barriers between different phases of MCCB to avert flashover. Standard separators provided by the MCCB manufacturer must be used.
3. Generator Batteries should be placed on a steel fabricated acid proof stand. Insulate the battery terminals to avoid short circuit and clean the battery vent to egress of gas. Prepare a maintenance checklist for the generator where the checking point of exciter battery should be included.
4. Inspection is needed to identify the cause of overheating. In case of loose connection tighten the connection; in case of faulty circuit breaker (MCB) replace it by a new one; in case of overloading select the cable and protective device by calculating the connected load. Periodic inspection is needed to keep the system in sound condition.

Short Term (Within 3 Months):

1. Use PVC/rigid pipe, laid in earth trench of sufficient depth to pass the HT cable from pole to HT panel to prevent any physical damage of the cable (HT cable) insulation throughout its whole length.

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2. Install riser or cable tray to support the cables above the panel to reduce strain on cable termination point.
3. Install a cable tray/ riser with protective cover to support and protect the generator output cables from generator terminal box to cable trench/panel.
4. Provide cable tray with protective cover to route and protect the cables laid on the floor. Provide a vertical cable tray to support the cables entering to the distribution panel.
5. Surface and exposed wiring should be encased in rigid PVC pipe throughout it's length; run horizontally and vertically never at an angle and support them at regular intervals by using saddle clamp. Use flexible pipe with proper fixation only at the bending point.

Mid Term (Within 6 months):

1. Metallic cover (checkered plate) should be provided on cable trench to prevent the damage of cable insulation or falling of operator.
2. Clean the cable channel and arrange cables inside the channel properly. Provide cover on the cable channel to make it dust and vermin proof. Establish a periodic cleaning program to keep the cable channel neat and clean.

Long Term (More than 6 months): NA