

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: BEST SHIRTS LTD.
Address of the Factory	: 35, Kunia, Borobari, PO. National University, Gazipur-1704
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 30 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 29 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	: Main structure composed of R.C. Beam with rectangular column frame with a 2-way slab with intermittent cantilevers on all the 4 sides of the building
iii. Floor System	: Beam slab
iv. Floor Area	: Unavailable
v. No. of Stories	: 9 storied
vi. Construction Year	: 2008
vii. Foundation Type	: Piled foundation
viii. Design Drawings	: Available (Industrial permit dated 2013)
ix. Soil investigation Report	: Unavailable
x. Construction Materials	: Unavailable
xi. Generator	: West 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. Missing steel support to be replaced.

Long Term (Within 6 Months):

1. Engineer to verify the lateral stability of the steel roof.
2. Engineer to verify the load transfer of the steel roof to the supports and propose repair.

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. Remove all storage from exit stairs and egress paths.
3. 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.

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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.

Short Term (Within 3 Months):

1. Separate the boiler, generator and transformer room by a minimum 2-hr fire-rated construction. Seal and 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 a minimum 2-hr fire rated shaft to separate the utility risers from each floor level. Seal all penetrations in floor/ceiling assemblies to maintain the fire separation.
4. Separate the hazardous materials / flammable liquid storage room by a minimum 2hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
5. 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.

6. Provide a minimum 2-hr fire rated shaft to separate the utility risers from each floor level.
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): NA

Long Term (More than 6 months):

1. 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. Inflammable items (may help spreading fire) kept near HT cable must be removed.
2. Fill the Breather oil cup with transformer oil up to the required level as instructed by the manufacturer. 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.
3. Provide phase separators between poles of MCCB made of non-combustible materials preferably use rubber having enough dielectric strength to insulate phases from each other.

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Short Term (Within 3 Months):

1. HT cable dropping from HT pole must be protected in steel pipe of required size at least 2m from the ground level to protect the cable from any physical damage. The cable should be supported on covered tray or ladder throughout its length up to the HT panel base-plate (except the part of the cable laid underground at a depth of at least 1 meter).
2. Cables/wirings passing through permanent wall must be protected installing pipes and remaining gaps must be sealed with fire resistant materials. Cable tray/raceway shall be installed for the support of the cable throughout its length.
3. Use covered cable duct/ladder to support the cable at bottom of the panel. Flexible conduit must not be used for long point wiring (except for special wirings). Use industrial graded flexible pipes instead of using normal flexible pipes (if required).
4. Damaged PVC casing capping cover must be replaced with new one clamed at regular interval or wiring may be supported providing cable duct.
5. Use steel pipe/cable tray to ensure the mechanical protection of the cable laid on floor otherwise cable insulation may damage due to falling object or stepping of occupants onto it.
6. Cables/wirings & BBT passing through permanent floor must be protected and remaining gaps must be sealed with fire resistant materials. Cable tray/raceway shall be installed for the support of the cable throughout its length.
7. Assign an electrical engineer to determine the capacity of the installation and redesign the wirings of the panel. If the wirings and loads exceed the capacity of the panel, install additional panel. Establish a load management program for avoiding any installation exceeding its capacity in future. Install slotted wiring-duct inside the panel to arrange and latch the haphazard cables.
8. Use covered cable duct/ladder to support the cable at bottom of the panel. Flexible conduit must not be used for long point wiring (except for special wirings). Use industrial graded flexible pipes instead of using normal flexible pipes (if required).
9. Provide cable gland at the base plate of panels 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.
10. Install an appropriate sized MCCB such as the rating of the MCCB does not exceed the current carrying capacity of the cable.
11. Neutral bus bar that form part of the three phase system must be installed inside the panel & arranged to accommodate within the panel.
12. Cables entering through panel top must be installed with cable glands fixed through the top cover plate. 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.

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

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resistant and should have height up to the ceiling. The wall should have the provision for necessary ventilation and fire rated door on required side.

Long Term (More than 6 months): NA