

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: COMFIT COMPOSITE KNIT LTD.
Address of the Factory	: Gorai, Mirzapur, Tangail, Bangladesh
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 3 November, 2013
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 23 April, 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	: Post-tensioned concrete slab on RC Columns
iii.	Floor System	: Beam slab
iv.	Floor Area	: The factory building has total area of 357746 sqft
v.	No. of Stories	: 6 storied
vi.	Construction Year	: 2006
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Dated March 2006)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Stone aggregated
xi.	Generator	: Generator Shed

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. No areas to be used for storage of stacks of 18kg boxes more than 3 boxes high.
2. Factory Engineer to review design, loads and columns stresses in area identified above.
3. Verify insitu concrete stresses either by cores or existing cylinder strength data for all columns.
4. A Detailed Engineering Assessment of Factory to be commenced, see attached scope.
5. Commence design checking of PT slabs as part of Detail Engineering Assessment.
6. Survey typical PT tendon top and bottom covers in slab to confirm that profile of cables matches the design requirements.

Mid Term (Within 6 Weeks):

1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
2. Detailed Engineering Assessment to be completed.
3. Building Engineer to review concrete cylinder strength records, strand extension results, as-surveyed cable profiles and grouting records for PT slabs to establish if these match design requirements.

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4. This will be required as an input to the controlled loading plans.
5. As part of Detail Engineering Assessment –confirm PT slabs are adequate.
6. Get engineer to check that slab has been designed to accommodate loads.
7. Get engineer to check the stability of antenna structure against lateral loading
8. Base plates of the antenna to be refurbished and to be fixed on roof slab, if required. Roof slab to be checked in case of fixing.
9. Ensure connections between roof beam and columns are fully bolted.
10. Engineer to check that mezzanine in Shed 2 is capable of supporting loads applied to it.
11. Engineer to check design of racking in mezzanine for loads applied to it.
12. Engineer to check design of roof beams in storage shed (shed 3).

Long Term (Within 6 Months):

1. Continue to implement load plan.
2. Develop dimensionally accurate as built drawings of roof structure.

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. Remove all storage from exit stairs, areas of exit discharge, and egress paths.
3. Keep egress paths and stairs clear of storage.
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.

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 to a maximum height of 2.4m and maximum area of 23m².
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. Modify the egress door to swing in the direction of egress travel.
4. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
5. 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.

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6. 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. 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.

The recommendations for Electrical Safety corrective actions are:

Immediate (Within 1 month):

1. Leakage must be checked during maintenance and repaired as necessary (may consult with manufacturer or serving company).
2. Shut down the transformer and replace the silica gel or perform maintenance to remove moisture from it. Consult with transformer servicing company before performing the task. Establish a routine maintenance & inspection program for transformer to ensure any future repetition of the occurrence.
3. Protective devices should be encased in metal casing made of 20 SWG thickness metal sheets.
4. Existing panel(s) installed near wall may be rearranged to provide accessibility (1 meter) from either/both sides for maintenance.
5. 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.
6. Remove the stored cable from the panel.
7. 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.
8. Cables must be supported in cable tray/rigid conduit to prevent any mechanical damage.
9. Disconnect the power source of the cable laid into duct 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 duct for preventing ingress of dust and debris in future.
10. Flexible PVC conduit wiring must be additionally supported on continuous cable tray and risers. Flexible conduit must not be used for long point wiring (except for special wirings).
11. Flexible conduits (standard and approved for industrial use) must be supported on a cable duct supported at regular intervals with clamps.
12. Remove diesel and other oil barrels from generator room.
13. Cables passing through permanent walls must be protected with rigid conduits/pipes and supported near entry point.

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14. Junction box must be covered and protected.
15. Damaged PVC casing capping wiring must be replaced to protect wires in it throughout its length.
16. Wires terminating to devices inside panel must be connected firmly and wires approaching devices must be securely fastened to avoid unintentional contact with live parts. Install slotted wiring duct to latch the cable inside the duct.
17. Cables used in factory must be supported in trays or ladders or rigid pipes with proper support and protected where necessary.
18. Cables used at the noted location must be supported in rigid pipes with proper support (clamped with saddle at regular interval) and protected where necessary.
19. Connection to lights (lighting fittings) and fans must be connected through ceiling rose or junction box (cable joint must be placed inside the box).

Short Term (Within 3 Months):

1. HT/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. Wiring or cables in PVC conduit must be securely fixed providing supports and protected against damage.
3. Cables supported on external walls must be laid in horizontal/vertical direction (never at an angle), supported in cable trays/ladder.
4. Cables passing through permanent walls must be protected in steel pipes and remaining holes around the pipe must be sealed with fire rated material.
5. 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).
6. 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.
7. Panel rear cover must be closed with nuts and bolt and gaskets must be installed to prevent ingress of lint/dust. Make circular hole at the base plate/top plate of panels and provide cable gland according to the respective cable size for cable entry and exit.
8. Check the capacity of the 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.
9. Cables must be supported on tray/ladder, up to the panel to prevent any physical damages.

Mid Term (Within 6 months):

1. Overhead cables must be firmly supported providing rigid pipes/duct throughout the cable length.

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2. The cables must be supported in cable trays to avoid mechanical damages. Install a cable tray from the generator terminal box to panel to support and protect the generator output cables.
3. Cables must be protected and separated in rigid conduit or pipes when passing through the walls. The opening after passage of the pipe/duct must be sealed with fire rated materials.

Long Term (More than 6 months): NA