

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: COMFIT COMPOSITE KNIT LIMITED UNIT 2
Address of the Factory	: Amtola, KathgoraBazar, Ashulia, Savar, Dhaka
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 29 March, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 3 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	: R.C. Beam and column frame with 2-way spanning soli slabs
iii.	Floor System	: Beam slab
iv.	Floor Area	: Each floor has an area of 1,054 sq. ft.
v.	No. of Stories	: 5 storied
vi.	Construction Year	: 2004
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Approved by Ashulia Union Porishod in 2011)
ix.	Soil investigation Report	: Available (Dated 27 March, 2014)
x.	Construction Materials	: Brick Chip aggregate concrete
xi.	Generator	: 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):

1. Reduce floor loading immediately as detailed on pages 3 and 4. Maintain current use of the floors, in remaining areas, and do not change use or increase occupation, either of which could increase loading.
2. Factory Engineer to review design, loads and stresses in all columns.
3. Verify insitu concrete strength either by 100mm diameter cores or existing cylinder strength data for cores from 6 columns. Verify reinforcement within as built columns.
4. A Detail Engineering Assessment of Factory to be commenced, see attached Scope.
5. Building Engineer to review excavation and existing foundation depth immediately.
6. Excavation should be propped or backfilled with suitable compacted material as required by Building Engineer.

Mid Term (Within 6 Weeks):

1. Detail Engineering Assessment to be completed.
2. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.

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3. Steel roofs to dining area should be assessed by the Building Engineer including the provision of a lateral stability system and, if required, upgraded to support code vertical and wind loads.
4. Engineer to review as-constructed layout of stairwells and complete a design check on the cantilevers and supporting columns.
5. Erect temporary propping if required by Building Engineer.

Long Term (Within 6 Months):

1. Continue to implement load plan.
2. Structure should be examined on an on-going basis for signs of settlement in the affected area.
3. Implement recommendations for roof structure as required by the Building Engineer.
4. Implement requirements of Building Engineer to ensure structure meets building code requirements.
5. Building Engineer to investigate source of water ingress and remedy if necessary with appropriate water proof sealant.
6. Protective coating or membrane to be installed at roof level to prevent moisture ingress and damage to the concrete floor structure.
7. Continue to monitor for water ingress throughout building and implement corrective procedures if necessary.

The recommendations for Fire Safety corrective actions are:

Immediate (Within 1 month):

1. Remove locking features from all egress gates. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.
2. Keep egress paths and stairs clear of storage.
3. Remove all storage from exit stairs and egress paths.
4. Replace all steel sliding gates 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. Remove manual on/off switches from exit signage units to prevent them from being switched off.

Short Term (Within 3 Months):

1. Separate the boiler room 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. 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.

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Separate areas of unenclosed combustibile storage by a minimum clear distance of 3m.

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 to the interior of the building, up to a height of 10 ft, to maintain the fire separation. Alternately, provide 1-hr fire-rated separation up to a height of 10 ft.
5. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
6. Provide exit signs above all exits to the exterior and all doors to the exit stairs.
7. 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 additional notification appliances such that the fire alarm system is audible throughout the building in accordance with NFPA 72.
2. Provide automatic smoke detection throughout the building 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. 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.
2. Seal all the penetrations using appropriate fire rated material and ensure the cable insulation does not get damaged during sealing work.
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. 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.
5. 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.
6. Install cable duct to protect the generator output cables and provide covers made of non-combustible material preferably metal to protect the cables' insulation from any physical damage as well as prevent the ingress of debris, dust and lint.

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7. Bearing grease applied on Change-Over-Switch contacts for mobility must be cleaned. For lubricating, thin layer of contact grease may be used.

Short Term (Within 3 Months):

1. Service cables installed on walls outside building must be supported on covered ladder/trays firmly fixed on wall at regular intervals.
2. Re-locate the generator in a proper sized and fire rated room in the ground floor; preferably near the substation room to reduce voltage drop. Discharge the generator exhaust in safe location and install louvers and exhaust fan for ventilation of the generator room.
3. Cable terminating at Generator output terminal box must be supported on riser and protected as well reduce cable strain on the termination point. Install cable duct to protect the generator output cables and provide covers made of non-combustible material preferably metal to protect the cables' insulation from any physical damages.
4. Cables must be supported by cable tray before entering panel.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA