

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: DEKKO KNITWEARS LTD., UNIT 2.
Address of the Factory	: Plot # M/2-1, Road # 07, Section # 07, Mirpur I/A, Dhaka - 1216, Bangladesh
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 22 April, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 1 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	: R.C Beam and column frame with a 2-way solid slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: Unavailable
v.	No. of Stories	: 8 storied
vi.	Construction Year	: 1990
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Permit drawing)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Stone aggregated
xi.	Generator	: Ground Floor, facing the street

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. Carry out a full Detailed Engineering Assessment (DEA) of the entire building including any intrusive testing required.
2. Carry out intrusive testing of structure to determine actual concrete and rebar strengths.

Mid Term (Within 6 Weeks):

1. Factory Engineer to review design, loads and columns stresses in entire building.
2. Carry out the steps as noted in Item 1 for structural survey.

Long Term (Within 6 Months):

1. Consider removal of the water tank or a relocation to ground floor level.
2. Any extensions or structural modifications of the existing building needs to be investigated by a Structural Engineer fully, should be designed in full compliance with the BNBC and be subject to a new Building Permit.
3. Based on the building survey, the Factory Engineer is to develop full structural records and check for compliance with BNBC codes.

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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. 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.
3. Provide minimum aisle widths of 36-in.
4. Remove all storage from exit stairs and egress paths.
5. 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. 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 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.
4. Provide a minimum 2-hr fire-rated shaft to separate the utility risers from each floor level. Seal all penetrations and openings in floor/ceiling assemblies to maintain the fire separation.
5. Separate the boiler and transformer room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
6. Landing between 3rd and 4th stories has a reduced width of 55". If this could be cleared, egress width would be adequate.
7. Modify the egress door to swing in the direction of egress travel.
8. Provide handrails on at least one side of exit stair.
9. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
10. Regularly inspect all exit signage and replace/install lights as needed to illuminate signs.

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. Provide ladder made of noncombustible material preferably steel for supporting the cables and fasten the cables with the ladder.
2. Seal the bottom of the panel using noncombustible material preferably metallic sheet. Provide cable gland at the cable entry.
3. Replace the flexible pipes with PVC foot grade pipe and provide clamped with saddle at an interval.
4. Remove the flexible PVC conduits and provide ducts, trays or ladders made of noncombustible material, clamped at regular intervals.
5. Cables, terminating to panel, between floor and base of panel must be protected in rigid conduits made of noncombustible material with ample strength. Conduit must be securely fixed to the wall with saddle or clamps.
6. Existing Aluminum wiring ducts with ends open must be closed with end cover. Ends may be sealed to prevent ingress of lint and duct.
7. Provide cable socket sized same as the cable for terminating the cables and ensure lugs are punched properly with lug puncher.
8. Transformer neutral earth must be connected directly and independently to the main earth. Ensure the size of the cable is not less the required size as per the manufacturer's recommendation.
9. Recommended to remove the joint and if not possible provide appropriate connector a long with junction box for the joint.
10. Transformer neutral earth conductor must be selected at least the same size as that of the neutral conductor.
11. Remove the additional wiring. If required by any means, terminate the wires using proper sized connector and support.
12. Provide cable tray made of noncombustible material preferably steel to support and protect the cables and put cover made of same material so that dust cannot get into the tray.
13. Wiring in flexible PVC conduit must be additionally supported and securely clamped with saddle at regular intervals.
14. Provide PVC pipe or Steel pipe for terminating the down conductor and connecting conductor of the air termination network. Use clamped with saddle at regular interval for supporting the pipe.

Short Term (Within 3 Months):

1. Provide ladder made of noncombustible material preferably steel for supporting the cables and fasten the cables with the ladder. Latch the excess cable on the ladder.
2. Cables terminating at distribution boards must be supported in risers and protected throughout its length till the panel base or top plate.

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3. Cables must be protected and supported throughout its length. Wiring exposed between different wiring systems may be prevented by selecting appropriate adapter to connect.
4. Provide cable tray made of noncombustible material preferably steel to support and protect the cables and put cover made of same material so that dust cannot get into the tray.
5. Seal the penetrations using appropriate fire rated material and ensure the cables insulation is free from physical damage that might occur by sharp edges of the concrete.

Mid Term (Within 6 months): NA

Long Term (More than 6 months): NA