

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: BENGAL JEANS LTD
Address of the Factory	: 135-138, Abdullahpur, Uttara, Dhaka - 1230, Bangladesh
Dhaka Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Structural Inspection	: 6 April, 2014
Fire & Electrical assessment conducted by	: Accord (Full report available at bangladeshaccord.org)
Date of Fire & Electrical Inspection	: 15 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 a 2-way solid slab
iii.	Floor System	: Beam slab
iv.	Floor Area	: The total floor area for the factory is 3,500 sft
v.	No. of Stories	: 5 storied
vi.	Construction Year	: 2006
vii.	Foundation Type	: Unavailable
viii.	Design Drawings	: Available (Permit drawing)
ix.	Soil investigation Report	: Unavailable
x.	Construction Materials	: Unavailable
xi.	Generator	: Building

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. Factory Engineer to produce and actively monitor a loading plan for all floor plates within the factory, with consideration given to slab, column and foundation capacities.
2. Verify the capacity of the slabs, beams and columns beneath the water tanks.
3. At the joint at each floor level, verify the cantilevered sections of slabs and beams.
4. Produce an assessment by the Factory Engineer.

Long Term (Within 6 Months):

1. Maintain and enforce the loading plans.
2. This item can be managed by the loading plan mentioned in the item 1.
3. Produce an assessment by the Factory Engineer for the validation for the shear design of the beams.
4. Produce a Detailed Engineering Assessment of the steel shed at roof level.
5. Apply a new waterproofing membrane.

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The recommendations for Fire Safety corrective actions are:

Immediate (Within 1 month):

1. Immediately reduce occupant load to not more than available exit capacity. If possible, provide additional exits in the future to increase egress capacity.
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.

Short Term (Within 3 Months):

1. 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.
2. Separate the boiler room by a minimum 2-hr fire-rated construction. Seal and/or protected all openings to maintain the required fire separations.
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 and floors to maintain the fire separation.
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. Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.
7. Provide illuminated signage above all egress exit door points.
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. 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. Silica gel in transformer-breather must be checked during routine inspection and replaced if required. If the color of the silica gel is blue, then it's dry. The oil container attached below breather must be filled with transformer oil to trap moisture in air.

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2. Breather oil cup must be filled with transformer oil to required level as instructed by the manufacturer.
3. Materials and wastage stored in generator room must be removed.
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. Disconnect the power source of the cable laid into channel and clean dust and debris of all interior components. Establish a periodic cleaning program and maintain records of the activities. Provide cover made of non-combustible material on the channel for preventing ingress of dust and debris in future.

Short Term (Within 3 Months):

1. Cable Generator outgoing cable must be supported on trays. Existing cables laid on floor may be installed in cable trench or on trays with cover.
2. Cables must be protected from external damages and must be laid/supported on cable trays. It is recommended to lay cable in covered trenches, under floor level or covered cable-ducts installed on floor.
3. Cables/wirings passing through permanent wall must be protected and remaining gaps must be sealed with appropriate fire resistant materials.
4. Cable laid on the walkway must have mechanical protection. Cable shall be laid in trench with cover or in concrete slab.
5. Arrange periodic inspection & thermal scan to identify the overloading, loose connection, unbalanced load which may cause the excessive heat-rise and take action accordingly.
6. 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 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. Remove all the multiple connections made at a single point of bus bar and connect individual branch cables to individual points on bus bar using individual lug according to the respective cable size.
8. Rearrange the devices inside panel such that it can be easily accessible during operation and maintenance. Install slotted wiring duct to latch the cable kept haphazardly inside the panel.
9. Cable must be supported on cable trays on floors and ceilings and on raisers/ladders on walls to prevent any physical damage to cable-insulation.

Mid Term (Within 6 months):

1. Service cables must be supported on trays or raisers throughout its length.
2. Cable must be supported on cable trays on floors and ceilings and on raisers/ladders on walls.
3. Cables laid outside building must be supported in covered cable trays and protected against weather and possible physical damages.
4. Cables tray or raceway must be continuous & supported rigidly through-out its length.

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5. Cable trays must be installed with complete accessories to prevent damages and stress to the cables.
6. Some of the panels shall be relocated, to other location, to provide adequate and safe working space for ease of its operation.
7. Cables laid outside building must be supported in cable trays with cover and protected against weather and possible physical damages.

Long Term (More than 6 months): NA