

## **Summary of Preliminary Assessment on Structural, Fire and Electrical Safety**

---

Name of the Factory	: ROSEBAY APPARELS BD LTD (FOR UD)
Address of the Factory	: 88, Borpa, Rupgonj, Narayangonj
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	:
Date of Structural Inspection	:
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 17 October, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 17 October, 2015
BKMEA Membership No.	: 1543

### **BASIC INFORMATION:**

The factory consists one of 3-storied reinforced concrete building with a pre- fabricated steel shed at roof. The following information was noted:

- i. Building Usage Type :
- ii. Structural System :
- iii. Floor System :
- iv. Floor Area :
- v. No. of Stories :
- vi. Construction Year :
- vii. Foundation Type :
- viii. Design Drawings :
- ix. Soil Investigation Report :
- x. Construction Materials :
- xi. Generator :

### **RECOMMENDATIONS FOR CORRECTIVE ACTION:**

The recommendations of corrective action for both Structural and Fire & Electrical Safety comprises in Short Term, Mid Term and Long Term basis.

The recommendations for **Structural Safety** corrective action are:

- |                        |   |
|------------------------|---|
| Short Term (Immediate) | : |
| Mid Term (6-weeks)     | : |
| Long Term (6-months)   | : |

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

The recommendations for **Fire & Electrical Safety** corrective action are:

**(A): Recommendations for Fire Safety Corrective Actions:**

<p>Immediate</p> <p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	<p>N/A</p>
<p>Short Term</p> <p><i>(Actions that must be incorporated into a Fire Safety Management Plan immediately (1 ~ 2 weeks) and should be a regular activity</i></p>	<p>Factory needs to conduct fire drill quarterly (4 times a year) under the fire safety plan and needs to kept the written record of such drills for at least 3 years for the inspection of fire brigade whenever called for.</p> <p>Factory need to have proper testing plan &amp; record of fire safety equipment.</p> <p>Factory needs to have marked aisles in all working floor according to 0.9m for one side seat and 1.0m for both side seat. Factory needs to remove all obstruction from escape route for emergency and safe evacuation.</p> <p>Lights in storage area are needed to be installed with protective covers and conduits.</p> <p>Factory needs to close all the opening in the rated wall of the stair case by 2 hours rated construction/enclosure or 1.5 hours rated doors</p> <p>Combustibles are to be managed with good housekeeping. Storage facilities with no air-conditioning duct need to be at least 2.9 m and when used as a storage facility there needs to have a minimum clearance of one third the floor height from the ceiling to the top of the storage stack.</p> <p>All required means of exit or exit access in buildings or areas requiring more than one exit shall be signposted. The signs shall be clearly visible at all times, where necessary supplemented by directional signs</p> <p>Portable fire extinguisher needs to be of an approved type and installed as per manufacturer's instruction and placed near the path of exit travel where easily accessible. Portable fire extinguisher needs to be installed in private and public buildings as per specification and requirements of BDS 825:1991 (BDS 825:91).</p>

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Need to have as built drawing with floor machine layout showing means of escape.</p> <p>Fire license needs to be updated for full occupied area. Factory Manager or Director needs to arrange fire safety training for the workers of the factory from proper authority time to time.</p> <p>All the exit doors need to be replaced by side swinging so that un-lockable doors can be opened easily in the direction of evacuation without the use of a key.</p> <p>Factory needs to provide handrail on both sides of all the stairways.</p> <p>Factory needs to be installed with adequate illuminated emergency lighting in floors, exits &amp; stairs.(Escape route).</p> <p>Emergency back-up power needs to be connected for critical fire safety system and not less than 30 minutes in case of failure of power supply.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Factory needs to have a proper pre-plan for fire department. Factory needs to maintain minimum width of exit 0.9 m and height 2 m.</p> <p>Final exit route-2 (Stair-2 route) need to be protected (2 hours rated construction with 1.5 hours rated door) from knitting section at ground floor by need to have a protected escape route till to reach safe refuse area.</p> <p>Storage area need to be protected with 2 hours rated construction and 1.5 hours rated opening or doors.</p> <p>Generator: Generator room need to be protected by 4 hours rated construction with 2 hours rated opening / door from main factory building located at ground floor.</p> <p>Boiler: Boiler room need to be protected with 4 hours rated construction with 2 hours rated opening / door from stair-1 and generator room at ground floor of the building.</p> <p>All the stairs need to be protected with fire and smoke resistant enclosures and opening (2 hours rated enclosure and 1.5 hours rated door)and provide a protected route from all though the stairway to the final exits.</p>

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>Factory need to install centralized and automatic fire detection &amp; alarm system on all occupied floors, including other tenanted floors of the building as per NTPA Guideline.</p> <p>Factory needs to install manually operated electrical fire alarm system and automatic fire alarm system with single or multiple call boxes on all occupied floors, including other tenanted floors of the building.</p> <p>Factory needs to install control panel for centralized automatic smoke detection &amp; fire alarm system according to NTPA Guideline.</p> <p>Install proper standpipe system having at least 75 mm diameter of standpipe. First aid hose system (38 mm nominal) needs to be provided (Ref. Fire Service Standard # 9) in addition to first aid fire-fighting appliances in existing high rise buildings. In addition 50 mm or larger hose connection facility needs to be provided.</p> <p>Install 1 riser per 1000 m<sup>2</sup> of floor area &amp; Install adequate number of hose in floor area and the minimum hose diameter is 38 mm, or 1.5" preferably fabric hose with variable nozzle to be used in both of the stairways covering the floor area.</p> <p>Factory need to install standard standpipe, hose and fire pump system to ensure required hose pressure as per NTPA Guideline</p> <p>Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection.</p> <p>Factory needs to install dedicated fire pump with sufficient capacity and backup power.</p> <p>Factory need to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900ltr x 75min=142500 liters water storage tank.</p>
--	---

### **(B): Recommendations for Electrical Safety Corrective Actions:**

<p>Immediate</p> <p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	<p>Ensure there is no break in the neutral wire in the form of a fuse unit throughout the wiring installation.</p> <p>Remove all unused cables from distribution boards and make sure all necessary</p>
---	---

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>cables are properly terminated at its point of termination using appropriate size and type of lug.</p> <p>Find out cause (improper cable selection, improper protective device selection, improper termination, rusted connection, heat source etc.) of burning sign/insulation damage and take proper action including replacing cable or equipment where necessary.</p> <p>Find out the cause (improper cable/over current selection, over loading, improper lug, improper cable joints, rusted connection, insulation damage, multiple cables at single point, ) of overheating (&gt; ambient+ 40°C) and take proper action.</p>
<p>Short Term</p> <p><i>(Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity)</i></p>	<p>Discharge the generator exhaust to the exterior of the building in a safe location.</p> <p>Also ensure exhaust has been taken out through any other side except south.</p> <p>Provide two separate and distinct connections of earthing for each generator.</p> <p>Ensure all distribution boards (including panel door) are earthed properly.</p> <p>Ensure proper earthing connections at all electrical equipment. Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering. Install earthing pit for the factory with adequate provision for inspection of the earthing system and ensure inspection is being completed and documented.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<p>Install appropriate type of safety signage at generator room. Also ensure graded rubber mats are provided in front of all distribution boards.</p> <p>Provide Instruction board for first aid and artificial respiration in the generator room.</p> <p>Ensure distribution boards have a minimum clearance of 1 m (39 in) in front.</p> <p>Provide dedicated &amp; adequate size of earthing with proper identification for each circuit from the earth busbar of distribution boards and ensure continuous earth path is back to main building intake.</p> <p>Rewire to avoid the use of multiple cables from incoming and outgoing side of MCB's/MCCB's.</p> <p>Replace wooden bases and use metal enclosure for mounting the</p>

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>circuit breaker and fuse.</p> <p>Ensure all electrical cables are sized according to capacity of circuit breakers.</p> <p>Provide adequate support or mechanical guards for electrical equipment and wiring where necessary.</p> <p>Ensure cable joints are made in respect of conductivity, insulation and mechanical strength.</p> <p>Ensure discrimination is achieved between circuit breakers used for protection of main circuit and the sub-circuits derived therefrom.</p> <p>Connect all metal in the building to the building earthing system.</p> <p>Find out the cause (improper cable/over current selection, over loading, improper lug, improper cable joints, rusted connection, insulation damage, multiple cables at single point, ) of overheating { ambient+( 20°C-40°C)} and take proper action.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<p>Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system.</p> <p>Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data.</p> <p>Inspect electrical panel boards on an annual basis.</p> <p>Ensure overhead service connections to the building are led via adequate size and type of service masts.</p> <p>Ensure the generator room has adequate fire separation from the main building.</p> <p>Provide adequate means of ventilation for the generator room based on the installed equipment considering fire barriers.</p> <p>Ensure appropriate generator room size in order to properly access the generator to perform routine maintenance activities.</p> <p>Replace distribution boards with metal enclosed body. Ensure distribution boards have no opening and all live internal components are concealed properly.</p>

## Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

---

	<p>Provide dedicated &amp; adequate size of neutral with proper identification for each applicable circuit.</p> <p>Ensure each distribution board is provided with a circuit list and means of identification is provided as per list.</p> <p>Use noncombustible material to make cable channel and provide adequate covers on cable channel.</p> <p>Ensure surface/exposed wiring are run either horizontally or vertically with proper mechanical support and avoid wiring at an angle or hanging way with improper support.</p> <p>Provide proper cable terminator/connector for stranded conductors at its point of termination.</p> <p>Install separate distribution boards for lighting and power circuits.</p> <p>Provide individual fuse with suitable discrimination with backup fuse or miniature MCB for each 15A socket outlet.</p> <p>Install lightning protection system on the building.</p>
--	---