Name of the Factory	: Delta Socks Ltd.
Address of the Factory	: Nayarhat, Savar, Dhaka, Bangladesh.
Present Status of the Factory	: Under Operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 17th February, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 17th February, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 17th February, 2015
BGMEA Membership No.	: 5395.

BASIC INFORMATION:

There are 1 no. Single-Storey prefabricated steel shed building, 1 no. 3-storey Utility building and 1 no. 2-Storey + Semi-Storey bonded warehouse in the factory premises. Both the utility and the warehouse buildings contain an extra vertical extension of a functioning floor. The factory operates in the premises on an ownership basis. The following information was noted:

i.	Building Usage Type	: Garment Factory.
ii.	Structural System	: RCC beam column frame system for Building-1 and Building-2 Steel Gabble Frame for Shed-1
iii.	Floor System	: RCC Beam slab frame system for Building-1 and Building-2 and Profile sheet roof system for Shed-1.
iv.	Floor Area	: The typical plinth area is 7,900 sft.(approx.) and total production floor is 10,600 sft.(approx.)
v.	No. of Stories	: Building 1: 3-Storey, Building 2: 3-Storey Shed 1: Single Storey
vi.	Construction Year	: 2012.
vii.	Foundation Type	: Unknown.
viii.	Design Drawings	: Available (Signed Pathalia Union Parshad on 1st of March, 2012)
ix.	Soil Investigation Report	: Available.
x.	Construction Materials	: Brick aggregate.
xi.	Generator	: Ground floor of utility building.

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) : None.

Mid Term (6-weeks) :

- As-built architectural and structural drawings of the building to be prepared and submitted for approval by appropriate authority. As part of this process the building engineer will be required to make a number of checks on the inconsistencies between the structural design and the as-built construction.

Long Term (6-months) :

- Sections of plaster finish of wall to be removed to investigate if cracks penetrate the building structure or wall. Carry out any

remedial actions as directed by the Building Engineer for cracks on wall.

- The connections of the steel stair need to be checked by the building engineer and the bracing system is required to ensure the stability of the structure. Carry out any remedial actions as directed by the Building Engineer for non-engineered steel structure.

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

(A): Recommendations for Fire Safety corrective actions:

Immediate (*the factory should not continue to be occupied until these non-conformities have been rectified*):	N/A
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (1 ~ 2 weeks) and should be a regular activity*	• Remove all temporary items from all escape routes, aisles and passageway. • Place the extinguisher near the path of exit travel & easily accessible • The hose pipe performance should be checked periodically and properly tagged.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Replace all existing exit doors on evacuation routes, exit doors with side hinged type door, which swing outward and in the direction of travel. Swinging of the door should not constrict the width of the corridor / passage below 0.9 meter. • Remove all locking device from all egress door. All exit doors should be open-able from the side they serve without the use of a key. • Provide handrails on both side of each stairway with height of 0.9m measured from the nose of stair to the top of the handrail. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at generator, boiler & transformer room. • The stairway should be illuminated with emergency lighting with power back-up supply & illumination should be a minimum of 10 lux for stairway. • Produce design and plan for automatic detection system with automatic fire alarm. • Provide adequate nos. of smoke detectors to cover the

	whole factory building. • Prepare proper design and plan for dedicated fire pump with alternate backup power supply. • Replace existing 1 inch hose pipe with 1.5 inch hose pipe to meet the requirement of RMG guideline. • Prepare plan and design for dedicated water storage tank for firefighting operation.
Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	• Provide 4 hours fire rated barriers with 2 hours fire rated doors at generator, boiler & transformer room. • Install automatic detection system with automatic fire alarm. • Install dedicated fire pump with alternate backup power supply. • Provide sufficient number of hose pipe with respect to area and travel distance as per RMG guideline. • Stand pipe supplying first aid hose should have minimum pressure of 200 KPa. • Provide dedicated storage tank for firefighting operation.

(B): Recommendations for Electrical Safety corrective actions:

Immediate (*the factory should not continue to be occupied until these non-conformities have been rectified*):	• Over current protection devices (Circuit breakers) should be installed at all distribution panels.
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity*	• Re-locate oil tanks away from control panels in generator room. • All strands cables at exposed ends should be properly soldered / crimped and insulated. • Provide proper separate earthing/grounding to generator. Ensure that generator body frame to have two separate and distinct connections to the earth / ground.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• 1. Provide updated SLD matching the existing installation at the factory. 2. SLD to indicate exact positions of all points of switch boxes and other outlets.

	3. SLD to be approved by the engineer-in-charge. • 1. Provide updated Electrical layout drawing prepared after proper locations of all outlets for lamps, fans, fixed and transportable appliances, motors etc. 2. Drawings to indicate exact positions of all points of switch boxes and other outlets to match existing installation. 3. As built drawing to be approved by the engineer-in-charge. • Need to refill the silica gel breather oil cup with working condition. • All unwanted materials should be removed from transformer / Generator room. • Provide rubber mats of adequate size in front of all distribution panels. • Provide and maintain clear and legible identifications numbers & names on all incoming and outgoing circuits of HT / LT panels. • 1. Exit signs should be illuminated either by lamps external to the sign or by lamps contained within the sign. 2. The source of illumination should be providing not less than 50 lux. • 1. Remove all the inflammable materials from surrounding of electrical circuitry. 2. Ensure that all electric circuitry clean of inflammable materials. 3. Conduct periodic maintenance and maintain the records. • Provide cable connections with properly soldered / welded lugs at (MDB /SDB)'s. Ensure that all the electrical connections are properly secured with lugs and glands. • Avoid looping and bunch of cable at MCCB/MCB or bus bar terminal, use individual circuit and over current device for every incoming and outgoing circuit at the distribution boards.

	• Provide circuit diagram /circuit list with proper current ratings and fuse size, marking for DBs identifying end use load, voltage, number of phases. • Provide cable joints of porcelain / PVC connectors with PIB tape wound around before placing the cable in the box. • Seal the cable penetrations through walls adequately with fire resistive elements. • Seal the opening of wall at wiring passing through wall/roof/floor partitions. Ensure that all cable penetrations though walls should be adequately sealed with fire resistive elements. • Provide proper separate earthing/grounding to transformer. Ensure that transformer body frame to have two separate and distinct connections to the earth / ground. • 1. Provide sufficient and separate earthing for HT / LT panels in substation/transformer room 2. Provide adequate number of earth electrodes. • Provide adequate earthing to body and doors to all MDBs / DBs. Ensure that all electrical panels provided with proper and separate earth potential.
Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	• Provide adequate clearance in all sides of main HT/LT panel boards/transformer for easy maintenance. • Area of substation / transformer to meet requirements of Table 4.3 of RMG Guideline; the area should be 45m2, or relocate the substation/ transformer room. • Maintain the minimum height of 3.6 m for the substation room. Increase the height or relocate it. • Provide 4 hour fire rated walls all around the transformer / generator room on ground level. • Provide adequate cable trenches with non-flammable covers at substation areas. • Modify Area of generator room to meet requirements of Table 4.4, RMG Guideline; the area should be 48m2, or relocate the generator room. • Provide calibrated Ammeters / Voltmeters at

	distribution boards (MDBs). • Power cables/ telecommunication cables should be laid separately. • Seal the cable entry-exit points of (MDB /SDB)'s with non-flammable materials. In addition: 1. Ensure that MDB / SDB panels / Switchgears to be vermin / damp proof. 2. Ensure all unused holes / openings in DBs to be blocked properly. • 1. Provide the ECC to meet minimum cross-sectional area as per table 4.5. 2. Ensure that connections between conductors / equipments provided to durable electrical continuity and adequate mechanical strength and protection. 3. The continuous earth connection is provided back to the main intake supply earth. • Provide adequate protection against lightning depending on the probability of a strike and acceptable risk levels at roof top of building.