Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: DALAS FASHIONS LTD(Building-3)
Address of the Factory	: PurbaChandura, Safipur, Kaliakoir, Gazipur.
Present Status of the Factory	: Under Operation
Structural Assessment Conducted by	: VERITAS Engineering & Consultant
Date of Structural Inspection	: 2015-02-17
Fire Assessment Conducted by	: VERITAS Engineering & Consultant
Date of Fire Inspection	: 2015-02-17
Electrical Assessment Conducted by	: VERITAS Engineering & Consultant
Date of Electrical Inspection	: 2015-02-17
BKMEA Membership No.	: 1045

BASIC INFORMATION: The present garment fac tory is a single storied PEB shed. The following general information was noted:

i. Building Usage Type	: Garment factory
ii. Structural System	: PEB shed
iii. Floor System	: N/A
iv. Floor Area	: 45800 sq. ft.
v. No. of Stories	: Single storied.
vi. Construction Year	: 2008-09
vii. Foundation Type	: Building was built in one phase in 2013 to 2014
viii. Design Drawings	: Available : Approved layout Not available: Architectural design drawing, structural design drawing, soil test report and machine layout plan.
ix. Soil Investigation Report	: Not available
x. construction Materials	: I-Section.(steel column), rafter, purlin.
xi. Generator	: Separate Structure.

RECOMMENDATIONS FOR CORRECTIVE ACTION: Corrective action for structure are,

Short Term (Immediate)	: N/A
Mid Term (6-weeks)	: 1. Structural Engineer to check the connections capacities of all steel column connections
Long Term (6-months)	: 1. Building Engineer to survey as constructed building. Full set of as built structural Drawing to be prepared showing the correct as constructed layout.

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*	• Factory needs to have proper testing plan & record for fire safety equipment. • Kitchen area needs to be equipped with fixed temperature type detectors and portable fire extinguishers. • Combustibles are to be managed with good housekeeping. Storage facilities with no air-conditioning duct shall be minimum 2.9m and when used as a storage facility there shall be a minimum clearance of one third the floor height from the ceiling to the top of the storage stack. • 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..
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Factory needs to have as built drawing with floor machine layout showing means of escape with proper dimension. • Fire manager/Director need to have safety training from proper authority & worker of the factory should as far as possible be trained for use fire extinguisher. • All the exit doors need to be replaced by side swinging so that unlockable doors can be opened easily in the direction of evacuation without the use of a key. • Factory needs to provide handrail on both sides of all the stairways. • Factory needs to be installed with adequate illuminated emergency lighting in floors, exits& stairs.(escape route). • 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.
Long Term (The remedial works indicated must be carried out within a period of 6 months)	• Fire department pre-planning need to be developed. • Chemical store need to be protected by 4 hours fire rated construction with 2 hours fire rated door/opening from the dyeing section and working floor.

	• Generator room need to be protected by 4 hours rated construction with 2 hours rated opening / door from other occupancy and kitchen room need to remove to other safe location. • Chemical store need to be protected by 4 hours fire rated construction with 2 hours fire rated door/opening from the dyeing section and working floor. • All the exits connecting to the staircase-1 andstaircase-2 need to be protected with fire and smoke resistant enclosures and opening (2 hours rated enclosure and 1.5 hour rated door) and provide a protected route from all though the stairway to the final exits. • Bonded ware house need to be protected with 2 hours rated construction & 1.5 hours rated opening or doors from office. • Factory needs to install centralized and automatic fire detection & alarm system on all occupied floors, including other tenanted floors of the building as per NTPA Guideline. • The factory need 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. • Factory needs to be installed with control panel for centralized automatic smoke detection & fire alarm system according to NTPA Guideline. • Factory needs to install proper standpipe system with having at least 100mm dia of riser. • Factory needs to install 1 hose per 1000 m2 and the minimum hose diameter is 38 mm, or 1.5" preferably fabric hose with variable nozzle. • Factory need to ensure the minimum pressure for standpipes supplying a 50mm or larger hose shall be at least 300 Kpa. For standpipe supplying first aid hose (38mm nominal) may have a minimum pressure of 200 Kpa. • Factory needs to be installed with Siamese connection for to the standpipe system located outside the building and accessible to the fire department connection. • Factory needs to have dedicated fire pump with backup power system & sufficient capacity for achieve required pressure in the remote place of the factory.

(B): Recommendations for Electrical Safety corrective actions:

Immediate (*the factory should not continue to be occupied until these non-conformities have been rectified*):	• 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+ 400C) and take proper action.
Short Term (*Actions that must be incorporated into a Fire Safety Management Plan immediately (a week) and should be a regular activity)*	• Ensure panel door of distribution boards are earthed properly. • Remove all unused cables from distribution boards and make sure all necessary cables are properly terminated at its point of termination using appropriate size and type of lug. • Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and debris from entering. • Provide provision for inspection of all earthing system and ensure inspection is being completed and documented.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Install appropriate number and type of safety signage and fire-fighting equipment at substation and generator room. Also ensure graded rubber mats are provided in front of all distribution boards. • Provide Instruction board for first aid and artificial respiration in the substation room and generator room. • Fill the transformer breather with fresh Silica gel and oil cup with fresh Oil. • Provide two separate and distinct connections of earthing for each generator. • Provide dedicated & adequate size of earthing with proper identification for each circuit from the earth bus bar of distribution boards and ensure continuous earth path is back to main building intake. • Rewire to ensure each incoming supply to an MCB/MCCB has a dedicated supply from bus bar. Avoid the use of multiple cables on outgoing side of MCB's/ MCCB's. • Ensure all electrical cables are sized according to capacity of circuit breakers. • Provide adequate support or mechanical guards for electrical

	equipment and wiring where necessary. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Connect all metal in the building to the building earthing system. • 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+(200C-400C)} and take proper action.
Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	• Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical system. • Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data. • Inspect electrical switchgear and panel boards on an annual basis. • Ensure all high tension cables are laid following standard cable laying techniques. • Ensure distribution boards have no opening and all live internal components are concealed properly. • Provide dedicated & adequate size of neutral with proper identification for each circuit. • Ensure each distribution board is provided with a circuit list and means of identification is provided as per list. • 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. • Provide proper cable terminator/connector for stranded conductors at its point of termination. • Install separate distribution boards for lighting and power circuits. • Install lightning protection system on the building.