Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Tanzina Fashion Ltd.
Address of the Factory	: Pawninagor, Demra, Dhaka.
Present Status of the Factory	: Under Operation
Structural Assessment Conducted by	: VERITAS Engineering & Consultant
Date of Structural Inspection	: 2015-07-29
Fire Assessment Conducted by	: VERITAS Engineering & Consultant
Date of Fire Inspection	: 2015-07-29
Electrical Assessment Conducted by	: VERITAS Engineering & Consultant
Date of Electrical Inspection	: 2015-07-29
BGMEA Membership No.	: 6040

BASIC INFORMATION: The present garments factory is a single storied non engineered shed with steel column. The following general information was noted:

i. Building Usage Type	: Garment factory
ii. Structural System	: Steel column with non-engineered shed.
iii. Floor System	: Roof truss with MS angle.
iv. Floor Area	: 28000 sft.
v. No. of Stories	: Single storied.
vi. Construction Year	: 2000.
vii. Foundation Type	: Isolated column footing.
viii. Design Drawings	: Available: Approval drawing, partial structural drawing Not Available: Architectural drawing, as built machine layout Plan, material test report.
ix.Soil investigation Report	: Available
x. construction Materials	: Steel truss, steel column.
xi. Generator	: Ground Floor.

RECOMMENDATIONS FOR CORRECTIVE ACTION: Columns were found highly stressed due to over load and big tributary area which may pose high risk to operations in the factory. During the assessment, other non-conformities were found. Mid-term and long term corrective actions are recommended. **Corrective action for structure are,**

Short Term (Immediate)	: N/A
Mid Term (6-weeks)	: 1. Design should be checked by the Building Engineer to verify the lateral stability of the shed and confirm the requirement of any bracing in the long direction. 2. A qualified structural engineer should be involved for maintenance by correcting the identified issues.
Long Term (6-months)	: 1. As built drawing with Structural adequacy certificate to be kept at site for review.

2. Building Engineer to confirm that bracing replacement has been carried out if required.

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 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. • Factory need to have proper testing plan & record of fire safety equipment. • Potable 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). • 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 prepare 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. • Fire license needs to be updated for full occupied area. • 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)	• Factory needs to have a proper pre-plan for fire department. • Generator room needs to be fire protected by 4 hours fire rated construction with 2 hour rated opening having direct access from outside. • Boiler room needs to be protected by 4 hour fire resistance construction

	with 2 hours fire rated door from the washing section of shed-1. • Factory need 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 install control panel for centralized automatic smoke detection & fire alarm system according to NTPA Guideline. • Factory need to install proper standpipe system having at least 75 mm diameter of riser. • Factory needs to install separate standpipes in each exit with minimum 38 mm diameter of 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. • Factory need to have sufficient water storage capacity to get adequate pressure to feed fire-fighting equipment and at least 1900 □ 75 = 142500 liters water storage tank.

(B): Recommendations for Electrical Safety corrective actions:

Immediate (*the factory should not continue to be occupied until these non-conformities*	• Remove all unused cables from panel boards and make sure all necessary cables are properly terminated at its point of termination using appropriate size and type of lug. • Find out the cause (improper cable/over current selection, over loading, improper lug, improper cable joints, rusted connection,

have been rectified):	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)*	• Discharge the generator exhaust to the exterior of the building in a safe location. • Provide two separate and distinct connections of earthing for each generator. • Ensure all panel boards (including panel door) are earthed properly. • 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. • Ensure inspection is being completed and documented for all earthing system.
Mid Term (*The remedial works indicated must be carried out within a period of 6 weeks)*	• Post safety signage and install appropriate number and type of fire-fighting equipment in generator room and ensure graded rubber mats are provided in front of all distribution boards. • Provide Instruction board for first aid and artificial respiration in the generator room. • 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 has a dedicated supply from bus-bar. Avoid the use of multiple cables on outgoing side of MCB's. • Replace wooden base with metal clad construction for mounting the circuit breaker and energy meter. • Ensure all electrical cables are sized according to capacity of circuit breakers. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Connect all metal in the building to the building earthing system. • Ensure Lighting fixtures are supported from the structure properly.
	• Develop an electrical layout diagram and an as-built single line diagram detailing key components and capacity of the electrical

Long Term (*The remedial works indicated must be carried out within a period of 6 months)*	system. • Establish a periodical Insulation and earth Resistance Measurement Program and record the related testing data. • Inspect electrical panel boards on an annual basis. • Ensure the generator room has adequate fire separation from the production area. • Ensure appropriate generator room size in order to properly access the generator to perform routine maintenance activities. • Ensure all panel 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. • 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.