

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Amc Knit Composite Ltd.
Address of the Factory	: Baniararchala, Member Bari, Gazipur Sadar, Gazipur, Bangladesh.
Present Status of the Factory	: Under Operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 29 th July, 2015.
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 29 th July, 2015.
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 29 th July, 2015.
BGMEA Membership No.	: 5103.
BKMEA Membership No.	: 1020.

BASIC INFORMATION:

The total factory is composed of multiple structures residing in a production complex. The containing built-up buildings are: 1-no. 6-Storey RCC building (Building 1), which houses the sewing floors, the management personnel rooms and the MDB room; 1 no. 7-Storey RCC building (Building 2), which was used for production purposes and had been previously assessed by ALLIANCE; 2 nos. ancillary RCC buildings (Ancillary Building 1 and Ancillary Building 2), used for housing security personnel; 3 nos. single storied pre-fabricated steel buildings (Shed 1, Shed 2 and Shed 3), which housed the dyeing, printing and utility sections respectively; and 4 nos. single-storey ancillary shed buildings (Ancillary Sheds 1 - 4), which housed the storage areas and the factory canteens. The following information was noted:

i. Building Usage Type	: Knit Composite Factory.
ii. Structural System	: RCC beam column frame structure and prefabricated shed on steel beam column.
iii. Floor System	: RCC beam slab floor and prefabricated shed.
iv. Floor Area	: Plinth level area of production floor is 41674 sq. ft., total area of the production floor is 128504 sft. and total area of the factory is about 300000 sft.
v. No. of Stories	: One 6- storey, one 7 -storey, one 3-storey, one 2-storey and one single storey RCC building and six no. of single storey shed.
vi. Construction Year	: Construction started 2008.
vii. Foundation Type	: Footing foundation as per design drawing.
viii. Design Drawings	: Available for six storey RCC building, seven storey RCC building and Dyeing shed.
ix. Soil Investigation Report	: Available (approval for 1 no. 6-storied commercial RCC building (Building 1) and 1 no. prefabricated shed (Shed 1) from LGED, Gazipur, Dhaka, on 20th November, 2008)
x. Construction Materials	: Brick aggregate. (Identified by removing plaster)
xi. Generator	: Separate by ancillary shed building and single storey RCC building at west side and south side of the factory area.

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:

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

- Short Term (Immediate) :
- Areas above the over stressed column not to be used for storage.
 - Factory Engineer to review design, loads and columns stresses in all column.
 - Verify insitu concrete stresses by taking 100mm diameter cores from A4 & K4 columns at ground floor. Verify reinforcement grade, diameter and number of bars in column.
 - A Detail Engineering Assessment of Factory to be commenced, see attached Scope.
- Mid Term (6-weeks) :
- Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
 - Detail Engineering Assessment to be completed.
 - As-built architectural and structural drawings to be prepared for unapproved buildings and sheds 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 structural design as described in the following recommendation.
- Long Term (6-months) :
- Continue to implement load plan.

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>	N/A
<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>	N/A
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<ul style="list-style-type: none"> • Prepare proper plan and design for one more exit in a way not to exceed the maximum travel distance or if the factory designs to equip with an automated fire alarm, portable fire-fighting system and appropriate standpipe and hose system through the entire building the length of travel should not be exceed 60 meter. • 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 /

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>passage below 0.9 meter.</p> <ul style="list-style-type: none"> • 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. • Doors in stair should be outward opening, side-swing, self-closing, non-lockable 1.5 hours fire rated doors at Building-1 and 2 hour fire rated door in building-2.(Also require fire rated door at the floor occupied by other tenants at Building-2) • Prepare design for installation of fire rating smoke proof enclosure. 2 hours fire rating doors for exit should not be less than that of 4 hours fire resistance rating of the walls of the smoke proof fire rated entry lobby.(Also require fire rated entry lobby at the floor occupied by other tenants) • Provide 1.5 hours fire rated doors at ground floor fabric store, which located at the adjacent to final evacuation route of stair 2. • Produce proper plan and design for another exit door at mezzanine floor. • Produce design and plan for automatic detection system with automatic fire alarm and control panel.(Also require fire rated entry lobby at the floor occupied by other tenants)
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<ul style="list-style-type: none"> • Implement the plan and design for one more exit or implement with an automated fire alarm, portable fire-fighting system and appropriate standpipe and hose system through the entire building. • Install smoke proof fire rated entry lobby at emergency stairways to separate from the area of incidence.(Also require fire rated entry lobby at the floor occupied by other tenants) • Execute the exit door at mezzanine floor. • Install automatic detection system with automatic fire alarm and control panel. (Also require fire rated entry lobby at the floor occupied by other tenants).

(B): Recommendations for Electrical Safety corrective actions:

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

<p>Immediate</p> <p><i>(the factory should not continue to be occupied until these non-conformities have been rectified):</i></p>	<p>None.</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>None.</p>
<p>Mid Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 weeks)</i></p>	<ul style="list-style-type: none"> • 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. All stranded conductors > 6mm² to be provided with cable sockets. • 2. All stranded conductors < 6 mm², at exposed end should be soldered / crimped. • 1. Remove all the inflammable materials from surrounding of electrical circuitry at MDBs/SDBs. • 2. Ensure that all electric circuitry clean of inflammable materials. • 3. Conduct periodic maintenance and maintain the records. • Select conductors and MCCB/MCB with adequate sizing without exceeding permissible current carrying capacity for insulation. • 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. • 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 adequate earthing to body and doors to all

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>MDBs / DBs. Ensure that all electrical panels provided with proper and separate earth potential.</p>
<p>Long Term</p> <p><i>(The remedial works indicated must be carried out within a period of 6 months)</i></p>	<ul style="list-style-type: none"> • 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. • 1. Design to have proper segregation of different end used loads. 2. Wiring design to have separate and distinct sub-circuits for power and heating system. 3. All DBs to be placed conveniently. 4. Wiring to be neat, tidy and located near ceiling. • Each circuit should have a separate neutral (use of common neutral for more than one circuit shall not be permitted). • Seal the cable entry-exit points of (LT/MDB/DB/SDB)'s with non-flammable materials. In addition: 1. Ensure that HT / LT 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 a connection between conductors / equipment's provided to durable electrical continuity and adequate mechanical strength and protection.

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>3. The continuous earth connection is provided back to the main intake supply earth.</p> <ul style="list-style-type: none">• Provide adequate protection against lightning depending on the probability of a strike and acceptable risk levels at roof top of building.
--	--