

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Wasif Knit Composite Ltd.
Address of the Factory	: Vogra, Bashon Sharak, National University, Gazipur-1704, Bangladesh
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: TUV
Date of Structural Inspection	: 8 April, 2015
Fire Assessment Conducted by	: TUV
Date of Fire Inspection	: 8 April, 2015
Electrical Assessment Conducted by	: TUV
Date of Electrical Inspection	: 8 April, 2015
BGMEA Membership No.	: 4610

BASIC INFORMATION:

The factory building is a three storied RCC building with beam and column system and flat slab system. The following information was noted:

- i. Building Usage Type : Garment Factory.
- ii. Structural System : Six storied RCC beam column frame structure building. Partial prefabricated shed with steel beam column structure on roof.
- iii. Floor System : Beam slab RCC floor.
- iv. Floor Area : Plinth area 5625 sq. ft and total 36707 sq. ft with roof shed
- v. No. of Stories : Six storey
- vi. Construction Year : 2012-2014, Single phase
- vii. Foundation Type : Shallow foundation as isolated column footing
- viii. Design Drawings : Available (Approval for 8 storey commercial building from Gazipur Pourashsva, Gazipur in 15th March, 2012.)
- ix. Soil Investigation Report : Available
- x. Construction Materials : Brick aggregate.
- xi. Generator : Ground Floor.

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) :
1. No excessive storage was observed on the floors of overstressed columns but since columns are highly stressed hence not to use those floors for storage purpose as precaution until DEA not performed.
 2. Factory Engineer to review design, loads and columns stresses in all column.
 3. Verify insitu concrete stresses by taking 100mm diameter cores from ground floor indicated columns. Verify reinforcement grade, diameter and number of bars in column.
 4. A Detail Engineering Assessment of Factory to be commenced, see attached Scope.

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- Mid Term (6-weeks) : 1. Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.
2. Detail Engineering Assessment to be completed
- Long Term (6-months) : 1. 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>	<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>	<ul style="list-style-type: none"> • Factory management should check alarm call points, alarm & detection system periodically and maintained the record properly. • Periodically check fire pumps. Maintain record properly • The hose pipe performance should be checked periodically and properly tagged.
<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"> • 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. • Doors in stair should be outward opening, side-swing, self closing, non-lockable 1.5 hours fire rated doors in all stair way encloses. • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator, substation & boiler room, which located at the adjacent to final exit • Prepare proper plan and design for 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator, substation & boiler room, which located at the adjacent to final exit • Design and plan for 2 hours fire rated walls for all vertical shafts as per requirements of RMG guideline. • Prepare proper plan and design for 2hours fire rated construction with 1.5 hours fire rated door at 1st & 5th floor fabric store area for fire separation from others operational

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	<p>area.</p> <ul style="list-style-type: none"> • Prepare plan and design for dedicated water storage tank for firefighting operation. • Visual fire alarm should be place at Generator room. • Obtain the boiler operator license from the proper issuing authority.
<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"> • Provide 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator, substation & boiler room, which located at the adjacent to final exit • Provide 4 hours fire rated barriers with 2 hours fire rated doors at ground floor generator, substation & boiler room, which located at the adjacent to final exit • Implement the design for 2 hours fire rated walls for vertical shafts • Provide 2 hours fire rated construction with 1.5 hours fire rated door at 1st & 5th floor fabric store area for fire separation from others operational area. • Provide dedicated storage tank for firefighting operation

(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>	N/A
<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>	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"> • 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. • Adequate number of caution boards should be kept in the substation/ transformer room. • Individual Fuse protection should be provided to every 15/20 A socket. • 1. All stranded conductors > 6mm² to be provided with cable sockets. 2. All stranded conductors < 6 mm², at exposed end

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	<p>should be soldered / crimped.</p> <ul style="list-style-type: none"> • The electrical panels to be of metal case and should be marked with “Danger 415 Volts” and identified with proper phase marking and danger signage. • Provide proper clearance of 0.8 - 1.0 m in front of all distribution panels/switchboards. • 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 cable penetrations through walls adequately with fire resistive elements. <p>Seal the opening of wall at wiring passing through wall/roof/floor partitions. Ensure that all cable penetrations through walls should be adequately sealed with fire resistive elements.</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"> • 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. • Adequate number of caution boards should be kept in the substation/ transformer room. • Individual Fuse protection should be provided to every 15/20 A socket. • 1. All stranded conductors > 6mm² to be provided with cable sockets. 2. All stranded conductors < 6 mm², at exposed end should be soldered / crimped. • The electrical panels to be of metal case and should be marked with “Danger 415 Volts” and identified with proper phase marking and danger signage. • Provide proper clearance of 0.8 - 1.0 m in front of all distribution panels/switchboards. • 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.

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