

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: RONAL KNIT RAGS
Address of the Factory	: Islampur, Kadda bazaar, Gazipur
Present Status of the Factory	: Under operation.
Structural Assessment Conducted by	: VEC
Date of Structural Inspection	: 13 July, 2015
Fire Assessment Conducted by	: VEC
Date of Fire Inspection	: 13 July, 2015
Electrical Assessment Conducted by	: VEC
Date of Electrical Inspection	: 13 July, 2015
BKMEA Membership No.	: 1396

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	: Non-engineered shed over RCC column.
iii. Floor System	: Corrugated iron shed
iv. Floor Area	: 5010 sft
v. No. of Stories	: Single storied
vi. Construction Year	: 2010-2014
vii. Foundation Type	: Isolated footing
viii. Design Drawings	: Available: Approval plan, Structural drawing, Not available: Machine layout plan
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)	: N/A
Mid Term (6-weeks)	: 1. Design should be checked by the Building Engineer to verify the structural integrity of the roofing frame against wind force.
Long Term (6-months)	: 1. Install horizontal bracings if required.

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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>	<ul style="list-style-type: none"> 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>	<ul style="list-style-type: none"> Fire manager/Director need to have safety training from proper worker of the factory should as far as possible be trained for use fire extinguisher. Fire drill needs to be conducted quarterly (4 times a year) under the Safety Plan. A record of such drills needs to be kept in writing for years for the inspection of fire brigade whenever called for. Factory need to have proper testing plan & record of fire safety equipment. Factory needs to have marked aisles in all working floor according for one side seat and 1.0m for both side seat. Lights in storage area are needed to be installed with protective conduits. Combustibles are to be managed with good housekeeping. Storage with no air-conditioning duct need to be minimum 2.9 m and when storage facility there needs to have a minimum clearance of one 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
<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"> Factory Needs to have as built drawing with proper dimensions show means of escape. All the exit doors need to be replaced by side swinging so that un-l doors can be opened easily in the direction of evacuation without t key. Factory needs to be installed with adequate illuminated emergency in floors, exits & stairs. (Escape route).
<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"> Factory needs to have a proper pre-plan for fire service and civil d Factory needs to ensure fire protected route from finished Goods S hours rated construction with 1.50 hours rated door) for final exit - exit -3 safely discharge outside of the building. Finished Goods store area need to be protected with 2 hours rated construction and 1.5 hours rated opening or doors. Generator room needs to be fire separated with 4 hours fire rated e and 2 hour rated opening having direct access from outside of te b Boiler room needs to be fire separated with 4 hours fire rated encl hour rated opening having direct access from outside of the buildin

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	<ul style="list-style-type: none"> • 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. • Factory needs to install manually operated electrical fire alarm system with single or multiple call boxes as well as automatic fire alarm system with centralized automatic fire detection and alarm system. • Factory needs to install control panel for centralized automatic fire detection & fire alarm system according to NTPA Guideline. • Install proper standpipe system having at least 75 mm dia of standpipe and first aid hose system (38 mm nominal) needs to be provided (Ref. Fire Code Standard # 9) in addition to first aid fire-fighting appliances in existing multi-rise buildings. In addition 50 mm or larger hose connection facility should be provided. • Install 1 riser per 1000 m2 of floor area & Install adequate number of standpipes per floor area and the minimum hose diameter is 38 mm, or 1.5" preferred fabric hose with variable nozzle to be used in both of the stairways covering the floor area. • Factory need to ensure the minimum pressure for standpipes supplied with 50mm or larger hose shall be at least 300 Kpa. For standpipe supplied with 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 for connection. • Factory needs to have dedicated fire pump with backup power system having sufficient capacity for achieve required pressure in the remote place of the factory. • Factory need to have sufficient water storage capacity to get adequate water pressure to feed fire-fighting equipment and at least 1900 \times 75 = 142500 liters water storage tank.
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(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>	<ul style="list-style-type: none"> • 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.
<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>	<ul style="list-style-type: none"> • Discharge the generator exhaust to the exterior of the building in a safe location. • Ensure all distribution boards (including panel door) are earthed properly. • Clean interior components from dust and debris and seal all openings within the enclosure to prevent dust and

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	<p>debris from entering.</p> <ul style="list-style-type: none"> • Provide provision for inspection of all earthing system and ensure inspection is being completed and documented.
<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"> • Install appropriate number and type of safety signage and fire-fighting equipment at 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 generator room. • Provide two separate and distinct connections of earthing for each generator. • Ensure distribution board has a minimum clearance of 1 m (39 in) in front. • 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 avoid the use of multiple cables from incoming and outgoing side of MCB's/MCCB's. • Ensure all electrical cables are sized according to capacity of circuit breakers • Provide mechanical guards for electrical equipment where necessary. • Ensure cable joints are made in respect of conductivity, insulation and mechanical strength. • Connect all metal in the shed to the earthing system. • Ensure Lighting fixtures are supported from the structure properly
<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"> • 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 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 distribution boards have no opening and all live

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	<p>internal components are concealed properly.</p> <ul style="list-style-type: none">• Install circuit breaker in proper way using metal enclosure to ensure safe installation.• 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 shed.
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