

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Name of the Factory	: Suprov Composite Knit Ltd
Address of the Factory	: Vadam Nishatnagar, Tongi, Gazipur.
Present Status of the Factory	: Under Operation
Structural assessment conducted by	: Alliance
Date of Structural Inspection	: 15-Apr-15
Fire & Electrical assessment conducted by	: Alliance
Date of Fire & Electrical Inspection	: 15-Apr-15
BGMEA Membership No	: 5004

BASIC INFORMATION:

There is one building in the factory premises. The following general information was noted:

- | | | |
|-------|---------------------------|--|
| i. | Building Usage Type | : Garments Factory. |
| ii. | Structural System | : RCC moment resisting frame structure . |
| iii. | Floor System | : Flat- slab. |
| iv. | Floor Area | : 130000 sft |
| v. | No. of Stories | : Six storied |
| vi. | Construction Year | : 2006 |
| vii. | Foundation Type | : Unknown |
| viii. | Design Drawings | : Not Available. |
| ix. | Soil investigation Report | : Not Available |
| x. | Construction Materials | : RCC brick chips. |
| xi. | Generator | : Ground Floor |

RECOMMENDATIONS FOR CORRECTIVE ACTION:

The recommendations of corrective action for Structural, Fire and Electrical Safety comprises of Short Term, Mid Term and Long Term basis are as follows:

The recommendations for Structural Safety corrective actions are:

Immediate : NA

Short Term: (3 Weeks) :

- i. Designate a representative as the Factory Load Manager. The Factory Owner shall ensure that at least one individual, the Factory Load Manager who is located onsite full time at the factory, is trained in calculating operational load characteristics of the specific factory. The Factory Load Manager shall serve as an ongoing resource to RMG vendors and be responsible to ensure that the factory operational loads do not at any time exceed the factory floor load limits as described on the Floor Load Plans.

Mid Term (6 Weeks) :

- i. Under guidance from a qualified structural engineer, conduct destructive core testing to validate the in-situ concrete compressive strength of

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

- structural elements. Also perform a structural analysis to confirm the stability of the steel (ancillary) structure.
- ii. Engage a qualified structural engineer to develop the required documents to confirm the structural integrity of the buildings. Documents must comply with the Alliance Standard Part 8 Sections 8.19 and 8.20
 - iii. Have a qualified structural engineer develop Floor Loading Plans per the requirements of Part 8 Section 8.20.5.3.
 - iv. Have Engage a qualified structural engineer to confirm and document that provisions have been made to accommodate concentrated loads. If provisions have not been made, have a qualified structural engineer develop a remediation plan.
 - v. Under guidance from a qualified structural engineer arrange geotechnical investigation at close vicinity of the structure and make the report available for review.
 - vi. Provide signage or the appropriate markings at all areas used for storage to indicate the acceptable loading limits detailed in the Load Plan.

Long Term (6 Months)

- i. Provide a protective coating at the structural elements constructed with MCAC exposed to rainfall or other sources of water. Have protective coating approved by the Alliance or a qualified structural engineer.
- ii. Provide occupancy certificate for review.

The recommendations for Electrical Safety corrective actions are:

<p>Immediate(3 to 6 Days)</p>	<p>Wiring system components including cables and wiring accessories shall be installed or handled only at temperatures within the standard limits.</p> <p>Keep the substation room clean and free from dirt, lint, water, oil, and debris. Develop a regular cleaning program and implement it for the factory.</p> <p>Disconnect the panel from the electrical service and clean interior components of all dust and debris. Seal all openings within the enclosure to prevent dust and debris from entering.</p>
<p>Short Term (3 Weeks)</p>	<p>Ensure light fixtures without protective covers are not installed in storage areas or in any area where the Inspector of the Factories Rules (1.5.3.5) Part 53 disallows these fixtures.</p> <p>All boxes and enclosures (including transfer switches, generators, and power panels) for emergency circuits shall be permanently marked so they will be readily identified as a component of an emergency circuit or system.</p> <p>Provide generator frame earthing (grounding) at two separate points.</p> <p>Develop and implement an electrical safety program. Include key topics such as lock out tag out procedures, personal protective equipment requirements, etc. Keep records of completed training available on site.</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

Mid Term (6 Weeks)	<p>Provide clearance of 1m (39in) in front of all switchboards and/or distribution boards.</p> <p>Provide earthing of equipment at required locations and connect to required number of electrodes. Refer to the BNBG for required number of electrodes.</p> <p>Foreign utilities should be removed from the substation room.</p> <p>Consult with a qualified Electrical Engineer and ensure electrical cables are sized according to capacity of circuit breakers and vice-versa. Protective devices shall be provided to break any overload current flowing in the circuit conductors before such a current could cause a temperature rise detrimental to insulation, joints, terminations or surroundings of the conductors.</p> <p>Have a qualified electrical engineer develop an as-built single line diagram detailing key components and capacity of the electrical system.</p> <p>Provide identification markings to all the switchboards and/or distribution boards.</p>
Long Term (6 Months)	<p>Complete an oil analysis on applicable transformers at appropriate intervals based on voltage and power.</p> <p>Ensure the proper level of fire rating is installed in the generator room.</p>

The recommendations for Fire Safety corrective actions are:

Immediate (3 to 6 Days)	<p>Remove all impediments, obstructions, and stored materials from the means of egress. Keep all elements of the means of egress (exit path, aisles, stairs, corridors, etc.) continuously free and clear of all obstructions in accordance with Alliance Standard Section 6.3.9.</p> <p>Remove all combustibles stored underneath the cutting tables in accordance with Alliance Standard Section 13.7.2.</p>
Short Term (3 Weeks)	<p>Remove all locking devices from all egress doors and means of egress components in accordance with Alliance Standard Section 6.8. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.</p> <p>The available exit width will need to be increased (either by widening existing exits or adding additional exits) or the occupancy for the floor must be limited to the available capacity of the existing exits.</p> <p>Smoking is prohibited in garment factory buildings or similar uses. Post "No Smoking" signs in English and Bengali at all building entrances. If the Owner designates a smoking area outside the building, information on the location of these areas shall be posted on the "No Smoking" signs.</p>
Mid Term (6 Weeks)	<p>Install an automatic fire alarm and detection system for the facility. System shall comply with the Alliance Standard and NFPA 72. Consult a qualified fire protection engineer and/or authorized fire alarm company to design and install the system.</p>

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>Post the occupant load for all assembly and production floor areas in a conspicuous space near the main exit or exit access doorway for the space in accordance with Alliance Standard Section 6.4.4.</p> <p>Install a new automatic fire alarm and detection system. Once installed, arrange for direct connection of the fire alarm and detection system to a central station monitoring service or the Fire Service and Civil Defence as per Alliance Standard Section 5.7.5. Until that time, a person trained to contact the Fire Service and Civil Defence in the event of fire alarm activation shall be provided. An annunciator shall be located in a constantly attended location (such as a fire control room) to alert this person.</p> <p>Create and post emergency evacuation maps at the entrance to each stair or main point of egress.</p> <p>Conduct fire drills on a quarterly basis as outlined in BNBC Part 4 Appendix A for all garment facilities. Fire drills shall be conducted under the direction of a Fire Safety Director. All other requirements for fire drills shall be conducted in accordance with BNBC Part 4 Appendix A.</p> <p>Implement training programs and document in accordance with the Alliance Safety Training Curriculum.</p> <p>Develop a testing and maintenance program that ensures the emergency power for all egress lighting is tested at least once per year. If battery operated lighting are used, these lights are tested on a monthly basis. Functional testing of battery powered lighting is provided for a minimum 90 min once per year.</p> <p>Develop a testing and maintenance program that ensures the emergency power for exit signs is verified at least once per year. If battery-operated signs are used, these signs shall be tested on a monthly basis. Functional testing of battery powered signs shall be provided for a minimum 90 min once per year.</p> <p>Install signage adjacent to each stair door indicating the stair name and the floor level in both English and Bengali.</p> <p>Apply to appropriate authority in an expeditious manner for issuance of the Certificates of Occupancy for each building and ancillary structure according to building use.</p> <p>Complete Fire Department pre-planning activities with the local Fire Service and Civil Defence in accordance with Alliance Standard Section 13.1.1(2).</p> <p>Install required identification signs at the noted locations. Signage must comply with NFPA 14.</p>
Long Term (6 Months)	Provide a fire-resistive rated assembly between the exterior exit stairs (and 10 ft beyond the ends of the stairs) and the building to

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>achieve the required separation. Enclose any openings (windows, etc.) with required fire rated construction within that 10 ft wall section. The rated assembly should be designed and/or approved by a qualified fire protection engineer.</p> <p>Provide proper aisles marking (clear width minimum 36 in.) and keep aisles free of storage. Relocate the machines accordingly if necessary to provide proper width. The path of egress travel along a means of egress shall not be interrupted by any obstruction. The capacity of the means of egress shall not be reduced along the path of travel.</p> <p>The number of means of egress from any floor or story should not be less than 2 except where a single exit is permitted.</p> <p>Replace non-compliant doors and frames in the means of egress with side-swinging doors. Replacement doors shall be a minimum width of 0.8 m (32 in), and are listed, approved, self-closing, fire rated door assemblies (door and frame) with latching panic hardware.</p> <p>Install initiating devices and notification appliances as required by the Alliance Standard and NFPA 72. This includes electrical supervision of all valves controlling fire protection systems (sprinklers, fire pumps, water supplies, etc.). Connect devices to an automatic fire alarm and detection system for the facility. All fire alarm installations or modifications shall be submitted for review by the Alliance prior to commencement of installation.</p> <p>Provide fire-resistive rated construction barriers and associated opening protection for exit enclosures in accordance with Alliance Standard Sections 4.5 and 4.6. Consult a qualified fire protection engineer to design the required rated construction barrier.</p> <p>Install a dedicated fire pump for the facility in accordance with NFPA 20 to supply the demands of the connected fire protection systems along with a stored source of water sufficient to meet the demands in accordance with NFPA 22. Fire pump installation is to be tested for final acceptance in presence of Alliance and a final inspection of the installation shall be conducted by the Alliance prior to final acceptance of the installation by the Alliance as per clause 5.5.5. Acceptance testing of the installation shall be in accordance with NFPA 20, 22, and 25 testing requirements. Documentation of all testing shall be submitted to the Alliance for review prior to final acceptance by the Alliance. The pump is to be connected to an alternative power source such as a generator. The generator is to be configured with an ATS (auto starter).</p> <p>Keep aisles free of storage. The path of egress travel along a means of egress shall not be interrupted by any obstruction. The capacity of the means of egress shall not be reduced along the path of travel.</p> <p>Provide handrails on both sides of each stairway. Intermediate handrails shall be provided when the stair width exceeds 2.2 m (87 in.). Mount new handrail at a height consistent with existing height (between 30 in. and 44 in).</p> <p>Provide parapets or guards with a minimum height of 1067 mm (42 in.) for all occupiable roof areas in accordance with Alliance Standard Section 6.12.</p> <p>Provide fire-resistive rated construction barriers between hazard</p>
--	--

Summary of Preliminary Assessment on Structural, Fire and Electrical Safety

	<p>types in accordance with Alliance Standard Sections 3.4 and 4.5. Consult a qualified fire protection engineer to design the required rated construction barrier.</p> <p>Establish an inspection, testing, and maintenance program for all fire extinguishers and prepare proper documentation. Program must comply with NFPA 10.</p> <p>Establish written corporate and plant policies on housekeeping to ensure scheduled cleaning for floor, wall, ceiling, supply and return air ventilation systems. Promptly reschedule skipped cleanings. Provide a documented line of authority for authorizing a cleaning delay and rescheduling.</p> <p>"Establish an inspection, testing, and maintenance program for the standpipe system. Program must comply with NFPA 25. "</p> <p>Create a Fire Safety Director position and fill the position with an individual that has sufficient training to be able to carry out the required duties in accordance with Alliance Standard Section 13.1.</p> <p>Establish an inspection, testing, and maintenance program for the fire pump. Program must comply with NFPA 25.</p> <p>Develop a hot work permit program. The program must comply with the requirements of NFPA 51B.</p>
--	--