Report

Fire and Electrical Safety Assessment of Existing RMG Factory Buildings in Bangladesh

Kojima Lyric Garments Ltd.
(BGMEA REf. # 407)
Chandna-Naljani, Joydebpur Road, Gazipur

Bureau of Research Testing and Consultancy (BRTC)
Bangladesh University of Engineering & Technology (BUET), Dhaka – 1000

April 2014

Fire and Electrical Safety Assessment Report

Summary

The **Kojima Lyric Garments Ltd.** factory was surveyed for Fire and Electrical safety 12 January 2014 by BUET. Details of the factory are as follows:

Name of the RMG factory	:	Kojima Lyric Garments Ltd.
Address of the RMG factory	:	Chandna-Naljani, Joydebpur Road, Gazipur
Date Visited	:	21Januaryr 2014
Approval Authority of the Building Plan	:	Tongi, Pourasava
Year of Approval of the Building Plan	:	2008

The purpose of the Preliminary Assessment is to identify the non-conformities of the Fire and Electrical safety provisions as stipulated in the Guidelines for Assessment of Structural Integrity, Fire and Electrical Safety of Existing RMG Factory Buildings in Bangladesh (the Guidelines) that is likely to cause life safety risks of the RMG factory and recommend remedial actions with time frames for addressing the major non-conformities. The following list provides a summary of the major concerns needing action from the RMG factory owner.

Key Concerns:

1. None of the stairways have smoke-proof enclosures. There are open grills between the stairways and the working floors leaving the stairways exposed to smoke and fire propagation.
2. The stairway on the North-West corner does not extend from the roof to the ground level. It ends at 2nd floor and continues anew laterally about 10m away forcing the workers to travel through the 2nd floor work area. Thus, appropriate planning is required to make the entire stairway smoke-proof and fire proof.
3. Doorways to the stairs are not Fire-rated. Therefore, appropriate modifications must be done to ensure that these entries do not compromise objectives of the smoke-proof and fireproof stairways as well as provide adequate work ability.
4. The ground floor exits are not enclosed so as to ensure safe pathway for escape from the premises.
5. The main stairway is not separated from the adjacent ground floor exit passage by a smoke-proof and fireproof enclosure.
6. The exit passages including the stairways were obstructed at some areas.
7. The aisles and passages in storage and working areas were blocked and/or convoluted, thus, likely to cause travel delay during a fire incident.
8. Although evacuation plans were posted at the entrance of each floor there was no directional sign on the walls.
9. Signs were not clearly visible due to disorganized arrangements of cloth racks and boxes. Directional signs should be posted at appropriate locations to be more effective.
10. No automatic fire detection and alarm system is present. Also, the smoke detectors were installed without proper design.
11. Although the building houses only this RMG factory, use of some floors fall under “Mixed Occupancy” (e.g. Storage, Office, Work areas, etc.). The designated storage areas, assembly areas, offices and work areas are not separated with fire-rated walls and doors according to the Guidelines.

Subsequently Table 1 summarizes the fire safety non-conformities identified during the inspection. Actions to be taken by the RMG factory owner have been mentioned in the table to address each issue. The issues have been prioritized using color codes to indicate the urgency and recommended time frame for carrying out the works. Factory management should ensure the modifications, commissioning and maintenance of different systems to meet the Guidelines requirements.

Preamble

In response to the series of recent devastating casualties at different garments and the tragic death of thousands of workers, the Government of Bangladesh (GoB), RMG owners' representatives and workers' representatives came together with the initiative of the International Labor Organization (ILO) to formulate a National Action Plan (NAP) on labor safety including Fire Safety in ready-made garments sector in Bangladesh.

As a part of this initiative, ILO communicated with Bureau of Research Testing and Consultation (BRTC), BUET for technical services in assessing the safety of the RMG factory buildings throughout Bangladesh. In response, BUET provided the required information and relevant scope of services to determine the fire safety status of different RMG factory buildings based on The Bangladesh National Building Code (BNBC 2006).

The Bangladesh National Building Code (BNBC, 2006) provides the Fire and Electrical safety requirements for industrial buildings in general. It does not contain standards specifically addressing the Ready Made Garment (RMG) factories. Also, majority of the RMG factory buildings have been constructed prior to the promulgation of BNBC 2006, thus, do not conform to the Fire and Electrical Safety requirements warranted by the building code. This necessitated development of separate guidelines specifically addressing the Structural, Fire and Electrical safety issues of RMG factory buildings in Bangladesh ('the Guidelines').

The National Tripartite Committee developed guidelines for the RMG factories prioritizing the issues related to the life safety of the workers rather than the property safety issues. Thus, the guidelines developed by the above committee identified and relaxed the BNBC standards related to the property safety related parameters. Vulnerability of RMG factory workers to fire and electrical issues was addressed in the guidelines by primarily focusing on the parameters directly related to life safety.

Methodology of Preliminary Assessment

The process of preliminary assessment of Fire and Electrical Safety of a RMG factory is done through collection of data during one and/or multiple field visits to the factory followed by analysis of collected data. Photographic evidence of current status of the visited RMG factory has also been included. These data were then compared with both the corresponding BNBC standards and those of the guidelines. The results of such analysis provide the information about the current status of the RMG factory regarding Fire and Electrical Safety as well as need for assessment and subsequent modifications by the owner of the building and/or the RMG factory to attain the required safety standard.

It should be noted that the preliminary assessment primarily involves visual inspection combined with minimal performance measurements of some parameters. Full compliance with performance requirements of the systems is not covered in this visual inspection; specifications and performance testing of systems to comply with the Guidelines will be recommended as actions for the building management when the modified or new measures and systems are implemented. The scope of this Preliminary Assessment is limited to the review and identification of critical and major fire safety issues. This assessment does not include identification of minor deficiencies which may be further addressed as a part of follow-up assessment, if any.

The presence or otherwise of all fire safety measures required by the Guidelines are identified; architectural measures incorporated into the fabric of the building as well as all fire safety systems. The ratings and material classification of a number of parameters such as the fire ratings of doors, building units, interior finishing, etc. cannot be determined in the field and thus can only be compared with those listed in different reference tables provided in the BNBC and the Guidelines

The preliminary electrical safety assessment of the existing RMG factory was conducted primarily through visual inspection where minimal direct measurements or testing were performed. Concealed cabling was not inspected. The major electrical equipment such as generator, transformer, LT and

HT panels were visually inspected. The overall status of the general cabling and connection, earthing, lightning protection and fire alarm system along with detectors was checked during the field visit.

Given the present scenario of Bangladesh, a number of existing RMG factories are located in buildings approved for residential/commercial/industrial purposes. Therefore, mixed occupancy e.g. RMG factories situated in buildings with other tenants such as markets and/or commercial buildings, is very much apparent. Although the BNBC allows mixed occupancy involving commercial, residential and industrial entities in the same building, specific conditions govern such construction providing specific limitations on fire ratings. The preliminary assessment has identified the mixed occupancies during the field visit and assessed the significance of such constructions in relation to life safety of the workers in the RMG factories present in the mixed occupancy scenario. It should also be noted that in such buildings accessibility to occupancies other than the visited RMG factory was restricted thus limiting the activities of the assessment team. Therefore, the preliminary assessment for RMG factories in mixed occupancy scenario could only be carried out for the designated RMG factory, but life safety issues related to the factory in question are addressed by the provision of fire rated separation from other occupancies and protection of the common means of escape associated with the factory within the building.

Brief Description of the RMG Factory Building

Kojima Lyric Garments Ltd. is a ready-made garments factory jointly owned and run by Bangladeshi and Japanese manufacturers. It is a six storey concrete building with three stairways in each floor. Two stairways start from the roof and continue from the roof to the ground floor. One stairway on the north-west part of the building starts at the roof and ends at the second floor. A new stairway starts at the 2nd floor, a short distance away from the discharge location, and continues to the basement. Another single flight stairway connects the basement with the ground floor.

Remarks

The factory manager shall prepare a detailed “Fire Safety Plan” for proper enforcement of the safety rules and for actions to be taken, in proper sequence, inthe case of fire in the factory. The plan should also familiarize building occupants with general and specific fire safety information related to the factory.

Once the non-conformities outlined in the Table below have been rectified according to the specifications required by the Guidelines, the factory management should ensure that the necessary performance testing is carried out on all fire safety systems (normally by specialist contractors) prior to sign-off of the systems.

Priority fire safety non-conformities are indicated with a color coding, and action time frames given for implementing them as suggested by the ILO and may be modified by the NTC as deemed necessary:

*Requiring **immediate** attention; the factory should not continue to be occupied until these non-conformities have been rectified*		Now
*The remedial works indicated must be carried out within a period of **6 weeks** to reduce the life safety risk in the short term*		6 weeks
*The remedial works indicated must be carried out within a period of **6 months** to reduce the life safety risk in the medium term*		6 months

*Actions that must be incorporated into a Fire Safety Management Plan i**mmediately and should be a regular activity** to address the fire safety risks*		On-going

Table 1 - List of Non-Conformities

General Note: *The Non-Conformities have been listed in accordance with both the BNBC and the NTC Guidelines. It should be noted that although the preliminary assessment was carried out following the NTC Guidelines developed for the Existing RMG Factories in Bangladesh; the BNBC, being the National Code, was also listed as it provides a basis for the NTC Guidelines.*

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
1	Access Facilities for Fire Service	• Table 3.1.3 Page 10307			• No action needed at present		
			• Fire Services Rules				
2	Type of Construction	• § 3.1 Page 10355 • Table 3.3.1 Page 10383		• Steel or temporary structure on Roof-top of building more than 4 storey high	• Remove temporary structure on roof top	6 months	
			• Sec. 2.3 • Table 2.6	• Same as above			
3	Mixed Occupancy	• § 2.3 Page 10351 • Table 3.3.1 Page 10383	Sec. 2.2.2	• Inadequate horizontal separation	• Provide design drawings to demonstrate how designated storage areas, assembly areas, offices and work areas should be separated with fire-rated walls and doors according to the Guideline occupancy separation will be achieved.	6 weeks	
			• Sec. 2.2.2 • Table 2.1	• Same as above	• Although this building houses only a single RMG, use of some floors fall under "Mixed Occupancy" (e.g. Storage, Office, Work areas, etc.). The designated storage areas, assembly areas, offices and work areas should be separated with fire-rated walls and doors according to the Guidelines.	6 months	

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
4	Vertical Propagation of Fire	• § 3.1.7 Page 10326		• Protection against propagation of fire through voids in interior and exterior walls not equivalent to the fire resistance rating of the wall	• Provide fire-rated separation to prevent smoke and fire propagation through staircases and grills on the interior walls	6 months	P4.1 P4.2
			• Sec. 2.3.5	• Same as above			
5	Ceiling Height	• §1.12.2.1 Page 10327 • Table in Page 10327		• Ceiling height less than specified for Industrial building	• No action needed at present		P5.1
			• Sec. 2.5.1				
6	Exit Components: - Exit Door - Corridors &Passageways (Aisles)	• § 3.6 Page 10423 • § 3.5 Page 10422 • Table 4.3.2 Page 10424		• Door width less than minimum • Other items same as below	• Doors on all escape routes to open in the direction of travel • Keep corridors and passageways on escape routes free of any obstructions to ensure unobstructed path of travel along the aisles, corridors, and passageways to the exits • Relocate work benches, temporary storage in such a way that corridors, passageways and aisles are at least 1.0m wide on all escape routes	6 months	P6.1 P 6.2 P 6.3 P 6.4 P 6.5
			• Sec. 2.9 • Table 2.19	• Doors do not open in the direction of flow • Corridors/Aisles/Passageways obstructed • Corridor and Passageways width less than minimum			
7	Floor Occupancy Load	• § 3.5 Page 10422 • Table 4.3.1 Page 10423		• Floor occupancy more than allowed	• No action needed at present		

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
			• Sec. 2.9.3 • Labor Act				
8	Travel Distance	• Table 4.3.3 Page 10426 • § 3.15 Page 10429	• Sec. 2.9.13		• No action needed at present		
			• Sec. 2.9.12 • Table 2.20				
9	Atria	• §3.1.17 Page 10390			• Not Applicable		
			• Sec. 2.5.5				
10	Vertical Shaft	• §2.5.5 Page 10411 • §D 9 Page 10485 • § D 13 Page 10486		• Openings not protected by enclosures of required fire resistance rating • Electrical cables do not run through separate Service ducts • Not sealed with noncombustible material at each floor level for electrical services duct	• Ensure prevention of fire and smoke propagation through vertical shafts by providing fire rated enclosures around the openings along with seals n shafts and ducts at floor separations. • Provide service duct for electrical cables.	6 months	
			• Sec. 2.3.7 • Sec. 3.7 • Sec. 3.7.8	• Same as above	• Seal the shafts/ducts in the floors when it is not needed. • Seal the shafts/ducts with non combustible materials at each floor.	On-going	

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
11	Staircases/ Stairways	• §1.12.5 Page 10329 • Table 4.3.4 Page 10427 • Table 4.3.2 Page 10424 • §3.10 Page 10426 • §3.13 Page 10428 • §3.9 Page 10426 • §3.7 Page 10424 • §3.14 Page 10429		• Number of Handrails less than required • Interior staircase not protected through smoke-proof enclosures • Open grills in walls between staircase enclosure and the working floors • Stair NW discontinuous at 2nd floor; continues anew laterally about 10m away forcing the workers to travel through the 2nd floor work area • The ground floor exits not enclosed • Stairway doors not Fire Door • Exit access doors not swing in the direction of flow	• Produce design drawings to demonstrate how stairways to are to be made into smoke-proof enclosures equipped with Fire-rated side swinging doors opening in the direction of travel at each floor.	6 weeks	P11.1 P11.2 P11.3 P11.4 P11.5 P11.6
			• Sec. 2.5.2 • Sec. 2.9.5 • Sec. 2.9.7 • Sec. 2.9.12	• Same as above	• Convert all stairways into smoke-proof enclosures equipped with Fire-rated side swinging doors opening in the direction of travel at each floor. • The ground floor exits should be enclosed so as to ensure safe pathway for escape from the premises. • Remove all collapsible security gates and roller shutters from all exit stairway access doors Provide continuous smoke-proof fire protected pathway along all the	6 months	

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
					stairways from roof to the final exit • Remove Sliding doors from all Final Exits. Where sliding doors are provided at final exits, these shall not be relied on for means of exit. • Remove obstructions from stairways		
12	Storage	• §1.12.2.1 Page 10327 • §2.12.7 Page 10419 • §2.5 Page 10411 • §3.16 Page 10430 • §2.13.1.3 (Page 10376)		• No Fire Door • No/Improperly illuminated exit sign • Tortuous and obstructed travel path • Absence of proper separation using fire rated walls and doors	• Provide clearly visible illuminated exit sign to indicate exit from storage area. • Provide cover on naked light.	6 weeks	P12.1 P12.1 P12.3
			• Sec. 2.5.1 • Sec. 2.8 • Sec. 3.9 • Sec. 2.7.1 • Sec. 2.9.14 • Sec. 2.2.4	• Same as above	• Provide fire doors as approved by the Guidelines • Provide clearly visible illuminated exit sign to indicate exit from storage area • Provide easily identifiable escape routes, clear and free of obstruction. • Provide fire-rated solid walls from floor to ceiling to ensure fire separation of the storage area from others or maintaining proper storage size and distance between stored items as per the Guideline	6 months	
					• Rearrange storage items to ensure proper clearance from ceiling.	On-going	

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
13	Smoke and Heat Vents	• §2.6 Page 10411 • §B 2 Page 10469		• No Smoke and Heat Vents	• Provide smoke and heat vents as required (e.g. Storage, etc.)		
			• Sec. 2.7.2	• Same as above			
14	Lift & Enclosures	• §D 3 Page 10481 • § 3.7 Page 10424		• Lift lobby not enclosed and without Fire door • No Fire switch • Inappropriate Fire rated Lift car door • Collapsible gate on lift door • No rules posted for use during Fire	• Provide enclosed Lift lobby with Fire door as part of the stair enclosure as specified in the Guidelines. • Remove collapsible gate on lift door at all levels. • Post emergency procedure notices in lift lobbies.	.6 months	P14.1
			• Sec. 3.7.1 • Sec. 2.9.5	• Same as above			
15	Fire Lifts	• § D 4 Page 10482		• No Fire Lift in building	• Provide drawings and plans for installation of Fire Lift as per the specifications provided in the Guidelines.	6 weeks	
			• Sec. 3.7.2	• Same as above	• Provide Fire Lift in building matching the specifications provided in the Guidelines.	6 months	
16	Signs & Illumination	• §1.15, Page 11231 • § 3.16 Page 10430		• Exit signs not clearly visible • Wrong directional signs • No Bangla and English Exit instructions in case of emergency • Signs not clearly visible due to disorganized arrangement of boxes and other storage items. • Means of Escape lack proper Emergency Lighting in some areas	• Provide adequate number and type of illuminated exit signs so that exits can be seen from all corridors and evacuation paths. • Remove and replace incorrect directional signs. • Provide English and Bangla Exit instructions where necessary. • Directional signs should be posted at appropriate locations.	6 weeks	P16.1

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
			• Sec. 4.13.1 • Sec. 2.9.14	• Same as above	• Provide new Emergency Lighting system that meets the specified emergency lighting requirements of the Guidelines.	6 months	
17	Command Station	• § D 18 Page 10489		• Non-standard Command Station	• Equip Command Station with all facilities required to meet the Guidelines requirements.	6 months	
			• Sec. 3.7.13	• Same as above			
18	Fire Drill & Training	• § A 3 Page 10457 • Fire Law			• No action needed at present		
			• Sec. 3.8				
19	Portable Fire Extinguishers	• § 4.10 Page 10451 • BDS 825 : 91		• Non-standard Cylinder color • Validation certificate not monitored regularly • Cylinders not accessible	• Provide fire extinguishers that meet the requirements of the Guidelines.	6 weeks	P19.1 P19.2
			• Sec. 3.5 • Sec. 3.10 • FACTORY RULES 1979	• Same as above	• Ensure regular monitoring and maintenance of extinguishers, including inspection and expiry/re-service labels. • Ensure easy accessibility to fire extinguishers.	On-going	

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
20	Standpipe and Hose system	• §2.11 Page10368 • Table 3.2.6 Page 10371 • §4.2.1 Page10435 • §4.2.2 Page10435 • Table 4.4.1 Page 10436 • §4.2.2.4 Page10439 • §4.2.3 Page10439 • Table 4.4.2 Page 10442		• Non standard Standpipe & Hose system • Supply of water required for interior fire protection is not adequate • Pressure in the standpipe is less than required • The size (diameter) of the standpipe is less than the prescribed value. • No Siamese connection available.	• Provide standard Standpipe& Hose system that complies with the Guidelines requirements for supply of water, minimum pressure in the standpipe and size (diameter) of the standpipe. • Ensure that Siamese connections are available as specified by the Guidelines.		P20.1 P20.2
			• Sec 2.2.4 • Table 2.5 • Sec. 3.2.1 • Sec. 3.2.2 • Table 3.1 • Sec. 3.2.2 • Sec. 3.2.4 • Table 3.2	• Same as above			
21	Fire Pump	• §4.2.6 Page10446		• No fire pump present	• Provide Fire pump with specifications to meet the Guidelines requirements	6 months	
			• Sec 3.2.6	• Same as above			
22	Additional				• No action needed at present		

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
	Fire Fighting Provisions		• Appendix-II: FACTORY RULES 1979				
23	Boiler Room	• § C 4 Page 10477 • § D 11 Page10486 • § 2.12.8 Page 10419		• Boiler room is not properly segregated from the rest of the occupancy • No smoke detectors in boiler room	• Produce design drawings to demonstrate the incorporation of fire rated enclosure from floor to ceiling and an approved fire rated self-closing swing door for the boiler room. • Provide firefighting equipment as required by the Guidelines.	6 weeks	P23.1
			• Sec. 2.8.2 • Sec. 3.4.2 • Sec. 3.7.6	• Same as above	• Provide fire rated enclosure from floor to ceiling and an approved fire rated self-closing swing door for the boiler room. • Install appropriate detectors.	6 months	
24	Transformer Room	• § D 15 Page10487 • Electricity Rule 1937 § 49		• No separating wall in Transformer room	• Produce design drawings to demonstrate the incorporation of fire rated enclosure from floor to ceiling and an approved fire rated self-closing swing door for the Transformer room. • Provide firefighting equipment as required by the Guidelines.	6 weeks	P24.1
			• Sec. 3.7.10 • Electricity Rule 1937 § 49	• Same as above	• Provide fire rated enclosure from floor to ceiling and an approved fire rated self-closing swing door for the Transformer room. • Install appropriate detectors.	6 months	

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
25	Generator Room	• § D 14 Page 10487 • Table 3.2.7 Page 10377 • § 2.6 Page 11248-11250 • § 2.7.4 Page 11253 • Electricity Rule 1937 § 49		• The generator room is not properly segregated from the rest of the occupancy due to presence of non Fire-rated Door • No detector in generator room • No firefighting equipment is present in the generator room • Combustible materials inside generator room • One point frame earthing of generator instead of two • No earth fault protection provided	• Produce design drawings to demonstrate the incorporation of fire rated enclosure from floor to ceiling and an approved fire rated self-closing swing door for the Generator room. • Provide firefighting equipment as required by the Guidelines. • Provide earth fault protection as required by Guidelines.	6 weeks	P25.1 P25.2
					• Provide fire rated enclosure from floor to ceiling and an approved fire rated self-closing swing door for the Generator room Install appropriate detectors.	6 months	
			• Sec. 4.9.3 • Electricity Rule 1937 § 49	• Same as above	• Remove Combustible materials from generator room.	On-going	
26	Basement	• § D 8 Page 10483 • § 3.13 Page 10428		• Basement staircase is not enclosed with materials of 2 hours fire resistance.	• Produce design drawings to demonstrate the incorporation of a fire-rated construction with smoke proof enclosure from roof to ceiling with vestibule separation from basement or by other provisions provided in the Guidelines.	6 weeks	
					• Enclose Basement stairs with a fire-rated construction with smoke proof enclosure from roof to ceiling with vestibule separation from basement or by other provisions provided in the Guidelines. • Install fire-rated self-closing swing doors	6 months	

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
			• Sec. 2.9.11 • Sec. 3.7.5	• Basement, ground floor and high risk areas are not separated from the stairways by smoke proof enclosures	to the smoke proof enclosure to prevent the spread of smoke and heat into the stairs.		
27	Ramps	• § 3.11 Page 10427			• No action needed at present		
			• Sec. 2.9.9 • Sec. 2.9.11				
28	Substation	• § 2.6.3 Page 11248 • § 2.7.5 Page 11258 • § 2.11.5 Page 11275 • Electricity Rule 1937 § 46, 47, 50, 60		• Separating wall not extended up to the ceiling • Improper door • Panel body & door not earthed • No clear identification mark on distribution panel • No instruction for first aid to electrical shock	• Produce design drawings to demonstrate the incorporation of fire rated enclosure from floor to ceiling and an approved fire rated self-closing swing door for the Substation room. • Ensure earthing of panel body & door. • Provide clear identification mark on distribution panel.	6 weeks	P28.1 P28.2
					• Provide fire rated enclosure from floor to ceiling and an approved fire rated self-closing swing door for the Substation room. • Install appropriate detectors	6 months	
			• Sec. 4.6 • Electricity Rule 1937 § 46, 47, 50, 60	• Same as above	• Provide instructions for first aid from exposure to electrical shock.	On-going	

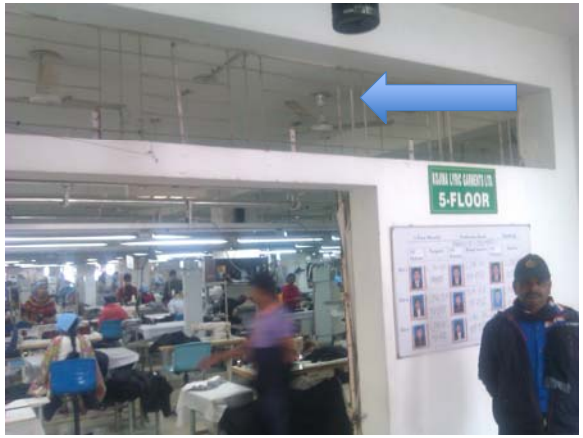
Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
29	MDB/SDB/SB /MCCB	• § 2.7.5 Page 11257 • § 2.5.5 Page 11245 • Electricity Rule 1937 § 46, 47, 54, 57		• No instruction for first aid to electrical shock • Connection without lug • Body & door not earthed • No or empty earth bar/neutral bar • MCCB/MCB box broken/loose • Does not have duplicate earth leads	• Repair broken/loose MCCB/MCB box. • Provide duplicate earth leads. • Provide connection with lug. • Provide earthing to body & door. • Provide earth bar/neutral bar	6 weeks	P29.1
			• Sec. 4.4 • Electricity Rule 1937 § 46, 47, 54, 57	• Same as above	• Provide instructions for first aid from exposure to electrical shock.	On-going	
30	Wiring/ Cabling	• § 2.5.4 Page 11244		• Undressed and messy wiring/cables	• Replace undressed messy wiring/cables	6 weeks	
			• Sec. 4.4	• Same as above			
31	Lightning Protection	• § 2.8.3 Page 11260 • § 2.9 Page 11262		• Lightning protection system not available	• Provide appropriate Lightning protection system.	6 months	
			• Sec. 4.11 • Sec. 4.12	• Same as above			
32	Fire Detection & Alarm System	• § 4.3 Page 10449 • § 4.4 Page 10450		• Non-standard fire alarm system	• Provide design drawings for the fire detection and alarm system in accordance with the Guideline requirements and hazard situation, (with appropriate specifications and drawings) showing how they will be implemented along with implementation plan.	6weeks	

Sl #	Item	BNBC2006 Reference	Guidelines Reference	Type of Non-Conformities	Actions	Time frame	Photo
			• Sec. 4.14 • Sec. 4.15	• Same as above	• Install the fire detection and alarm systems in accordance with the Guideline requirements and hazard situation (based on appropriate specifications and drawings).	6 months	

Note: *The term "Standard" in the above Table corresponds to the Standard set in the BNBC.*

Prof. Dr. Maksud Helali
Convener, Co-ordination Committee
Fire & Electrical Safety Assessment for
Existing RMG Factory Buildings in Bangladesh

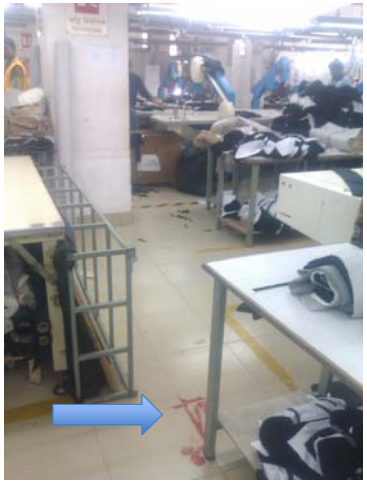
P 4.1 Pathway for vertical propagation of fire



P 4.2 Pathway for vertical propagation of fire

P 5.1 Ceiling height less than required

P 6.1 Obstructed aisles



P 6.2 Obstructed aisles

P 6.1 Inadequate passageway

P 11.1 Insufficient number of handrails

P 11.2 Stairway not in smoke-proof enclosure

P 11.3 Obstacle in Stairway

P 11.4 No Fire door

P 11.4 Improperly constructed stairway

P 11.5 Stairway to basement without smoke-proof enclosure

P 11.6 Discontinuous stairway

P 12.1 Blocked passageway

P 12.2 No fire door

P 12.3 Inadequate clearance from ceiling

P 14.1 Collapsible gate for door

P 16.1 Wrong directional sign

P 19.1 Inaccessible fire extinguisher

P 19.2 No validation certificate

P20.1 Non-standard hose system

P20.2 Non-standard hose system

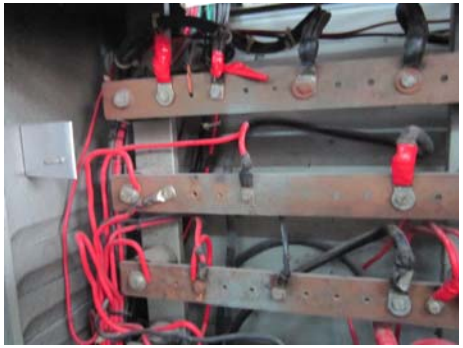
P 23.1 Boiler room is not properly segregated

P24.1 No separating wall for transformer

P25.1 Combustible material in generator room

P25.2 Wooden door in generator room

P28.1 Improper separation
in substation room



P 29.1 Wiring without lug