

FIRE SAFETY INSPECTION REPORT

VIYELLATEX LTD., DHAKA, BANGLADESH



ACC  **RD**
on Fire and Building Safety in Bangladesh

January 3, 2014

SUMMARY

The Viyellatex manufacturing complex located in Dhaka, Bangladesh was surveyed for fire safety on 03 November 2013 by Hughes Associates, Inc. This summary identifies the critical and major deficiencies that were identified during the inspection as documented in the Fire Safety Inspection Report, dated 19 December 2013, submitted to the Accord.

The factory buildings were surveyed to identify significant fire safety issues and to provide recommendations for remediation based on applicable standards specified by the Accord. The scope of this initial fire safety inspection was limited to the review and identification of critical and major fire safety issues. The inspection did not include identification of minor deficiencies, which will be further addressed as part of follow-up inspections.

Tables 1 – 6 summarize the critical and major fire safety issues identified during the inspection. Recommendations have been provided to address each issue. Reference photos are provided in Attachment 1.

Each finding has been assigned a priority based on the life safety risk associated with the noted condition. The priority classifications are defined as follows:

Critical: Critical findings and recommendations should be addressed immediately. These recommendations are considered essential to maintaining an acceptable level of life safety for occupants throughout the building.

Major: Major findings and recommendations should be addressed as soon as possible. These recommendations are considered necessary to maintaining an acceptable level of life safety for occupants on a particular floor or area.

An implementation schedule shall be developed by the factory to remediate each of the findings in Tables 1 – 6. The specific timing of improvements, including any requested extensions due to design / installation constraints, shall be submitted to the Accord for approval.

Table 1. GMT Building Unit #1 – Findings And Recommendations

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-1	Fire-Rated Construction, Egress	The three exit stairs are separated from the building interior with non-fire-rated sliding doors.	<p>Provide minimum 1.5-hr fire-rated doors to separate the exit stair from work areas and other building areas. Ensure that the fire doors are side-swinging, self-closing and positive latching and that they are provided with fire exit (panic) hardware where serving production floors.</p> <p>If the fire doors are required to be held open for functional reasons, provide automatic-closing devices tied to the fire alarm system.</p>	Critical	1
F-2	Fire-Rated Construction, Egress	The northwest exit stair has unprotected openings including ventilation louvers and access hatches.	Seal all penetrations and openings in the exit stair enclosure, or provided minimum 1.5-hr fire-rated opening protectives, to maintain the fire separation.	Critical	2
F-3	Fire-Rated Construction, Egress	Two of the three exit stairs discharge inside the building on the ground floor. Ground floor areas used for combustible storage are not separated from the exit discharge by fire-rated construction.	Provide minimum 2-hr fire separation between the exit stair discharge paths and all storage areas on the ground floor. Provide vestibules with minimum 1.5-hr fire doors to protect any openings in the fire separation walls.	Critical	3

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-4	Fire-Rated Construction	Areas used for combustible storage on the 1st (cutting) and 2 nd (sewing) floors are not separated by fire-rated construction.	<p>Provide dedicated storage rooms separated by minimum 1-hr fire-rated construction on all production floors where transient storage is required for operations.</p> <p>Where separate storage rooms are not feasible, provide defined storage areas and limit the storage arrangement as follows:</p> <ul style="list-style-type: none"> - Maximum height of 2.4 m and maximum area of 23m² - If sprinkler protected: maximum height of 3.66m and maximum area of 93m² <p>Separate areas of unenclosed combustible storage by a minimum clear distance of 3m.</p>	Major	4
F-5	Fire-Rated Construction	Rooms housing the generator and large electrical equipment on the ground floor, as well as combustible fuel oil, are not separated by fire-rated construction.	Provide minimum 2-hr fire separation of the generator, electrical rooms and all fuel storage. Protect openings with minimum 1.5-hr, self- or automatic closing fire doors.	Major	5

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-6	Egress	<p>The sliding doors at the exit stairs are provided with locking features.</p> <p>Note - all doors were unlocked during the inspection.</p>	<p>Remove all door/gate locking features at exit stairs and along the means of egress.</p> <p>If locks are required for security reasons, utilize special door locking features complying with NFPA 101.</p>	Critical	6
F-7	Fire Alarm	<p>Based on the number and location of notification appliances observed, the fire alarm system does not appear to provide adequate audible notification coverage on the production floor levels.</p> <p>Note – the system was tested on one of the floors and was not audible from all areas.</p>	<p>Provide additional fire alarm appliances to provide audible coverage throughout the building in accordance with NFPA 72 criteria.</p> <p>Where required based on ambient noise conditions (during operations), provide visual notification appliances.</p>	Critical	7
F-8	Fire Alarm	<p>Activation of the fire alarm system by a manual fire alarm station provides automatic occupant notification only on the floor of alarm and not throughout the building.</p>	<p>Configure the fire alarm system to initiate automatic occupant notification on all floor levels to facilitate whole-building evacuation upon alarm.</p>	Critical	7
F-9	Fire Alarm	<p>Smoke detector activation does not provide automatic fire alarm notification of occupants. Automatic notification is provided only by the manual fire alarm stations.</p>	<p>Configure the fire alarm system to initiate occupant notification upon activation of any two smoke detectors in addition to the manual fire alarm stations.</p>	Critical	7

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-10	Fire Alarm	<p>The fire alarm system is not regularly tested and maintained.</p> <p>Note – the system is reportedly visually inspected regularly with maintenance / repairs provided as needed.</p>	<p>Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.</p>	Critical	7
F-11	Fire Protection	<p>The high-rise building is not provided with automatic sprinkler protection. The large occupant loads, heavy fuel loading, and anticipated extended egress times warrant sprinkler protection.</p>	<p>Provide automatic sprinkler protection throughout the building in accordance with NFPA 13.</p>	Critical	--
F-12	Emergency Lighting	<p>Emergency lighting is provided on the floors and in the exit stairs. The adequacy of the system was not fully tested. Based on the number and location of emergency lights observed, adequate illumination levels are not anticipated for all floor levels along egress routes.</p>	<p>Test the emergency lighting system on each floor and provide additional emergency fixtures to provide adequate illumination along the means of egress. Provide a minimum illumination of 10 lux at the floor level within exit stairs and exit discharge paths and minimum 2.5 lux along exit access aisles.</p>	Major	8

Table 2. GMT Building Unit #2 – Findings And Recommendations

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-1	Fire-Rated Construction, Egress	The two exit stairs are separated from the building interior with non-fire-rated sliding doors.	<p>Provide minimum 1.5-hr fire-rated doors to separate the exit stair from work areas and other building areas. Ensure that the fire doors are side-swinging, self-closing and positive latching and that they are provided with fire exit (panic) hardware where serving production floors.</p> <p>If the fire doors are required to be held open for functional reasons, provide automatic-closing devices tied to the fire alarm system.</p>	Critical	9
F-2	Fire-Rated Construction, Egress	Both exit stairs discharge inside the building on the ground floor. Ground floor areas used for production, washing and combustible storage are not separated from the exit discharge by fire-rated construction.	<p>Provide minimum 2-hr fire separation between the exit stair discharge paths and all production, washing and storage areas on the ground floor. Provide vestibules with minimum 1.5-hr fire doors to protect any openings in the fire separation walls separating storage areas.</p>	Critical	10

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-3	Fire-Rated Construction	Areas used for combustible storage on the 1 st and 4 th floor are not separated by fire-rated construction.	<p>Provide dedicated storage rooms separated by minimum 1-hr fire-rated construction on all production floors where transient storage is required for operations.</p> <p>Where separate storage rooms are not feasible, provide defined storage areas and limit the storage arrangement as follows:</p> <ul style="list-style-type: none"> - Maximum height of 2.4 m and maximum area of 23m² - If sprinkler protected: maximum height of 3.66m and maximum area of 93m² <p>Separate areas of unenclosed combustible storage by a minimum clear distance of 3m.</p>	Major	11
F-4	Egress	<p>The sliding doors at the exit stairs are provided with locking features.</p> <p>Note - all doors were unlocked during the inspection.</p>	<p>Remove all door/gate locking features at exit stairs and along the means of egress.</p> <p>If locks are required for security reasons, utilize special door locking features complying with NFPA 101.</p>	Critical	9

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-5	Fire Alarm	Based on the number and location of notification appliances observed, the fire alarm system does not appear to provide adequate audible notification coverage on the production floor levels.	Provide additional fire alarm appliances to provide audible coverage throughout the building in accordance with NFPA 72 criteria. Where required based on ambient noise conditions (during operations), provide visual notification appliances.	Critical	--
F-6	Fire Alarm	Activation of the fire alarm system by a manual fire alarm station provides automatic occupant notification only on the floor of alarm and not throughout the building.	Configure the fire alarm system to initiate automatic occupant notification on all floor levels to facilitate whole-building evacuation upon alarm.	Critical	--
F-7	Fire Alarm	Smoke detector activation does not provide automatic fire alarm notification of occupants. Automatic notification is provided only by the manual fire alarm stations.	Configure the fire alarm system to initiate occupant notification upon activation of any two smoke detectors in addition to the manual fire alarm stations.	Critical	--
F-8	Fire Alarm	The fire alarm system is not regularly tested and maintained. Note – the system is reportedly visually inspected regularly with maintenance / repairs provided as needed.	Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.	Critical	--

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-9	Fire Protection	The high-rise building is not provided with automatic sprinkler protection. The large occupant loads, heavy fuel loading, and anticipated extended egress times warrant sprinkler protection.	Provide automatic sprinkler protection throughout the building in accordance with NFPA 13.	Critical	--
F-10	Emergency Lighting	<p>Emergency lighting is provided on the floors and in the exit stairs. Based on the number and location of emergency lights observed, adequate illumination levels are not anticipated for all floor levels along egress routes.</p> <p>Note – the 1st floor was without power during the inspection with workers operating with no normal or emergency lighting.</p>	<p>Test the emergency lighting system on each floor and provide additional emergency fixtures to provide adequate illumination along the means of egress. Provide a minimum illumination of 10 lux at the floor level within exit stairs and exit discharge paths and minimum 2.5 lux along exit access aisles.</p>	Major	12

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-11	Hazardous Storage	<p>The 1st floor of the adjacent Chemical Storage building has been connected to the building and is used for printing production. The Chemical Storage building contains a variety of hazardous materials, including combustible and flammable liquids stored on the ground floor. The printing area and means of egress serving this area are not adequately separated and protected from the hazardous storage.</p>	<p>Discontinue using areas of the Chemical Storage building for production.</p> <p>Alternatively, provide a minimum 2-hr fire-rated separation between the production area and associated means of egress and all hazardous storage areas, provide automatic sprinkler protection throughout the Chemical Storage building, and upgrade the fire alarm system as specified in the recommendations for the GMT Unit #2.</p>	Major	13

Table 3. Dyeing Unit #1 – Findings And Recommendations

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-1	Egress	One of the two building exits serving the factory area requires exit access through the storage warehouse. Additionally, maximum exit access travel distance from within the factory area is over 75 m.	Provide a remotely located exit for the factory area such that exit access is not required through the storage warehouse and maximum distance is less than 60 m.	Critical	14
F-2	Egress	Exits from the building consist of lockable sliding doors. Note - all doors were unlocked during the inspection.	Replace the sliding doors with side-swinging doors. Remove all door locking features along the means of egress. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.	Critical	15
F-3	Fire Alarm	Based on the number and location of notification appliances observed, the fire alarm system does not appear to provide adequate audible notification coverage on the production floor levels.	Provide additional fire alarm appliances to provide audible coverage throughout the building in accordance with NFPA 72 criteria. Where required based on ambient noise conditions (during operations), provide visual notification appliances.	Critical	--

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-4	Fire Alarm	Smoke detector (beam-type) activation does not provide automatic fire alarm notification of occupants. Automatic notification is provided only by the manual fire alarm stations.	Configure the fire alarm system to initiate occupant notification upon activation of any two smoke detectors in addition to the manual fire alarm stations.	Major	--
F-5	Fire Alarm	The fire alarm system is not regularly tested and maintained. Note – the system is reportedly visually inspected regularly with maintenance / repairs provided as needed.	Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.	Critical	--
F-6	Fire Protection	The storage warehouse area is provided with automatic sprinkler protection. The system appears to be designed for a light-hazard occupancy and is not appropriate for the high-rack combustible storage. The sprinkler-protected area is also not separated from the remainder of the building by fire-rated construction.	Modify the automatic sprinkler system for the warehouse area to provide appropriate protection in accordance with NFPA 13. Provide a minimum 2-hr fire-rated separation between the sprinklered warehouse area and non-sprinklered factory areas.	Major	16

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-7	Emergency Lighting	Based on the number and location of emergency lights observed, adequate illumination levels are not anticipated for all floor levels along egress routes.	Test the emergency lighting system and provide additional emergency fixtures to provide adequate illumination along the means of egress. Provide a minimum illumination of 10 lux at the floor level within exit stairs and exit discharge paths and minimum 2.5 lux along exit access aisles.	Major	--

Table 4. Dyeing Unit #2 – Findings And Recommendations

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-1	Egress	One of the two building exits requires exit access through a storage area within the Dining Building and was observed to be completely obstructed due to storage. Additionally, the two exits paths for the building are not remotely located and create a maximum common path of travel of over 60 m.	Provide a remotely located second exit for the building such that exit access is not required through a storage area and maximum common path of travel is less than 30 m.	Critical	17
F-2	Egress	The one functional exit serving the building consists of a lockable sliding door. Note - the doors was unlocked during the inspection.	Replace the sliding door with side-swinging doors. Remove all door locking features along the means of egress. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.	Critical	18
F-3	Fire Alarm	Based on the number and location of notification appliances observed, the fire alarm system does not appear to provide adequate audible notification coverage on the production floor levels.	Provide additional fire alarm appliances to provide audible coverage throughout the building in accordance with NFPA 72 criteria. Where required based on ambient noise conditions (during operations), provide visual notification appliances.	Critical	--

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-4	Fire Alarm	Automatic smoke detection is not provided for the building, reportedly due to the steam produced by equipment.	Provide automatic fire detection, consisting of either smoke detectors or heat detectors in areas subject to steam accumulation, to provide automatic fire alarm notification to occupants.	Major	--
F-5	Fire Alarm	<p>The fire alarm system is not regularly tested and maintained.</p> <p>Note – the system is reportedly visually inspected regularly with maintenance / repairs provided as needed.</p>	Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.	Critical	--
F-6	Emergency Lighting	Based on the number and location of emergency lights observed, adequate illumination levels are not anticipated for all floor levels along egress routes.	Test the emergency lighting system and provide additional emergency fixtures to provide adequate illumination along the means of egress. Provide a minimum illumination of 10 lux at the floor level within exit stairs and exit discharge paths and minimum 2.5 lux along exit access aisles.	Major	--

Table 5. Knitting Building – Findings And Recommendations

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-1	Egress	One of the two building exits requires exit access through the storage warehouse area. Additionally, the two exits paths for the factory area are not remotely located and create a maximum common path of travel of over 50 m.	Provide a remotely located second exit for the factory area such that exit access is not required through a storage area and the maximum common path of travel is less than 30 m.	Critical	--
F-2	Egress	Exits from the building consist of lockable sliding doors. Note - all doors were unlocked during the inspection.	Replace the sliding doors with side-swinging doors. Remove all door locking features along the means of egress. If locks are required for security reasons, utilize special door locking features complying with NFPA 101.	Critical	--
F-3	Egress	Dead-end aisles in excess of 30 m were observed both in the factory area and storage warehouse (due to storage obstructions).	Rearrange the factory equipment / work tables and remove all storage from aisles in the warehouse to eliminate dead-end conditions.	Major	19

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-4	Fire Alarm	Based on the number and location of notification appliances observed, the fire alarm system does not appear to provide adequate audible notification coverage on the production floor levels.	Provide additional fire alarm appliances to provide audible coverage throughout the building in accordance with NFPA 72 criteria. Where required based on ambient noise conditions (during operations), provide visual notification appliances.	Critical	--
F-5	Fire Alarm	Smoke detector activation does not provide automatic fire alarm notification of occupants. Automatic notification is provided only by the manual fire alarm stations.	Configure the fire alarm system to initiate occupant notification upon activation of any two smoke detectors in addition to the manual fire alarm stations.	Critical	--
F-6	Fire Alarm	The fire alarm system is not regularly tested and maintained. Note – the system is reportedly visually inspected regularly with maintenance / repairs provided as needed.	Inspect, test and maintain the fire alarm system, and keep written records on-site, in accordance with NFPA 72.	Critical	--
F-7	Fire Protection	The storage warehouse area is provided with automatic sprinkler protection. The system appears to be designed for a light-hazard occupancy and is not appropriate for the high-rack combustible storage. The sprinkler-protected area is also not separated from the remainder of the building by fire-rated construction.	Modify the automatic sprinkler system for the warehouse area to provide appropriate protection in accordance with NFPA 13. Provide a minimum 2-hr fire-rated separation between the sprinklered warehouse area and non-sprinklered factory areas.	Major	--

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-8	Emergency Lighting	Based on the number and location of emergency lights observed, adequate illumination levels are not anticipated for all floor levels along egress routes.	Test the emergency lighting system and provide additional emergency fixtures to provide adequate illumination along the means of egress. Provide a minimum illumination of 10 lux at the floor level within exit stairs and exit discharge paths and minimum 2.5 lux along exit access aisles.	Major	--

Table 6. Other Buildings – Findings And Recommendations

No.	Category	Finding	Recommendation	Priority	Photo Ref
F-1	Egress	The Fashion Plastics & Packaging building is served by two exits that are not remotely located, creating a maximum common path of travel of over 50 m.	Provide a remotely located second exit for the factory area such that the maximum common path of travel is less than 30 m.	Critical	--
F-2	Fire Protection	The fire pump building has a wood roof, is located next to a waste storage area, and is not provided with sprinkler protection.	Replace the wood roof with a non-combustible, fire-rated roof assembly and provide sprinkler protection in the pump room.	Major	20

ATTACHMENT 1 – PHOTOGRAPHS OF FINDINGS/ISSUES

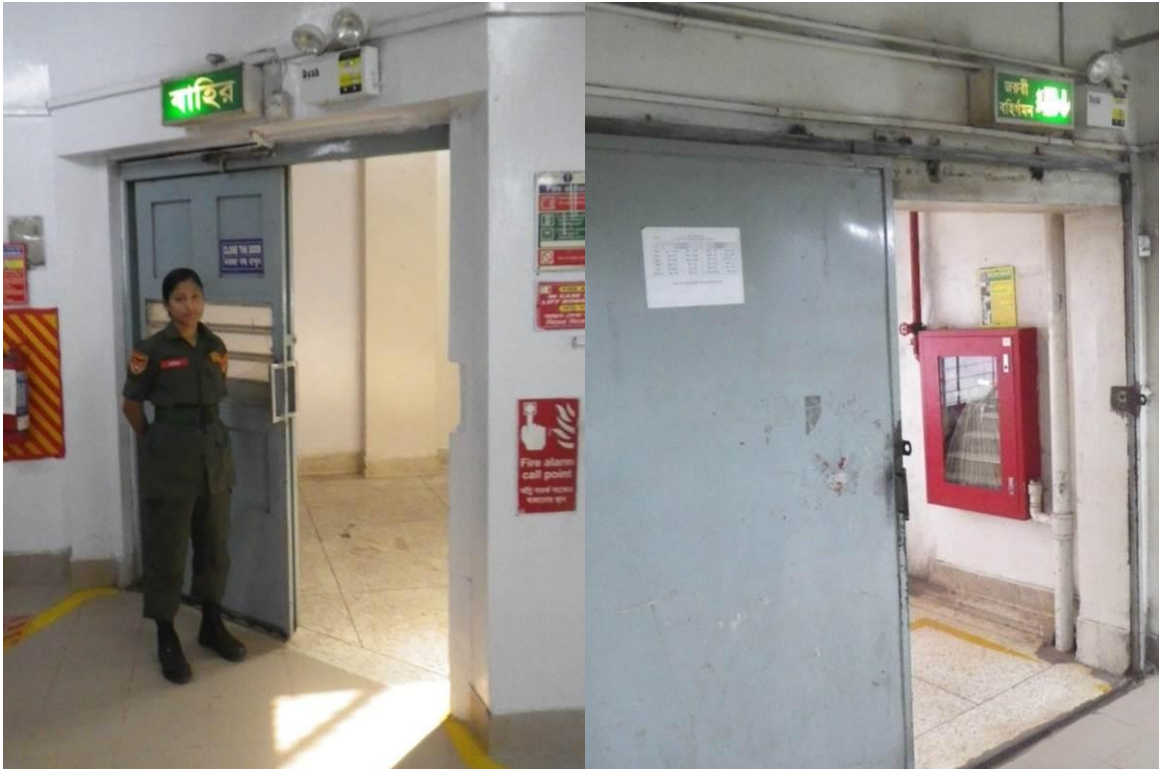


Photo 1 – Non-rated, sliding exit stair doors (GMT-1)



Photo 2 – Unprotected exit stair openings/penetrations (GMT-1, NW stair)



Photo 3 – Interior exit stair discharge open to storage areas (GMT-1)



Photo 4 – Storage area on production floor (GMT-1)



Photo 5 – Generator room (GMT-1)



Photo 6 – Exit door with locking features (GMT-1)



Photo 7 – Typical fire alarm devices (GMT-1)



Photo 8 – Typical emergency lighting unit at exit stair (GMT-1)



Photo 9 – Non-rated, sliding exit stair door with locking features (GMT-2)



Photo 10 – Interior exit stair discharge open to storage and work areas (GMT-2)



Photo 11 – Storage area on production floor (GMT-2)



Photo 12 – Production floor operating without normal/emergency lighting (GMT-2)



Photo 13 – Chemical storage, not separated from exit stair serving production floor (GMT-2)



Photo 14 – Egress through storage warehouse (Dyeing-1)



Photo 15 – Sliding egress door with locking features (Dyeing-1)



Photo 16 – Sprinkler system serving storage warehouse (Dyeing-1)



Photo 17 – Egress through storage warehouse, obstructed (Dyeing-2)



Photo 18 – Sliding egress door with locking features (Dyeing-2)



Photo 19 – Storage creating dead-end aisle in warehouse (Knitting)



Photo 20 – Fire pump room with wood roof