

INITIAL FIRE SAFETY INSPECTION REPORT

KSI Karnaphuli Shoes Industries Ltd.(Garments) (Extension)

RSC ID: 24604

Anowara, Plot # G1 and G2, Korean EPZ, Chittagong Chittagong, Bangladesh

GPS Coordinates: 22°14'06.5"N 91°50'42.3"E

Other Factories in the premises : KSI Karnaphuli Shoes Industries Ltd.(Garments) (ID: 11986)



Inspected By: Md. Hasibur Rahman Abir

Date: 21-09-2023

Fire Safety Inspection Report

Introduction:

KSI Karnaphuli Shoes Industries Ltd.(Garments) (Extension) complex was surveyed for fire safety on **21-09-2023** by the RSC inspection Team. The purpose of the survey was to identify significant fire safety issues and to provide recommendations for remediation based on applicable standards specified by the RSC. The scope of this initial fire safety inspection was limited to the review and identification of major fire safety issues. The inspection did not include identification of minor deficiencies, which will be further addressed as part of follow-up inspections.

Limitations

The information in this fire safety inspection report was obtained during a visit to the facility and during interviews with local factory management. It has not been possible to provide independent verification for all the information and data collected, and, therefore, The RSC cannot accept general responsibility for omissions or errors arising from inaccuracies in this report from the information obtained.

The findings and recommendations in this report are not intended to imply, guarantee, ensure or warrant compliance with any government regulations. Additionally, the results do not imply in any way that compliance with the findings or recommendations as stated in this report will eliminate all hazards, risks or exposures or that hazards, risks or exposures not referred to in this report do not exist. Compliance with the findings and recommendations stated in this report does not relieve the factory owner from obligation to comply with specific project requirements, industry standards, or the provisions of any local government regulations.

General Factory Information

Total Number of Structures in the premises	38	Production Building-19 nos. Canteen-4 nos, Sub-station-5 nos, Pump-3 nos, Ancillaries- 7 nos.
Total Number of RSC ID's in the premises	2	KSI Karnaphuli Shoes Industries Ltd.(Garments) (ID- 11986), KSI Karnaphuli Shoes Industries Ltd.(Garments) (Extension) (ID-24604)
Previous ID	11986	5 nos (2 production building (12 &13), one sub-station, one pump room & one ancillary)
New ID	24604	10 nos (5 production building (14,18,19,20,21), Sub-station- 3 nos, Pump room-2 nos & ancillary- 1 no.)

Factory Building name(s) under this ID:

Buildings Name and Total Area	Constrcution History	Production Start's Date	Drawing Approval Date and Authority	Remarks
1. Building - 14 (Shed with 2 RCC block) (1,28,951 sft)	Aug' 2011 - Dec' 2012	Sep' 2016	13 March 2013 by Korean EPZ	According to the construction and occupancy dates, all the buildings are considered under interim construction as per RSC Technical Guidelines (Standard) ¹ .
2. Building -18 (Shed with 2 RCC block) (1,28,542 sft).	June' 2013 - Dec' 2014	Dec' 2017	27 May 2013 by Korean EPZ	
3. Building - 19 (Shed with 2 RCC block) (2,99,913 sft)	Nov' 2017 - Dec' 2018	Sep' 2021	8 Nov 2017 by Korean EPZ	
4. Building – 20 (Shed with 2 RCC block) (3,00,344 sft)	Nov' 2017 - Dec' 2018	Feb' 2020	8 Nov 2017 by Korean EPZ	
5. Building-21 (Shed with 2 RCC block) (3,00,344 sft)	Nov' 2017 - Dec' 2018	April' 2019	8 Nov 2017 by Korean EPZ	
6. 4th Phase Substation (Steel) (4,219 sft).	Jan' 2014 - May' 2015	Nov'2016	3/17/2016 by Korean EPZ	
7. 7th Phase Substation (RCC) (5,271 sft).	June' 2018 - Nov' 2018	Apr'2019	12/5/2018 by Korean EPZ	
8. 7th Phase Pump Room (RCC) (6,993 sft).	Jan' 2018 - May' 2018	Oct' 2018	11/8/2017 by Korean EPZ	
9. 4th Phase Security & Pump Room (RCC) (581 sft).	June' 2014 - Dec' 2014	June' 2015	5/27/2013 by Korean EPZ	
10. Security & Central Command Station (RCC) (538 sft)	Jan' 2018 - May' 2018	Nov' 2019	5/21/2019 by Korean EPZ	

Factory Address: Anowara, Plot # G1 and G2, Korean EPZ,Chittagong Chittagong, Bangladesh

Points of contact:

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E-mail: i.khalil@youngonectg.com



Findings & Recommendations :

Table 1 summarizes the major fire safety issues identified **(Building - 21 (Findings))** during the inspection.

Table 2 summarizes the major fire safety issues identified **(Building - 20 (Findings))** during the inspection.

Table 3 summarizes the major fire safety issues identified **(Building - 19 (Findings))** during the inspection.

Table 4 summarizes the major fire safety issues identified **(Building - 18 (Findings))** during the inspection.

Table 5 summarizes the major fire safety issues identified **(Building - 14 (Findings))** during the inspection.

Recommendations have been provided to address each issue. An implementation schedule shall be developed by the factory to remediate each of the findings. The specific timing of improvements, including any requested extensions due to design / installation constraints, shall be submitted to the RSC for review.

Table-1:

SI No.	Category	Findings	Required Action	Remediation Time Frame
F-01	Fire Rated Construction	The production Shed (interim structure) is made of steel and found exposed without any fire protection which is defined as non-rated construction and a violation of BNBC-2006.	Construction must be of type 1 or type 2 (See BNBC 2006 Part 3 Section 3.2.4, page 10356). For type 2 construction, the maximum permissible height of the building shall be 4 storeys or 14 meters. (See BNBC 2006 Part 3, Table 3.1.9, page 10319). Provide/ensure required fire rating on the structural elements by following Section 4.4 and Table 4.4.1 of the RSC Standard and RSC TECHNICAL GUIDANCE (TGN). Consult a qualified fire protection engineer to design the rated construction barriers.	Within 6 months
				

F-02	Fire Rated Construction	Penetrations through floor/ceiling assemblies are found unsealed. Location: Electric Cable and PVC pipe.	Seal all penetrations in floor/ceiling assemblies by a listed through-penetration fire stop system tested in accordance with ASTM E814 or approved alternative standard to maintain minimum 3-hr. fire resistance rating. Installation shall be as per manufacturer published installation guideline and the certification authority guideline to ensure the fire-rating. or, Provide a minimum 2-hr fire rated shaft to separate the utility risers from each floor if required.	Within 3 months
 				

F-03	Fire Rated Construction	Rooms used for storage of combustible material is not separated from the surrounding occupancy/areas. Location: Ground Floor and 1st floor. The factory persons had reported that the store rooms are separated by fire-rated sheet but no certification mark/ logo was found on the sheets.	Rooms used for storage of combustible materials shall be separated from the surrounding occupancy with a minimum 1 hour construction.	Within 3 months
 				

F-04	Fire Rated Construction	Storage room/areas discharges directly into the exit stair enclosure.	Openings from exit enclosure to storage room, generator and transformer spaces shall be provided with a vestibule with fire rated construction and openings.	Within 3 months
ADD PHOTO  ADD PHOTO				

F-05	Fire Rated Construction	Elevator shafts are directly open into the production floor and exit stair enclosure without proper fire separation.	An exit stairway shall not be built around a lift shaft unless both of them are located in a smoke proof enclosure and made of a material with fire resistance rating required for the type of construction of smoke proof enclosure. Ensure minimum 2-hr listed/ approved 3rd part certified fire rated lift landing doors for elevator shafts.	Within 3 months
 				

F-06	Fire Rated Construction	All the exit stairs discharge the occupants inside the building at ground floor.	1. Modify stair to discharge directly outside Or 2. Provide 1-hr fire-rated exit passageway leading directly outside. Note: A maximum of 50 percent of the number and capacity of the exit enclosures can discharge through areas on the level of exit discharge where the conditions mentioned in section 6.17.3 of RSC Technical Guidelines (Standard) V1.0 are met.	Within 3 months
 				

F-07	Fire Rated Construction	Compressor room is not properly separated by fire rated construction.	Compressor room shall be separated from other occupancies by a minimum 1-hr fire rated construction (wall, floor, slab etc.). Seal all penetrations and openings (door, window etc.) should be protected by 0.75-hr (45 min) fire rated materials to maintain the fire separation if required. All exhaust systems shall discharge to the exterior of the building in a safe location. Or Relocate it to exterior of the building and maintain a minimum 3m (10 ft.) spatial separation distance from the building.	Within 3 months
 				

F-08	Fire Rated Construction	The exit stairs are not separated from on each floor by fire-rated construction due to unprotected opening from lift machine room, ground floor production shed, office and DB.	Stairs shall be enclosed with a minimum 1-hr fire-rated construction. Seal all unprotected openings and provide minimum 1-hr fire rated doors to separate the exit stairs from work areas and other building spaces on all floor levels. Ensure that the fire doors are self-closing, positive latching and that they are provided with fire exit (panic) hardware where serving production floors. If fire doors are required to be held open for functional reasons, provide automatic-closing devices tied to the fire alarm system. Penetrations into and through an exit enclosure shall be prohibited with the exception of required exit doors, sprinkler piping, standpipes, electrical raceway for fire alarm equipment, and electrical conduit serving the exit enclosure.	Within 3 months
 				

F-09	Fire Rated Construction	The 1st and 2nd floors are not separated from the ground floor (production shed) by fire rated construction (openings and penetrations).	Separate the openings and penetrations by a minimum 1-hr fire rated construction.	Within 3 months
 				

F-10	Means of Egress	Exit capacity (2387 as per present condition) is not adequate for the occupant load at ground floor (2667 persons).	Reduce occupant load to not more than available exit capacity. Or Provide additional exits to increase exit capacity.	Immediately																																								
 21 09 2023 Building Name and Number: Building No 21 <table border="1"> <thead> <tr> <th>Floor</th><th>Available Process</th><th>Manpower Available for today</th><th>Manpower Plan in Future</th><th>Re</th></tr> </thead> <tbody> <tr> <td>South Ground</td><td>Dray Room, Packing & Warehouse</td><td>203</td><td>852</td><td></td></tr> <tr> <td>South 1st Floor</td><td>Ware House, Inspection area & Work study</td><td>315</td><td>852</td><td></td></tr> <tr> <td>South 2nd Floor</td><td>Ware House</td><td>0</td><td>852</td><td></td></tr> <tr> <td>Production Shed</td><td>Sewing, Cutting, Embroidery, Maintenances, Down</td><td>2429</td><td>5086</td><td></td></tr> <tr> <td>North Ground</td><td>MCD Office & Warehouse</td><td>35</td><td>852</td><td></td></tr> <tr> <td>North 1st Floor</td><td>Office (HR, Admin, Sales, planning, ME)</td><td>96</td><td>852</td><td></td></tr> <tr> <td>North 2nd Floor</td><td>Sample, CAD & Pattern</td><td>119</td><td>852</td><td></td></tr> </tbody> </table>					Floor	Available Process	Manpower Available for today	Manpower Plan in Future	Re	South Ground	Dray Room, Packing & Warehouse	203	852		South 1st Floor	Ware House, Inspection area & Work study	315	852		South 2nd Floor	Ware House	0	852		Production Shed	Sewing, Cutting, Embroidery, Maintenances, Down	2429	5086		North Ground	MCD Office & Warehouse	35	852		North 1 st Floor	Office (HR, Admin, Sales, planning, ME)	96	852		North 2nd Floor	Sample, CAD & Pattern	119	852	
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F-11	Means of Egress	Travel distance exceeds the maximum limit at ground floor packing warehouse.	Exits shall be arranged in such a manner that the travel distance from any point in the store shall not exceed 30 m (100 ft).	Within 3 months
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F-12	Means of Egress	The headroom on the doors is less than 2.03 m (6 ft 8 in.). Location: Mezzanine Floor	All means of egress shall have a minimum ceiling height of 2.3 m (7 ft 6 in.) with projections from the ceiling not less than 2.03 m (6 ft 8 in.).	Within 3 months
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F-13	Egress Lighting	Based on the number and location of emergency lights observed, adequate illumination levels are not anticipated along egress routes. Location: Ground Floor.	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.	Within 2 months
F-14	Egress Lighting Checklist	Inspection, testing, and maintenance for the exit sign and emergency lighting system was not in accordance with The RSC standard.	Inspect, test and maintain the exit sign and emergency lighting system in the accordance with the RSC standard. Keep written records on-site.	Within 3 months

F-15	Fire Alarm & Detection System (FADS)	Fire alarm and detection system installation complete which requires detailed review to confirm compliance with NFPA 72 and RSC Technical Guidelines (Standard).	Submit the fire alarm system design to RSC for review. Once the design is reviewed, install and modify the fire detection and alarm system throughout the building in accordance with review comment, RSC Technical Guidelines (Standard) and NFPA 72. After installation the owner shall conduct internal testing and commissioning and then contact the RSC for witness of final acceptance testing.	Design within 2 month and modification/ installation with 4 months
 				

F-16	Inspection, Testing and Maintenance (ITM) of FADS.	Inspection, testing and maintenance for the fire detection and alarm system was not in accordance with standard.	Inspect, test and maintain the fire alarm system and keep written records on-site, in accordance with Table-14.3.1 of NFPA 72.	Within 1 Month (after installation)
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Findings & Recommendations :

Table 2 summarizes the major fire safety issues identified **(Building - 20 (Findings))** during the inspection. Recommendations have been provided to address each issue. An implementation schedule shall be developed by the factory to remediate each of the findings. The specific timing of improvements, including any requested extensions due to design / installation constraints, shall be submitted to the RSC for review.

Table-2:

SI No.	Category	Findings	Required Action	Remediation Time Frame
F-01	Fire Rated Construction	The production Shed (interim structure) is made of steel and found exposed without any fire protection which is defined as non-rated construction and a violation of BNBC-2006.	Construction must be of type 1 or type 2 (See BNBC 2006 Part 3 Section 3.2.4, page 10356). For type 2 construction, the maximum permissible height of the building shall be 4 storeys or 14 meters. (See BNBC 2006 Part 3, Table 3.1.9, page 10319). Provide/ensure required fire rating on the structural elements by following Section 4.4 and Table 4.4.1 of the RSC Standard and RSC TECHNICAL GUIDANCE (TGN). Consult a qualified fire protection engineer to design the rated construction barriers.	Within 6 months
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F-02	Fire Rated Construction	Penetrations through floor/ceiling assemblies are found unsealed. Location: Electric Cable and PVC pipe.	Seal all penetrations in floor/ceiling assemblies by a listed through-penetration fire stop system tested in accordance with ASTM E814 or approved alternative standard to maintain minimum 3-hr. fire resistance rating. Installation shall be as per manufacturer published installation guideline and the certification authority guideline to ensure the fire-rating. or, Provide a minimum 2-hr fire rated shaft to separate the utility risers from each floor if required.	Within 3 months
 				

F-03	Fire Rated Construction	Rooms used for storage of combustible material is not separated from the surrounding occupancy/areas. Location: Ground Floor and 1st floor of South RCC building. The factory persons had reported that the store rooms are separated by fire-rated sheet but no certification mark/ logo was found on the sheets.	Rooms used for storage of combustible materials shall be separated from the surrounding occupancy with a minimum 1 hour construction.	Within 3 months
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F-04	Fire Rated Construction	Storage room/areas discharges directly into the exit stair enclosure.	Openings from exit enclosure to storage room, generator and transformer spaces shall be provided with a vestibule with fire rated construction and openings.	Within 3 months
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F-05	Fire Rated Construction	Elevator shafts are directly open into the production floor and exit stair enclosure without proper fire separation.	An exit stairway shall not be built around a lift shaft unless both of them are located in a smoke proof enclosure and made of a material with fire resistance rating required for the type of construction of smoke proof enclosure. Ensure minimum 2-hr listed/ approved 3rd part certified fire rated lift landing doors for elevator shafts.	Within 3 months
 				

F-06	Fire Rated Construction	All the exit stairs discharge the occupants inside the building at ground floor.	1. Modify stair to discharge directly outside Or 2. Provide 1-hr fire-rated exit passageway leading directly outside. Note: A maximum of 50 percent of the number and capacity of the exit enclosures can discharge through areas on the level of exit discharge where the conditions mentioned in section 6.17.3 of RSC Technical Guidelines (Standard) V1.0 are met.	Within 3 months
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F-07	Fire Rated Construction	The exit stairs are not separated from on each floor by fire-rated construction due to unprotected opening from lift machine room, ground floor production shed, office and DB.	Stairs shall be enclosed with a minimum 1-hr fire-rated construction. Seal all unprotected openings and provide minimum 1-hr fire rated doors to separate the exit stairs from work areas and other building spaces on all floor levels. Ensure that the fire doors are self-closing, positive latching and that they are provided with fire exit (panic) hardware where serving production floors. If fire doors are required to be held open for functional reasons, provide automatic-closing devices tied to the fire alarm system. Penetrations into and through an exit enclosure shall be prohibited with the exception of required exit doors, sprinkler piping, standpipes, electrical raceway for fire alarm equipment, and electrical conduit serving the exit enclosure.	Within 3 months
 				

F-08	Fire Rated Construction	The 1st and 2nd floors are not separated from the ground floor (production shed) by fire rated construction (openings and penetrations).	Separate the openings and penetrations by a minimum 1-hr fire rated construction.	Within 3 months
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F-09	Means of Egress	The headroom on the doors is less than 2.03 m (6 ft 8 in.). Location: Mezzanine Floor	All means of egress shall have a minimum ceiling height of 2.3 m (7 ft 6 in.) with projections from the ceiling not less than 2.03 m (6 ft 8 in.).	Within 3 months
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F-10	Means of Egress	Exit capacity (2387 as per present condition) is not adequate for the occupant load at ground floor (2418 persons).	Reduce occupant load to not more than available exit capacity. Or Provide additional exits to increase exit capacity.	Immediately																																
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F-11	Egress Lighting	Directional signs are not provided where direction of the path of travel to an exit has changed.	Illuminated directional signs shall be provided where there is a change in the direction for the path of travel and the direction to an exit is not obvious.	Within 3 months
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F-12	Egress Lighting	Based on the number and location of emergency lights observed, adequate illumination levels are not anticipated along egress routes. Location: Ground Floor.	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.	Within 2 months
F-13	Egress Lighting Checklist	Inspection, testing, and maintenance for the exit sign and emergency lighting system was not in accordance with The RSC standard.	Inspect, test and maintain the exit sign and emergency lighting system in the accordance with the RSC standard. Keep written records on-site.	Within 3 months

F-14	Fire Alarm & Detection System (FADS)	Fire alarm and detection system installation complete which requires detailed review to confirm compliance with NFPA 72 and RSC Technical Guidelines (Standard).	Submit the fire alarm system design to RSC for review. Once the design is reviewed, install and modify the fire detection and alarm system throughout the building in accordance with review comment, RSC Technical Guidelines (Standard) and NFPA 72. After installation the owner shall conduct internal testing and commissioning and then contact the RSC for witness of final acceptance testing.	Design within 2 month and modification/ installation with 4 months
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F-15	Inspection, Testing and Maintenance (ITM) of FADS.	Inspection, testing and maintenance for the fire detection and alarm system was not in accordance with standard.	Inspect, test and maintain the fire alarm system and keep written records on-site, in accordance with Table-14.3.1 of NFPA 72.	Within 1 Month (after installation)
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Findings & Recommendations :

Table 3 summarizes the major fire safety issues identified **(Building - 19 (Findings))** during the inspection.

Recommendations have been provided to address each issue. An implementation schedule shall be developed by the factory to remediate each of the findings. The specific timing of improvements, including any requested extensions due to design / installation constraints, shall be submitted to the RSC for review.

Table-3:

SI No.	Category	Findings	Required Action	Remediation Time Frame
F-01	Fire Rated Construction	The production Shed (interim structure) is made of steel and found exposed without any fire protection which is defined as non-rated construction and a violation of BNBC-2006.	Construction must be of type 1 or type 2 (See BNBC 2006 Part 3 Section 3.2.4, page 10356). For type 2 construction, the maximum permissible height of the building shall be 4 storeys or 14 meters. (See BNBC 2006 Part 3, Table 3.1.9, page 10319). Provide/ensure required fire rating on the structural elements by following Section 4.4 and Table 4.4.1 of the RSC Standard and RSC TECHNICAL GUIDANCE (TGN). Consult a qualified fire protection engineer to design the rated construction barriers.	Within 6 months
 				

F-02	Fire Rated Construction	Penetrations through floor/ceiling assemblies are found unsealed. Location: Electric Cable and PVC pipe.	Seal all penetrations in floor/ceiling assemblies by a listed through-penetration fire stop system tested in accordance with ASTM E814 or approved alternative standard to maintain minimum 3-hr. fire resistance rating. Installation shall be as per manufacturer published installation guideline and the certification authority guideline to ensure the fire-rating. or, Provide a minimum 2-hr fire rated shaft to separate the utility risers from each floor if required.	Within 3 months
 				

F-03	Fire Rated Construction	Rooms used for storage of combustible material is not separated from the surrounding occupancy/areas. Location: Ground Floor and 1st floor of South RCC building. The factory persons had reported that the store rooms are separated by fire-rated sheet but no certification mark/ logo was found on the sheets.	Rooms used for storage of combustible materials shall be separated from the surrounding occupancy with a minimum 1 hour construction.	Within 3 months
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F-04	Fire Rated Construction	Storage room/areas discharges directly into the exit stair enclosure.	Openings from exit enclosure to storage room, generator and transformer spaces shall be provided with a vestibule with fire rated construction and openings.	Within 3 months
ADD PHOTO  ADD PHOTO				

F-05	Fire Rated Construction	Elevator shafts are directly open into the production floor and exit stair enclosure without proper fire separation.	An exit stairway shall not be built around a lift shaft unless both of them are located in a smoke proof enclosure and made of a material with fire resistance rating required for the type of construction of smoke proof enclosure. Ensure minimum 2-hr listed/ approved 3rd part certified fire rated lift landing doors for elevator shafts.	Within 3 months
 				

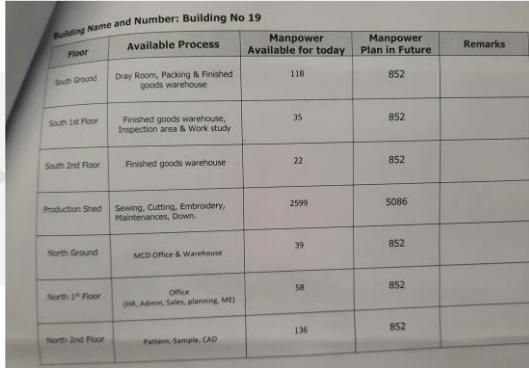
F-06	Fire Rated Construction	All the exit stairs discharge the occupants inside the building at ground floor.	1. Modify stair to discharge directly outside Or 2. Provide 1-hr fire-rated exit passageway leading directly outside (vestibules to separate any storage areas). Note: A maximum of 50 percent of the number and capacity of the exit enclosures can discharge through areas on the level of exit discharge where the conditions mentioned in section 6.17.3 of RSC Technical Guidelines (Standard) V1.0 are met.	Within 3 months
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F-07	Fire Rated Construction	The exit stairs are not separated from on each floor by fire-rated construction due to unprotected opening from lift machine room, ground floor production shed, office and DB.	Stairs shall be enclosed with a minimum 1-hr fire-rated construction. Seal all unprotected openings and provide minimum 1-hr fire rated doors to separate the exit stairs from work areas and other building spaces on all floor levels. Ensure that the fire doors are self-closing, positive latching and that they are provided with fire exit (panic) hardware where serving production floors. If fire doors are required to be held open for functional reasons, provide automatic-closing devices tied to the fire alarm system. Penetrations into and through an exit enclosure shall be prohibited with the exception of required exit doors, sprinkler piping, standpipes, electrical raceway for fire alarm equipment, and electrical conduit serving the exit enclosure.	Within 3 months
 				

F-08	Fire Rated Construction	The 1st and 2nd floors are not separated from the ground floor (production shed) by fire rated construction (openings and penetrations).	Separate the openings and penetrations by a minimum 1-hr fire rated construction.	Within 3 months
 				
F-09	Fire Rated Construction	Compressor room is not properly separated by fire rated construction.	Compressor room shall be separated from other occupancies by a minimum 1-hr fire rated construction (wall, floor, slab etc.). Seal all penetrations and openings (door, window etc.) should be protected by 0.75-hr (45 min) fire rated materials to maintain the fire separation if required. All exhaust systems shall discharge to the exterior of the building in a safe location. Or Relocate it to exterior of the building and maintain a minimum 3m (10 ft.) spatial separation distance from the building.	Within 3 months



F-10	Fire Rated Construction	Areas used for combustible storage are not separated by fire-rated construction.	Provide defined storage areas and limit the storage arrangement as follows: Maximum height of 2.45 m and maximum area of 23 m² and is separated by a minimum 3.0 m (10ft) from other storage areas and they do not exceed 10 percent of the building area of the story in which they occur. or If sprinkler protected, Maximum height 12 ft (3.66 m) and maximum area of 1000 ft² (93 m²) and separated by a at least 25 ft (7.62 m) and does not constitute more than 10 percent of the building area or 4000 ft² (372 m²) of the sprinklered area, whichever is greater. or Enclose the storage area from the surrounding occupancy with a minimum 1 hour construction.	Within 3 months
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F-11	Means of Egress	Exit capacity (2387 as per present condition) is not adequate for the occupant load at ground floor (2418 persons).	Reduce occupant load to not more than available exit capacity. Or Provide additional exits to increase exit capacity.	Immediately
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F-12	Means of Egress	The headroom on the doors is less than 2.03 m (6 ft 8 in.). Location: Mezzanine Floor	All means of egress shall have a minimum ceiling height of 2.3 m (7 ft 6 in.) with projections from the ceiling not less than 2.03 m (6 ft 8 in.).	Within 3 months
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F-13	Egress Lighting	Directional signs are not provided where direction of the path of travel to an exit has changed.	Illuminated directional signs shall be provided where there is a change in the direction for the path of travel and the direction to an exit is not obvious.	Within 3 months
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F-14	Egress Lighting	Based on the number and location of emergency lights observed, adequate illumination levels are not anticipated along egress routes. Location: Ground Floor.	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.	Within 2 months
F-15	Egress Lighting Checklist	Inspection, testing, and maintenance for the exit sign and emergency lighting system was not in accordance with The RSC standard.	Inspect, test and maintain the exit sign and emergency lighting system in the accordance with the RSC standard. Keep written records on-site.	Within 3 months

F-16	Fire Alarm & Detection System (FADS)	Fire alarm and detection system installation complete which requires detailed review to confirm compliance with NFPA 72 and RSC Technical Guidelines (Standard).	Submit the fire alarm system design to RSC for review. Once the design is reviewed, install and modify the fire detection and alarm system throughout the building in accordance with review comment, RSC Technical Guidelines (Standard) and NFPA 72. After installation the owner shall conduct internal testing and commissioning and then contact the RSC for witness of final acceptance testing.	Design within 2 month and modification/ installation with 4 months
 				

F-17	Inspection, Testing and Maintenance (ITM) of FADS.	Inspection, testing and maintenance for the fire detection and alarm system was not in accordance with standard.	Inspect, test and maintain the fire alarm system and keep written records on-site, in accordance with Table-14.3.1 of NFPA 72.	Within 1 Month (after installation)
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Findings & Recommendations :

Table 4 summarizes the major fire safety issues identified **(Building - 18 (Findings))** during the inspection. Recommendations have been provided to address each issue. An implementation schedule shall be developed by the factory to remediate each of the findings. The specific timing of improvements, including any requested extensions due to design / installation constraints, shall be submitted to the RSC for review.

Table-4:

SI No.	Category	Findings	Required Action	Remediation Time Frame
F-01	Fire Rated Construction	The production Shed (interim structure) is made of steel and found exposed without any fire protection which is defined as non-rated construction and a violation of BNBC-2006.	Construction must be of type 1 or type 2 (See BNBC 2006 Part 3 Section 3.2.4, page 10356). For type 2 construction, the maximum permissible height of the building shall be 4 storeys or 14 meters. (See BNBC 2006 Part 3, Table 3.1.9, page 10319). Provide/ensure required fire rating on the structural elements by following Section 4.4 and Table 4.4.1 of the RSC Standard and RSC TECHNICAL GUIDANCE (TGN). Consult a qualified fire protection engineer to design the rated construction barriers.	Within 6 months
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F-02	Fire Rated Construction	Penetrations through floor/ceiling assemblies are found unsealed. Location: Electric Cable and PVC pipe.	Seal all penetrations in floor/ceiling assemblies by a listed through-penetration fire stop system tested in accordance with ASTM E814 or approved alternative standard to maintain minimum 3-hr. fire resistance rating. Installation shall be as per manufacturer published installation guideline and the certification authority guideline to ensure the fire-rating. or, Provide a minimum 2-hr fire rated shaft to separate the utility risers from each floor if required.	Within 3 months
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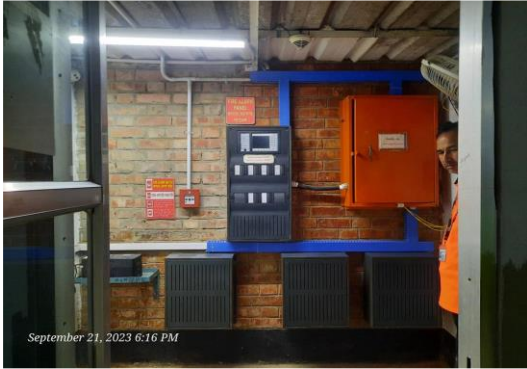
F-03	Fire Rated Construction	Storage room/areas discharges directly into the exit stair enclosure.	Openings from exit enclosure to storage room, generator and transformer spaces shall be provided with a vestibule with fire rated construction and openings.	Within 3 months
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F-04	Fire Rated Construction	The exit stairs are not separated from on each floor by fire-rated construction due to unprotected penetrations.	Stairs shall be enclosed with a minimum 1-hr fire-rated construction. Seal all unprotected openings and provide minimum 1-hr fire rated doors to separate the exit stairs from work areas and other building spaces on all floor levels. Ensure that the fire doors are self-closing, positive latching and that they are provided with fire exit (panic) hardware where serving production floors. If fire doors are required to be held open for functional reasons, provide automatic-closing devices tied to the fire alarm system. Penetrations into and through an exit enclosure shall be prohibited with the exception of required exit doors, sprinkler piping, standpipes, electrical raceway for fire alarm equipment, and electrical conduit serving the exit enclosure.	Within 3 months
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F-05	Fire Rated Construction	The 1st and 2nd floors are not separated from the ground floor (production shed) by fire rated construction (openings and penetrations).	Separate the openings and penetrations by a minimum 1-hr fire rated construction.	Within 3 months
 				

F-06	Egress Lighting	Directional signs are not provided where direction of the path of travel to an exit has changed.	Illuminated directional signs shall be provided where there is a change in the direction for the path of travel and the direction to an exit is not obvious.	Within 3 months
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F-07	Means of Egress	The stairs have a width less than the required minimum of 1.5 meter (60 inches).	Stairs shall have a minimum width of 1.5 m (60 in.)	Within 6 months
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F-08	Egress Lighting	Based on the number and location of emergency lights observed, adequate illumination levels are not anticipated along egress routes. Location: Ground Floor.	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.	Within 2 months
F-09	Egress Lighting Checklist	Inspection, testing, and maintenance for the exit sign and emergency lighting system was not in accordance with The RSC standard.	Inspect, test and maintain the exit sign and emergency lighting system in the accordance with the RSC standard. Keep written records on-site.	

F-10	Fire Alarm & Detection System (FADS)	Fire alarm and detection system installation complete which requires detailed review to confirm compliance with NFPA 72 and RSC Technical Guidelines (Standard).	Submit the fire alarm system design to RSC for review. Once the design is reviewed, install and modify the fire detection and alarm system throughout the building in accordance with review comment, RSC Technical Guidelines (Standard) and NFPA 72. After installation the owner shall conduct internal testing and commissioning and then contact the RSC for witness of final acceptance testing.	Design within 2 month and modification/ installation with 4 months
 				
F-11	Inspection, Testing and Maintenance (ITM) of FADS.	Inspection, testing and maintenance for the fire detection and alarm system was not in accordance with standard.	Inspect, test and maintain the fire alarm system and keep written records on-site, in accordance with Table-14.3.1 of NFPA 72.	Within 1 Month (after installation)

Findings & Recommendations :

Table 5 summarizes the major fire safety issues identified **(Building - 14 (Findings))** during the inspection. Recommendations have been provided to address each issue. An implementation schedule shall be developed by the factory to remediate each of the findings. The specific timing of improvements, including any requested extensions due to design / installation constraints, shall be submitted to the RSC for review.

Table-5:

SI No.	Category	Findings	Required Action	Remediation Time Frame
F-01	Fire Rated Construction	The production Shed (interim structure) is made of steel and found exposed without any fire protection which is defined as non-rated construction and a violation of BNBC-2006.	Construction must be of type 1 or type 2 (See BNBC 2006 Part 3 Section 3.2.4, page 10356). For type 2 construction, the maximum permissible height of the building shall be 4 storeys or 14 meters. (See BNBC 2006 Part 3, Table 3.1.9, page 10319). Provide/ensure required fire rating on the structural elements by following Section 4.4 and Table 4.4.1 of the RSC Standard and RSC TECHNICAL GUIDANCE (TGN). Consult a qualified fire protection engineer to design the rated construction barriers.	Within 6 months
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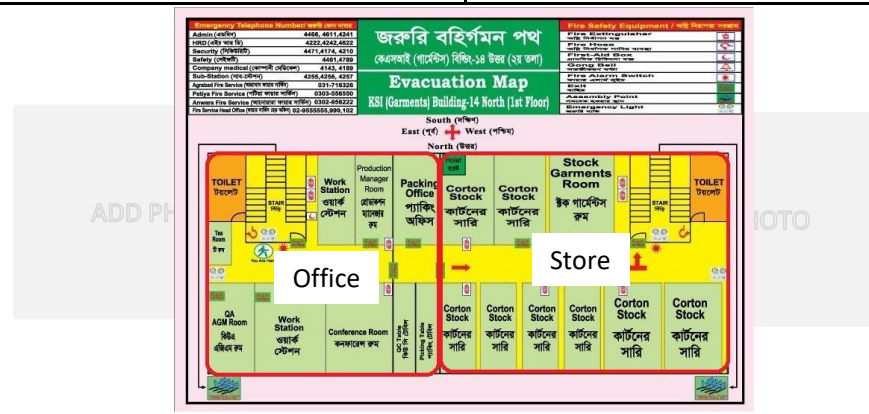
F-02	Fire Rated Construction	Penetrations through floor/ceiling assemblies are found unsealed. Location: Electric Cable and PVC pipe.	Seal all penetrations in floor/ceiling assemblies by a listed through-penetration fire stop system tested in accordance with ASTM E814 or approved alternative standard to maintain minimum 3-hr. fire resistance rating. Installation shall be as per manufacturer published installation guideline and the certification authority guideline to ensure the fire-rating. or, Provide a minimum 2-hr fire rated shaft to separate the utility risers from each floor if required.	Within 3 months
 				

F-03	Fire Rated Construction	Storage room/areas discharges directly into the exit stair enclosure.	Openings from exit enclosure to storage room, generator and transformer spaces shall be provided with a vestibule with fire rated construction and openings.	Within 3 months
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F-04	Fire Rated Construction	The exit stairs are not separated from on each floor by fire-rated construction due to unprotected penetrations.	Stairs shall be enclosed with a minimum 1-hr fire-rated construction. Seal all unprotected openings and provide minimum 1-hr fire rated doors to separate the exit stairs from work areas and other building spaces on all floor levels. Ensure that the fire doors are self-closing, positive latching and that they are provided with fire exit (panic) hardware where serving production floors. If fire doors are required to be held open for functional reasons, provide automatic-closing devices tied to the fire alarm system.	Within 3 months
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F-05	Fire Rated Construction	The 1st and 2nd floors are not separated from the ground floor (production shed) by fire rated construction (openings and penetrations).	Separate the openings and penetrations by a minimum 1-hr fire rated construction.	Within 3 months
 				

F-06	Fire Rated Construction	Rooms used for storage of combustible material is not separated from the surrounding occupancy/areas. Location: 1st floor of South RCC building. The factory persons had reported that the storeroom is separated by fire-rated gypsum board which is required to review and verify.	Rooms used for storage of combustible materials shall be separated from the surrounding occupancy with a minimum 1-hr. construction.	Within 3 months
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F-07	Egress Lighting	Directional signs are not provided where direction of the path of travel to an exit has changed.	Illuminated directional signs shall be provided where there is a change in the direction for the path of travel and the direction to an exit is not obvious.	Within 3 months
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F-08	Means of Egress	Doors along means of egress are provided with non compliant locking system.	No locks or other devices shall be installed on a means of egress component that would prevent any occupant from having safe egress from the building or structure and doors shall not be locked in the direction of egress under any conditions. All hasps, locks, slide bolts, and other locking devices are prohibited unless meet the following conditions: • Doors may be locked where the latch and lock are disengaged with one motion where the occupant load does not exceed 49 persons. Turning a door handle and disengaging a lock is considered two motions. • Doors may be provided with locking hardware from the ingress side provided that a panic bar is installed on any door with an occupant load exceeding 49 persons.	Immediately
 				

F-09	Means of Egress	The stairs have a width less than the required minimum of 1.5 meter (60 inches).	Stairs shall have a minimum width of 1.5 m (60 in.)	Within 6 months
 				

F-10	Egress Lighting	Based on the number and location of emergency lights observed, adequate illumination levels are not anticipated along egress routes. Location: Ground Floor.	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.	Within 2 months
F-11	Egress Lighting Checklist	Inspection, testing, and maintenance for the exit sign and emergency lighting system was not in accordance with The RSC standard.	Inspect, test and maintain the exit sign and emergency lighting system in the accordance with the RSC standard. Keep written records on-site.	

F-12	Fire Alarm & Detection System (FADS)	Fire alarm and detection system installation complete which requires detailed review to confirm compliance with NFPA 72 and RSC Technical Guidelines (Standard).	Submit the fire alarm system design to RSC for review. Once the design is reviewed, install and modify the fire detection and alarm system throughout the building in accordance with review comment, RSC Technical Guidelines (Standard) and NFPA 72. After installation the owner shall conduct internal testing and commissioning and then contact the RSC for witness of final acceptance testing.	Design within 2 month and modification/ installation with 4 months
F-13	Inspection, Testing and Maintenance (ITM) of FADS.	Inspection, testing and maintenance for the fire detection and alarm system was not in accordance with standard.	Inspect, test and maintain the fire alarm system and keep written records on-site, in accordance with Table-14.3.1 of NFPA 72.	Within 1 Month (after installation)