

EMERGENCY ROUTES IN ONE SHED IN CASE OF SINISTER

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ABSTRACT

The escape route is used to indicate the emergency exit, leading to the exit, stairs, fire doors and not obstructing them. In all companies there is a use of signs that indicate an escape route in emergencies. These plates are made of special materials that allow the visualization of the same case of power failure. The batteries contain a special ink or film that is being charged by ambient light. The values are varied from material to material and should be analyzed according to a demand definition.

Keywords: Escape route, signaling; emergency.

I. INTRODUCTION

The escape route is the route to be followed in case of urgent need to evacuate a site due to fire, landslides or other emergencies. For all workers or visitors to a particular location to feel safe in an emergency, it is important to know the escape route. Knowing the way forward at critical moments makes it easy for everyone to get out and save.

This paper will show an example of escape routes for a new shed, planning it. Many consider the planning of escape routes unnecessary because they claim that it is only leaving the entrances or exits of buildings, but all planning in a project is essential for the perfect functioning of an entire set.

Currently, companies, especially from the industrial hub, are investing considerably in security. And including in this context are the escape routes. Which assist in the removal, evacuation, of people within an establishment, so that there are no deaths in a claim.

The overall objective of this paper is to propose emergency signaling in a new warehouse in a district factory. Specifically, corridors and shed access areas will be checked to report key risk areas and demonstrate possible escape routes.

II. LITERATURE REVISION

II.1 THE IMPORTANCE OF ESCAPE ROUTES

Fire safety measures, as well as any other safety measures, may be preventive or protective. [1] defines these measures as follows:

Fire prevention measures are those associated with the fire prevention precaution and are intended solely to prevent the onset of fire, i.e. to control the risk of fire onset.

Fire protection measures are those designed to protect human life and property from the harmful effects of the fire already developing in the building. They are necessary for the overall fire safety system as the preventive measures fail to allow the fire to arise. These measures comprise the following elements of the overall system: limitation of fire growth; initial fire extinguishing; fire propagation limitation; precaution against propagation between buildings; safe evacuation of the building; precaution against structural collapse; and speed, efficiency and safety of combat and rescue operations [2].

Escape routes are the routes people should follow in case of accidents requiring evacuation. More than having signposts, a company must follow the requirements so that instructions are clearly and easily understood.

To put it clearly, we cite the example of the Kiss nightclub, which for lack of clarity in escape routes, many people rushed to locked doors [3]. In short, escape routes are the planned, mapped, and detailed way for people to leave safely, quickly, and with good flow.

That's why it's important to keep your entire system up to date and have high performance devices. Thus, the combination of these methods and practices are really significant for protecting lives, buildings and heritage.

A fire prevention system is made up of a number of important equipment and devices predetermined by law [4]. But in order for it to prove useful, it must also have another indispensable element.

Escape routes are sometimes overlooked as many people find that the material part of the system is sufficient [5]. However, it is vital for saving lives and making the firefighting process faster and more efficient.

In a fire situation, it is normal for panic to spread. Therefore, when using escape routes, it is essential to try to use them in the correct way so as not to harm others who also need to pass them.

The emergency exit is the properly protected path, part of the escape route, to be traveled by the user of a building in case of fire, until reaching the public road or open space protected in communication with it [6].

The lack of evacuation route indicators may lead to panic situations in emergencies, where the tranquility factor is paramount for the prevention of major accidents.

The planning of the Escape Route should be well elaborated, taking into consideration: The MTB NR-23 guidelines; NBR 9077 and 13434; State Code for Fire Prevention; others that will make it easier for individuals to leave the affected places.

“The reliability of this element must necessarily be higher than that of the other system elements, since in the event of a fire occurring, endangering the safety of building users, meaning that other system elements have failed, the safe evacuation of the building will not may fail. It is therefore the most important element and most directly associated with the safety of human life in the event of fire” [7].





II.2 SIGNALING WAYS

Illustrated and [8] and can be seen in table 01.

Circular: Used to deploy prohibition and command action symbols; Triangular: Used to deploy warning symbols; Square and Rectangular: Used to deploy guidance, distress, emergency and identification symbols for firefighting and alarm equipment;

Security Colors: The security color must cover at least 50% of the symbol area, except for the prohibition symbol, where this value must be at least 35%; Red: Used for prohibition and identification symbols for firefighting and alarm equipment; Green: Used for guidance and distress symbols; Black: Used for warning symbols and danger signs; Contrast Colors: Contrast colors are white or yellow for prohibition and alert signaling respectively. Contrast colors shall be photoluminescent for orientation and equipment signaling.

Table 1: Signpost Dimensions 1.

Signal	Geometric form	Share mm	Maximum distance of visibility m										
			4	6	8	10	12	14	16	18	20	24	28
Prohibition		D	101	151	202	252	303	353	404	454	505	606	706
Alert		L	136	204	272	340	408	476	544	612	680	816	951
Guidance, Rescue and Equipment		L	89	134	179	224	268	313	358	402	447	537	626
		H (L=2H)	63	95	126	158	190	221	253	285	316	379	443

1) The dimensions (dimensions) shown are minimum reference values for the given distances.

Source: Adapted from [8].

Table 2: Minimum height of letters on signposts as a function of reading distance.

Minimum height mm	High impact reading distance (m)	Minimum height (mm)	High impact reading distance (m)
30	4	300	36
50	6	350	42
65	8	400	48
75	9	500	60
85	10	600	72
100	12	700	84
135	16	750	90
150	18	800	96
200	24	900	108
210	25	1000	120

Source: Adapted from [8].

II.2.1 SIGNALING WAYS











Orientation signs shall be as follows:

- a) shape: square or rectangular;
- b) background color (safety color): green;
- c) symbol color (contrast color): photoluminescent;
- d) margin (optional): photoluminescent.

II.3 SIGNALING SYMBOLS

The symbols adopted by this part of [8] for fire and panic signaling are presented in 3, accompanied by application examples.

Table 3: Guidance and rescue signs.

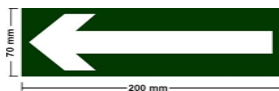
Code	Symbol	Meaning	Shape and color	Application
12		Emergency Exit.	Symbol: Rectangular Background: Green Pictogram: photoluminescent.	Indication of the direction (left or right) of an emergency exit, especially for fixing to columns. Minimum dimensions: L = 1,5H.
13				Indication of the direction (left or right) of an output of emergency Minimum dimensions: L = 2,0 H.
14				Indication of an emergency exit to be affixed above the door to indicate access.
Code	Symbol	Meaning	Shape and color	Application
15		Emergency Exit.	Symbol: Rectangular Background: Green Pictogram: photoluminescent.	a) indication of the direction of access to an outlet that is not apparent. b) indication of the direction of a ramp exit. c) indication of the direction of exit in the vertical direction (rising or falling). NOTE - The Indicative Arrow should be positioned according to the meaning be flagged.
16		Emergency Exit.	Symbol: Rectangular Background: Green Pictogram: photoluminescent.	Indication of escape direction inside stairs Indicates right or left down or up The indicative drawing must be positioned in the direction to be indicated.
				
17	Example 1:  Example 2: 	Emergency Exit.	Symbol: Rectangular Background: Green “EXIT” message and or pictogram and or directional arrow: photoluminescent, always with letter height > 50 mm.	Indication of emergency exit, used as a complement to the photoluminescent pictogram (arrow or image, or both).
Code	Symbol	Meaning	Shape and color	Application
18	Example 1:  Example 2: 	Emergency Exit.	Symbol: Rectangular Background: Green “OUTPUT” message: photoluminescent, always with letter height > 50 mm.	Indication of emergency exit, used as a complement to the photoluminescent pictogram (arrow or image, or both).

Source: Adapted from [8].

II.3.1 CONTINUED INDICATION OF ESCAPE ROUTES

Continued indication of escape routes shall be carried out by means of indicative arrows in accordance with the criteria specified in ABNT NBR 13434-1, installed in the direction of exit, with the following minimum shape, size and color specifications:

Table 4: Direction of exit route.

Code	Symbol	Meaning	Shape and color
28		Direction of exit route.	Symbol: Rectangular Background: Green Pictogram: photoluminescent.

Source: Adapted from [8].

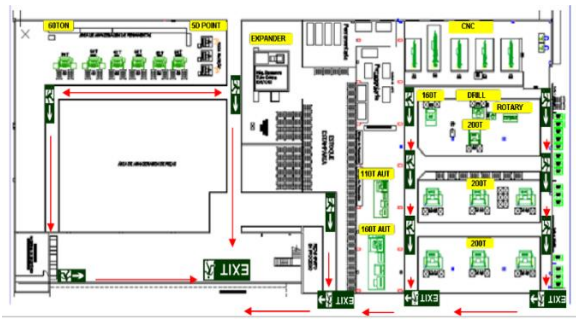


Figure 4: Result of escape route signs in the shed.

Source: Authors, (2019).

We demonstrated the route that people will use in case of emergencies. We use the main corridors in the sector as there is a greater possibility of mobility, therefore, free of obstacles or obstructions in the path of the emergency route.

VI CONCLUSIONS

Escape routes play a very important role in any building as they are directly linked to the safety of the site, and hence of the individuals within the site.

Most of the companies in the Manaus Industrial Pole are investing a lot in security, which is why this type of project has grown considerably. Maintaining a safe environment considerably influences the credibility of the company. Having visibility of the direction indicator plates is indispensable, because if it is not in visible conditions, it is a design irregularity, thus having no functionality in the work environment.

Safety always comes first, and having safe evacuation sites is one of those principles.

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[9] Google Maps, 2019.