

System for Security and Prevention of Terrorism Attacks at Mrt Lebak Bulus, Jakarta

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Abstract

Public transportation systems such as the Lebak Bulus MRT are likely to become prime targets for terrorists due to the potential for disruption, destruction, and possible escape of perpetrators, due to size, openness, accessibility, lack of identification of passengers, and the number of people carried by the transportation system. Risk prevention and preparedness in the Lebak Bulus MRT transportation system is critical to internal security and requires proper analysis of asset vulnerabilities, clear awareness of criticality, possible countermeasures, and adequate methods to design, scale and optimize protection. This study uses a literature study research method. The author uses previous research sources that are relevant to the topic under study, especially related to the security system and prevention of terrorism attacks at MRT Lebak Bulus Jakarta. CPTED is a complex strategy that will include a variety of interventions and behavioral responses from different groups of users. CPTED involves territoriality, surveillance, access control, activity support, image/management, and target setting. In the Mass Rapid Transportation (MRT) Lebak Bulus, the vulnerability to terrorist attacks can be identified based on physical security theory. The main vulnerability is the MRT central depot. All MRT control is in the central depot, not on the mechanics. The MRT driver is only in charge of opening and closing the train doors, so that the control of the MRT, which is located at the Lebak Bulus central depot, places the vulnerability to hijackings by terrorists.

1. Introduction

September 11th is a date forever inscribed in the world's memory as one worst terrorist attack in modern history. With 2996 people dying in a day, the incident highlighted the global need to re-evaluate how safety is ensured. Global terrorism is becoming increasingly common, with around 700 incidents in 1970 increasing to nearly 16,800 incidents in 2014 alone ([Berkebile](#) 2017). Stories of conflict and destruction have filled the media, most recently in Europe, taking place on 22 March 2017 at Westminster Bridge in London. Terror attacks take many forms. Although their goals are often unknown, they incite, instill fear and are usually used to show rebellion against aspects of civilization with which they disagree. A repeated target of terrorism attacks is popular

infrastructure, with airports and train stations being prime targets, due to the heavy foot traffic, the 'open and accessible design' of the train stations, and the vital services they provide to society.

The airport has strict security checks and extensive safety protocols. However, train stations do not have such a procedure, although a study conducted by Professor Arnold Barnett, George Eastman Professor of Management Science and Professor of Statistics at the MIT Sloan School of Management, found the risk per mile of rail travel was ten times greater than if when traveling by air ([Luxton and Marinov 2020](#)). But train stations rely on CCTV, public vigilance, and security guards to maintain a safe situation. Despite the admission of Adrian Dwyer, British Transport Police counterterrorism risk adviser, that 'ensuring 100% protection against terrorist attacks is not an option' ([Luxton and Marinov 2020](#)), current terrorism mitigation tools are insufficient to provide consistent guarantees of public safety. The 2004 attack on the Metro, Madrid showed how vulnerable the railroads are today, with 191 killed and 1841 injured ([Reinares 2014](#)). Terrorism is on the rise and railroads are expanding. The development of high-speed rail technology, marked by the expansion of the rail network, has made rail travel a bigger target for terrorist activities. An effective terrorist attack prevention and security system must be designed to ensure the continuous protection of public infrastructure and railways.

One of the rail developments in Indonesia that is also vulnerable to terrorist attacks is the MRT (Mass Rapid Transportation). Jakarta's MRT (Mass Rapid Transportation) is the first subway system in Indonesia that provides affordable and efficient public transportation for its citizens. Construction of the MRT (Mass Rapid Transportation) started in 2013 with the help of international and local partners, such as the Japan International Cooperation Agency, in an effort to overcome Jakarta's severe traffic congestion. The concept of the first MRT in Jakarta was born in the 1980s, but major political and financial challenges delayed the start of the project for nearly three decades. The first phase of the project was completed in 2019, exceeding one of the targets of 65,000 passengers per day. The MRT Jakarta project is owned by the Regional Government of Jakarta and is run by a company called PTMRT Jakarta owned by the City Government of Jakarta (Land Transportation Authority). Funded by the central government of Indonesia and the regional government of Jakarta, the first tranche comes from a loan of around \$1.18 billion (or 125.2 billion) from the Government of Japan supported by the Japan Bank for International Cooperation (JICA). . . Japan Bank for International Cooperation (JBIC)). The total construction cost for the two phases of the project is US\$ 2.6 billion. The only impact felt by the public so far was the announcement from MRT Director William Syahbandar in June 2019, stating that their initial target of serving 65,000 passengers per day in the first months had been met and exceeded by 15,000.

In terms of impact estimates, the project is expected to produce several results, such as increasing public transportation capacity, reducing travel time and travel costs, and creating jobs. Greenhouse gas emissions are also expected to decrease as a result of the MRT (to approximately 93,663 tons of CO₂ per year, or 0.7 percent of the current total CO₂ emissions). When people choose the MRT over cars and motorbikes, it is hoped that the number of accidents and traffic jams in the city will also decrease. However, the shift in public transportation mode to the MRT is precisely in line with the development of terrorist attacks which has made trains a bigger target for terrorist activities.

Crime Prevention Through Environmental Design, usually abbreviated as CPTED, is one of the strategic theories in crime prevention efforts, a theory that was originally put forward by Clarence Ray Jeffery, a criminologist who quoted in his book and published in December 1971. The definition of CPTED itself is "proper design and effective use of the built environment that can lead to a reduction in the fear and incidence of crime, and an improvement in the quality of life", which means "proper design with the effective use of the built environment is able to reduce fear and incidents of crime and improving the quality of life". CPTED has a vital role in providing a sense of security and preventing terrorist attacks that take advantage of the existence of the MRT. Therefore, in writing this paper the author is interested in studying the "Security System and Prevention of Terrorism Attacks on MRT Lebak Bulus Jakarta" .

2. Materials and Methods

This study uses a literature study research method. The author uses previous research sources that are relevant to the topic under study, especially related to the security system and prevention of terrorism attacks at MRT Lebak Bulus Jakarta.

A. Concept/Theory Used

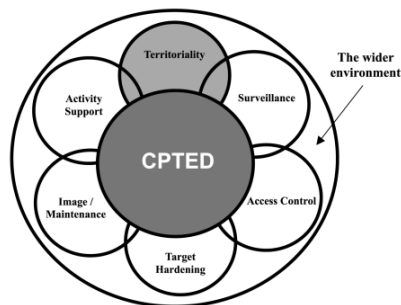
a. Crime Prevention Through Environmental Design (CPTED)

CPTED is an acronym for crime prevention through environmental design which asserts that “proper design and effective use of the built environment can lead to reduced fear and incidence of crime, and increased quality of life” ([Monchuk, Pease, and Armitage](#) 2018). It is based on studies carried out from the mid-twentieth century onwards ([Gašparović, Sopina, and Zeneral](#) 2022).

Various theoretical criticisms of CPTED have been expressed ([Ekblom](#) 2019) and discussed elsewhere ([Lee et al.](#) 2020). However, the ongoing refinement of what is now known as first generation CPTED, by researchers, practitioners, and policy makers, is arguably responding to criticism to create a more robust and rigorous approach referred to as second generation CPTED ([Cozens, Saville, and Hillier](#) 2005). These refinements go beyond mere physical design to include social factors. The second generation of CPTED uses risk assessment, socio-economic and demographic profiles ([Frimpong](#) 2021) and active community participation ([Mihinjac and Saville](#) 2019).

Following Newman (1973), Moffat (1983) proposed that there were six characteristics common to the first generation of CPTED concepts; territoriality, supervision (informal and formal), access control, image/maintenance, activity program support and target setting.

Tabel 1



CPTED is a complex strategy that will include a variety of interventions and behavioral responses from different groups of users. CPTED involves territoriality, surveillance, access control, activity support, image/management, and target setting.

1. Territorial

Territoriality is a design concept geared toward reinforcing notions of ownership and “belonging” in authorized users of a space thereby reducing opportunities to offend by discouraging unauthorized users. In the first generation of CPTED, this was the main umbrella concept on which everything else was based. Different forms include symbolic barriers (eg signage) and tangible barriers (eg fences or designs that clearly define and delineate between private, semi-private and public spaces). Access control and surveillance will also contribute to promoting territoriality by promoting informal social control of authorized users. CPTED emphasizes crime prevention techniques that take advantage of opportunities in the environment “to both naturally and routinely

facilitate access control and surveillance, and to reinforce positive behaviors in environmental use” (Silic and Lowry 2020). These strategies are not independent of one another, and they act together to use physical attributes to separate public, public-private and private spaces, to define ownership (e.g. railings, pavement maintenance, signs, landscaping and works of art) and define patterns that acceptable from use, in addition to promoting opportunities for surveillance.

2. Supervision

Physical design has the capacity to promote informal or natural control opportunities for residents and their agents and supervision is part of a competent trusteeship (Lasierra 2022). If perpetrators feel that they can be observed (even if they are not), they are less likely to commit an offence, given the increased potential for intervention, fear, and prosecution. Different types include natural (eg citizen self-monitoring opportunities facilitated by windows) formal or organized (eg police patrols) and mechanical surveillance strategies (eg street lighting and CCTV).

3. Access control

Access control is a CPTED concept that focuses on reducing opportunities for crime by denying access to potential targets and creating a high perception of risk in violators. Access control can include informal/natural (eg spatial definition), formal/organized (eg security personnel) and mechanical (eg locks and bolts) strategies (the latter two are discussed under the subtitles control and target hardening respectively). Studies by (Xu, Cheng, and Sugumar 2020) all show a relationship between design features and crime rates; especially the feature that allows unrestricted movement of pedestrians through residential complexes. However, researchers have also found that busier streets with some pedestrian movement have seen a reduction in recorded crime rates (Kim and Hipp 2021).

4. Activity support

Activity support involves using design and signage to encourage desired patterns of use of public space. (Ojo and Ojewale 2019) notes how reason, activity generation and support seek to place “unsafe” activities (such as those involving money transactions) in “safe” locations (those with high levels of activity and with opportunities for oversight). Likewise, “safe” activities serve as a magnet for ordinary citizens who can then act to deter the presence of criminals. This approach clearly contains elements of territoriality, access control and supervision. While increasing the number of pedestrians can provide additional “eyes on the road” and potentially deter some offences, it can also actually encourage and provide other targets for crime (e.g. pickpocketing).

5. Image/management

Promoting a positive image and regularly maintaining the built environment ensures that the physical environment continues to function effectively and transmits positive signals to all users. The significance of the physical condition and “image” of the built environment and its influence on crime and fear of crime has long been recognized (Petersen and Aplin 2021) and there is now much research. In terms of private rental housing management, (Femenías, Mjörnell, and Thuvander 2018) argues, “we have strong evidence that improving rental property management can reduce drug-related crime”. Vacant premises have been found to represent crime “magnets” (Jay et al. 2019) and smaller buildings are preferred sites for drug trafficking because they have less management and financial resources to regulate such criminal activity. On public transportation, a cleaning program was undertaken to remove graffiti from all train cars and stations (Denis and Pontille 2021) on the New York subway system. Graffiti is significantly reduced and although police attention has increased on graffiti, arrests for the offense have also decreased. In Victoria, Australia, following a program promoting the quick repair and rehabilitation of faulty equipment, (Plana et al. 2022) found that rail availability increased by 45 percent and reported crimes against persons decreased by 42 percent. At the New York Harbor Authority Bus Terminal 63 special design interventions (including access control, cleaning and increased formal oversight by staff) significantly reduced burglaries and assaults (Ariel et al. 2019).

6. Target hardening

Target setting increases the effort an offender must expend in committing a crime and is the oldest and most traditional approach to crime prevention. However, there is much disagreement as to whether or not target hardening should be considered a component of CPTED. It is geared towards denying or limiting access to crime targets through the use of physical barriers such as fences, gates, locks, electronic alarms, and security patrols. Most importantly, the excessive use of targeting tactics can create a “fortress mentality” and an image in which residents withdraw behind physical barriers and the self-policing capacity of the built environment is damaged, effectively contradicting CPTED's strategy of relying on surveillance, territoriality and imagery.

In summary, a review of the CPTED components of surveillance, access control, territorial reinforcement, activity support, image/management, and target hardening all contribute to reducing crime and fear of crime.

B. Physical Security

The Center for the Protection of National Infrastructure (CPNI) (2007) explains that a physical attack is likely to involve some form of improvised explosive device (IED). Physical attacks can be categorized according to the way they are delivered:

1. Vehicle bomb

Vehicle bombs are one of the most effective weapons of terrorists because of the potential for large quantities of explosives that can be aimed at targets with reasonable precision. Explosive devices are usually prepared in advance and hidden in the vehicle. Vehicle-borne threats can appear in a number of ways:

- a. Parked, where the vehicle is positioned near or below the target.
- b. Encroachment, where a vehicle passes through an existing security barrier that is incomplete or incorrectly spaced or tails a lawful vehicle through an active barrier system into the site.
- c. Penetrative, where the vehicle collides into its target.
- d. Fraud, in which perpetrators swindle their way into a site by using prepared cover stories, fake documentation or 'trojan vehicles'.
- e. Coercion, in which the guard controlling the vehicle check point is forced to let the vehicle pass or the authorized vehicle driver is forced to carry an IED.

Several tonnes of explosives can fit in larger vehicles which have been used to cause casualties and structural damage at distances of hundreds of meters.

2. Borne / sent by people

Devices carried by people are usually hidden on the person's body or carried in a backpack, carrying case or briefcase. In order to remain portable, they also typically weigh less than 15 kg (an amount still sufficient to cause serious structural damage). These devices have been used in suicide missions but have also been designed to be left unattended, possibly hidden behind furniture, and timed to detonate without warning. In either case, the impact is often increased by packing the device with nails, nuts, bolts and similar items which act as shrapnel which can have a devastating effect in small spaces. Incendiary devices that ignite rather than explode are usually smaller items which, because they don't require explosives, are easier to manufacture. They are usually intended to cause damage and disturbance, by starting a fire or triggering a sprinkler system.

3. Postal equipment

Letters, parcels or parcels containing explosives, incendiary or chemical substances have come in all shapes and sizes. It is designed to appear harmless but there are certain signs which are advised when extra caution should be shown during handling:

- a. The package comes from an unexpected or unknown sender.
- b. Bad spelling, inaccurate addressing or written in an unusual style and with a postage value that is more than appropriate for the size and weight.
- c. Soft envelopes or large items that are very heavy for their size (most letters weigh around 30g, whereas letter bombs weigh 50g–100g).
- d. There is a pin-sized hole in the envelope or packaging.

While any suspect items should be treated seriously, most occurrences will serve as false alarms so procedures for dealing with suspicious items must avoid repercussions that could exacerbate any nuisance.

Physical Security includes:

1. Building Design

Security in the form of a physical building/building, doors, windows, fences and other buildings of a private, government or public institution.

2. Approximately Uncontrolled Areas

Areas that may not be controlled such as parking lots, bathrooms/ WC, workshops, telephone rooms and others.

3. Orals Vehicles & Pedestrians

Gate for vehicles or pedestrians to enter

4. Barriers

obstacles which can be in the form of fences, walls, barbed wire and others that can prevent people from entering the building

5. Access by Uncleared Personnel

Entrance used by people who are not employees in a building or area (guests).

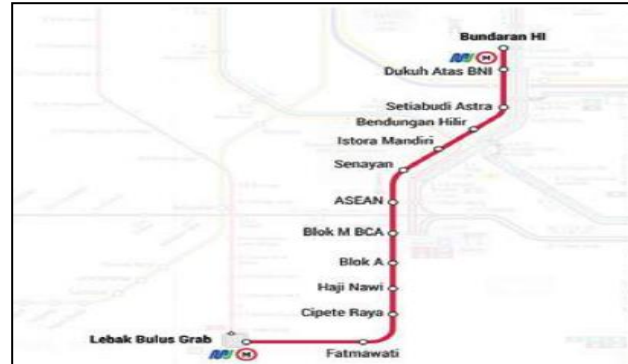
6. Required Service Access

Entrance or exit that is used for external service needs such as Aqua Cars, Vendor or Partner Cars, Guest Cars, garbage trucks and others.

C. Mass Rapid Transportation (MRT)

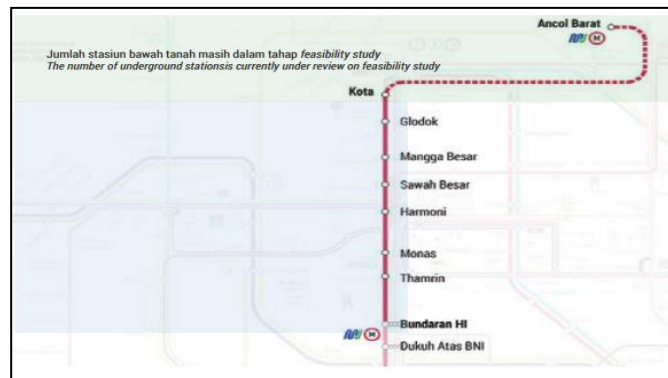
A transport system is a complex system exhibiting collective phenomena resulting from the interaction of its components. The efficiency of the transport network is critical in connecting communities as it allows individuals to carry out a variety of economic activities, from going to work or school, shopping and/or making recreational visits. As a result, there are many related urban issues that surround these systems, from the infrastructure itself to the passengers/commuters who use it. Here, we look at the Mass Rapid Transportation (MRT) system, which is the leading mode of public travel around the world, especially in highly urbanized cities. Mass Rapid Transportation (MRT) is an economical option because, as the name suggests, it serves a larger volume of public commuters and sends them to their destinations at a higher speed at any given time. MRT is a means of mass transportation, and is an effective and comfortable electric rail transportation to be developed, as evidenced by the introduction of this mode of transportation to big cities in various countries. Lebak Bulus is one of the areas that supports the development of Phase 1 (initial stage) of the Jakarta MRT system which divides Jakarta into north and south and connects them. Lebak Bulus was chosen because of its potential and terminal in terms of location and existing accessibility. Corridor 8 Transyakarta and Intercity Public Transportation. The current state of the site includes the terminal and stadium, with local regulations to reconstruct the area by completely overhauling it and turning it into the starting point for a future North-South subway line.

Tabel 1. Map of Mrt Jakarta North-South Route Phase 1



MRT Phase 2 (West Ancol HI Roundabout) is part of the MRT line that connects South and North Jakarta at MRT Phase 1 (Lebak Bulus Bundaran HI). MRT Phase 2 construction consists of Phase 2A (Hikota Rotary) which is currently in the construction bidding stage, and Phase 2B (Kota - West Ancol) which is currently in the feasibility study stage. May 2019 Mayor of DKI Approved by Governor of Jakarta.

Tabel 2. Map of Mrt Jakarta North - South Route Phase 2



3. Results and Discussions

Internationally, until now there has been no official agreement regarding the definition of what is called terrorism. However, in Resolution 1566, adopted unanimously in 2004, the security council described terrorism as “Criminal acts, including crimes against civilians, committed with the intent to cause terrorism among the general public, groups of individuals or individuals, to threaten the population, or to induce a government or international organization to do or refrain from doing something. Acts that constitute offenses as defined in international conventions and protocols relating to terrorism;

According to “Law number 5 of 2018 concerning amendments to law number 15 of 2003 concerning the ratification of government regulations in lieu of law number 1 of 2002 concerning eradicating criminal acts of terrorism into law, provides a definition of criminal acts of terrorism” is “Actions that use violence or threats

of violence that create a widespread atmosphere of terror or fear, which can result in mass casualties, and/or “generate riots” or destroy strategic vital objects, the environment, public facilities, or international facilities with ideological, political or security disturbance. Terrorists seek asymmetric ways to penetrate our defenses and exploit the openness of our society to their advantage. These tactics include targeting mass transit, which is explicitly designed to be available and open to the public, as is the case with the existence of Mass Rapid Transportation (MRT).

Mass transportation has been and remains an attractive target for terrorist activities around the world. In the last three years, major attacks in Britain, Russia, Spain, and most recently on India’s subway system left hundreds dead and thousands injured. The impact of terrorism on mass transportation is counted in lives. With this in mind, it is necessary to examine terrorist bombings on transportation to determine how the Police can mitigate the impact of terrorist bombings on Mass Rapid Transportation (MRT) systems. Mass Rapid Transportation (MRT) not only represents an attractive target, as studies show that of nearly 1,000 terrorist incidents of various kinds, attacks on transportation are the one most likely to result in death (Wang and Hsieh 2021).

One of the unique aspects of using CPTED for problem solving is the arrangement of “data and information that must be collected and” analyzed. While crime, fear and victimization are critical considerations, environmental evaluations need to include information that is not law enforcement based or crime related, for example, land use and zoning, violations of housing or health codes, or traffic volumes and pedestrian activity. Quality of life issues such as trash and litter, weeds, bare land, and depreciation of property values are also considered, as these issues often have a more debilitating impact on society day by day. They can also be a symptom of, or a precursor to, crime.

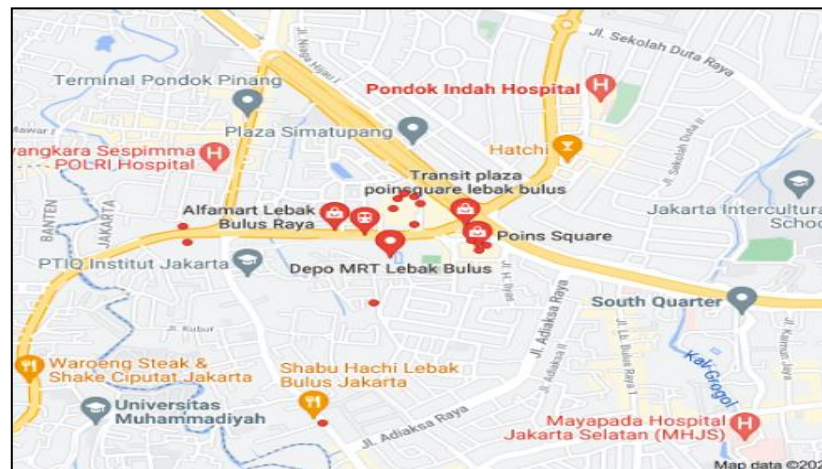
CPTED, also known as “crime designing” is an acronym for Crime Prevention through Environmental Design. It asserts that ‘proper design and effective use of the built environment can lead to reduced fear and incidence of crime, and increased quality of life (Leung, Famakin, and Wang 2019). CPTED is a multi-disciplinary approach that describes criminology, planning and environmental psychology, and is specifically situated within the field of environmental criminology, gaining theoretical support from opportunity theories such as rational choice theory and routine activity theory which are also concerned with “identifying the physical and social environmental conditions that provide opportunities for for crime, and modification of these conditions to reduce these opportunities (Horváth and Szabó 2019). The goal is to proactively prevent crime, compared to the reactive strategies of most criminal justice systems such as the police, courts and correctional facilities. Crime prevention through environmental design is not a new concept. This phrase was coined by Jeffery (1971) but a significant contributor to the CPTED concept is the renowned criminologist Timothy D. Crowe, a legend in the security industry. His book ‘Crime Prevention through Environmental Design’ (1991), is a key resource for crime prevention practitioners in the security industry to assist them in better understanding the relationship between design and human behavior. CPTED, Perry (2013) sees it as a non-reactive discipline. Rather, he describes it as a proactive approach to manipulating the physical environment and producing desired behavior to reduce crime as well as reduce fear of crime. Prior to 9/11, public transport operators paid little attention to crime prevention through environmental design (CPTED), but a survey conducted in 2005 indicated that 80 percent of public transport operators believed CPTED could play a useful role. New construction train stations in the United States and Europe have open spaces that facilitate control, reduce the effects of explosions, and eliminate sources of shrapnel. This has also been initiated in the development of the Mass Rapid Transportation (MRT), where a transit-oriented area (TOD) of Lebak Bulus has been developed which offers various potentials, namely 1.5 hectares of parks and open space. The Pedestrian Center (KBT), which is designed to maximize the convenience of public transportation and encourage the development of integrated transportation within the area, is a multi-purpose area within a pedestrian development radius (350m). The area will be developed according to the principle of vertical development, which will contribute to the creation of open spaces of better quality at the road surface level.

The Center for the Protection of National Infrastructure (CPNI) (2007) explains that a physical attack is likely to involve some form of improvised explosive device (IED). At the Mass Rapid Transportation (MRT) Lebak Bulus, vulnerability to terrorist attacks can be identified based on physical security theory, which includes:

1. Building Design

Security in the form of a physical building/building, doors, windows, fences and other buildings of a private, government or public institution.

Tabel 1



Besides being close to the office center, the Mass Rapid Transportation (MRT) Lebak Bulus also has a strategic location near hospitals, shopping centers, culinary delights, to interesting tourist attractions in Jakarta. The physical design of the building and the integration of security systems are important components of an overall Facility Protection Plan and positive client, visitor and staff experiences. Security design considerations must take into account the requirements of the program and the services offered.

2. Approximately Uncontrolled Areas

Areas that may not be controlled such as parking lots, bathrooms/ WC, workshops, telephone rooms and others. The MRT station whose main function is waiting, getting on and off the MRT train is located in the Transit Oriented Development (TOD) area of Lebak Bulus, South Jakarta. MRT trains (MRT depots). Mass Rapid Transportation (MRT) Lebak Bulus. The main MRT depot is located at the Lebak Bulus MRT, so all MRT control is in the central depot, not the drivers. The MRT driver is only in charge of opening and closing the train doors, so that the control of the MRT, which is at the Lebak Bulus central depot, places the vulnerability to hijackings by terrorists. Surrounded by an acrylic fence with an automatic door (platform safety door/PSD), the passenger train waiting area is comfortable and safe. The marker lights are directly in front of the PSD for high visibility. In our opinion, there is one entrance with its own drawbacks. This is the entrance to Carrefour, which is the center of the crowd. Crowd situations can certainly minimize crime, but in the case of a terrorist attack, this can be an opportunity, as it can lead to anomalous attacks with multiple victims.

2. Portals Vehicles & Pedestrians

The gate for vehicles or pedestrians to enter. The station, which is about 200 meters long and 33.8 meters wide, is an integrated pedestrian crossing bridge (JPO) that connects residential areas around the depot. The area of the passenger platform is 12.45 meters from the road level, and the roof of the station is about 20.9 meters

from the road level. The station, which is integrated with the People's Crossing Bridge (JPO), which connects residential areas around the depot, actually opens up opportunities for terrorist threats due to the lack of security.

3. Barrier

Obstacles which can be in the form of fences, walls, barbed wire and others that can prevent people from entering the building. The absence of extra security, except for security guards, makes the Lebak Bulus MRT easy for terrorists to infiltrate

4. Access by Uncleared Personnel

Entrance used by people who are not employees in a building or area (guests). From the reception area to the platform area, passengers have free access to 6 stairs, 2 escalators and 2 lifts. There are five toilet units available for men, women, disabled passengers and station staff, including one for the treatment room. The station roof panels use zinc aluminum. The station uses a half-height screen door (PSD) platform. This station is also equipped with a special area to drop off prospective MRT users who come with four-wheeled and two-wheeled vehicles.

5. Required Service Access

Entrance or exit that is used for external service needs such as Aqua Cars, Vendor or Partner Cars, Guest Cars, garbage trucks and others. Similar to the entrance, exit access without intensive inspection opens opportunities for terrorist attacks on the Lebak Bulus MRT.

Examination of incoming passengers for the purpose of detection that creates the danger of carrying out terrorist attacks has not yet been carried out a complete examination. The high passenger traffic of Lebak Bulus MRT makes it impossible for the technical security system deployed to inspect all incoming passenger flows. Technically, the Lebak Bulus MRT security service does not allow it to screen all incoming passengers. Public transportation systems such as the Lebak Bulus MRT are likely to become prime targets for terrorists due to the potential for disruption, destruction, and possible escape of perpetrators, due to size, openness, accessibility, lack of identification of passengers, and the number of people carried by the transportation system. Risk prevention and preparedness in the Lebak Bulus MRT transportation system is critical to internal security and requires proper analysis of asset vulnerabilities, clear awareness of criticality, possible countermeasures, and adequate methods to design, scale and optimize protection.

4. Conclusions

The main problem with the MRT central depot being at the Lebak Bulus MRT is that all MRT control is at the central depot, not the mechanics. The MRT driver is only in charge of opening and closing the train doors, so that the control of the MRT, which is at the Lebak Bulus central depot, places the vulnerability to hijackings by terrorists. In addition, there is an entrance that has its own vulnerability, namely access from carefour which is the center of the crowd. Crowd situations can indeed minimize crime, but for terrorist attacks, this actually becomes an opportunity because it can cause extraordinary attacks with a large number of victims. Lebak Bulus MRT's high passenger traffic makes it impossible for the technical security system deployed to inspect all incoming passenger flows, so it is vulnerable to terrorist attacks.

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