



Urban Threat Challenges for Urban Defence

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بسم الله الرحمن الرحيم: " وأعدوا لهم ما استطعتم من قوة و من رباط الخيل ترهبون به عدو الله و عدوكم و آخرين من دونهم لا تعلموهم الله يعلمهم". صدق الله العظيم (سورة الأعراف: آية ٦٠)



ABSTRACT:

Terrorism plays a magnificent role in our modern life now. It is normal now that we hear that an explosive has happened somewhere, a bomb or an exploded car and so on. The world measurements and space designs should be changed, including architecture and urban design, even material properties to be changed. All scientists and designers are rethinking of how? Why? And where? To locate the new settlements and structures to avoid terrorism attack in the future. In a previous paper, a solution was discussed by using GIS computer system to reduce the disasters, but this paper discusses the urban solutions. The Department of Defence (DoD) in U.S.A. and other organizations applied security standards for planning and architecture



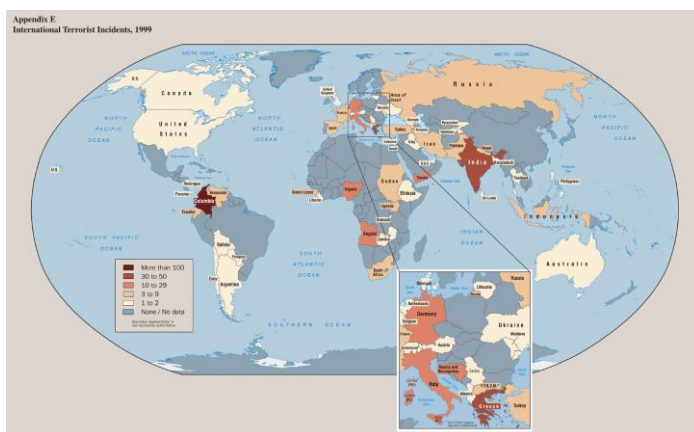
design. They tried to create a new way of design which not prevents, but at least decreases the size of damages attacks.

Last summer we had a terrible attack in Sharm El sheikh. All the Egyptians felt very angry and helpless, as there was nothing to do after the terrible destroy. Again in 2006 we had the same unacceptable experience in Dahab, with three terrorist suicides that exploded themselves to terror people and tourists. Today there is a new way of thinking; we can renew damages by using a new style of architecture and urban design. Now rebuilding and renovation means rethinking in a different situation.

This paper aims to fulfill this new way of urban design. Taking Naama Bay¹ as a case study to analyze these new standards. Propose a solution for our touristic famous city Sharm El sheikh. The result solution can be applied to any area or building, which can be a target for terrorism attacks. Finally this paper should end by a proposed protective, anti-terrorism project in Naama Bay.

INTRODUCTION:

Terror, fear, screaming and tears all combined with blood in Sharm last summer 2005. Red was the master color of the floors, as if Sharm El Sheik was covered by royal carpets of blood. The sun seemed embarrassed to rise the next morning. Tourists standing on lines with their bags like ants trying to survive from a fire. News, magazines and radio chatting about the horrible attack. Unbelievable, every body was talking this night. Egyptians have been shocked asking a lot of questions; Is it real?!! Why the land of peace?!! How this happened?!! Who did it?!! What for?!!!, and so on, thousands and millions of questions trying to understand and think for an answer. The same questions were repeated this year in Dahab's² attack of bombs, again red blood, death, fear and so on. What is happening to us? Why all these terrorism happen in Sinai? What to do? What if?!!! As a researcher, the only thing to



do is to try to answer these questions in a scientific way. Especially the question of: what to do after the threat? As an urban designer it is not easy to answer right away from the urbanism point of view. In a previous research national security has been suggested to be solving by using GIS system, for the fast reactions not to prevent as this is impossible.

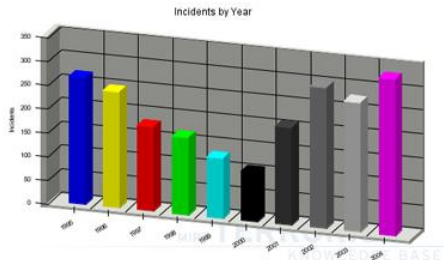
Map (1): Terrorism Global map. (http://www.fas.org/irp/threat/terror_99/752622.gif)

¹ **Naama Bay:** It is a beautiful bay located in Sharm EL Sheik.

² **Dahab:** It means gold; the city of Dahab lays Quara Bay & Ghazala Bay in Sinai.



Any terrorist targets a building or an area conducts an analysis for the area looks for a plan or tactics to be used, the vulnerabilities that can be exploited and the type of weapon to be used for the plan. In a Global terrorism view (See map 1), historically



building are primary targets, (Protecting buildings, 1995) they even are increasing in number of incidents each year as shown in (See graph 1). It shows that terrorism's level has decreased by the end of the 90's and started rising again in 2001 due to a lot of political and economical changes in the world

Graph (1): Increase of terrorism incident.

(<http://www.btcnews.com/btcnews/images/globalterroristattacks2005jpg.jpg>)

Our role here is to understand a terror strategy. Threat as a main issue and a main question for everybody, is the core of this research. To analyze any critical situation, it is important to understand the nature of the criminal and his motives. In our case the star of the show is the terrorist. The research aims in the first chapter to analyze him in most of his ways of thinking and behaviors, to evaluate the threat and rethink of some urban solutions. Chapter two is discussing the tactics of terrorism and how and why they choose a specific target at a certain time. The department of Defence in Washington has suggested some solutions or standards for architectural and urban answers. Also the National Capital Planning Commission in Washington has made a policy of urban design, for physical perimeter security improvements in 2002 which are explained in chapter three. Chapter four is an illustrator to all these suggestions in the form of a minor suggested project, taking Naama Bay as case study applying some of the previous anti-terrorism standards and urban design policies.

1. CHAPTER ONE: A TERRORIST:

Solving critical situations in any circumstance needs first to understand or get to know the person or the client dealing with. In our case here, the client is "A terrorist". This part of the research tries to analyze a terrorist's way of thinking trying to act and design against it. Interviewing Dr. Hanan Salem¹ in May 2006, let us conclude that: terrorism is a gigantic violent action from a person or a group towards a person, group or the society. A terror action has a reaction of insecure and unbalanced environment on the economical, social and political situations. (Salem: 42, 2006)

1.1 Who is a terrorist? According to Pestalozzi's² theory, a human is good and always tends to do the good. Being evil is a result of shutting down all the ways of benevolence in his face. (Zahran: p.16, 1977) A terrorist can do a crime of violence with a political motives pointed to special strategically targets, sometimes they could

¹ **Dr. Hanan Salem:** Professor Assistant in Crime Science, Sociology Department, Ain Shams University.

² **Pestalozzi:** A Psychological scientist who lived in the 19th century. He believed in Jan Jack Rousseau's opinions in rearing...



be a group of terrorists have a religious motive or hired by another country. (El Saied, 2001) A terrorist can be considered as a criminal who has moral, religious and philosophical thoughts. (Deabes: p.22, 1996) A terrorist can be classified under emotional criminal, which is very sensitive to casual emotions like love, jealousy, anger and enthusiasm to a situation or an opinion.

1.2 A psychological approach: The classical school in *Crime Science* was built on the theory of "*Hedonism*". It was explained in Gemy Bentam's¹ book of "*Deontology- the science of Mortality*". It explained that nature put the human being behavior under the control of two basic powers, which are "*pain and pleasure*". Each person lives to achieve the maximum rate of pleasure and the minimum rate of pain. So a terrorist criminal is achieving a kind of psychological pleasure. (Ahmed: p.86, 1969)

1.3 A look: The idea of having special outlook for most criminal has been discussed for eras. Ages ago the Greek philosophies like Sukrat and Aflaton, thought that a crime is based on a soul disease as a result of a biological foible. It may show on his hands, legs and face. (Benham: p.24, 1970) Even in the new era some of the scientists agreed on this idea as Dr. Ditulio² who thought that not only the outlook of a criminal can be foible but also his internal organs. Lumpruzo³ thought most criminal have small unshaped skull, unsystematic teeth, over-sized or tiny ears, long legs and arms and so on. He even could recognize each type of criminal by his look, as small eyes of a robber and a murderer as our case of a terrorist can have a wide cheeks and long jaws. (Deabes: p. 27, 1996)

1.4 Anatomy: A terrorist as a criminal has a psychopathic personality; he may have genetic epilepsy which affects his psychic balance that can cause some kind of madness and abnormal diseases. (Deabes: p. 28, 1996) Sometimes a terrorist criminal has brain inflammation or adrenal glands disorders, which make the "EGO"⁴ control on lusts, are very low. Though the sick criminal acts very selfish and doesn't follow any rules for people or law. (El Kahwagy: P.45, 1984)

1.5 A background: The previous biological thoughts are not acceptable now, as poverty is considered one of the basics items of a terrorist crime. (El Mersafawy: p.30, 1973) And there are also a lot of sick people exist but are not criminals. The social factors that circumstance the terrorist are very important. The terrorist probably came from a poor, neglected segment of society. (Suicide attack, 2006) Since a terror crime is a human character, so his behavior will be a reaction of this character with the surrounded circumstances as ignorance and poverty. (Deabes: p. 33, 1996)

1.6 Behaving: A terrorist as a violent character is full of hatred to all the society even himself. In our case here "*self bombing terrorist*", he is considered a suicide person. Suicide can be defined as; a direct positive or negative action leads to death of the

¹ **Gemy Bentam:** Scientist philosopher, a pioneer of the old classical school of Crime Science.

² **Dr. Di Tillio:** Doctor Scientist, one of the pioneers of the modern anthropological creational school.

³ **Lumpruzo:** The pioneer scientist of the traditional anthropological creational school.

⁴ **Ego:** Is the second part of the character classified by Freud and is the rational part of personality.



person doing the action himself. Actually this person can do anything as before his suicide biologically, his first suicide psychologically by hating life and having intendancy to destroy himself. (Fayed: p.241, 2001) Depression and desperation are the real reasons leading to suicide as shown in (figure 1), not the thoughtful religious motive to be killed for God's sake.

1.√ Helpers: There are several factors helping a criminal to be terrorist like; social, geographical and economical factors. Even Herder said that "Any nation's history is the geographic nature to this nation through eras". (El Kahwagy: p.83, 1984) For example; what helps the terrorists in the last three bombs in Taba, Sharm and Dahab is the mountain topographic area. Also the French statistics showed that there is a direct relation between crimes of abusing, killing, terrorism and high temperature with long day. (Abd El Satar: p.157, 1985)

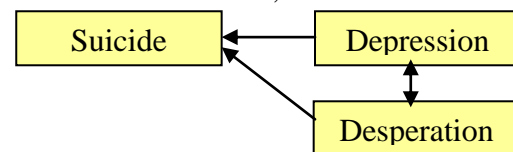


Figure (1): The interaction of depression and desperation.

2. CHAPTER TWO: TACTICS:

Terrorist always have a strategy for their attacks. This tactic concerns kind of weapon, time of attack and the specific target. Bombs have been used to destroy political, financial, touristic, social, and religious institutions. Attacks are always in public places and busy streets so people around are injured and killed.

2.1 Weapon: Terrorists have recently used explosive devices as one of their most common weapons; they have been the most preferable weapon for most of the terrorist globally. (Chipley, 2002) They can be made from common materials found in many places and are highly portable using vehicles and humans as means of transport. They even can be controlled from remote locations or by suicide bombers.

It was explained in the previous chapter, that our client terrorist is a suicide criminal. Usually his attacks carried out with the help of vehicles or explosive materials such as bombs, or both a vehicle loaded with explosives. Finally the strategy of attack that an attacker is killed is; upon impact or detonation. These kinds of attacks such as Sharm's bombs are a planned tactic, by paramilitary groups. In the September 11th 2001, they used hijacked airplanes as the largest suicide weapon and the most destructive too. (Suicide attack, 2006)

2.2 Target: Mostly now in our discussion the favorite targets are civilians, being easier to attack than fortified installations or wary soldiers. The political message of these suicide bomb attacks is glorification of death is potent. (Suicide attack, 2006) This is the greater form of terrorism to be afraid of and try to think of its solutions as will be explained in the next part. Our saved target in this paper was totally touristic. The terrorist in Sharm had their three targets; a hotel, a market and a parking area. Also in Dahab it was a super market and a restaurant.



2.3 Time: All targets are very crowded places in vacations or at rush hours of the city as night time in Sharm El Sheik. In Taba¹ the terrorist chose the sixth of October vacation, in Sharm 23rd of July and finally in Dahab it was Eastern. Time is a major factor as it means more incant population will die.

3. CHAPTER TWO: THREAT CRITERIAS:

Governments are trying to protect their critical infrastructure by taking precautions. Many tools and methodology are been used to provide recommendations and mitigations. In a previous paper it was discussed that the Geographic Information System is used as a tool for security assessment. But from the urban and architecture point of view, the DoD² & GSA³ Anti-Terrorism Standards can be used and incorporated into other systems and security tools.(Chiple, 2002) Our case here illustrating them and choose what we can use in Egypt, to give more protection for our touristic city treasures.

3.1 Anti-Terrorism importance: All national systems and infrastructure are interconnecting. Therefore using these anti Terrorism standards can help to evaluate and save more complicated systems. For example: Last spring particularly in April 2006, the FBI stopped a terrorist attack to the main natural gas line in the ring road of Cairo. They arrested the terrorist union before they explode it. This if happened could affect the whole city of gas supply. Also Dahab's bombs in April 2006 and Sharm El Sheik's July 2005 affected and will affect the next touristic movement in Egypt. "A successful terrorist attack to disrupt or destroy them could have tremendous impact beyond the immediate target and continue to reverberate long after the immediate damage is done" (National Strategy, 2006)

3.2 Protective Standards: The DoD standards were developed to provide a level of protection for everyone to live in a threat environment. They can be used for the high value targets as hotels and commercial areas or critical infra structure. (Protecting buildings, 1995) They have thought of two levels of standards; building's and urban, but from my point of view that both have to be integrated together to achieve the maximum protection. Minimum stand off distances (See figure 2) and building separation are examples of urban standards. Parking beneath buildings and structure isolation are example of architecture standards which can be discussed in another paper (See index I). (Chiple, 2001)

Several American government agencies and commercial companies started new guidelines for developing basic criteria. For example: the {GSA} Public Building Standards {PBS} developed additional guidance than the {DoD} standards to provide initiatives that could reduce the risk of a terrorist attack. (Federal Protective Service, 2006) The suggested case of Sharm El Sheik is discussing the urban standards done by the DoD and how they can be applied in our Egyptian touristic cities.

¹ **Taba:** It is a small town in Sinai near Israeli border.

² **DoD:** The Department of Defence in U.S.A

³ **GSA:** U.S. General Services Administration.



DoD Stand-off Distance

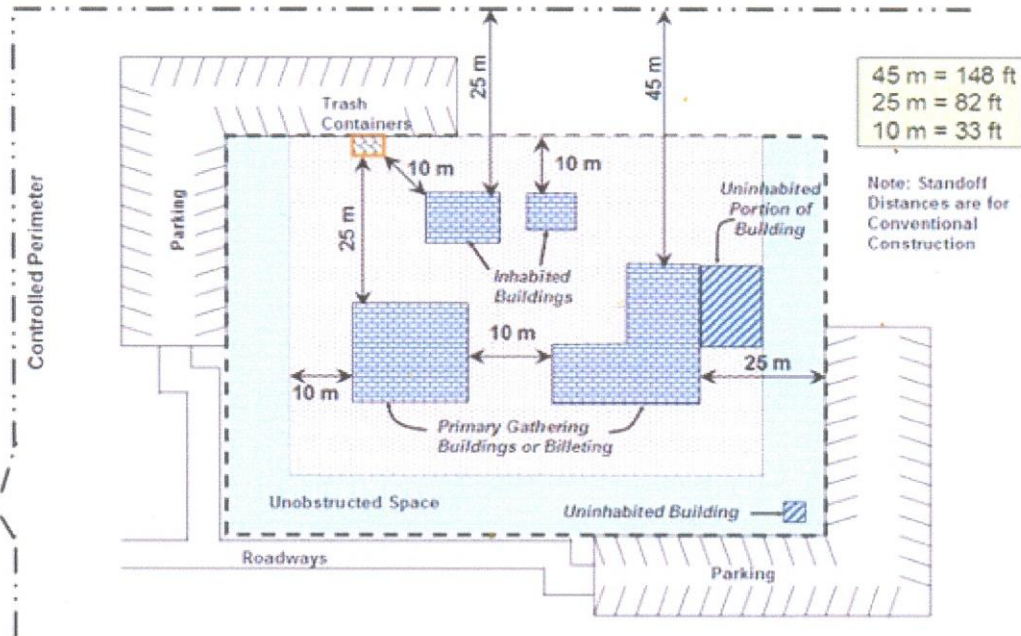
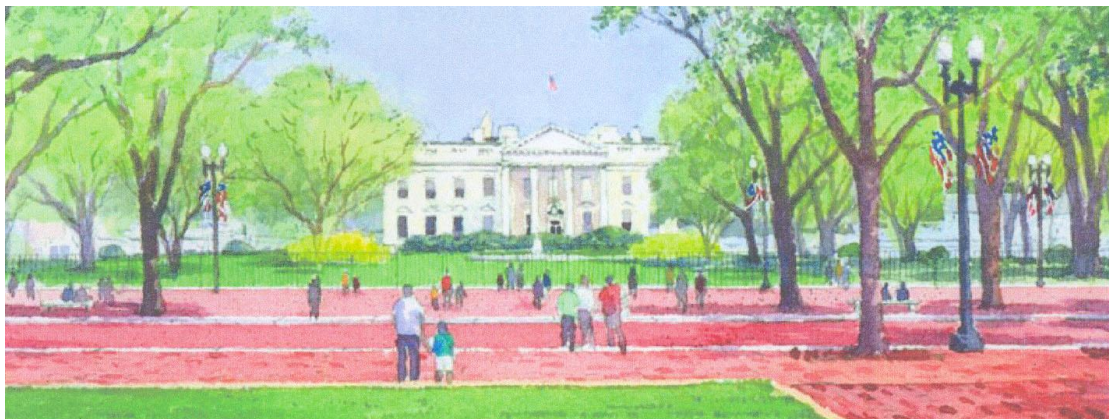


Figure (2): DOD Stand-off Distances. (Chipley, 2001)

3.3 Threat urban design: Elizabeth Miller¹ served a new security plan for Washington, D.C. The central theme of this urban design and security plan is that “*Good security and quality urban design are not incompatible, and when done right the security components can greatly enhance the urban environment in which they are located*”. (NCPC-Press release, 2004) This design is the latest security thought in U.S. for protecting building and lives and was adopted by the Commission on October 3, 2002. (National Capital, 2002) Urban design was suggested as a solution for Washington, due to its historical unique architecture (See sketch1).



Sketch (1): The National Capital Urban Design and Security plan. (National Capital, 2002)

¹ **Elizabeth Miller:** A senior community planner at the National Capital Planning Commission in U.S.



It develops solutions that provide efficient protection without marring beauty and historic urban design of U.S. capital. Our case in this paper “Sharm El Sheik” can benefit from this trial, and also considered a unique touristic city with natural urban design.

3.3.1 Threat urban design elements: Urban design for security offers a wide range of landscape and streetscape elements that when hardened can work as a protector to a building or any other structure from explosive vehicles particularly. (National, 2002) Protective urban elements can be;

- Specially designed bollards.
- Benches.
- Lampposts.
- Trash receptacles.
- Bus shelters.
- Guard booths.
- Plinth walls. (NCPC-Press release, 2004)



Photo (1): Security elements. (The National: p.1, 2002)

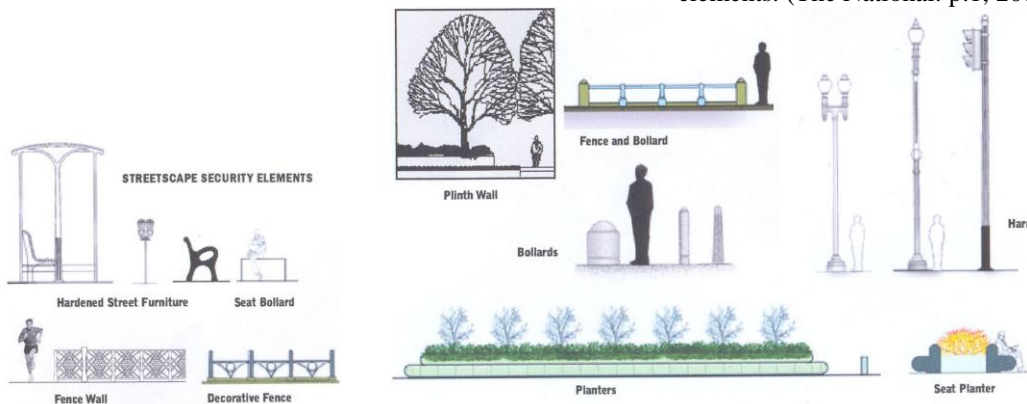


Figure (3): Landscape elements after hardened to provide security.

3.3.3 Threat urban design policies: Urban threat design policies are used widely in U.S. now and can be spread to solve security problems in the whole wide world. From these policies that any urban design and security plan should provide perimeter security (See photo 1) against the threat of bomb vehicles. It is made of hard material metals, granite and reinforced concrete and requires an installed foundation; it helps the facility managers to find their protective needs with appropriate urban design solutions. Expands the variety of landscape street furniture to provide curbside security (See figure 4). Finally, it offers a program of security and urban design beautification. (National, Policy, 2002)

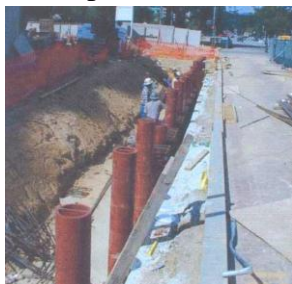


Photo (2): Security perimeter foundation. (The national: p.7, 2002)

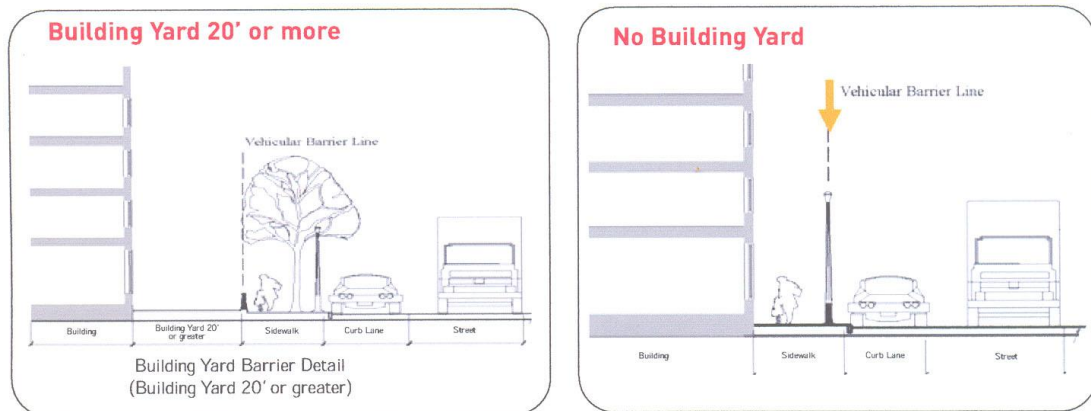


Figure (4): Building curbside security details.

3.3.4 Tiger trap system: This creative system is an intelligent solution created by Rogers Marvel¹ Architects and Rock Twelve Security Architecture. The idea is placing under the security perimeter, a material strong enough to hold foot traffic, bikes and any other item used in pedestrian walk way. If a vehicle drives to this material, it collapses and trapped into this material below. This solution is amazing if tried on public places or pedestrian areas. (The National: P.6, 2002)

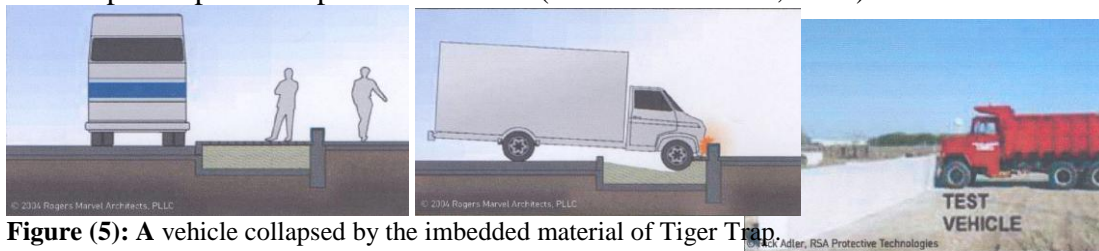


Figure (5): A vehicle collapsed by the imbedded material of Tiger Trap.
(The National: P.6, 2002)

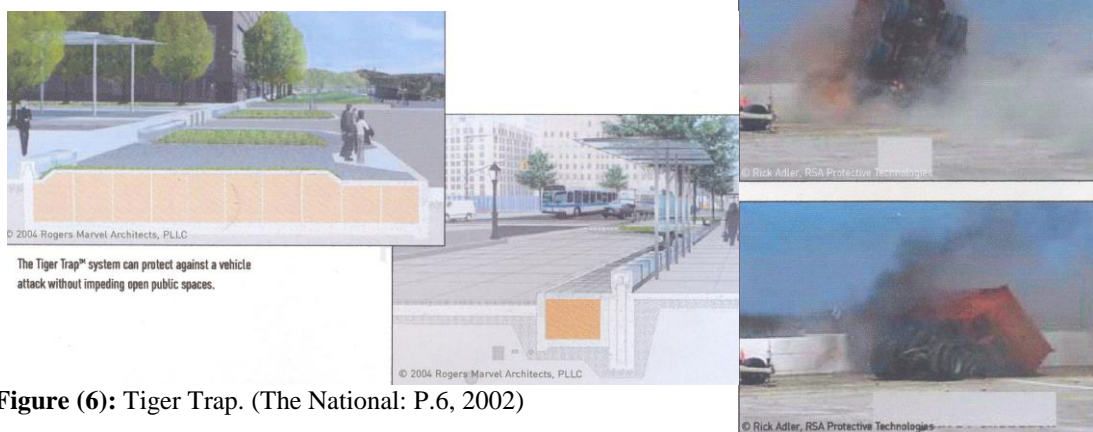


Figure (6): Tiger Trap. (The National: P.6, 2002)

Photo (3): A Real test for a large vehicle trapped in Tiger Trap.
(The National: P.6, 2002)

¹ **Rogers Marvel:** He is a famous American architect who works in N.Y. City.



4. CHAPTER FOUR: NAAMA BAY SUGGESTED ANTI-TERRORISM URBANISATION:

Here is choosing all information we need for the suggested anti-terrorism urban design in Naama Bay. This chapter actually is considered the conclusion of the research. Understanding that we are dealing now with a criminal of totally different psychopathic personality; he can do anything, has no fear or respect to any law or person, has a suicide intendency to achieve his only pleasure of pain and kill as was explained in the first chapter. Civilians and crowded places in Naama Bay; hotels, casinos, cafés, diving centers and all touristic activities are considered main target for terrorism attacks. Understanding the most preferable weapon for the terrorist, which is the bomb, or vehicles loaded with explosives.

4.1 Sharm's securing strategy: The Anti-terrorism, urban design suggested plan can provide new policies and standards for extra protection in Sharm El Sheik;

- First we have to be un-fearful of this ignorant terrorist criminal and pay extra thinking of unimaginable expectations with our science and technology.
- An analysis for approaching vehicles should be studied for Naama Bay main roads.
- Give extra care in our urban design security plan to the targets of attacks.
- Give attention and extra care to over secure in the time of vacations and feasts.
- Study the destruction that can happen to all buildings and make a rescue plan for any collapse.
- Choose what needed from the DoD standards (Chiple, 2001) and use them in Naama Bay's high value targets as hotels and commercial areas like;
 - ✚ Minimum standoff distance for new constructions and re-modernization of existing ones.
 - ✚ Building separation in the designing architecture and urban concepts especially in the crowded area of markets and close coffee shops. In case of any explosive people will be staggered and we will have less victims.
 - ✚ Access roads after analysis of traffic and walkways.
 - ✚ Parking beneath buildings or on roofs unless it is not accessible we can put it in appropriate distances.
 - ✚ Exterior masonry walls if needed as done in Washington D.C.
 - ✚ Under building access from the access roads so in case of an important building bombs collapses, there would be a way for entering and saving more victims.
 - ✚ Drive-up/drop off areas far from the buildings, so no vehicles come close to it. People and luggage in hotels can be transferred by internal transportation for the hotel.
- Use hardened landscape on streets and public areas.
- Try the creative solution of Tiger Trap materials under the pedestrian areas inside Naama Bay, between shops and cafés.
- Use the new security perimeter around extra valued places, we can design a beautiful cordon and use it as a beatification element.

4.2 Naama Bay's Anti-terrorism analysis: Notice the satellite image of Naama Bay (See photo 4), it shows the compact design of the hotels and all activities on the



beach, collected all on one main vehicle road. This compact design gave a big opportunity for the terrorist attack to destroy and kill the maximum construction and civilians. Trying to achieve the suggested policies in the previous point is an urban design plan to locate the proposed strategies. Taking a closer look in (map 2), the main road joining the big hotels was the only access for the explosives' vehicles.



Photo (4): A satellite image of Naama Bay (Quality Standard, 2006)

- Main roadway.
- Beach walkway.
- Access roadway.



Map (2): Detailed map for Naama Bay. (Military Survey Department, 2006)

Taking a part of the main road (see figure 7), to analyze vehicles approach to main buildings. Security decisions taken are by analyzing the velocity of cars in this road. In the main road at night time, velocity of cars, speed of approach are slow, so bollards and perimeter security elements can be used according to the vehicular approach to the buildings. The analysis shows the possible angles the vehicle can approach the building as the worst angle is the perpendicular impact, trying by landscape elements to avoid these perpendicular angles by reducing the speed of vehicles and make curves for entrances.

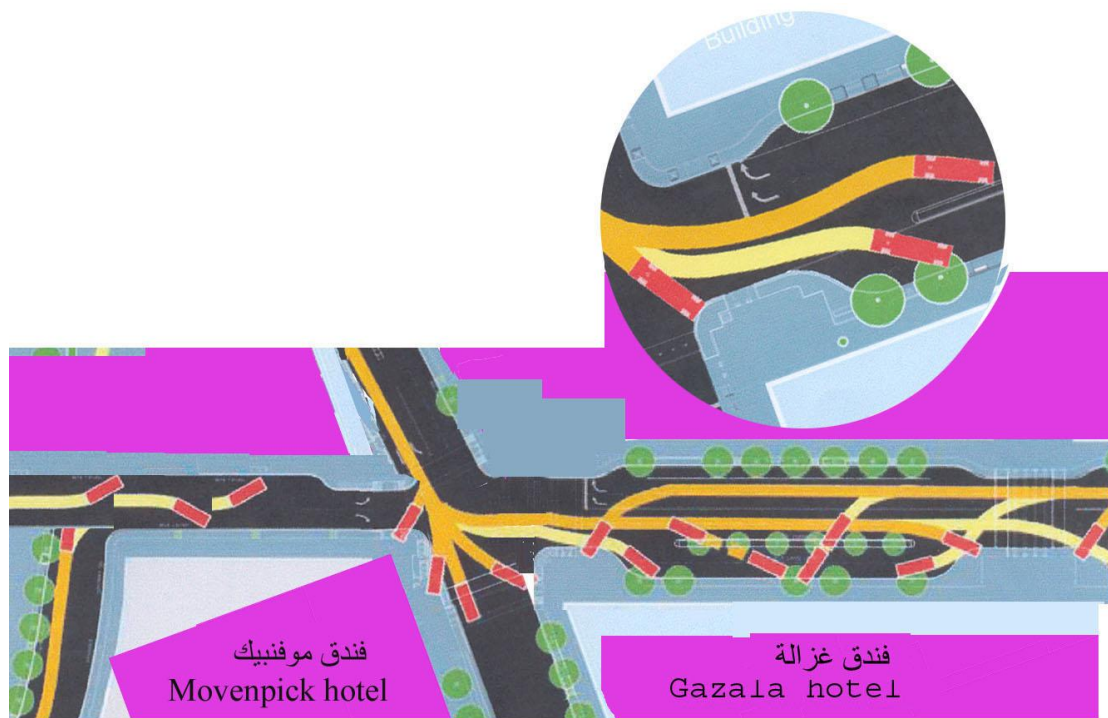
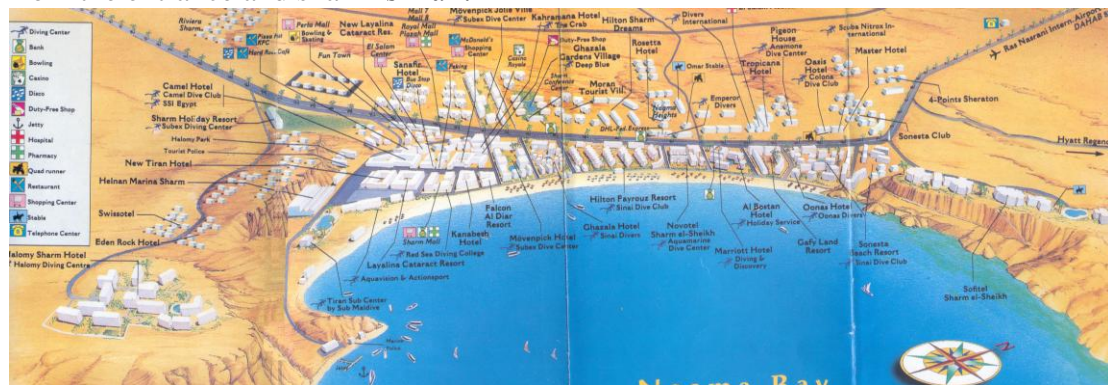


Figure (7): studying the speed and angles of approach of vehicles in the main road of Naama Bay.

Vehicle approach.
Vehicle.

4.3 Naama Bay's Security plan: Looking to the urbanization plan of Naama Bay (Map 3). Notice the compact of buildings on the sea shore on one main road so all entrances is from this side. This was the easy way for terrorist to attack Ghazala hotel from the entrance and sharm's mall.



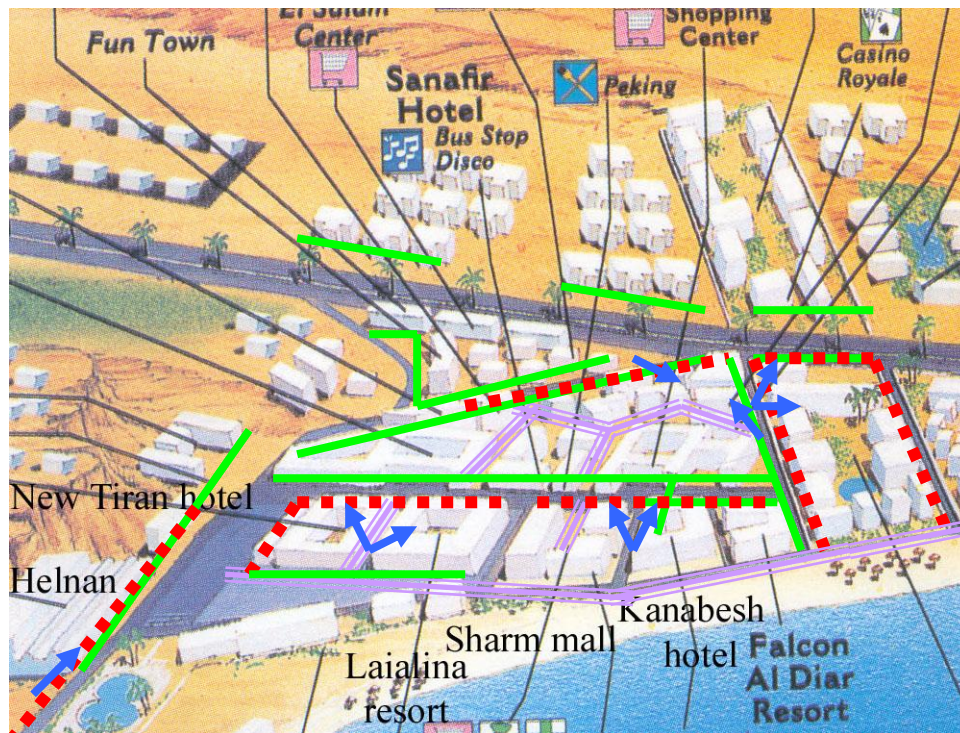
Map (3): Naama Bay existing urban design plan. (Sinai, 2005)

By dividing constructing the anti terrorism plan of Naama Bay into **3 phases**, because Naama Bay is very busy all year and working in roads and construction will bother the tourists.

4.3.1 Phase one: From the entrance of Naama Bay from the south side, starting with Helnan Marina Sharm hotel, shopping areas, and hotels in the area and till Movenpick hotel. It is difficult in this situation of full urbanism to demolish any of the working buildings and separate them, but in new areas can be used. The solution is to work on

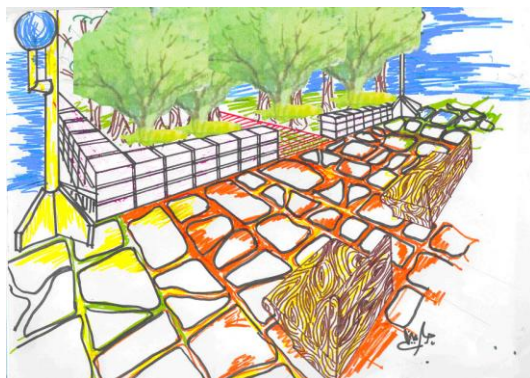


the plan as it is and start to dig some authorized access tunnels for the important buildings and hotels, in case bomb collapse of a building there would be an access to save people. Landscape elements which were discussed before can be hardened and used on the main access vehicle roads to work as a protector. Security perimeter will be built under the hard-scape in most of the surrounded roads, especially the main roadway as it has the maximum speed and the highest vehicle velocity, and there is no need for beach side. Tiger trap system is used in all pedestrian walkways, the beach walk and as a barrier between any parking and a pedestrian. Taking in consideration all the discussed policies which are difficult to be shown on this scale. All policies will be repeated for the three phases as shown in maps (4, 5& 6).

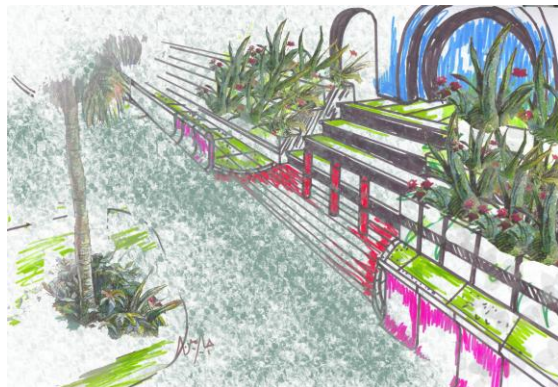


Map (4): Security planning & urban design for Naama Bay, PHASE1.

- ■ ■ Security perimeter.
- Hard landscape.
- Tiger Trap underground material.
- Underground building access



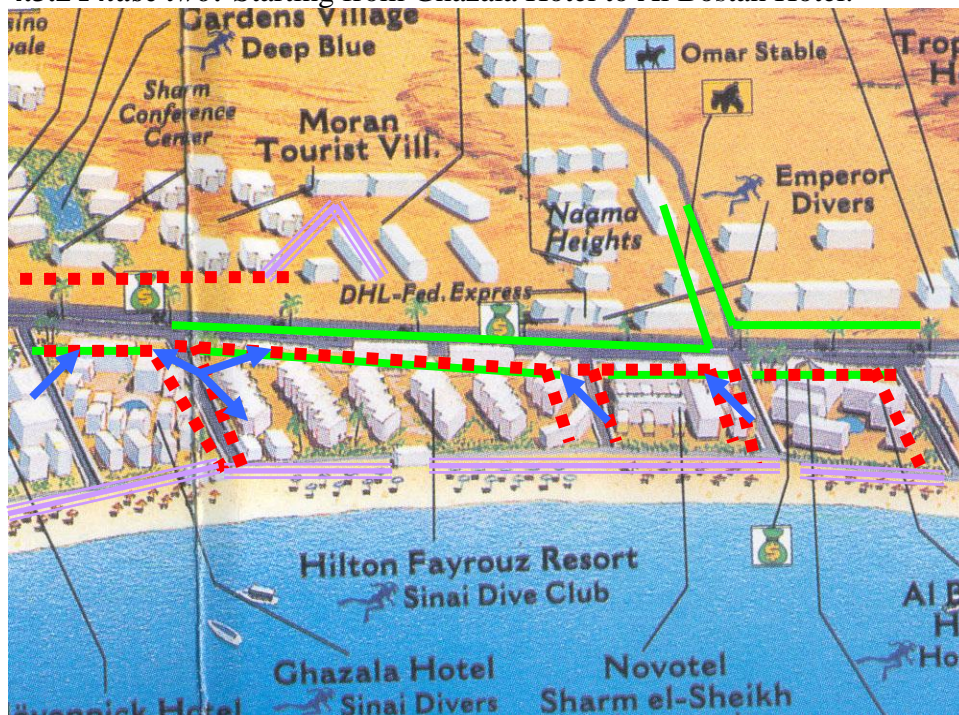
Sketch 2: Hardened the mall landscape.



Sketch 3: Security ideas of Ghazala entrance.

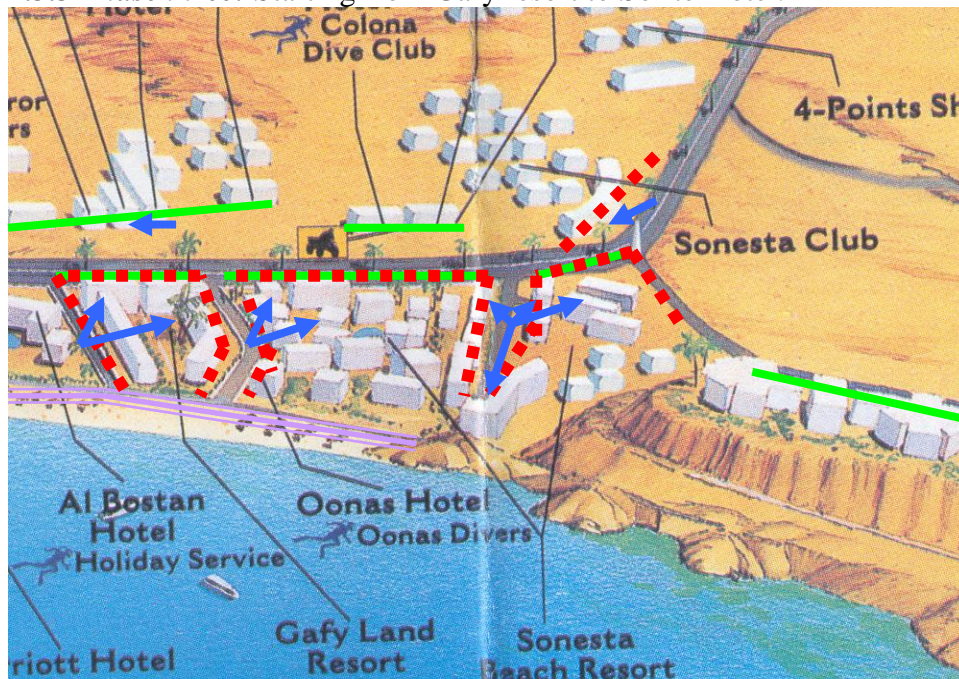


4.3.2 Phase two: Starting from Ghazala Hotel to Al Bostan Hotel.



Map (5): Security planning & urban design for Naama Bay, phase 2.

4.3.3 Phase three: Starting from Gafy resort to Sofitel hotel.



Map (6): Security plan for Naama Bay, phase 3.

Finally, this is a tiny trial from your colleague Germin Elgohary, hoping one day it may help someone to live. Sailing in the sea of knowledge, no ships or beaches but at least a hope star far away, to survive in a better environment, with no blood, no fear, no tear and **NO TERRORISM**.



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INDEX I **INDEX I**

DoD Minimum Antiterrorism Standards for new and existing buildings (Chiple, 2001)	
Standard 1	Minimum standoff distances.
Standard 2	Building separation.
Standard 3	Unobstructed Space.



Standard 4	Drive-Up/Drop-off Areas.
Standard 5	Access Roads.
Standard 6	Parking beneath buildings or on roofs.
Standard 7	Progressive collapse avoidance.
Standard 8	Structural isolation.
Standard 9	Building overhangs.
Standard 10	Exterior masonry walls.
Standard 11	Windows and glazed doors.
Standard 12	Building entrance layout.
Standard 13	Exterior doors.
Standard 14	Mailrooms.
Standard 15	Roof access.
Standard 16	Overhead mounted architectural features.
Standard 17	Air intakes.
Standard 18	Mailroom ventilation.
Standard 19	Emergency air distribution shutoff.
Standard 20	Utility distribution and installation.
Standard 21	Equipment bracing.
Standard 22	Under building access.
Standard 23	Mass notification.
Recommendation 1	Vehicle access points.
Recommendation 2	High-speed Vehicle approaches.
Recommendation 3	Vantage points.
Recommendation 4	Drive-Up/Drop-off.
Recommendation 5	Building location.
Recommendation 6	Railroad location.
Recommendation 7	Access control for family housing.
Recommendation 8	Standoff for family housing.
Recommendation 9	Minimize secondary debris.
Recommendation 10	Structural redundancy.
Recommendation 11	Internal circulation.
Recommendation 12	Visitor control.
Recommendation 13	Asset location.
Recommendation 14	Room layout.
Recommendation 15	External hallways.
Recommendation 16	Windows.