EXAMINATION AND RECOMMENDATION OF DESIGN OF THERAPY CENTERS' EXTERNAL SPACES WITH PASSIVE DEFENSE APPROACH

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ABSTRACT
Iran due to its specific geographical situation and having access to oil has a specific military and political importance in the region. Passive defense is a topic that its role is much more prominent in the current situation of our country. Defense is essential for human survival and providing security. In this study, it has been tried to process the architectural design principles of external spaces of therapy centers, including: location of hospitals, hospital entrance, parking and air connection and helicopter with passive defense approach. Because hospitals are the most important centers that can provide services to injured in times of crisis, and this will not be possible except when these spaces can be less damaged in case of danger and perform their duties properly as possible. For this purpose, analytical-descriptive method and field studies will be used to investigate the role of security in external space of the therapy centers. Finally strategies to design a therapy set will be presented in order to reduce the vulnerability of human resources and improve security by taking advantage of the fundamental concepts of passive defense.

Keywords: passive defense, security, hospital, defense, damage

1. INTRODUCTION

1.1 Problem Statement:

Security is a social issue and is considered one of the consequences of communal living. In other words, security makes often sense associated with phenomena and other people. At the national level, security has a concept beyond survival and protection of the country's nature (civil defense committee, work of study and research group, 2011: p. 12). The most important need in terms of spiritual is security that is considered as the most important purpose of life and the essence of mental health (Fromm, 1981: p. 11).

According to Maslow (1968) when the physiological needs are met, the people consideration will be immediately focused on the meeting and satisfying the higher-level needs such security. These needs are tightly and severely related with social and physical abilities of the environment (Salehi, 2008, p. 22). Passive defense means defense with minimal management or inactive defense. Impassive defense is a reactive and reflexive movement; so in case of surprise, passive defense must inherently be held accountable (Asgharian Jedi, p. 1386).

Hospital is a medical institution that delivers services using the facilities of diagnosis, treatment, and health care, educational and research to treat and improve inpatients and outpatients. Hospital is the most important unit of services provider in the therapy network of the country and has at least 32 inpatient beds. It should be noted that units that have less beds and their inpatient services are provided on a temporarily are called inpatient treatment centers (Safe Hospital, 2014, p. 48).

A safe Hospital is a hospital that would not destroy at the time of accident, and against the disasters, and the patients and employees to be damaged at least. In critical situations that needs the hospital more than
any time; safe hospital can continue to its activity and provides the health services as important community-based facilities. The aim of safe hospital design is to increase the knowledge and to make effective changes in order to protect the lives of patients and health workers against disasters by ensuring about the reversible structure of health facilities, and guarantees the risk taking reduction for health employees and institutions through crisis management and creation of passive defense projects. (Safe Hospital, 2013: p. 42).

1.2 Research Methods:

Due to research topic that is the examination of the external spaces of the hospital through passive defense approach, in the research method we require a method that can cover all dimensions of the topic. Therefore, research method in this section will be descriptive - survey. The method of gathering information in the descriptive section is library and in the survey section is field.

1.3 research questions:

The main question of this study: What are the strategies of suitable design for external spaces of health centers with passive defense approach?

Secondary question: to answer the main question we should know, what is the position of external spaces of the hospital for passive defense? And how passive defense affect the design of external spaces of hospital? What are the main criteria of passive defense for the hospital spaces?

2. RESEARCH THEORETICAL PRINCIPLES:

2.1 Categorization of hospitals in terms of level, volume and type of services

2.1.1 Public Hospital (multi-specialized):

These hospitals provide a diverse and wide variety of specialized and ultra-specialized services. They must include at least quad clinical departments including internal inpatient portion, surgery inpatient portion, gynecology inpatient portion and pediatric inpatient portion with specialist physicians and laboratory, pharmacy, radiology, emergency and nutrition portions are all essential components of them.

2.1.2 Specialized hospital (single-specialized)

Single specialized hospitals which are also known as specialized hospitals are provider of diagnostic, care and therapy services in terms of specialized and comprehensive for one or more specific group of patients. In fact, the specialized hospital will only work in one or more medical specialized or subspecialized fields (safe Hospital, 2013, p. 50).

2-2 Locate and select hospital sites:

The establishment of any urban element in the specific spatial - physical position of the city follows specific principles, rules and mechanisms that observing them will increase functional success and efficiency of that element. So to achieve a balance in the spatial distribution of resources and serving is the aim of planners. In planning, a balanced distribution requires locating, resources and facilities so that people under support can easily benefit from its services.

Since the locating hospital will have a direct impact on its pattern and performance, attention to it in different plans and projects is important. So that the establishment of a hospital in inappropriate places
not only will not have the desired efficiency by itself but can have a negative impact on the country's health network.

Until two centuries ago the only factor affecting the construction of hospitals had been religious beliefs. Investigation of the nineteenth century of hospitals in France shows that only difference of hospitals with churches had been in their names. In Iran, some hospitals have been made regardless of social conditions and other factors affecting the places that benefactor was intending. Its result is disturbing the rational distribution system of hospital beds and undesired performance of the hospitals.

After the Industrial Revolution and the impacts of ideas of that time sociologists such as "Harvard", hospital building was existed from the absolute realm of religion and was converted from a public charity institution to a set for the delivery of healthcare and educational services. Finally, the authorities concluded that the hospital is not separate and isolated building and proper locating can manifest it in the social environment as a healthy environment for mental and physical relaxation.

With a holistic view of the country's hospitals, it becomes clear that some of them face with problems such as difficult access and inappropriate, failing to meet the needs of spaces under support by not observing some basic principles on locating. This will lead to lack of desired services and patients' dissatisfaction. So identify basic indicators and criteria in locating and determine the location of hospital construction is very important and should be considered in the planning of hospital (ibid., P. 53).

2.3 Criteria and guidelines of choosing the land of hospital and therapy centers:

Based on the directives Vice President of Strategic Planning and Monitoring Directives, non-educational hospital beds' capitation has been declared about 44 to 85 square meters based on the proportion to hospital's Arfaeiat, number of beds and etc. The infrastructure defined for limited surgery centers has been considered about 444 to 544 square meters based on the area of spaces required and essential joints. Peripheral spaces of hospital such as specialized physicians pensions, patients' concomitant house, police force and sentry chambers, buffet and cafeteria, and etc., will allocate about 14% of the basic infrastructure to themselves (Criteria of designing hospital and therapy centers, 2012, p. 11).

2.4 indicators and criteria affecting the locating and selecting Hospital's site:

<table>
<thead>
<tr>
<th>Table 2.2: Indicators and criteria affecting locating and selecting the hospital site</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Row</strong></td>
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<tr>
<td>--------</td>
</tr>
<tr>
<td>1</td>
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<tr>
<td>2</td>
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</tbody>
</table>
### Development Plan and Redundancy Principle

Land for construction of hospital shall be selected in a way that provides the possibility of the development and expansion of these centers in the future. In other words, prediction of storage space for future expansion of these centers to be possible. Experience has proven that every hospital requires expansion and development every 11 or 15 years.

### Infrastructures and Infrastructural Installation

Hospital locating of the infrastructure should be made so that if part of it is destroyed, there must be the possibility of rapid restoration of the infrastructures and/or if necessary, the possibility of required branching of these infrastructures in order to maintain hospital serving. Some of these basic infrastructures that can be noted are water and sewage system, gas, electricity and telephone. Also the possibility to create a telecommunication networks, elimination of blind spots of mobile phone and radio waves, the possibility to communicate wireless and satellite systems, access to water for industrial use, the possibility of disposal of waste and wastewater industries, etc., are also put in this group.

### Economic Indicator and Cost Estimation

Switching the location with the least cost for the relating organizations and institutions.

### Cultural Indicator

Psychology knowledge due to the nature of applied, in the examination of the causes and motives of social and individual behavior of citizens can significantly help to choose the best urban space for the construction and establishment of the centers.

### Geographical Location

Geographical location and climatic characteristics of the target location should provide all the needs of a hospital in critical and normal conditions. On the other hand, its negative impact should be studied and examined, and to be considered in therapy center planning.

### Physical Characteristics of Lands

Some of these factors have been identified as the potentials of design and others will lead to restrictions in the plan. Some of these cases that pointed out are factors such as soil type, land topography, located in the main faults and floodwaters, located in landslide or avalanche route, located in rivers, the existence of natural and artificial effects, groundwater levels and so on.

### Area and Dimensions of Land

The land is suitable for hospital that is appropriate with its need in terms of dimensions to be able to provide enough space to build a hospital according to capita, as well as having adequate spaces for other welfare and services users for different groups. Land should be large enough in order to rotate the building and to locate in the best geographical direction.

### Geometry of the Land

Suitable land geometry in order to facilitate layout of the entry and exit routes, location and the way of placement towards the surrounding streets and passages and how the placement of full and empty spaces towards each other will be effective. Lands that provide the possibility of east-west expansion have more priority in selecting hospital location.

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Location of construction hospitals should not be placed in adjacency and proximity of the following users. If there is limitation, an announced minimum distance to be observed. It should be noted other troublesome users in recognizing the professional group should be identified and taken into consideration.

**Table 3.2: Minimum distance of therapy centers from neighborhoods with inappropriate user**

<table>
<thead>
<tr>
<th>Row</th>
<th>User</th>
<th>Minimum distance from therapy centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Industrial factories and workshops</td>
<td>The minimum distance of 200 meters</td>
</tr>
<tr>
<td>No.</td>
<td>Entrance Types</td>
<td>Explanations</td>
</tr>
<tr>
<td>-----</td>
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<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2</td>
<td>Gas station and other similar centers</td>
<td>The minimum distance of 200 meters</td>
</tr>
<tr>
<td>3</td>
<td>Military garrison (with the exception of military therapy centers)</td>
<td>The minimum distance of 1000 meters</td>
</tr>
<tr>
<td>4</td>
<td>Airport</td>
<td>The minimum distance of 200 meters (from flight band and path)</td>
</tr>
<tr>
<td>5</td>
<td>Main terminals of train, bus and truck</td>
<td>The minimum distance of 500 meters</td>
</tr>
<tr>
<td>6</td>
<td>Police station and police force</td>
<td>The minimum distance of 200 meters</td>
</tr>
<tr>
<td>7</td>
<td>Radio and television and telecommunication masts and stations</td>
<td>The minimum distance of 300 meters</td>
</tr>
<tr>
<td>8</td>
<td>Schools and related educational spaces</td>
<td>The minimum distance of 100 meters</td>
</tr>
<tr>
<td>9</td>
<td>Gyms</td>
<td>The minimum distance of 200 meters</td>
</tr>
</tbody>
</table>

Source: Safe Hospital, P. 58

2.4 Entrances of Hospital site:

Hospital site entrance plays an important role as the first canal to access hospital site. In this regard, in order to increase the ease, reducing interference in performance, and enhance the quality of serving it is necessary to consider separate entrances for different functional areas of hospital site by maintaining the safety and security tips. Mentioned entrances are related to the hospital site and should not be confused with the entrances of the hospital building. Some of these entrances are as follows:

<table>
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<tr>
<td>1</td>
<td>Main entrance of Hospital</td>
<td>The important entrance that provide the main relationship of the hospital with the spaces outside of the site. Embedding this entry is mandatory in all hospitals. Hospital main entrance has necessarily two separate entrances for pedestrians and vehicles. This entrance by preparation of routes can provide the relationship outside the set with other hospital building entries of such as independent entrance of some diagnostic and therapy spaces such as clinic, laboratory, ... (Management domain entrance, educational domain entrance, services entrance, accommodation spaces and pavilions entrance, and parking entrance. only emergency entrance at the site cannot be integrated with hospital main entrance and must be programmed completely separate. dimensions of this entrance should be planned and designed for commuter of variety of light and heavy vehicles.</td>
</tr>
<tr>
<td>2</td>
<td>Emergency entrance</td>
<td>In addition to the main entrance of the hospital at any hospital, preparation of emergency entrance at the hospital site is required. In addition, the access road and entrance to the emergency department should be completely separated from other entrances of passages. This entrance also necessarily has two separate entrances for pedestrians and vehicles. Appropriate access from the main passages around the site should be provided in the emergency entrance design, and to be determined away from traffic jams, crowded neighborhoods, narrow passages and any factors that lead to the disruption and delay in providing emergency services.</td>
</tr>
<tr>
<td>3</td>
<td>Clinic entrance</td>
<td>This is recommended in polar and regional hospitals that the volume of hospital services is significant to avoid interference in performance and increase efficiency. Separate entrance for clinics set from hospital site to be considered. This entrance also necessarily has two separate entrances for pedestrians and vehicles.</td>
</tr>
<tr>
<td>4</td>
<td>Parking entrance</td>
<td>Parking planning is different in different hospitals. In some due to Parking land constraints has only the possibility to serve management, emergency, and medical groups. There may be also the possibility to serve to patients and visitors in some hospitals. It is recommended parking entrance to be separate from the main entrance of the hospital in the site. The dimensions of the entrances should be planned for commuter of variety of light and heavy vehicles.</td>
</tr>
</tbody>
</table>
Increasing the safety and comfort in hospital routes and avoiding congestion and interference in performance for the separation of performance, it is recommended separate entrance to be considered for service and support domain. Of course, in small hospitals usually these entrances are integrated with parking entrance. If parking entrance is not anticipated, the main entrance of the hospital can also be used in this regard. Dimensions of these entrances should be planned for commuter of variety of light and heavy vehicles.

Hospital must also be designed for rainy conditions and provide their services without interruption in these circumstances. In this case, the usual entrances can be used for a specific purpose. In addition to the usual entrances, embedding an emergency entrance is also required to connect the external part of the hospital site to the hospital building. This path must be designed based on the minimum safety standards for the rainy conditions that in case of damage to other communications sites in the rain time, this entrance and its specific path can provide an access to the site to transport the injured to relevant sections. Also arrival of rescue vehicles such as firefighting vehicles can also be done via this entrance. Of course, in any case emergency entrance should also have the possibility of commuting rescue vehicles. Dimensions of these entrances should be planned for commuter of variety of light and heavy vehicles.

Source: Safe hospital, Volume 11, pp. 69-67 by the author

To reduce the vulnerability of full important infrastructure and structures of operational against weapons of the enemy, usually transferred them to the proper depth of the ground, and the is only way of communication of these spaces with the outside world, inputs and outputs of them that in case of their damage, cut off communicating with the outside world and individuals and equipment are locked within a secure environment (Akbarpoor, Hosseini, Bita) that in the this case can be prevented dramatically by creation of barriers and knees of 90 degrees from entrance of explosion waves.

2.6 Parking:

The hospital is one of the centers that for referring many people to that, needs to parking predict in necessary amount. Based on the criterion of the parking surface in health users in the most comprehensive urban plans, the allocable area to the parking is up to 30% of the area of total field. This is despite the fact that 30 percent also to green space and the remaining 40% is related to occupancy surface of the hospital building in the ground floor.

2.6.1 Types of parking in the hospital:

In general in a public hospital can be estimated per capita number of parking required for all individuals and groups per bed of hospital at about 2.5 numbers that must be embedded both inside and outside of the hospital site. Parking types include:

| Table 5.2: Types of parking in therapy spaces |
|----------------|-------------------------------------|
| row | Parking type                                      | Explanations                                                                 |
|-----|--------------------------------------------------|
| 1   | Parking physicians                                | Embedding of a parking within the site is required per a physician           |
| 2   | Parking non-physician employees                   | Among these individuals can be noted technicians, nurses, administrative, finance, and engineering and services personnel. Embedding of 1 parking for each 2 forces is sufficient. If there is no possibility of planning of this parking on the site, should be provided facilities required to park cars of this group in outside of site. |
| 3   | Parking cars belonging to                         | Each of hospital according to the type, level and volume of services has personal vehicles. Among these instructions can be noted to ambulance, passenger cars, and |
Table 6-2: Types of helicopter pad

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<td>One of the common methods to prepare a helicopter pad is establishing on the ground in hospital area. This method is more cost-effective due to using building complex systems and ease in implementation. The designing of helicopter pad in the ground is done in two ways: Establish on an extended area Establish on a small areas</td>
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<td>Low-height platform is other method to prepare helicopter pad which is used in the hospitals with limited space. These platforms are designed in concrete and steel structures. The height of platforms are in two category: The platform with height lower than 3 meters The platform with height more than 3 meters</td>
<td>On a low platform in the area 2</td>
</tr>
<tr>
<td>Establishing helicopter pad on the roof has some limitation in future construction and the airlines lack of physical barriers reduce the environmental effect on medical centers. One of the advantage is proper access to hospitals. The distance between helicopter pad and vertical and horizontal routes is low. In this method, a square 25 meter of a circle with 35 meters of diameter is needed.</td>
<td>On the roof of hospital 3</td>
</tr>
</tbody>
</table>

Resource: Safety Hospital, Page 100-111 by Author

2.7 Air connection and helicopter pad:

Air emergencies is among the most important strategies that in the rainy conditions can be effective that in the accelerating the emergency services. Air connection is typically done by a helicopter. Including the facility air connection can be noted to place of takeoff and landing of the helicopter (helicopter pad), access routes, employees of flight (flight groups, groups of flight, flight service groups), physical spaces service and support and so on. In this regard, the appropriate design of helicopter pad is very important.

2.7.1 Helicopter pad types:

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2.8 principle of passive defense:

The major principle of passive defense includes 1. Choosing safe areas in the geography of the country 2. Determine the optimal scale for population establishment and activities in space / 3. Dispersion in the

1.8.2 Proprietary principles of passive defense in therapy buildings

1. The establishment of a building in the safety area/ 2. Being safety place for whole of building / 3. Enjoyment of safe spaces and adequate equipment to increase the capacity to accept emergency patients at normal conditions until at least 2 times / 4. Construction of safe warehouses for storage of medicines and equipment emergency / 5. The possibility of rapid evacuation in emergency situations, including appropriate exit options and legible and quick access to all parts of the hospital to the emergency exit / 6. Easy access to main transport links of the urban / 7. Accessibility of quick and easy traffic of rescue vehicles in the hospital / 8. Existing the transport parking of light and heavy transport / 9. Having the helicopter landing site / 10. Index and being visibility (visibility) inputs (Hosseini, 2007: p. 23).

2.8.2 The major functions of passive defense:

According to the definition and by using the concepts presented, different functions can be recognized for passive defense. So chart below has been extracted from its definition:

Figure 1-3: Major functions of the passive defense (Eskandari, 2012, p. 35)

2.9 vulnerability in buildings

Damages caused by military attacks (bombardment) and Sabotage (bombing), in urban areas and mainly consisted of two groups: Physical damage (buildings, infrastructure and equipment) and criminal damages. Its physical damages consisted of two categories: 1. Initial damages: all damage to be imported immediately after the performance of a conventional explosive system. 2. Secondary damages: the intensification and expansion of the scope of the initial damages caused by the performance of environmental factors.
The most important factors affecting the vulnerability of buildings that enhance vulnerability is the distance from the point of the explosion, building form and position of it against the explosive forces. Damages in the blast wave can be divided in both direct effect of the wave, and the gradual crumbling. Direct effect of the waves can cause localized damages in exterior walls, windows, floors, columns and original beams. This wave may affect in some ways that structural members have not been designed for it, such as upward force on the floor. About the sequence of structural response, blast wave initially be entered on the weakest parts of the area points of near the explosion, such as building envelope. Explosion forces to the exterior walls on the lower floors and may cause of walls rupture and break windows. Then the wave entered to structure and up and down force is entered into the floors. Explosion destroyed large frames, walls, doors, and windows, and disrupts all facilities of the building. The pathology bomb in the building depends on the type, layout structures, and contents within the bomb (ibid. 3).

2.9.1 Explosion effect on buildings:

In time of aftermath of the bombardment, the following cases are visible in its remains:

Buildings with wooden frames see the most damage and main degradation cause of them in addition to the wave explosion had been fire after the bombing.

The image of the atomic bombing of Japan that shows the vast destruction of buildings with wooden frames (Source: Bitarafan, 2013, p.)

Buildings with steel frame also have suffered a lot. The main cause of that had been excessive heat caused by explosion and fire after it. As well as buildings with gable roof and metal trusses and metal hangars have been destroyed completely.
Steel frame destroyed in Hiroshima (Source: Bitarafan, 2013)

Buildings with brick load-bearing walls in sectors that had significantly more pop, they transmit the energy from the explosion and suffered less damaged.

Buildings with reinforced concrete had the least damage. Because in addition to good resistance that had against blast waves, against the fire also suffered less damage.

One of the factors that have been caused of individuals' damages in buildings that have not been destroyed is entering of blast waves from pops and fragments of glasses and frame of windows. The interesting thing in the meantime is no suffered of damages of narrow cylindrical chimneys that the effect of shape and form shows against explosion.

2.9.2 Effects of explosions on buildings:

In explosive designing, explosive loads are considered generally stronger than other design loads. As a basic principle the pressure caused by the explosion increases linearly with the size of the weapon (the amount of explosive material), the pressure on the structures can be strengthened to 10 times the amount of the initial encounter. Since it is not clear what aspect of buildings will be affected by the explosion, it is necessary that design be done based on the worst case. Pressure caused by the explosion has a negative or tensile phase that occurs in the positive or direct phase. Negative phase pressures in areas of low pressure can cause the breaking glasses to outwards or fall off the roofs of buildings. Exactly in the blast layer, a hole is created that can damage to lower parts of structure. Slender members such as columns that at least have possible area against the wave explosion are much more sensitive than other members. Moreover, in the time of blast wave propagation in space, some of the energy is transferred to the soil.

This effect is similar to a severe earthquake with a short duration. In explosions that occur on the above-ground, this effect is negligible on structure design. In general, to resistant designs for blast, simple
shapes with minimal embellishments are the best solution. By using lightweight decorative materials such as wood and plastic, is preferable compared to brick, stone and metals decompose into deadly pieces in the explosion (2009, Hinman).

• Dimensions:

The overall dimensions of buildings to find the fundamental limitations of the resistant buildings to wave explosion is most important principles of retrofitting buildings against vibrations caused by the wave explosion. There are serious limitations on the height of the building. In fact, it increases the natural period of buildings and leads it to whole the lower answers. The ratio of height to width that is a shape factor, Because of the influence in the reversal of buildings and additional axial load of external structural elements, should be under control.

• Shape:

Shape of building is from most important contributing factors in destruction of building due to a large influence on the dynamic behavior of buildings. Niches can hold waves caused by the explosion and increase the wave explosion effects. It is notable that the trapping waves caused by explosion, large niche corners or with gentle slope have less impact compared with small niche corners or sharp angles.

3. CONCLUSION:

The purpose of passive defense accordance to the principles governing in crisis management is the set of measures, actions and initiatives that by using the tools and conditions as much as possible without the need for manpower and as self-reliance on the one hand increases defensive power of set in the time of crisis and on the other hand to reduce the consequences of the crisis and possibility of Restore damaged areas provides by the lowest cost.

In this study, what are more focused on had been issues of security, defense and military. But the necessity of addressing to this issue very much felt in other areas. Iran is a country in terms of strategic geographical location has always been attracted the attention of powerful countries of the world. There are huge reserves of oil and gas resources that this region has become the world's very sensitive area. Thus addressing to the issue of the civil defense would be critical in other aspects such as architecture and critical infrastructure of the country. A comprehensive study on this subject, this issue brings to mind that there is a missing link between passive defense and architecture issues.

4. SUGGESTIONS:

4.1 Organizational suggestions:

1. The allocation of a maximum of 41% of the land area to the infrastructure / 2. Proximity to the city / 3. Allowing easy access to collection

4.2 Construction suggestions:

1. Beautiful series by utilizes the latest technology of world and modern equipment / 2. Building plan is in a way that takes advantage of the prospects for the region / 3. Continuation of building activities in times of crisis
4.3 performance suggestions:

1. Designing space is in a way that in times of crisis meets the needs of region / 2. Pay attention to proposed standards in the field of passive defense / 3. Safety precautions and considering assisting in the emergency situations / 4. Parallelization of support dependent systems / 5. Utilizes the principle of passive defense in the design, such as camouflage, making invisible, deception, and principle of dispersion / 6. Self-reliance of building of hospital to continue activity in times of crisis

4.4 shape suggestions:

1- Designing form according to the function of collection and the region climate 2 - The shape of the building to be considered due to common patterns hospital building 3 - Using simple shapes with emphasis on axes of the building form 4 - restrictions on building height and prevention of designing landmark 5 - prevention of vertical geometry irregularities and irregularities of the structural system and irregularities plan shape 6 - The use of blast-resistant materials and harmful factors 7 - building with notch or sharp angles of concave shapes in view 8 - to minimize the decoration of buildings, especially by using the heavy materials.

4.5 Being Multipurpose

Suggestion of this research to an appropriate plan is the dual purpose design to be usable both in times of peace and in time of crisis. If multipurpose strategies not be considered in the plans in times of peace work it is inevitable, plans are made in times of crisis that is unused in case of peace.

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