



Adrian Siadkowski, Łukasz Szymankiewicz, Karol Kujawa, Szymon Bańka

Security by Design Guidebook for Religious Sites



ProSPeReS

Consortium





**Protection System
for large gatherings of People
in Religious Sites**

Security by Design Guidebook for Religious Sites

**Adrian Siadkowski, Łukasz Szymankiewicz,
Karol Kujawa, Szymon Bańka**

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Introduction

This introduction aims to briefly indicate the methodological assumptions behind the Security by Design study of religious sites in the EU within the ProSPeReS project.

Research Methodology

The aim of the project was to create a guide with basic assumptions on how to improve the state of protection and reduce vulnerability to terrorist threats at places of worship. The basic design assumption is to develop as simple and universal a guide as possible, the implementation of which will not require large financial and organisational resources, while the implemented solutions can effectively minimise the risk of a terrorist attack.

The following assumptions were taken into account during the development of the guide:

1. users/administrators of places of worship will not be able to apply the full range of security systems solutions due to limited financial resources;
2. administrators of places of worship cannot be expected to take Security by Design concepts into account when planning the construction of facilities, as most buildings already exist;
3. places of worship may be historic monuments, so a full use of Security by Design concepts will also be limited;
4. the recommended solutions must not interfere with the core activities carried out at a place of worship and adversely affect the participants;
5. places of worship may be locations or buildings which, due to their nature, age and listed status, may have limitations on the application of security systems.

The research thesis was formulated in the following question: How can the vulnerability to terrorist threats at a place of worship be reduced using the concept of Security by Design?

It should also be emphasised that an adequate technical and building security system strengthens the overall safety and security of sites, not only against the risk of terrorist attack and its potential consequences, but also against vandalism, criminal threats and natural disasters.

The following research instruments were used in the guidebook:

- descriptive method,
- systematic method,
- case study,
- results of ProSPeReS' project activities 2.2 and 2.3 which included 1) vulnerability assessments (VA) and site surveys at selected places of worship (PoW) and discussions with their representatives (Site Operators), local LEAs, local first responders and others; 2) additional case studies of religious studies in the EU; 3) an online workshop that included a discussion with representatives of religious organizations from different EU countries; 4) additional questionnaire to 3.2 preparing Security by Design guidebook for religious sites.

Moreover, conclusions from ProSPeReS' project activities 2.6 *Report on Past Events/Best Practices/Gap Analysis/Needs Assessment of Religious Sites* and analysis of additional surveys conducted during the study visits were used in the development of the guidebook.

During the development of the guidebook, a research perspective was adopted that takes into account the capabilities of administrators of religious sites, so that the solutions presented can be more easily introduced and applied.

Overview of Thematic Projects

One of the first research processes during the development of the guidebook was to conduct a search of two knowledge sources:

- CPTED and Securityby Design dedicated projects so far;
- documents made available by institutions which specialise in providing security and counter-terrorism and scientific literature, including monographs and articles in peer-reviewed journals.

Up to now, many Crime Prevention Through Environmental Design and Security by Design concepts have been developed, which have evolved over time or have been developed for specific social groups¹. Examples of Securityby Design concepts include:

- *Protection Against Terrorism, Centre for the Protection of National Infrastructure*, 2011 (third edition),

¹ For more information on the CPTED and Securityby Design concepts, see ProSPeReS: A.3.1 Analysis and Assessment of Relevance of the State-of-the-art Achievements in Public Places Protection – Security by Design Design, novel detection technology, equipment, PPE, procedures and training, cooperation protocols.

of barriers; channeling the flow of people, using surveillance and observation by residents and the police. The paper also highlights the decision of a criminal to take action based on observation of residents' activity – a rational criminal will be guided by the scale of difficulty of carrying out an attack and the level of risk when choosing a target – in this case, greater resident activity and attention to the above-mentioned elements of the environment may reduce crime. The term Crime Prevention Through Environmental Design was first used by University of Florida criminologist Clarence Ray Jeffery, who published a book with this title in 1971. The original concept was developed as a result of the experience of revitalising school spaces and was based on the stimulus-response principle, referring largely to the principles of experimental psychology. Perhaps this is why the work of architect Oscar Newman's *Defensible Space* (1972) gained more recognition, it was decidedly more practical in nature – there was a strong emphasis on observation, which is just as important today. Oscar Newman presented an updated version of his concept in the 1996 publication *Creating Defensible Space*.

There is a noticeable emphasis in this guidebook on proper care of the surroundings, e.g. greenery and landscaping elements, as well as facility management (in terms of safety) – this approach derives from the “broken glass” theory presented in 1982 by James Q. Wilson and George L. Kelling. An equally interesting work is *Situational Crime Prevention* by Ronald Clarke and Patricia Mayhew, published in 1980, in which the authors point out the need to reduce the possibility of crime and escape, for example through access control, natural surveillance or guarding. A similarly valuable paper was published in 1990 by Timothy Crowe *Crime Prevention Through Environmental Design*. A 1997 article by Gregory Saville and Garry Cleveland *Second Generation CPTED and School Safety* pointed out that simply applying CPTED solutions is not enough. An equally important aspect is nurturing strong and healthy relationships among the communities/users concerned – this is particularly important in the context of places of worship.

Towards the end of the 1990s CPTED started to become institutionalised, resulting in an increasing number of conferences, which are also a very valuable source of knowledge. Security by Design itself, in a way, began to be applied on a large scale at the initiative of the Association of Chief Police Officers in the UK. *The European Union Terrorism Situation and Trend Report* published by Europol in 2019 can be cited as particularly valuable sources of information on contemporary terrorist threats and methods of prevention together with *Commission Staff working Document – Good practices to support the Protection of Public Spaces, SWD (2019) 140 Final*, or a document by Monica Lloyd and Annelies Pauwels, *Lone Actors as a Challenge for*

P/CVE, UE 2021, prepared for the European Commission. The research also analysed, for example, *Crime Prevention Through Environmental Design Guidebook* published in 2003 by the National Crime Prevention Council in Singapore and *The Site Security Design Guide*, U.S. General Services Administration, (2007), so that emerging differences in more recent concepts could be identified.

Of the more contemporary literature, architect Artur Jasinski's book, *Architecture in Times of Terrorism: City-public space-building*, (2013) or Anthony J. Masys, *Security by Design* (2018) are particularly noteworthy. Nowadays, the concepts of CPTED and Security by Design are so well established that it is no longer necessary to look for additional arguments to prove their effectiveness; this also helps to focus on the development of publications dedicated to specific social groups. For publications on providing security directly at places of worship, particularly valuable information can be found in the following books: Jennie-Leigh McLamb, *Keeping Religious Institutions Secure*, (2015); Paula L. Ratliff, *Crime Prevention for Houses of Worship*, (2015); Stephen D. Bryen, *Security for Holy Places. How to Build a Security Plan for Your Church, Synagogue, Mosque, or Temple*, (2020). A full list of literature can be found in the References section.

Conclusions of the Research

Places of worship (PoW) pose numerous challenges to the organisation of the protection system. This is because the protection system, as a holistic system of various protection elements, i.e. technical protection, landscaping, procedures or standards, are interrelated with each other and with the protected site. These challenges arise from at least two conflicting factors. The first relates to ensuring an adequate level of protection while keeping the PoW open, accessible and welcoming to worshippers. The second concerns the periodic surge in the number of worshippers or pilgrims staying in the PoW. The two general challenges cited above necessitate a different approach to protection from the traditional zonal approach. Hence, there have recently been numerous initiatives promoting the approach of implementing good patterns and good practices already at the design and construction stage of religious buildings, known as 'Security by Design'. It should be noted that the majority of sacred buildings are historic, listed buildings, which makes it difficult to fully implement this approach. However, this does not invalidate the application of good practices and models where possible.

In a number of documents dedicated to the concept of Security by Design or Crime Prevention Through Environmental Design, several basic areas can be distinguished:

- interior design;

- *Security by Design for the Protection of Public Spaces*, European Commission, 2019.

There have also been projects and programmes dedicated to places of worship, such as the *SOAR Programme – Protecting Places of Worship in Europe*, or *SASCE – Safer and Stronger Communities in Europe*. Furthermore, valuable information can be found in the *EU Quick Guide to Support the Protection of Places of Worship* (May 2021), which refers to risk management, building a basis of awareness for the protection of places of worship and principles for assessing the level of security.

Review of Scientific and Expert Literature

In order to be well prepared, the authors of the guidebook decided to first carry out a search of the available literature on the subject, taking into account the historical aspect as well. This enabled a better understanding of the CPTED and Security by Design concepts, together with changes in the occurrence of various elements and in the approach to applying the concepts, taking into account the strengths and weaknesses of the solutions used. The first, but not yet CPTED-defined reflections on the importance of safe city and neighbourhood planning appeared in the 1960s. At that time, it had already been recognised that safety was promoted by making the environment more liveable and encouraging more social activity – creating clear spaces, limiting vehicle traffic in favour of pedestrians, encouraging the use of amenities such as shops, restaurants and bars which would lead to more people on the streets and thus more people to observe and report disturbing situations; at the same time such places would tend to push away potential criminals. Examples of an approach that was innovative for the time include a book by Jane Jacobs published in 1961: *The Death and Life of Great American Cities*. It is worth noting that it was Paul von Sommeren who in a conference on the reduction of urban insecurity in the 1980s (*Safe and Secure Cities. The Physical Urban Environment and Reduction of Urban Insecurity*. A General Security – Conference on the Reduction of Urban Insecurity, Barcelona, 17-20 October 1987) noted that more people on the streets also means potentially more criminals. Moreover, increased activity and exploitation of urban space generate more pollution and litter.

Undoubtedly, Schlomo Angel, who published his work *Discouraging Crime Through City Planning* in 1968, can be considered as one of the pioneers of the design of safe spaces. Schlomo Angel chose the city of Oakland in the USA as a case study and described some important observations. He indicated that crime reduction can be influenced by drawing the boundary of an area; reducing or increasing accessibility to an area through the use

- exterior design;
- landscape architecture;
- urban planning.

Another classification may include the following areas:

- landscape and landscape design;
- separate zones and access control;
- traffic routes;
- physical surveillance and CCTV;
- physical barriers and territorial enhancement.

As can be seen, these are almost identical areas, so one of the basic principles is to adapt the concept to one's needs. This is why guidance often takes the form of general information and should be regarded as good advice, where good practice is especially important. This guidebook places particular emphasis on those solutions that can be implemented in a simple manner. In the development of the document, the authors conducted several study visits in places of religious worship belonging to different religions and located in different sites and building types, so that the presented solutions can provide inspiration for raising the level of protection in each place.

The guidance provided by Security by Design also takes into account costs and operational difficulties, so it is important that the proposed solutions are not only realistically feasible, but also minimally invasive for users. There are two very important areas that can have a positive impact on the organisational aspect and reduce the costs associated with the implementation of Security by Design, namely:

- use of natural architectural suitability;
- facility management.

It should be noted that the idea of Security by design is not the only and sufficient solution to guarantee an adequate level of protection and neutralise all threats. The technical security of the building and its surroundings described in the handbook is only one of several elements of a comprehensive protection of facilities against a terrorist attack and limiting the possible consequences of such an attack. Technological, building and electronic security systems should be used in parallel with appropriate security policies, staff training and the implementation of emergency response protocols. Religious leaders as well as worshippers should be involved in the protection of religious facilities – assistance in this regard should be sought, for example, from representatives of LEAs.

There is also an increasing focus on the principles of security culture and security awareness. Security culture and security awareness training goes beyond the traditional concept of Security by Design , which originally only refers to the given space and its material dimension. However, they are components that perfectly complement the concept and have a positive impact on security as well as having pro-social values.

This guide is a conceptual proposal put together by the team of authors from WSB University. The challenge faced by the authors was to develop a guide that is versatile enough to allow individual solutions to be implemented for large, medium and small PoWs. We hope that the presented good patterns and good practices supported by numerous real-life examples will be helpful in arranging safe spaces for places of worship.

1. Landscape and Landscape Design

1.1. Concept and Design Assumptions

The adopted assumption was to create an ideological concept that involved the use of various design solutions to enhance the security of the area around the building (facility) of worship (PoW). The building itself in the project was not explicitly defined. It could refer to a church, a mosque, a synagogue as well as buildings of other religions and faiths.

Assumed Threats to the Design Situation

In determining the direction in which the architectural concept is developed, it was important to define the main terrorist threats through the modus operandi of the perpetrators, in the contexts of which the adopted landscaping solutions were considered. The following contextual threats were assumed when making design decisions:

Table 1. Potential Considered Threats

Types of attacks	Attack modes
Firearms attack	Attack against the crowd with a concealed automatic firearm
Sharp object attack	Attack with concealed weapons against the crowd
Vehicle ramming attack	Attack with a vehicle against the crowd near the main street of the religious site
IED explosives attack	Attack with a bag discarded (unattended) containing explosives
PBIED attack	Attack by a suicide bomber against the crowd
UAVIED attack	Attack with drone against the crowd outside the religious site, carrying explosive material
Vehicle-Born Improvised Explosive Device	Attack with explosive material placed onto a car parked near high crowd concentration areas
CBR attack	Attack with chemical agents outside the place of worship

Source: Prosperes WP 2.

Design Problem Definition

The main design problem was based on three issues:

1. How to create a protected space around the building using the existing context, site conditions such as distances from the road, topography of the site or distribution of functions in the building?

2. How will the design solutions build architectural quality around the object?
3. What architectural elements should be used to optimally protect the facility from terrorist attacks?

It was also important to find solutions that can be adapted to both large PoWs, smaller facilities and PoWs located in multifunctional buildings.

1.2. Landscaping Elements for the Security of a Place of Worship (PoW)

Traditional systems of facility protection focus on their physical protection by separating at least three concentric protection zones, which are: the peripheral zone of facility protection, the area whose internal boundaries are the boundaries of the protected facility, and the external boundaries defined on an ad hoc basis depending on the needs (e.g. the number of pilgrims taking part in the event). The external zone of protection of an object is the area whose external borders constitute the boundaries of the area where the object or complex of objects is located (e.g. a building, a chapel, a basilica, a dwelling house); the internal zone of protection of an object is the area inside the buildings that constitutes of the object. The use of security barriers and protection zones is particularly important in the context of securing the PoW and the people gathered from attack with a vehicle against the crowd or VBIEDs attack. It is important to prevent an unidentified car from approaching the vicinity of the PoW, and the most vulnerable element to a car attack is the main entrance to the building, as the most dangerous consequences are caused by the explosion of a bomb, carried by a car that enters the building. To prevent such an attack, access routes can be protected with appropriate barriers and landscaping –concrete barriers, fences, and barriers can be used to construct zoning barriers and protection zones, but if it is possible, it is advisable to use solutions that are aesthetically pleasing and have a friendly landscaping effect, such as natural elements existing on the plot: retaining walls, steps, slopes and elevation differences, urban furniture and small architectural elements.

The concept presents architectural elements that, when introduced into the PoW landscape (or into the particular zones described above), increase its protection potential. Architectural elements that can be implied not only into the design, but also used selectively to complement the existing infrastructure have been defined. The figure presents the idea of the application of the elements, where the black point means an architectural element. Importantly, the presented architectural elements with examples observed in the visited PoW, can be implemented in the building environment freely, so that they fulfil their protective function and harmonise with each other.

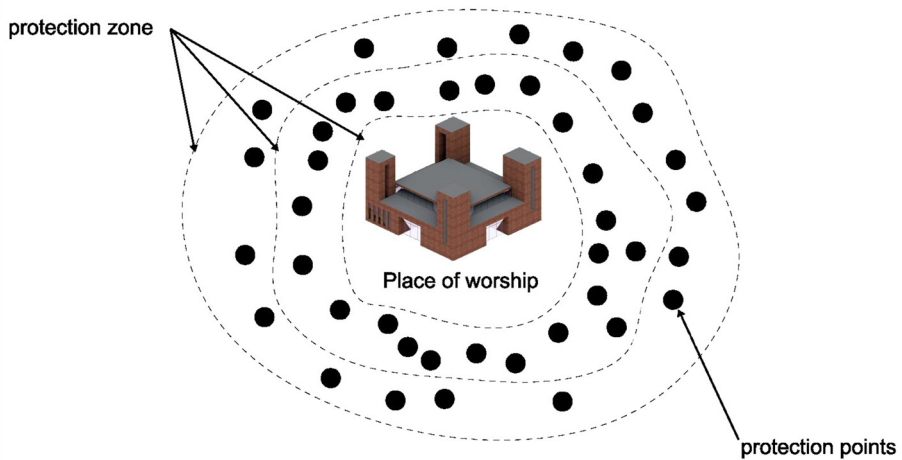


Figure 1. The concept of protective elements in the PoW landscape
Source: Authors' own concept.

1.2.1. Architectural Element – Benches and Other Seatings

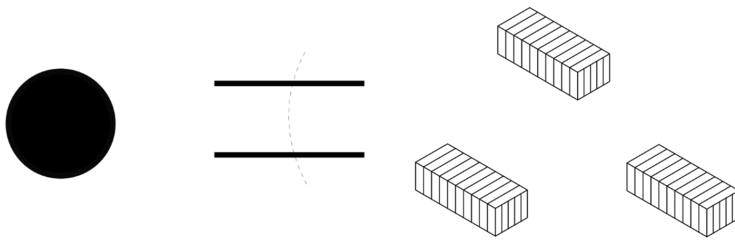


Figure 2. Architectural element – bench
Source: Authors' own concept.

Benches or seatings of any kind can be an excellent form of protection, they can be used as a visually attractive form of “pillars” that cordon off the area and introduce access controls for vehicles or provide a form of shielding. It is important for the bench or seating element to be made of materials that can withstand impact and blast waves, e.g. it should be made from reinforced concrete and covered with a friendly material such as wood. Elements of this type should be fixed to the ground on a suitably prepared foundation that will prevent the element from being torn out during an impact or explosive wave. Such an element must also not become a life- and health-threatening fragment.

Inside buildings, it is a good practice to use simple benches bearing a message not to leave luggage or transparent benches that prevent a concealed placement of dangerous items. Visualisation of messages and intentions is important in modern design.



Figure 3. Architectural element – benches in Jerusalem (Jubilee) Synagogue in Prague and a sign with information instructing to not leave luggage unattended

Source: Authors' own collections.

Transparent benches with a modern design ensure good inspection of the facility and detection of dangerous objects that may be intentionally left behind, with the aim of carrying out an attack with explosives.



Figure 4. Architectural element – transparent benches in Pinkasova Synagogue in Prague

Source: Authors' own collections.

1.2.2. Architectural Element - Pots and Flowerbeds

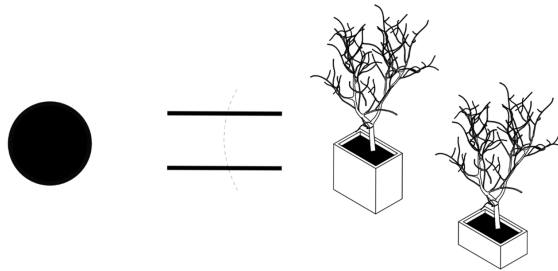


Figure 5. Architectural element – pots and flowerbeds

Source: Authors' own concept.

Pots and flowerbeds can have similar protective function to benches, while also introducing an aesthetic element to the surroundings. It is important that the pot and flowerbed elements are made of materials that can withstand impact and blast waves, e.g. reinforced concrete, and are covered with a visually pleasing material for example, coloured concrete. Elements of this type should be fixed to the ground on a specially prepared foundation, which will prevent the element from being torn out during an impact with a large object (e.g. a car) or a wave created during an explosion. Such an element must also not become a life- and health-threatening piece of debris.



Figure 6. Architectural element – pots and flowerbeds in front of Agios Dimitrios Temple in Thessalonik

Source: Authors' own collections.

1.2.3. Architectural Element – Earthen Hills with Plants

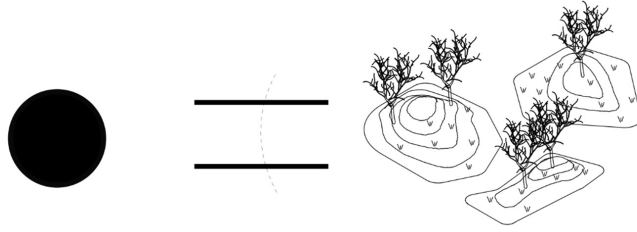


Figure 7. Architectural element – earthen hills with plants

Source: Authors' own concept.

Green (grassy or vegetated) hills can be a very attractive landscape feature, created by raising hills out of the ground with low and tall vegetation planted on them. They can protect the space around a building both from vehicles entering the perimeter of the building, provide a kind of protective balustrade to help mark an escape route, provide shelter during attacks by firearms or reduce the effects of an explosion. A hill also has another important advantage over other landscaping elements in that it does not generate dangerous debris of its own when explosives go off and it can also dampen shock waves.

1.2.4. Architectural element – concrete benches and seats

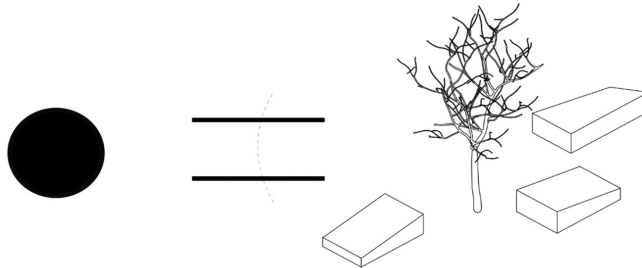


Figure 8. Architectural element – concrete benches and seats

Source: Authors' own concept.

Concrete seats interspersed with grass seating and trees can provide a nice landscaping element, and appropriately placed stone benches can be treated as a kind of post to prevent unauthorised vehicles from entering the area in front of the building. Grassy strips can also be made in such a way as to cause the wheels to bog down when an uninvited vehicle attempts to pass through. Of course, it should be remembered that the concrete seating should be fixed to a strong and solid foundation.



Figure 9. Example of a concrete seat preceded by a grass strip
Source: Authors' own collections.

1.2.5. Architectural element – stairs with pots and greenery

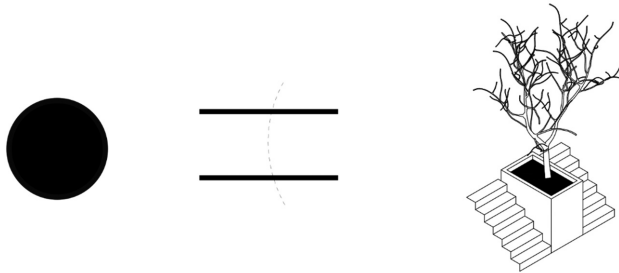


Figure 10. Architectural element – stairs with pots and greenery
Source: Authors' own concept.

Stairs provides a very good element of protection against vehicle intrusion into the perimeter of the building facade. The additional use of tree pots will certainly enhance the design of stairs itself, but will also introduce an additional element of protective barrier which one can hide behind, it can protect one from possible debris.



Figure 11. Architectural element – staircase with flower pots and greenery at the Vienna Central Mosque
Source: Authors' own collections.



Figure 12. Architectural element – stairs with pots preceded by a monument in the Church of St. Mary Magdalene in Tychy
Source: Authors' own collections

1.2.6. Architectural Element – Stairs with Pots and Benches

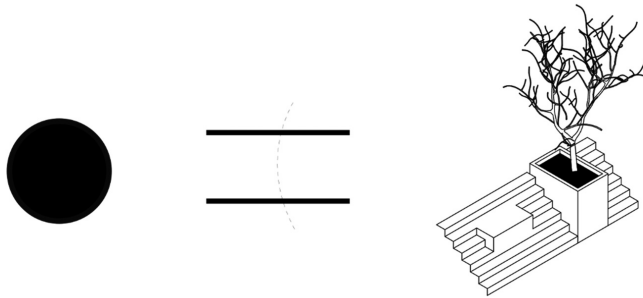


Figure 13. Architectural element – stairs with pots and benches

Source: Authors' own concept.

As with the flower pots, the benches on the stairs, in addition to adding variety to the functionality of the stairs, will provide a useful element to prevent unauthorised vehicles from driving up to the building.

1.2.7. Architectural Element – Lighting

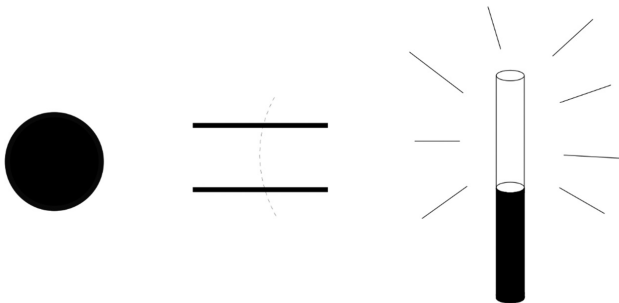


Figure 14. Architectural element – lighting

Source: Authors' own concept.

Lighting is a very important element of protecting a space. Good lighting is that which evenly illuminates the area of the facility and does not leave underexposed areas around the building where a potential terrorist may hide, or an explosive may be concealed. Lighting should provide, at night and on cloudy days, full visual control of the surroundings of the protected building.



Figure 15. Architectural element – Lighting in front of the Great Synagogue Dohany in Budapest
Source: Authors' own collections

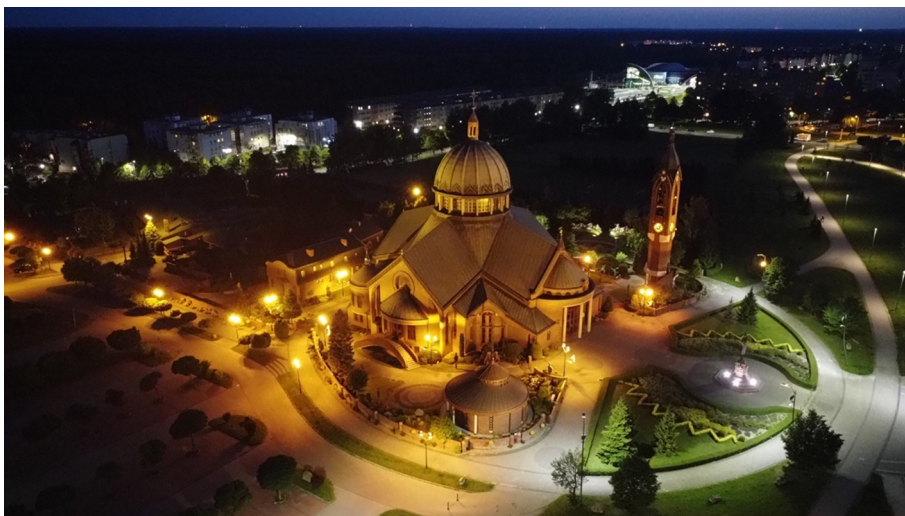


Figure 16. Architectural element – complex lighting of the Blessed Caroline Church in Tychy
Source: Authors' own collections.



Figure 17. An example of lighting in an urban plan. The Metropolitan Cathedral of the Annunciation in Athens

Source: Authors' own collections.

1.2.8. Architectural element – monitoring CCTV

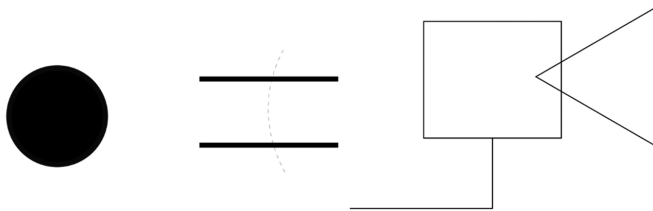


Figure 18. Architectural element – CCTV

Source: Authors' own concept.

The mere sight of a camera placed on a building, or in a clearly visible location, can have the effect of deterring or discouraging an act of terrorism. Cameras should be positioned around the building so that no blind spots are created.



Figure 19. Architectural element – example of deployment of CCTV cameras at the Old New Synagogue in Prague

Source: Authors' own collections.

1.2.9. Architectural element – Walls

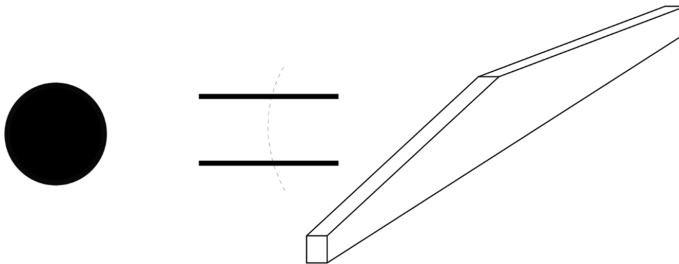


Figure 20. Architectural element – walls

Source: Authors' own concept.

Walls, like benches and flowerbeds, act as a barrier against uninvited vehicles entering the building area, as a form of a shield against debris or firearms attack. Elements of this type should be fixed to the ground on a specially prepared foundation, which will prevent the element from being uprooted during a collision with a large object (e.g. a car) or an explosive wave. Such an element must not become debris that endangers human life and health.



Figure 21. Architectural element – example of a wall with a seat in front of the church of John the Baptist in Tychy.

Source: Authors' own collections.



Figure 22. Architectural element – concrete wall in front of the entrance to the Jerusalem Synagogue in Prague

Source: Authors' own collections

1.2.10. Architectural Element – Fences

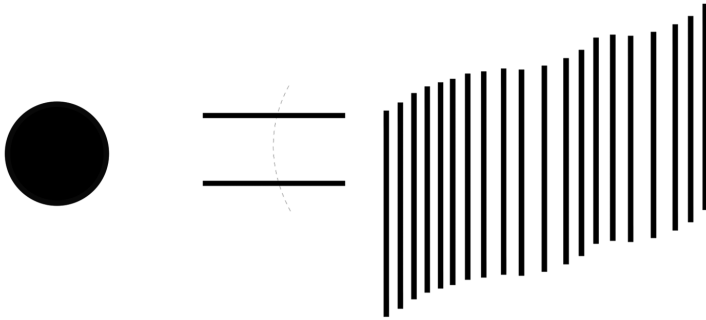


Figure 23. Architectural element – fence

Source: Authors' own concept.

Fence encloses the space of a facility, clearly indicating territorial zones. Fence can also be used to establish communication routes. Depending on the type of fencing used, it is a basic architectural barrier against acts of terror using a vehicle, but also against acts of vandalism and common crime, e.g. theft.



Figure 24. Architectural element – Concrete fence around St. Clement's Church in Łędziny

Source: Authors' own collections.



Figure 25. Architectural element – concrete fence and pillars in front of the facade of the Great Mosque of Budapest

Source: Authors' own collections.



Figure 26. Architectural element – high metal fence with a turnstile regulating the direction of pedestrian traffic at the Great Synagogue Dohany in Budapest

Source: Authors' own collections.



Figure 27. Architectural element – wood and stone fence around Saint George Orthodox Church in Marathoussa (Greece)

Source: Authors' own collections

1.2.11. Architectural Element – Rows of Trees

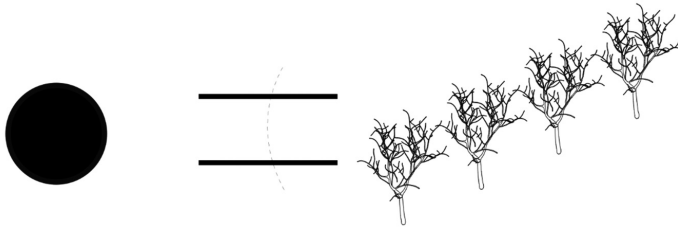


Figure 28. Architectural element – rows of trees

Source: Authors' own concept.

Trees have a great landscaping value, but they also provide noise protection and shade for heated areas. A densely planted tree row can be a very good part of a natural fence preventing uninvited vehicles from entering the perimeter of a building.



Figure 29. Architectural element – tree rows around the church of John the Baptist in Tychy

Source: Authors' own collections.



Figure 30. Architectural element – rows of trees around St. Mary's Church in Katowice

Source: Authors' own collections.

1.2.12. Architectural Element – Boulders

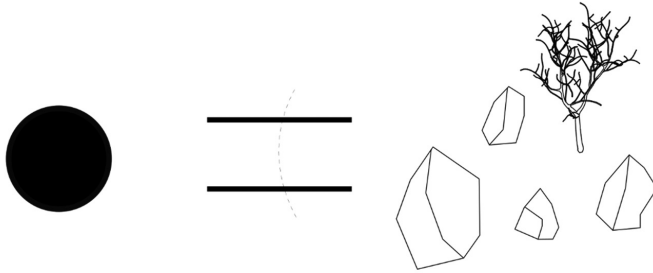


Figure 31. Architectural element – boulders

Source: Authors' own concept.

Boulders provide an interesting landscape element and, when densely placed, can be used as barriers to prevent unauthorised vehicles from entering the area in front of a building. Specially sized boulders can also be a feature behind which to hide during a potential attack.



Figure 32. Architectural element – boulder in front of Blessed Caroline Church in Tychy

Source: Authors' own collections



Figure 33. Architectural element – boulders along the road in front of the Vienna Central Mosque

Source: Authors' own collections.

1.3. PoW Security by Design Concept

The architectural elements indicated above become more important in their collective application. Each additional element strengthens the protective potential of the PoW and reduces its vulnerability to terrorist threats. Ideally, a 'Security by Design' approach should be applied during design and construction. However, it is important to be aware of historical conditions, as a significant part of PoWs are heritage sites. The presented design is a conceptual presentation of certain exemplary solutions with an indication of architectural elements that can be implemented in this or a similar form in both newly built and existing sacred buildings. It should also be emphasised that this is a design concept and should therefore be considered in detail in relation to building standards and regulations in individual countries.

1.3.1. Reference Landscaping Design

The main consideration in designing a reference landscaping was to locate a building in such a way as to allow the application of design elements, in different relationships to the road. Therefore, each of the walls of the building are located at different distances from the road and at a slope in relation to the road, thus allowing the introduction of a full range of solutions based on the idea of points of protective intervention. The numerical designations of the architectural elements (1-11) presented on the concept plans are explained below.

Legend:

1. Place of worship
2. Stairs
3. Landscaping elements on the stairs
4. Grassy hills
5. Stone boulders
6. Concrete seats with grass strips
7. Fence
8. Tree planters and benches along the road
9. Escape route
10. Lighting
11. CCTV



Figure 34. Landscaping with indication of architectural elements

Source: Authors' own concept.



Figure 35. Axonometry with indication of architectural elements

Source: Authors' own concept.

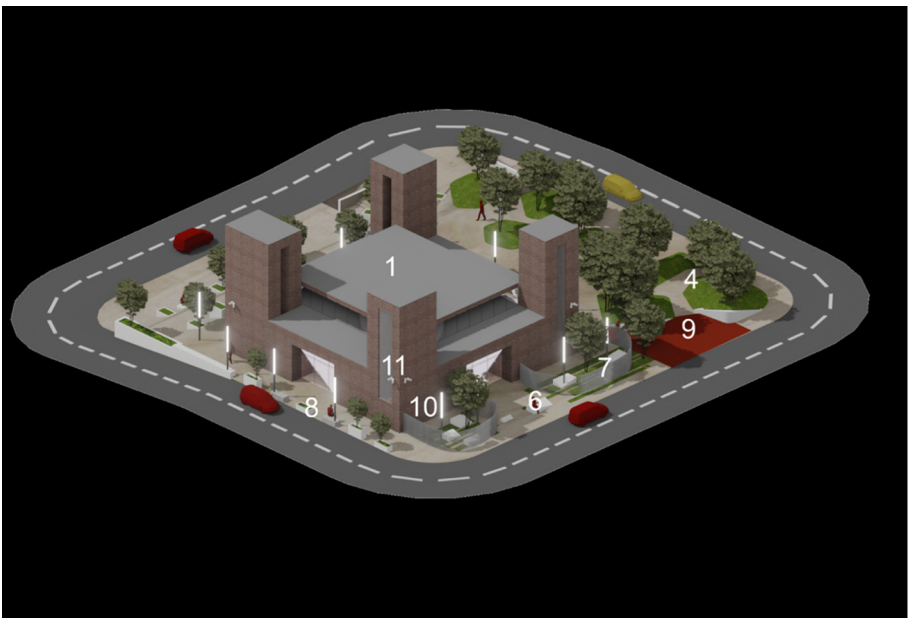


Figure 36. Axonometry with indication of architectural elements

Source: Authors' own concept.

In the following section, the individual architectural elements in the site development concept are presented.

1.3.2. Reference Landscaping Design Element – Stairs

A landscaping design solution which consists of stairs was introduced at the slope of the site, with pots and a seating on the steps.



Figure 37. View of the staircase in the landscaping concept

Source: Authors' own concept.

1.3.3. Reference Landscaping Design Element – Fences

Important elements of the building function (administration offices, treasury) have been additionally buffered by introducing an additional zone separated by a fence. The fence is in the form of a loose projected fence, which can be inserted into a variety of existing site situations.



Figure 38. View of the fence in the landscaping concept

Source: Authors' own concept.

1.3.4. Reference Landscaping Design Element – Rows of Trees and Benches

Where the facade is located closest to the road, a row of tree pots and seating benches have been introduced at the boundary between the road and the pavement, providing a clear barrier between the two.



Figure 39. View of a row of trees and benches in front of the fence in the landscaping concept Source:

Authors' own concept.

1.3.5. Reference Landscaping Design Element – Evacuation Route

An escape route for people to a safer area has been indicated. Such route should be clearly marked by the introduction of appropriate graphic signs or, for example, by introducing a different colour for the pavement or another distinguishing element. In addition, the edges of the road have been protected by grass hills and walls, which increases the safety of evacuation to another zone.

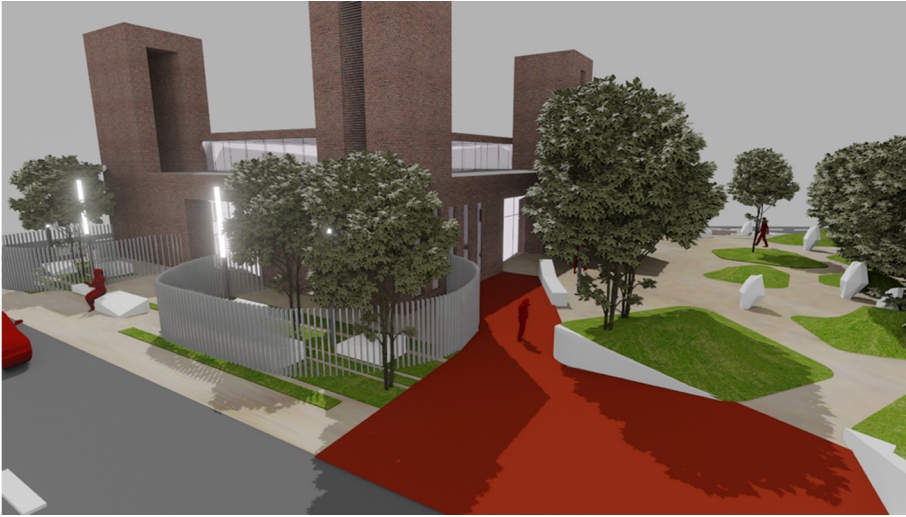


Figure 40. A view of the escape route in the landscaping concept

Source: Authors' own concept.

1.3.6. Reference Landscaping Design Element – Boulders and Earthen Hills with Plants

In the space with the greatest distance between the road and the building, landscape elements have been introduced in the form of grassy hills with tree plantings and boulders forming spatial compositions. Thus creating a clear protective barrier in the zone between the road and the building.

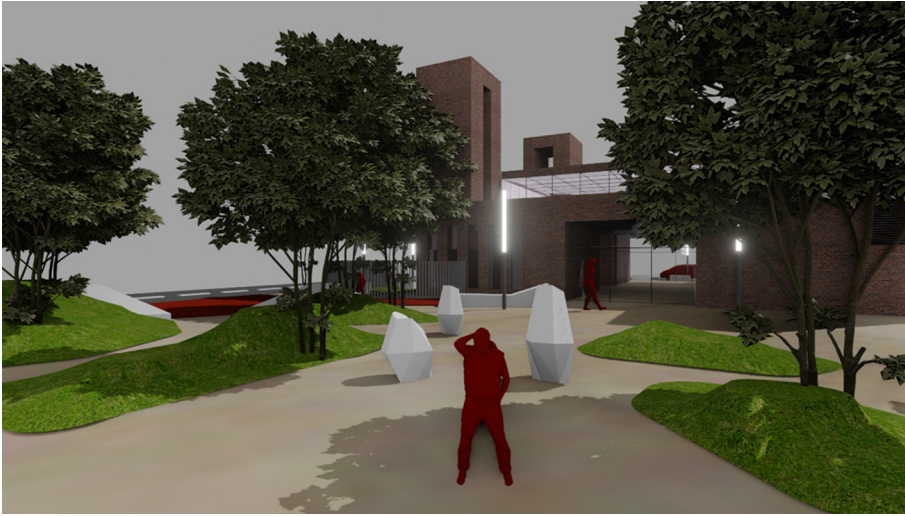


Figure 41. View of boulders and earthen hills with plants in landscaping concept

Source: Authors' own concept.

1.3.7. Reference Landscaping Design Element – Lighting and CCTV

Spot lighting has been introduced to ensure an even distribution of light and CCTV camerason every facade of the building eliminating blind spots.



Figure 42. View of lighting and monitoring in the landscaping concept

Source: Authors' own concept.

1.4. Good Practices Used in the Project

As already indicated, it seems to be a more favourable situation to design a new building and its landscaping. Below, good practices introduced in the design concept are presented, which can also be implemented in the existing PoWs. Good practices mean such land development measures so that architectural changes are introduced into the existing condition with greater protection efficiency and reduced vulnerability.

1.4.1. Introduction of Design Measures in Landscaping – Sloping Terrain and Stairs

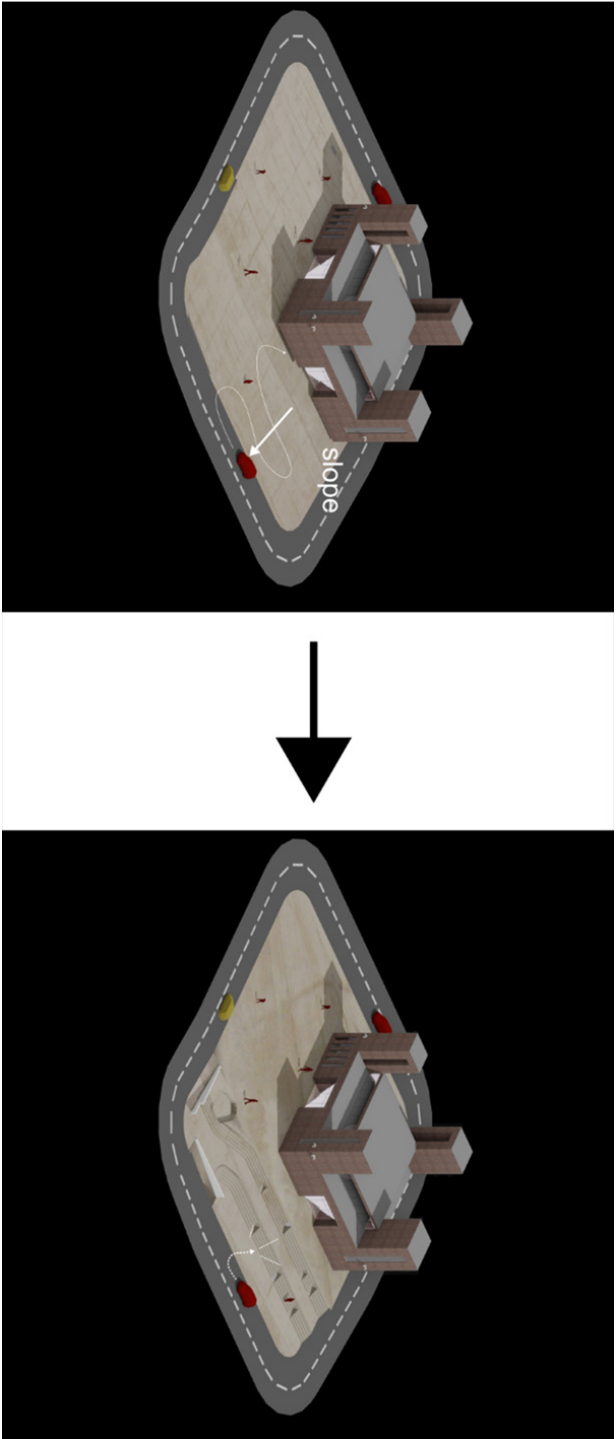


Figure 43. Introduced design action in land use for increased security efficiency – stairs

Source: Authors' own concept.

Site with gentle slope, no obstructions between the road and the building, free movement of the vehicle on the forecourt.

The introduction of stairs helps to create a protective buffer between the road and the building facade. It prevents uncontrolled movement of vehicles within the building.

1.4.2. Introduction of Design Measures in Landscaping – Landscape Details on Stairs

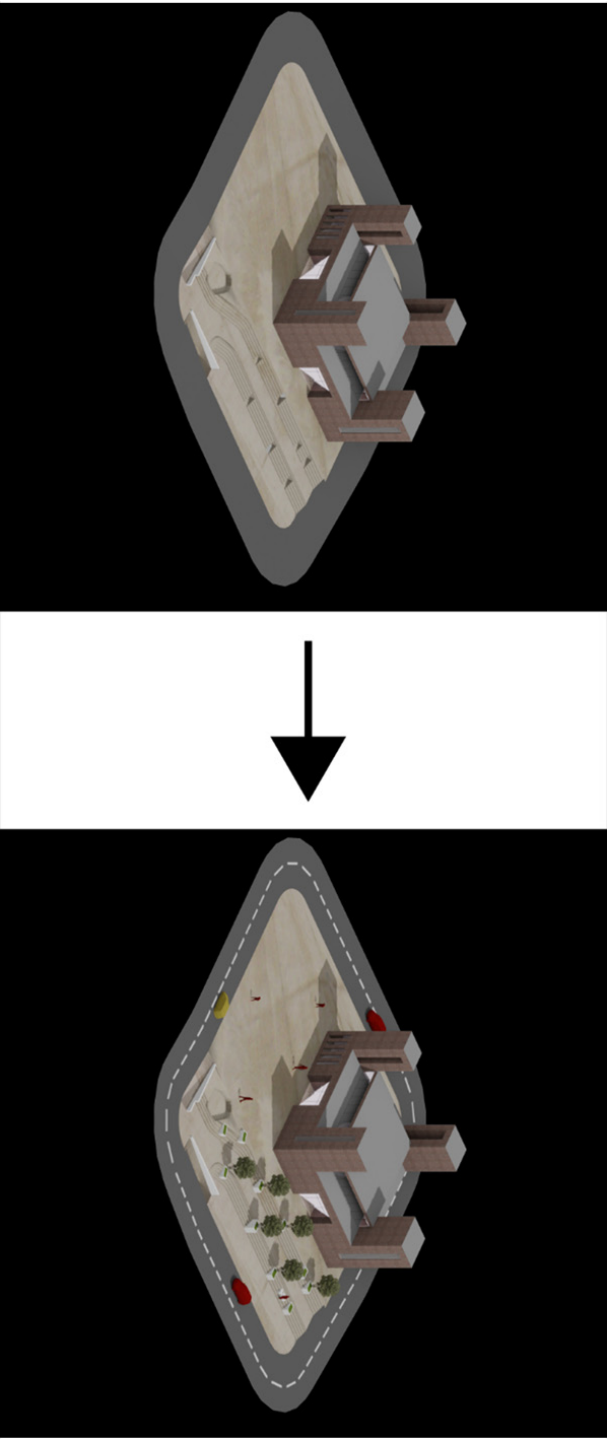


Figure 44. Introduced design action in land use for increased security efficiency – pots on the stairs

Source: Authors' own concept.

Square with stairs without variety of protective and aesthetically enriching architecture. Introduction of landscaping elements on the stairs in the form of flower beds, seats or walls increases the potential for protection and aesthetics.

1.4.3. Introduction of Design Measures in Landscaping – Earthen Hills with Plants

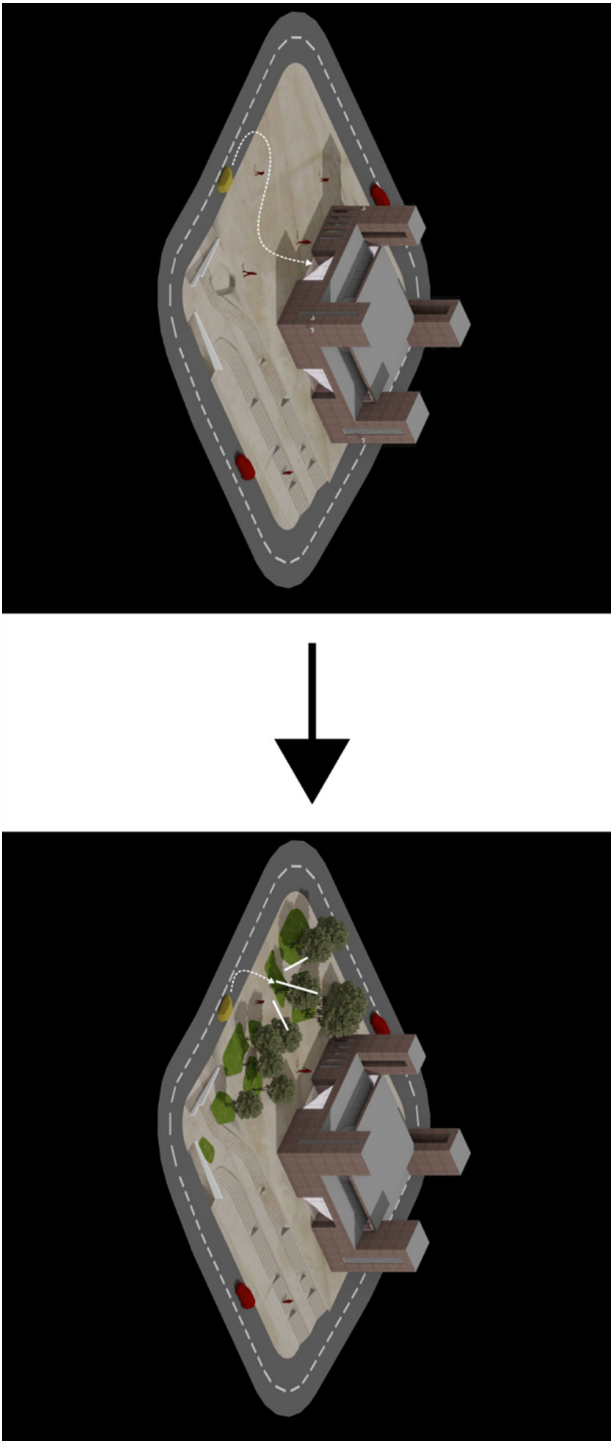


Figure 45. Introduced design action in land use for increased security efficiency – earthen hills with plants

Source: Authors' own concept.

Square with large forecourt in front of the building with open space, uncontrolled movement of vehicles.

Introduction of landscaping elements in the form of green hills. It protects against uncontrolled movement of vehicles within the building and provides shelter for victims in the event of an attack.

1.4.4. Introduction of Design Measures in Landscaping – Lighting

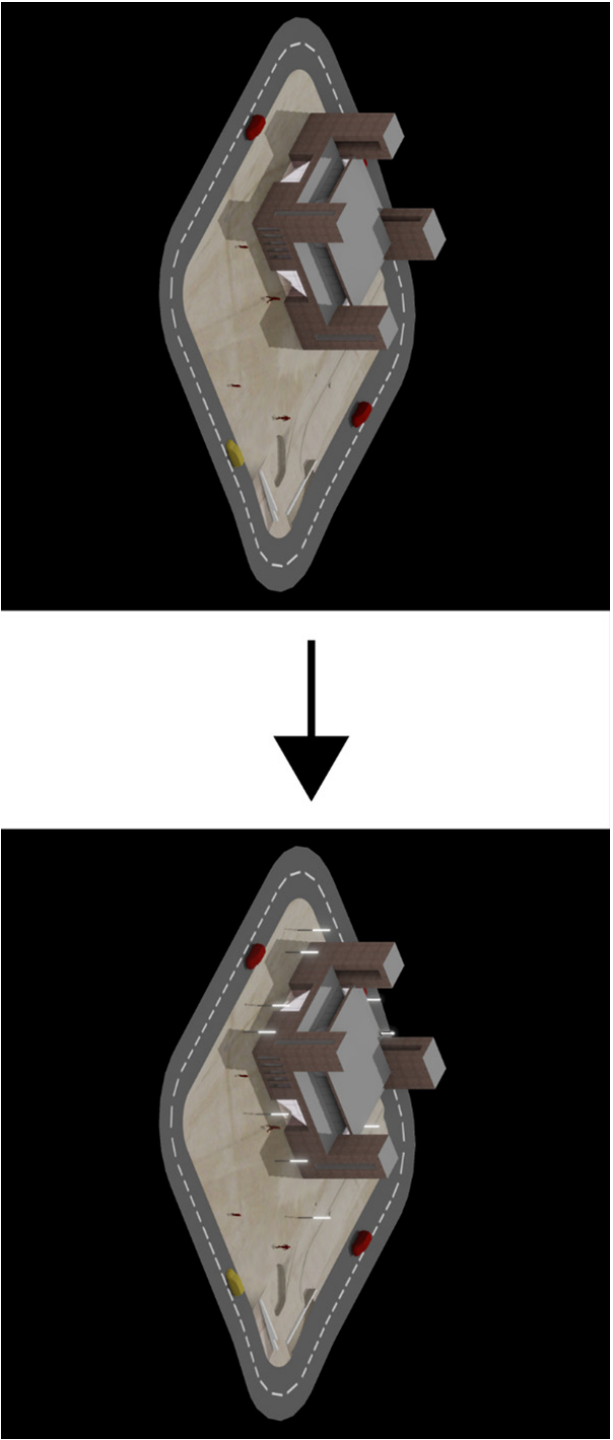


Figure 46. Introduced design action in land use for increased security efficiency – lightings

Source: Authors' own concept.

The area around the building not illuminated

Introducing light points in the form of lanterns facilitates the inspection and monitoring of the area around the building.

1.4.5. Introduction of Design Measures in Landscaping – CCTV

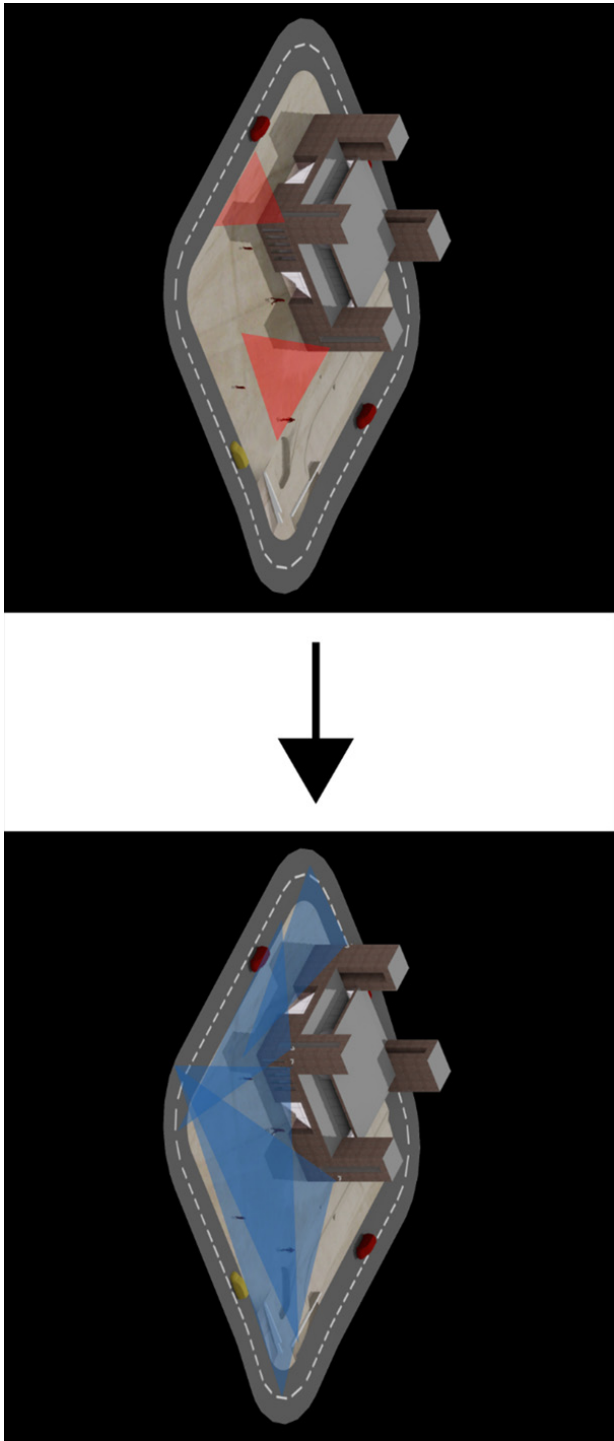


Figure 47. Introduced design action in land use for increased security efficiency – CCTV areas

Source: Authors' own concept.

Incomplete site monitoring, there are areas not monitored

Arrangement of CCTV cameras to eliminate observation blind spots.

1.4.6. Introduction of Design Measures in Landscaping – Concrete Seats and Grass Strips

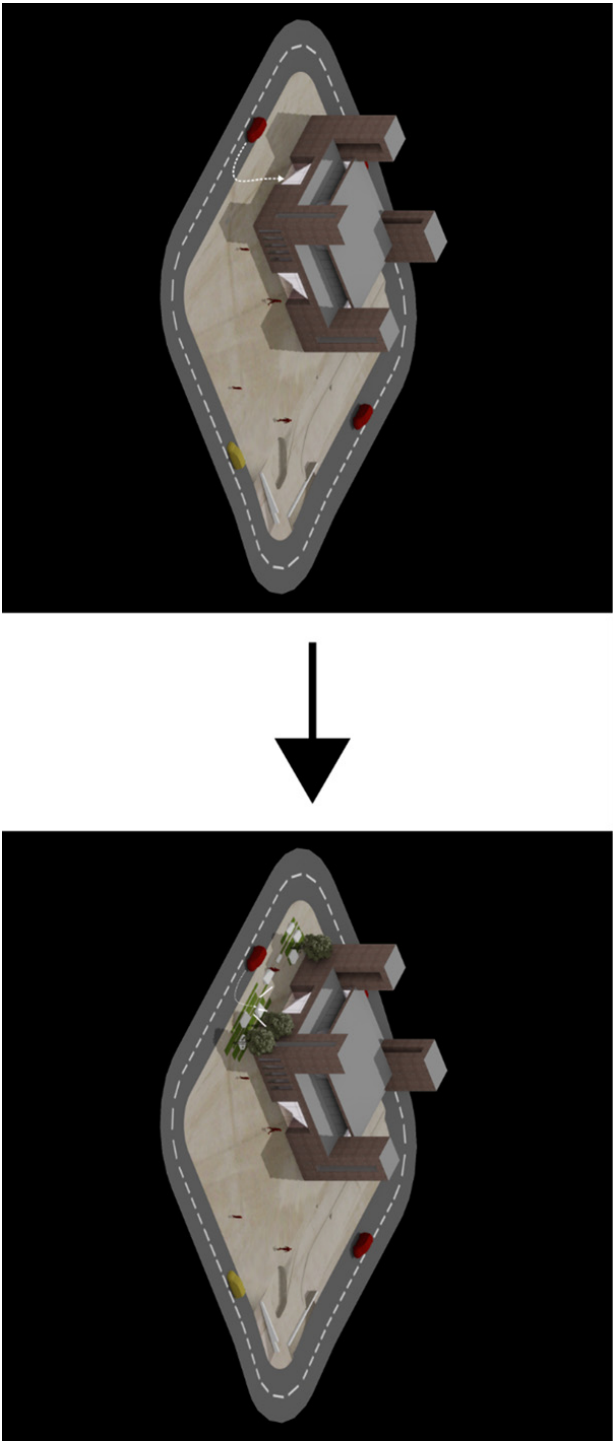


Figure 48. Introduced design action in land use for increased security efficiency – concrete seats and grass strips

Source: Authors' own concept.

Forecourt in front of the building open, with no features to restrict unauthorised vehicle approach.

Introduction of concrete and stone seating and grassy lanes with a boggy surface.

1.4.7. Introduction of Design Measures in Landscaping – Fence

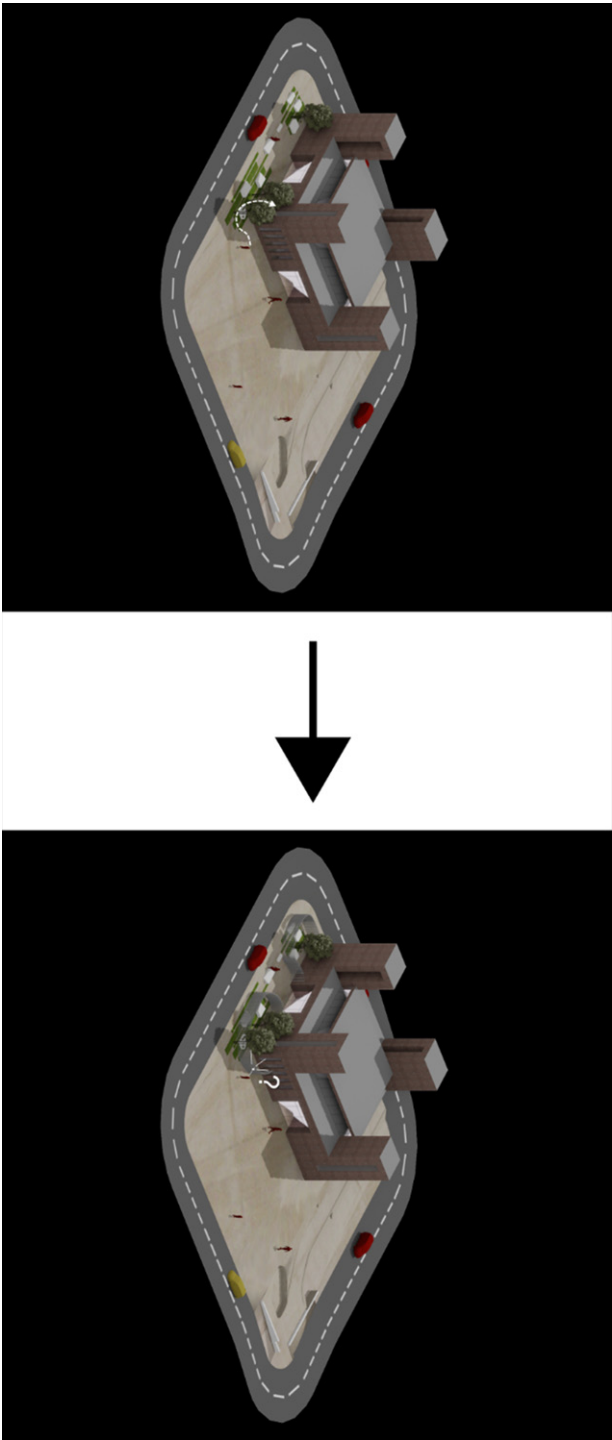


Figure 49. Introduced design action in land use for increased security efficiency – fence

Source: Authors' own concept.

Important room in a building without a security guard, easy to break into.

Introducing a solid fence around a building or in a sector will provide protection for important rooms in a building using the buffer of space that will be created between the fence and the protected room.

1.4.8. Introduction of Design Measures in Landscaping – Boulders

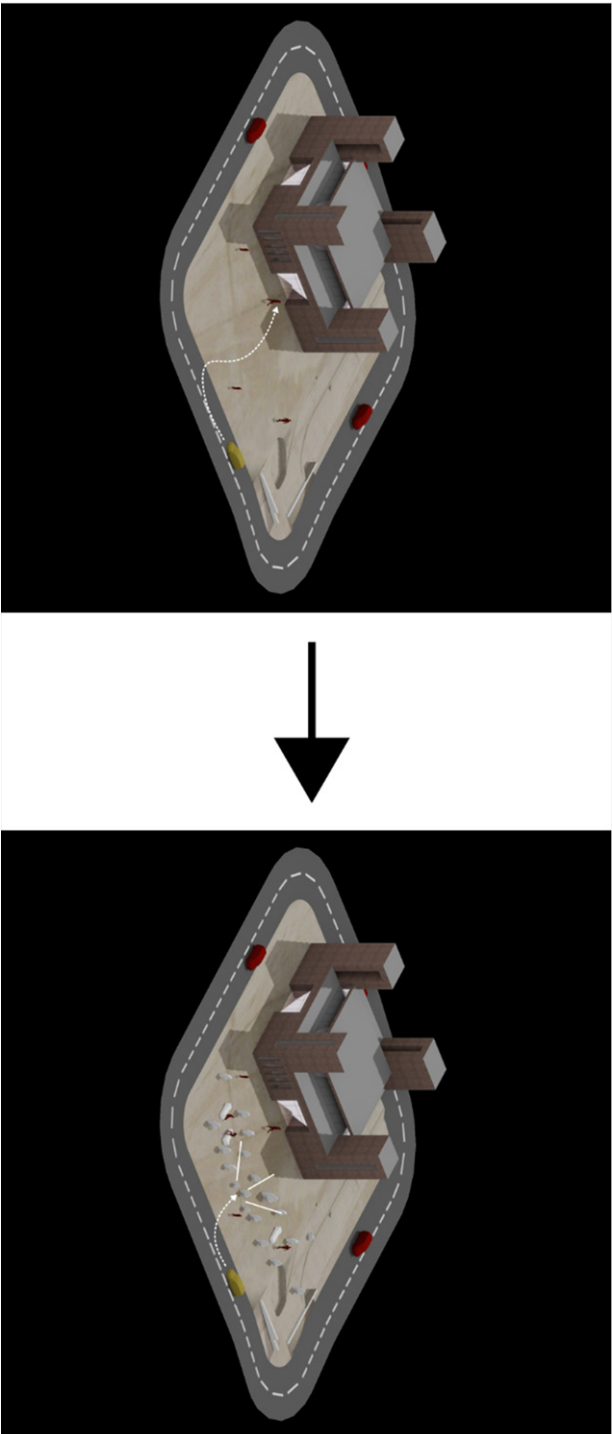


Figure 50. Introduced design action in land use for increased security efficiency – boulders

Source: Authors' own concept.

No obstruction between the road and the building.

Introduction of boulders, which can function as a landscape composition, be a form of gallery, protect from attack using of the driveway, provide shelter for users.

1.4.9. Introduction of Design Measures in Landscaping – Rows of Trees and Benches

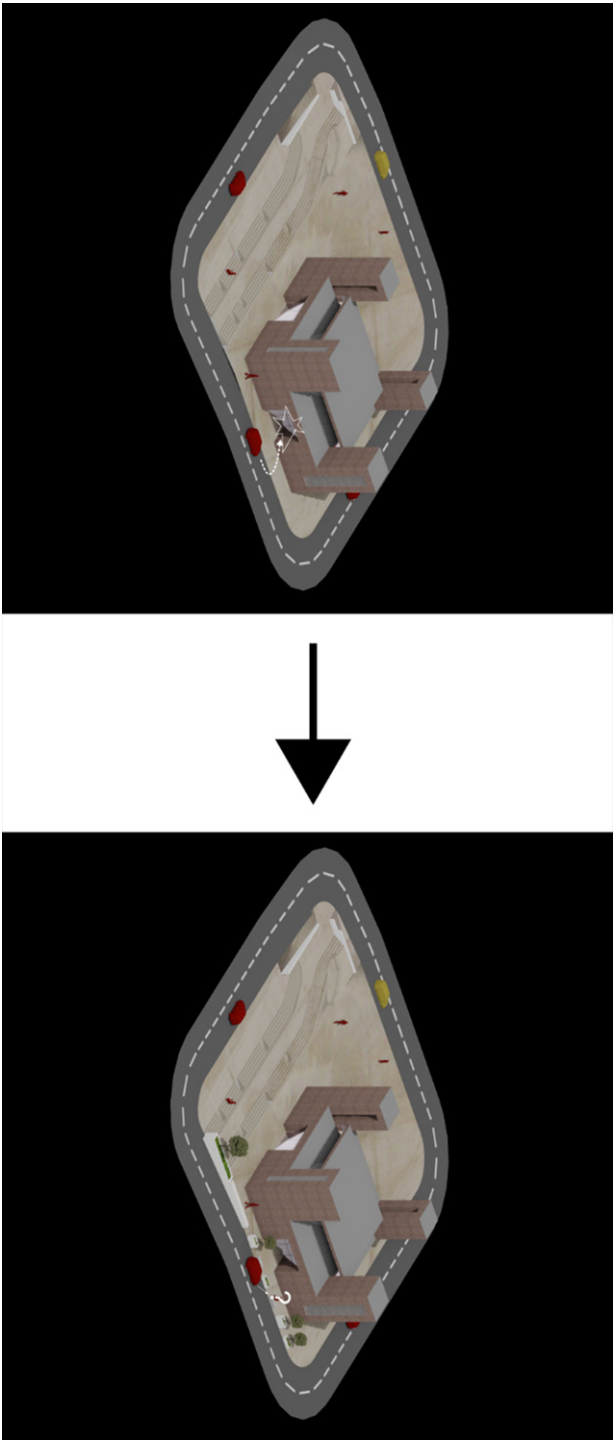


Figure 51. Introduced design action in land use for increased security efficiency – row of trees and benches

Source: Authors' own concept.

No obstruction between the road and the building.

Introduction of a row of flower pots and benches along the road, which can act as a landscape composition, be a form of gallery, protect from vehicle attack, provide shelter for users.

1.4.10. Introduction of Design Measures in Landscaping -Separate Evacuation Route

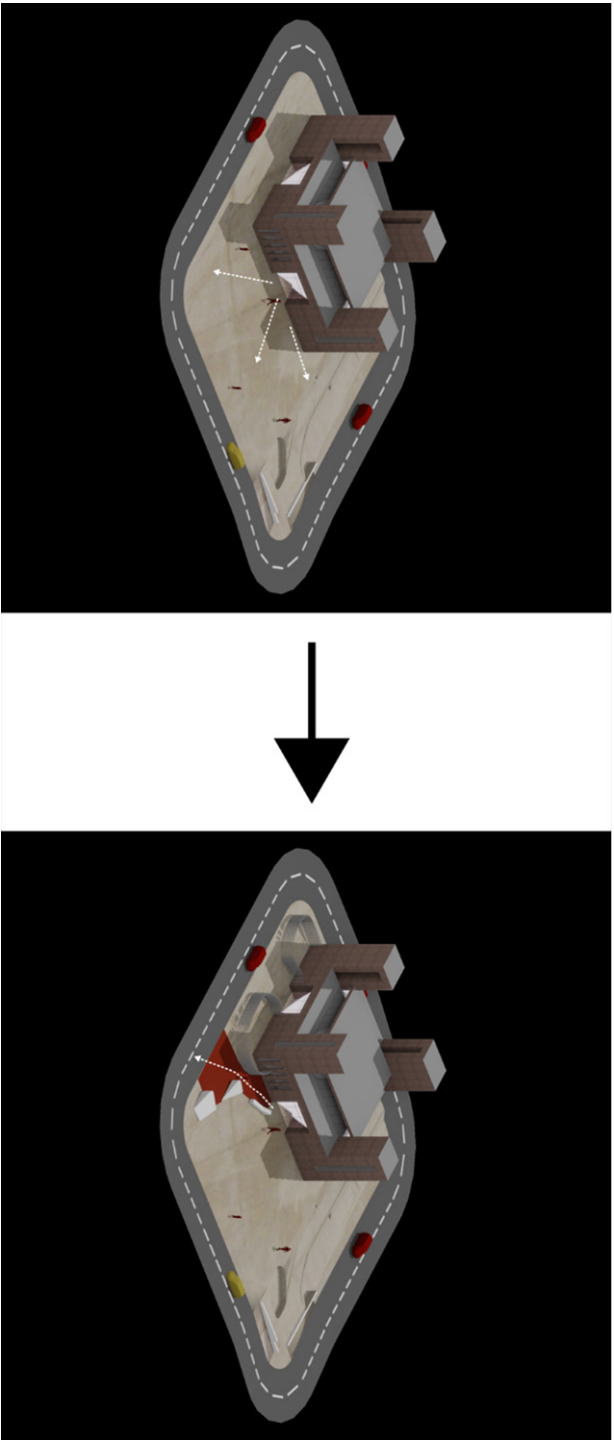


Figure 52. Introduced design action in land use for increased security efficiency – row of trees and benches

Source: Authors' own concept.

No obstruction between the road and the building.

Introduction of a row of flower pots and benches along the road, which can act as a landscape composition, be a form of gallery, protect from vehicle attack, provide shelter for users.

2. Separate Zones and Access Control

This project is primarily dedicated to reducing the threat of terrorism, but the use of access control also helps to reduce the possibility of criminal acts such as:

- burglary,
- pickpocketing,
- acts of vandalism.

Introducing access control at a PoW may seem cumbersome, but by applying a few basic principles, you can create an access control system that not only prevents crime, but also has a positive impact on the conduct of daily activities. Access control means the application of measures to prevent unauthorised persons or unauthorised vehicles, or both, from entering a designated area. Access control also enables better surveillance of people and vehicles in the area.

In order to be able to implement effective and efficient access control in a PoW, the presence of at least the following area elements should be taken into account:

- external environment,
- public area,
- restricted zone,
- border between the zones.

In terms of organisation, the following should be distinguished:

- infrastructure to enable and facilitate access control,
- physical access control by dedicated persons.

From the technical side, it is crucial to use technical solutions that will realistically increase the level of protection and security in a given location, e.g. locks, intercoms, keypads, card readers.

2.1. Zoning

The border of the zones is a visible technical barrier that prevents unauthorised persons from passing and unauthorised vehicles from entering. For the smooth operation of the facility, an adequate number of passageways between zones, both for pedestrians and vehicles, must be taken into account. The evacuation plan and emergency situations must also be taken into account. Entrances, passageways, doors and gates must allow:

- unobstructed day-to-day functioning;
- smooth evacuation;
- rescue operations, e.g. entry of ambulances, fire brigade vehicles or other special vehicles;
- uninterrupted deliveries and supplies;
- construction or renovation work with the use of larger construction equipment, e.g. during the removal of technical faults, construction work, organisation of major events.

The first border to pay attention to is the border between a PoW and the external environment. Usually, a PoW is a part of a larger environment and can be located in:

- the city/district centre;
- the middle of a busy street;
- the vicinity of shopping centres, service areas, transfer centres.

In the above cases, the possibility of defining a demarcation between the place of worship and the external environment should be examined. The optimal solution would be to use a physical barrier/boundary. Sometimes, however, this is not feasible, so it is also important to pay attention to symbolic borders – this can be a small fence, hedge, step, information board – the purpose is to convey a signal that the person crossing the symbolic border is entering the territory of the place of worship. A symbolic boundary may indicate that after crossing it you are in a place where different behavioural norms apply, e.g. you should not talk loudly, use a mobile phone or drink alcohol.

Most often first elements of the external environment are:

- pavement;
- kerb or parking bay, bus stop;
- roadway.

In the case of **pavement**, it is important to use a barrier separating the pavement from **roadway**. The physical barrier solutions used should take into account local conditions and the context of the site, and barriers should not impede pedestrian traffic. It is worth considering the use of small architecture such as reinforced benches, street bollards, reinforced flagpoles, reinforced

light poles. It is also important to make the pavement as wide as possible so that people can move freely, especially during the largest celebrations.

Parking bays and **bus stops** should be kept to a minimum. Where non-designated places where vehicles are parked (e.g. lawns) are observed, bollards should be placed or appropriate trees planted, which will prevent vehicles from parking and have a positive impact on aesthetic values.

The first border, e.g. between the place of worship and the external environment, should also be adequately illuminated – both for the safety of passers-by and to enable better observation of the area and possible access control.

2.1.1. Public Area

Public area means space and facilities to which access is possible 24 hours a day or at designated times and no physical restrictions are applied on a daily basis to prevent free access. Each public area may differ by:

- size,
- shape,
- external environment (location),
- internal environment,
- nature of the site and the activities carried out, e.g. additional social, charitable and cultural activities.

Basic principles from the point of view of the security and protection of places of worship are to identify which areas are to be open to the public and to establish certain rules for their operation. For this purpose, four basic questions should be asked:

- Does the entire facility need to be accessible 24 hours a day?
- Which roads lead to the facility?
- Which doors can be used to enter the facility?
- Where can a person move in the facility?

Answering the above questions allows to:

- determine the opening hours of the facilities in question, e.g. the prayer area may be open almost all day, but the food area and meeting rooms may only be made available during certain hours of actual operation;
- determine so-called ‘movement tracks’, e.g., on the basis of an analysis of the area and facilities, indicate which routes are necessary so that the believer/visitor can freely access the location²;
- minimise accessible doors;

² Free means that a person does not have to see that the possibility of getting to the location is restricted at all. It is important not to induce a ‘besieged fortress syndrome’ in people.

- minimise the space in which people can stay;
- minimise access routes.

Apart from the preventive aspect in the case of terrorist and criminal threats, the application of the above solutions may also have positive organisational effects and may contribute to the reduction of expenses related to the reduction of electricity consumption in certain parts of the buildings, or even reduce the need for cleaning in places which were previously visited by the faithful without any purpose, for example because they got lost or were curious where a given corridor leads to.



Figure 53. Visibly wall-separated public gathering area from the inner PoW area with a pedestrian walkway and access point located to the left. The Shrine of Jasna Góra in Częstochowa

Source: Authors' own collections.

2.1.2. Restricted Area

Restricted area is a space or a building to which access is restricted. In case of religious places, which are usually open, it is extremely difficult to identify which spaces and buildings should constitute of a restricted area. While each place of worship should be analysed individually, there are certain areas that should belong to the restricted area:

- buildings/administrative premises;
- rooms where money, other valuables or documents are kept;
- private areas (e.g. living quarters).

Some areas, e.g. concerning the administrative aspect, must be accessible to visitors for organisational reasons – in this case it is advisable to designate so-called **dedicated areas**, where access is limited to the minimum necessary to enable the smooth functioning of the place of worship. In addition, any visitor should not move within the restricted and dedicated area without the assistance or supervision of **an authorised person**.

As a general rule, all service panels, manholes, air intakes, water intakes, technical rooms and storerooms should also be located in the restricted area. If this is not possible, the rooms should always be kept locked, and seals may also be used – especially for plumbing service panels.

Authorised person means a member of the clergy of the place of worship or an employee of the place of worship. Such a person should have an identification card and be authorised in writing to take care of visitors; the number of authorised persons should be limited to the necessary minimum.



Figure 54. Passage inside the Jerusalem Synagogue in Prague closed by a door with a “No Entry” sign

Source: Authors' own collections.

2.1.3. Dedicated Area

A dedicated area can be defined as the area designated for the purpose of making deliveries, supplies, receiving mail and parcels, and serving petitioners/stakeholders. The demarcation of the zone can have a positive impact on the overall organisational aspect of a place of worship. An appropriately designated and signposted cordoned-off area can facilitate deliveries and supplies to the place of worship, improve administrative services and reduce the need for visitors to enter the restricted area. Basic principles for creating demarcated zones are to:

- include a safety zone – the zone should be at least 30 metres away from large concentrations of people;
- provide an adequate space for free and safe unloading and loading, but the entire road in the zone and the access road should not allow the vehicle to speed up. Consideration should be given to whether vehicles will be able to turn around and leave;

- develop a procedure for the reception of mail and parcels – this is not only to maintain the safety aspect, but also to ensure the proper circulation of correspondence;
- enable an efficient service to be provided to the petitioners;
- provide adequate territorial reinforcement to prevent forcing through by vans, trucks, cars and unauthorised persons. Walls, gates, drop-down bollards and speed bumps, for example, may be used;
- use small infrastructure elements, e.g. benches, waste bins that should be kept to a minimum – the zone should be easy to supervise in order to verify that no one has left a parcel or other object unattended.

2.2. Access Control Between the PoW and the External Surroundings

For organisational and financial reasons, it is difficult or almost impossible to carry out physical daily access control at the border between the place of worship and the surroundings. Physical access control at such a border can be limited to use at events with larger numbers of people – in which case, dedicated access control people will both form part of the security system and also allow pedestrian and vehicular traffic to be more easily managed. Security staff may be appointed. To carry out access control one can use security staff or ask LEA's representatives to assist.

On a day-to-day basis, one should consider involving members of one's community in access control, for example by organising daily activities for certain groups of people around the entrance to a place of worship, who will be able to respond to unusual and strange behaviour of people. However, it is important to ensure that such people behave appropriately and do not frighten visitors away, so instead of approaching each stranger and asking "Why are you here?", it is worth approaching and asking if they need help, or (if the visitor looks like a tourist) if they would like to obtain some historical information about the site.



Figure 55. The entrance gate granting the external and internal parts of the Shrine at Jasna Góra in Częstochowa

Source: Authors' own collections.

2.3. Access Control to a Restricted Area

Physical security measures shall be used to prevent unauthorised access by persons and vehicles to the restricted area, such as:

- fences and walls,
- walls inside the building,
- gates and doors,
- service passages,
- posts,
- identification cards/passes.

In the instance of **fences and walls**, it is important to remember that they should be high enough to prevent or at least make it significantly more difficult to break through them. Their condition should also be checked regularly.

Walls inside the building can provide a natural border between zones. Care should be taken to ensure that such a border is non-porous, that there are no doors or windows between the zones that would allow unauthorised entry into a restricted or dedicated zone.

Gates and doors need to be robust and lockable. Even gates with state-of-the-art locks from the best manufacturers will be of no use if we do not remember to lock them and maintain them properly. Keys to gates and doors should be secured and access to them should be restricted. Always have spare keys and keep them in a different location, such as a sealed cupboard located in a locked room in a restricted area.



Figure 56. An example of a historic door still functioning in the PoW with the possibility of opening it only from the inside of the building. The Shrine at Jasna Góra in Częstochowa

Source: Authors' own collections.

Service passages should be equipped with systems which prevent unauthorised opening. One can use standard, traditional keys or an intercom, but if one has the necessary funds it is worth considering touch keypads or ID card readers.

If it is possible, it is worth setting aside space for **posts** to be located at the borders of the zones. Posts do not have to be used every day, they can be activated on an ad hoc basis, according to needs and risk assessment. If it is possible, the post should be integrated into the surroundings so that it does not raise an unnecessary sense of threat in the worshipers. It is worth considering the use of posts at the entrance/entry to the dedicated area, which will be used frequently for e.g. delivery and receipt of mail. It is recommended that the post should be manned by at least two people. The post should be equipped with at least:

- telecommunication devices;
- additional lighting, e.g. torches;
- a list of persons and vehicles authorised to access the restricted area and the partitioned area;

- equipment for vehicle inspection, e.g. a mirror for checking the chassis;
- a duty book/logbook;
- first aid kit;
- fire extinguisher;
- a social room.



Figure 57. Access control point for cars to the internal part of the Shrine at Jasna Góra in Częstochowa
Source: Authors' own collections.

Identification cards/passes should be the only documents allowing access to a restricted area. The shape and form of an identification card may be an individual issue, but each card should have at least one anti-counterfeiting security feature, e.g. a hologram or a magnetic card. A potential criminal may easily disguise himself as a clergyman and try to enter guarded places in this way – therefore the need for a ID card may hinder his access to the restricted area. ID cards can be lost or stolen, so it is advisable to use access codes; in addition, records of issued ID cards should be kept. The following types of identification cards/passes can be distinguished:

- temporary cards for persons (issued to residents);
- single-use visitor cards, the validity of which should not exceed twenty-four hours;
- temporary vehicle cards (issued to residents or vehicles which regularly enter the place of worship);
- single-use vehicle cards that must not be valid for more than twenty-four hours.

Temporary ID cards should have an expiry date, e.g. three or five years – this will make it easier and more efficient to keep records of issued cards.

In terms of organisation, it is also important to indicate where visitors can get their one-time identification cards before entering the restricted area. It is also important to establish a procedure for taking the card, e.g. announcing the arrival of the guest, delivery, supplies; it is also worth considering that each guest or group of guests should have an attendant with a temporary ID card.

Restriction of Access

The basic principle of access to a restricted area should be to allow entry to persons and vehicles who have a need to be in such an area. In order to improve the functioning of the facility, reduce the occurrence of a terrorist attack and increase its resistance to attack, it is worth considering the use of a restricted area, access to which would also be limited to the necessary minimum.

System Reinforcement

Access control is one element of the security system. In order to strengthen the protection of a place of worship, it is worth considering duplicating the security measures and methods used at sensitive points, such as the zone border. In this case, it is worth supplementing access control with CCTV cameras directed at doors, gates and passageways.



Figure 58. Access control point for the monks to the closed part (cloister) of the monastery.
The Shrine at Jasna Góra in Częstochowa

Source: Authors' own collections.

3. Traffic Routes

A pedestrian walkway is a paved strip of land used by pedestrians, usually it is a part of the shoulder of a road. It is most often paved with concrete slabs, concrete blocks, or stone pavers. The purpose of pavements is to provide safe and convenient pedestrian traffic and to separate it from vehicular traffic on the roadway. They may also serve as a promenade. Decorative mosaics and special small infrastructure can transform the pavement into a work of art. Many cities are now building pavements where possible and necessary and they include bike lanes, lighting. Moreover, curbs at pedestrian crossings are lowered to accommodate the disabled and people with strollers.

An evacuation route is a route designed to efficiently evacuate people from a danger zone to a safe area outside the building or to an adjacent fire area, either directly or by means of general circulation routes, in the event of an emergency, mainly fire. An escape route is a horizontal route – corridor, passage, hallway, gallery, etc. and a vertical route – stairway and ramp, if they provide a final exit to an open space or another fire zone. In the event of a dangerous accident, everyone in the building should be able to get out to a safe place on their own and without the help of emergency services. However, some people with disabilities and other special needs may require assistance and support from staff who should be designated for this purpose. A clear escape route is very important in the event of an emergency. In emergency situations, the main escape route leads through the front door, which is not desirable in the event of a terrorist attack. For this reason, it is recommended that additional exits be created from the building to act as emergency exits during an attack. Evacuation route information is most often posted near elevators, stairs, and in main corridors so that visitors know how to exit in case of an emergency. Evacuation routes should be designed so that, if possible, any person who finds himself in an emergency anywhere in the building can turn around and escape to a safe place, such as a protected stairwell. From there, one should be able to go directly to a place of complete safety outside the building.

In determining whether premises have adequate escape routes, a number of factors should be considered, including:

- **type and number of people using the premises** – the number and capabilities of those present will affect the evaluation of escape routes. Care should be taken to ensure that existing escape routes are sufficient to allow safe evacuation of all persons who may use the facility at any time. If necessary, it may be necessary to increase the capacity of the evacuation routes or reduce the number of occupants;
- **evacuation time** – in the event of a fire or attack, it is important to evacuate people from the facility as quickly as possible. Evacuation routes in a building should be designed so that people can escape quickly enough to avoid being in danger from an accident. The time available depends on a number of factors, including how quickly the danger is detected and the alarm raised, number of escape routes available, and the nature of the people in the building;
- **age and construction of the facility** – older buildings may consist of different building materials than newer buildings and may be in poorer condition. The materials used to construct the premises, the quality of the construction work, and the condition of the building can all contribute to the speed of evacuation and potentially affect the escape routes that occupants will need to use;
- **number and complexity of escape routes and exits** – as a rule, there should be at least two escape routes from all parts of the facility, but under certain circumstances one escape route may be acceptable. If it is necessary to designate two escape routes, to further minimize the risk of trapping people, it must be ensured that the routes are completely independent of each other. This will prevent a fire from affecting more than one escape route at the same time. When assessing escape routes, it may be necessary to consider a safety factor by subtracting the largest exit from the evacuation plan and then determining whether the remaining escape routes from the room, floor or building are sufficient to evacuate all persons within a reasonable time. Escape routes that provide escape in one direction only may require additional fire protection measures to be considered adequate;
- **management of evacuation routes** – it is essential that escape routes and measures to ensure their safe use are managed and maintained in a condition that ensures their usability and accessibility throughout the stay in the facility. Staff should be advised of the on-site escape routes during training sessions.

Factors to Consider when Evaluating Evacuation Options

Key elements to include in a workplace evacuation plan:

- evacuation or shelter in place: a thorough assessment of the emergency situation,
- clearly defined evacuation procedures,
- access to necessary safety equipment,
- consideration of visitors and employees on site.

The above general evacuation principles (described in detail in another Prosperes document relating to procedures) have implications for the separation of communication routes and evacuation routes in a PoW. The separation of communication routes will depend on the size of aPoW and its territorial extent. Therefore, we can distinguish communication routes, including evacuation routes: inside the building, inside the facility (PoW) and outside the facility (PoW).

Internal Escape Route

Emergency (internal) routes play a key role in our safety. In rooms where people may stay, it is necessary to provide a safe exit, leading directly or indirectly to the open space, to another fire zone or to horizontal or vertical general communication routes, hereinafter referred to as ‘escape routes’. Here are some examples of good solutions that one can introduce to a religious facility.



Figure 59. Example of a side emergency exit. The Blessed Caroline Church in Tychy

Source: Authors' own collections.



Figure 60. Internal communication route in the shrine complex at Jasna Góra in Częstochowa
Source: Authors' own collections.

External Escape Route

Communication routes, including outdoor escape routes, are particularly important for security in the event of a terrorist attack in the case of outdoor facilities surrounded by high walls, fences, or integrated into a natural environment with difficult access. In other cases they can also shape the aesthetics of the landscape.



Figure 61. An example of a traffic route in a PoW built as a fortress with high walls.
The Shrine at Jasna Góra in Częstochowa
Source: Authors' own collections.



Figure 62. Separated by concrete walls and trees, the external walkway in front of the Great Synagogue Dohány in Budapest

Source: Authors' own collections.

4. Physical surveillance and CCTV

The use of organisational and technological solutions for the surveillance of a place of worship is primarily aimed at strengthening the level of protection. The two most common surveillance methods are:

- Patrolling,
- CCTV surveillance.

If a place of worship has an internal security service or uses the services of commercial security companies, the duty of supervision, including the performance of patrols and operation of monitoring, is the responsibility of these entities – these tasks should be carried out in accordance with the security plan. However, not every PoW uses such solutions, therefore this guide assumes the identification of universal solutions that are least complicated and can be easily implemented.

4.1. Physical Surveillance

There are two types of patrols:

- foot patrol,
- motorized patrol.

Areas covered by patrols should include all PoW zones, that is:

- parking areas,
- pavements and access roads,
- exterior of aPoW,
- interior of aPoW,
- administrative buildings,
- other facilities, equipment and materials which if damaged or destroyed may pose a threat to human health, life or the environment or cause significant property damage.

In addition, patrols are aimed at:

- verifying weak points,
- maintaining order and cleanliness,

- verifying the condition of security barriers, e.g. the condition of fences, padlocks, locked doors and gates,
- verifying whether bystanders are present at a given location,
- verifying whether objects are left unattended at a given location.

Patrols by themselves are also a form of prevention.

4.2. Basic Principles for Patrols

Basic principles for patrols are as follows:

- patrols should be carried out precisely, one cannot omit places where e.g. someone may hide or leave an object unnoticed – a good practice is to develop several patrol routes in such a way that selected areas are patrolled precisely from one side. There should be enough routes so that an outsider would not be able to predict the patrol route;
- patrols should be performed regularly – ensuring continuity of security.

However, patrols must not be timed – it is unacceptable to always perform patrols at the same hour.

The extent and frequency of patrols should be determined on the basis of a risk assessment.

By applying the above principles it is possible to reduce the risk of a security gap, which in this case consists of the patrol system being worked out and potential criminals choosing a time when they can be sure not to encounter a patrol on their way.

The above description refers to people who are dedicated to carrying out patrols, e.g. uniformed services, an internal security service or a commercial security company.

4.2.1. Daily Patrolling Practice

It is a good practice to make all members of the community aware that everyone is an important part of the security system. It is crucial that when moving around a PoW on a daily basis everyone pays attention to:

- unusual behaviour of people,
- items left unattended,
- acts of vandalism,
- overflowing rubbish bins,
- badly parked vehicles, e.g. a car blocking a crossing,
- always locking the doors,
- before closing the PoW or any part of it, e.g. the administration building, checking whether there are any unattended persons or objects

left in the building. In addition to the central points of the building and corridors, one should also check the toilets and other areas that are made available to visitors, and also check that areas that should be locked (e.g. lockers) are indeed locked.

4.2.2. Additional Surveillance Activities through Patrolling

Virtually every place of worship is characterised by a specific traffic volume. Intensity of traffic can differ depending on a carried out activity e.g. traffic can increase during prayer times. It is important to check both before the start of major religious events, which will be accompanied by higher volumes of worshippers, and after the events one should check:

- condition of an infrastructure,
- condition of small architecture,
- condition of physical security elements, e.g. walls, fences, gates, etc.

Attention should also be paid to issues related to the forces of nature. Patrols or inspections of PoWs' areas and systems should also be carried out after violent atmospheric discharges, e.g. storm, rainstorm, windstorm.



Figure 63. Police patrol in front of the Great Synagogue Dohány in Budapest

Source: Authors' own collections.

4.3. CCTV

CCTV – Closed Circuit Television also known as video surveillance, is the use of video cameras to monitor a specific site and transmit the picture to a local control room. In this case, at least two elements must be distinguished:

- cameras,
- local control room/monitoring centre/server room.

The view from a camera can only be recorded on a disk one has to remember about another important element of a CCTV system – the monitoring operator. CCTV should be a system properly tailored to one's needs. Therefore, in the case of CCTV, it is important to pay attention to the following issues:

- types of cameras,
- location of cameras,
- monitoring system points.

4.3.1. Types of Cameras

There are two types of cameras used in CCTV surveillance systems:

- analogue cameras,
- digital cameras.

In the case of analogue cameras there are, for example, AHD cameras (Analogue High Definition), HDTVI cameras and HDCVI cameras. These types of cameras ensure very good image quality and are resistant to interference. The downside of this technology is the need for cabling, which may hinder the installation of the system, especially in places where there is no possibility of aesthetically conceal the cables. In the case of analog CCTV systems with older technology, in order to minimize the costs one can replace the cameras with newer types – AHD, HDTVI, HDCVI. However, in the case of a desire to establish a completely new CCTV surveillance system, perhaps a better solution is to use digital cameras, where mainly IP cameras are used. IP cameras use data communication links and computer networks, which are necessary to record and transmit recorded data. Digital cameras can have a wider range of applications than analogue cameras, the lack of physical cabling does not limit the distance over which the image is to be transmitted. In order to implement digital cameras it is necessary to choose very carefully the right quality of system components and pay close attention to the network design so that the system is not overloaded – overloading the system may cause interference or delay in image transmission and this will limit the greatest advantages of such asystem.

4.3.2. Camera Types by Designation and Casing Camera types by design and casing are as follows:

- indoor cameras – dedicated for use inside a building;
- outdoor cameras – dedicated for outdoor use, usually placed to supervise entrances and exits to buildings, main passages;
- day/night cameras – dedicated for places that have to be supervised 24/7;

- dome cameras – a very interesting solution for places where large groups of people gather. Such a camera is embedded in a darkened dome, so that an outsider is not able to indicate the monitored area;
- bullet cameras – it is usually a fixed camera, embedded in a specific tube housing;
- fisheye cameras – a fisheye lens allows visibility at an angle of 360 degrees;
- split cameras (modular) – they have both indoor and outdoor functions;
- slow motion cameras;
- high-speed cameras;
- cameras with a positioning system;
- cameras used for counting people;
- cameras used for recognition of license plates;
- pan tilt zoom cameras – a camera that is capable of remote directional and zoom control.

The choice of the appropriate type of cameras is an individual matter, justified among others by the mass and type of buildings, terrain and other environmental factors. The choice of cameras should also take into account the risk assessment and the factor of different types of crime. For example: in places exposed to acts of vandalism, it is worth choosing vandal-proof cameras, whereas in sensitive places, which are important due to the security plan, e.g. entrance to the archive, entrance to the place where valuable items are stored, and at the same time these places are rarely visited, it is worth considering installing a camera with a motion sensor – such a solution may positively influence the perception and reaction of a monitoring operator.

4.3.3. Location of Cameras

After choosing the right types of cameras, attention should be paid to their proper deployment. For operational, financial, aesthetic and social reasons, there should not be too many cameras deployed. The focus should definitely be on quality rather than quantity of cameras. When planning the deployment of cameras it is important to:

- avoid blind spots – the whole area to be monitored with CCTV should be clearly visible; one should pay attention e.g. to columns and various corners;
- pay attention to lighting, e.g. strong light from a street lamp in the direct vicinity of the camera may adversely affect image quality;
- pay attention to greenery. It often happens that at the planning stage and in the initial phase of operation the camera fulfils its tasks, but after several years it turns out that the camera is overshadowed by trees;

- in the case of dividing PoW into zones, if possible place cameras over the borders of the zones;
- take care of aesthetics, e.g. choose a colour of camera housing matching the elevation.

By prioritising the quality of cameras and proper placement, one can avoid creating a sense of surveillance in worshippers. In addition, too many cameras may overload the system and be an unnecessary expense. A small number of well-placed cameras will be effective enough and at the same time will certainly not escape the attention of a potential criminal or terrorist who will make a hostile reconnaissance.

4.3.4. Monitoring System Points

The basic issues one needs to pay attention to when designing a monitoring system are:

- types of end points: camera, audio box, alarm – the number of points is the main determinant of the whole system;
- required image quality;
- volume of data to be archived;
- network throughput (e.g. resolution, quality, frequency – number of frames per second).

Both patrols and monitoring provide a very valuable anti-terrorism reinforcement. In addition, both can improve the management of a PoW and reduce the occurrence of other threats such as property theft, pickpocketing and vandalism. With the help of CCTV, a PoW can be managed efficiently during periods of high concentrations of people. The mere sight of a camera may discourage a potential criminal and creates the opinion that the facility is properly managed and secured, and thus constitutes a more difficult target for an attack.



Figure 64. Information about monitoring in the PoW area posted at the entrance to the mosque. Islamisches Kulturzentrum Azizye, Wien

Source: Authors' own collections.



Figure 65. Cameras covering the whole prayer hall in Vienna Central Mosque

Source: Authors' own collections.



Figure 66. Cameras placed inside the PoW building in a manner that eliminates observation blind spots.
The Shrine at Jasna Góra in Częstochowa

Source: Authors' own collections.



Figure 67. External rotating camera placed on the tower next to the church for more efficient observation.
The Blessed Caroline Church in Tychy

Source: Authors' own collections.



Figure 68. External rotating camera with additional stationary camera to eliminate observation blind spots. The Shrine at Jasna Góra in Częstochowa

Source: Authors' own collections.

5. Physical Barriers and Territorial Enhancement

Physical barriers are the outermost layers of security that, along with alarms and cameras, create a complete and secure system. Physical barriers are an easy, but most importantly inexpensive way to prevent or delay attacks or intrusions into facilities. They also act as a psychological deterrent because they draw a line and make intrusions seem more difficult. Protective barriers fall into two main categories: natural and structural. Natural protective barriers are mountains and deserts, cliffs and ditches, water obstacles, or other terrain features that are difficult to cross. Structural protective barriers are man-made objects (such as fences, walls, floors, roofs, grills, grates, roadblocks, signs, or other structures) used to restrict, channel or impede access.

Functions of structural and/or natural barriers include:

- defining protection area boundaries;
- delaying or slowing traffic or access;
- it is worth considering speed bumps;
- directing access to garages, parking lots, and building entrances;
- denying unauthorized access and allowing only authorized visitors.

There are many ways to increase the physical security of facilities. Among the most important of these are the following:

- **chain link fence** which is an effective and affordable option that can surround the property boundary and protect the area from human or animal intrusion;
- **decorative fence which is** as effective as chain link, if not more so, as it is much more durable, although slightly more expensive;
- **razor wire/barbed wire which** can be added to the top of chain link or ornamental fencing to provide extra security and prevent people from jumping over the fence;
- **bollard** which effectively prevent vehicles from entering the fenced area while allowing pedestrian traffic;

- **barrier gates which** restrict vehicle access while allowing pedestrian traffic when the gate is closed;
- **safety glass** such as tempered glass, laminated glass, security film,
- **grating on windows** – putting bars on one’s windows is a more effective, though perhaps less attractive option if one’s concerned about glass breakage.

Barriers cannot be designed for all situations. Structural barrier considerations include questions of threat analysis, risk, vulnerability, or weighing the cost of completely enclosing large areas of land with significant structural barriers against the threat and the cost of alternative security measures (such as patrols, WMD teams, ground sensors, electronic surveillance and airborne sensors).



Figure 69. Barrier made of tape ordering pedestrian traffic in front of the entrance to the Great Synagogue Dohany in Budapest

Source: Authors' own collections.



Figure 70. Concrete posts to prevent car entry while maintaining pedestrian traffic.
St. Mary's Church in Katowice
Source: Authors' own collections.



Figure 71. Metal posts separating the street with car traffic from the synagogue. The Great Synagogue Dohany in Budapest
Source: Authors' own collections.



Figure 72. Metal posts and a statue forming part of the physical barriers in front of the entrance to Blessed Caroline Church in Tychy

Source: Authors' own collections.



Figure 73. Historic high fortress wall. The Shrine at Jasna Góra in Częstochowa

Source: Authors' own collections.



Figure 74. A metal fence with a foundation and built-in street lamps separating the synagogue building from the street in an urban compact development. The Maisel Synagogue in Prague
Source: Authors' own collections.



Figure 75. An example of a brick fence around a historic wooden church in Bierun
Source: Authors' own collections.

6. Facility Management – Maintaining a Facility at a Level that Ensures Proper Functioning of the Security System

The mere implementation of Security by Design elements may not be sufficient in the long term to maintain an adequate level of security, for example, a newly built fence can provide a very good physical barrier, but at least two things should be kept in mind: regular maintenance; and ad hoc inspection to assess the condition of the fence, e.g. after a storm. Facility management is important because it ensures that the places where people worship feel safe and comfortable. Facility management combines processes to maintain and grow support services and organisation. Religious facility management is not just about maintaining order. Religious facility managers are primarily responsible for security. This is especially important because more and more attacks on religious facilities these days are observed. Houses of worship can be targeted because of their religious beliefs or simply because their church creates a market. That's why it's so important to implement a church security plan and manage it properly.

6.1. Facility Management – Best Practices to Increase Efficiency Regarding Security by Design

Facility management is an ever-evolving process. It is very important for facility managers to constantly use facility management best practices and stay up-to-date. To achieve cost savings and maintain one's facilities and building systems in the most efficient manner possible here are some facility management best practices that can help to improve management efficiency and achieve operational success in the short term:

1. ensure that the facility infrastructure is adequate and that the building is constructed in a manner that is appropriate for the location and work area;

2. have regular fire safety inspections, including making sure fire suppression systems are on and ready;
3. develop and update procedures, e.g.: evacuation/partial evacuation, inevacuation/partial inevacuation, lockdown/partial lockdown – procedures should be discussed with local LEAs;
4. housekeeping – good housekeeping also means keeping the surroundings and traffic routes clean;
5. door security – check all exterior doors to make sure frames are strong, hinges are secure and – if the door has a letter opening – that someone cannot reach through it to open the door;
6. lock windows – the latches used by window manufacturers are not always effective and sometimes they are downright flimsy. If one does not like the look of one's window latches, reinforce the security features by using aftermarket window locks or key-operated levers. One can also reinforce glass with security film, window or glass break sensors, or window grilles;
7. plant prickly bushes under second floor windows (but remember to keep them trimmed);
8. automatethe facility's lighting – it leads to increased efficiency. Similarly, lighting on-demand can help make a facility more energy efficient, which saves organisationsmoney in the long run;
9. illuminate the landscape – criminals do not like to be in the center of attention. Keep them at bay with proper outdoor lighting. Place lights around one's front and back yards, along pathways, near one's garage and other outdoor structures. Not only will itmake intruders fearful, but also reduce the risk of tripping on one'sway to the front steps;
10. cover windows to hide items inside;
11. eliminate hiding places – trees and shrubs may be attractive in appearance, but they also provide a convenient place to hide. Trim back trees and plants near one's home that can serve as hiding places. Instead, opt for smaller flowers and shrubs. If trees are near windows, remove them or reinforce the windows with additional protection. Do not neglect the rest of the exterior of one's home either;
12. post safety signs and stickers – even a security system is not present;
13. take advantage of home automation – allow remote (or scheduled) control of lights, door locks, security cameras, smoke detectors and other security devices. One can receive real-time notifications of suspicious activity so one can respond quickly and thwart potential theft;
14. verify that one's current fire alarms and CO detectors are in a working order – install new detectors if necessary. Check the state of charge and expiration date of current fire extinguishers. Purchase

new fire extinguishers if necessary. Call a professional fireplace inspector before using your fireplace. Do not forget to draw up a new fire exit plan based on the layout of the house, including escape ladders for second floor bedrooms;

15. communicate with your team – communication is the key to success, and a key facility management best practice is to have a clear and effective communication among team members, between departments, and with outside vendors. Be sure to keep everyone informed of any changes that occur in the facilities or its processes, any emergency repairs that have occurred, and always be open to listening to the concerns of team members;
16. organise security awareness training – such a training can be provided by local LEAs to at least PoWs leaders and key staff, such as those responsible for safety and security. Such training should provide knowledge of the most serious threats, reporting procedures and make the audience realise that ensuring an adequate level of protection is not just a cost and a nuisance, but can have a very positive impact on the functioning of PoWs.

6.2. Patterns and Practices

Volunteers

Many PoW's cannot afford to hire police officers or private security guards during worship services. PoW's that want to set up their own security team can use volunteers, with the requirement that they receive proper training and make sure they are familiar with emergency procedures. Increasingly, worship leaders are beginning to train worshippers on everything from evacuation plans to active shooter simulations. Every PoW should prepare for the eventuality of a shooting, just as in the case of a fire, worship leaders receive safety training. In classes taught by specialists, clergy learn, for example, how to identify and segregate newcomers so they can be better observed. Upon request, commissary staff have visited religious facilities to assess vulnerabilities in their buildings and act out scenes in which a fake gunman shoots place of worship pplow with a blanks weapon. Some PoWs with higher risk of attacks to reduce vulnerability establish points with armed security during peak traffic hours.



Figure 76. Standing post with armed security in front of the entrance to the Great Synagogue Dohany in Budapest

Source: Authors' own collections.

Security Checks

“Security checks” are an application of means by which the introduction of prohibited articles may be prevented. Checking methods are usually based on standard metal detectors, baggage scanners or manual inspection. They are used in facilities with a high risk or vulnerability to a terrorist attack. Also visible in the photo is the visualisation of the security check and the clear intent of the detection of dangerous items illustrated on the banner.



Figure 77. A board in front of the entrance to the Nożyk Synagogue in Warsaw with information about security control and objects prohibited to carry into the synagogue

Source: Authors' own collections.



Figure 78. Security checkpoint in front of the entrance to the Great Synagogue Dohany in Budapest

Source: Authors' own collections.

Maintaining Order

Another way to secure religious facilities is to maintain order. During daily patrols it's a good idea to make sure all infrastructure is locked and clean. One should remember that overgrown, neglected or abandoned places pose a potential danger. They encourage break-ins and acts of vandalism.

See Something, Say Something

One of the basic principles in the security aspect is the 'see something, say something' principle. The principle itself is very simple, but to be more effective it is necessary to enable religious leaders, staff and the community at large to know:

- what,
- where,
- how,
- and when to report.

In order to gain a better understanding of the need to ensure an adequate level of security, security awareness training can be helpful so that people can understand why this is so important. Moreover, one can also realise that one can also have a positive impact on the level of security and safety, thereby contributing to the safe and smooth functioning of one's religious community.

Establishing Working and Advisory Relationships with Local LEAs

Local LEAs can be very helpful when pointing out the feasibility of particular Security by Design elements, developing security plans, evacuation plans and conducting training on the protection of PoWs. Establishing working and advisory relationships with local LEAs not only facilitates daily life and better preparation for celebrating the most important events of the liturgical year (e.g. organising processions, holding prayers with a larger number of worshippers), but also has the positive character of building social bonds which can enable positive relationships to be built also outside the religious community. Such an approach can be particularly important in the case of people who for various reasons are or feel excluded, are prone to radicalisation processes or are characterised by extremist views. In this context, strengthening social ties and contacts with LEA representatives in a friendly environment can have a positive impact on the social component, as they also have an educational and socialising character.

7. Security by Design in Practice on the Example of Blessed Caroline Church in Tychy (Poland)

Church of the Blessed Caroline in Tychy (Poland) is a contemporary religious building, built in the millennium at the turn of the 20th / 21st century. The PoW performs sacred as well as social and charitable functions through the surrounding infrastructure. As can be seen in the photograph below, the architectural concept focuses on open space with appropriate site and landscape planning.



Figure 79. General view of the landscape development

Source: Authors' own collections.

In front of the church there is an open space with separate traffic routes connected to the city's recreation area.



Figure 80. View of the development of traffic routes

Source: Authors' own collections.

Parking for worshippers is in close proximity, has a dedicated road leading to it and it can be closed off if necessary.



Figure 81. View of the car park at PoW

Source: Authors' own collections.

The road from the car park to the PoW central facility is closed from traffic by placing boulders and metal posts at the access point.



Figure 82. View of the piosts closing the access from the parking lot to the church

Source: Authors' own collections.

In addition, from the urban open space, metal posts and a memorial were installed in front of the facility. This solution provides an effective barrier against the use of a car as a tool for a terrorist attack and effectively protects the central PoW's facility.



Figure 83. View of the closing posts and monument separating the public space from the church
Source: Authors' own collections.



Figure 84. View of the closing posts and monument separating the public space from the church
Source: Authors' own collections.

The facilities in the PoW complex are enclosed by a brick wall and greenery.



Figure 85. A view of the brick fence and greenery separating the church grounds from the public space

Source: Authors' own collections.

Numerous architectural elements like stairs on a slope were also used.



Figure 86. A view of the use of stairs and the slope separating the church grounds from the public space

Source: Authors' own collections.

A line of trees and boulders were used around the PoW.



Figure 87. A row of trees and boulders applied to the side of the public space
Source: Authors' own collections.

Entrance gates are separated and monitored and locked against unauthorized access.



Figure 88. The entrance gate to the church grounds
Source: Authors' own collections.

Monitoring of the area has been applied by placing rotating cameras on the church tower, which provides a good vantage point.



Figure 89. A rotating CCTV camera placed on the church tower for a better field of view

Source: Authors' own collections.

The entire site and walkways are illuminated at night.



Figure 90. View of the lighting of traffic routes

Source: Authors' own collections.

Also, the central facility itself is perfectly lit, enabling observation via CCTV.



Figure 91. View of the lighting of the church grounds
Source: Authors' own collections.



Figure 92. View of the lighting of the church grounds
Source: Authors' own collections.

**Summary: Tips for One's Own
Security by Design**

The following tips can help one to use the basic principles of Security by Design, which can easily and non-intrusively increase the level of security in one's PoW. Of course, one does not have to use all the tips, only those that suit one's needs and capabilities. The following tips are not prioritised. Furthermore, take note of the advice given in section 6.1. *Facility Management Best Practices* to increase efficiency regarding Security by Design. The tips are as follows:

- keep the public area tidy – this way one can identify unattended items more quickly;
- monitor car parks and entrances to avoid unauthorised entry of vehicles and leaving items unattended;
- ensure ease of access for emergency vehicles;
- ensure that emergency/fire exits are well marked and passable;
- regularly check the condition of fences, doors and windows;
- regularly monitor the condition of vegetation, trees and shrubs;
- regularly monitor the condition of small architecture, e.g. benches;
- regularly check and empty waste bins;
- regularly check security systems;
- regularly check the technical condition of the CCTV and make sure that the monitored area is adequately exposed;
- regularly check the condition of the lighting;
- regularly check the condition of information boards and pictograms;
- regularly check means of communication, e.g. the condition of loudspeakers, or even such mundane matters as keeping key telephone numbers up to date;
- during one's daily work, e.g. when passing through pow, check that doors and windows are locked, that there are no unauthorised persons or unattended objects in the premises;
- keep entrances to a minimum and regularly check that doors are locked;
- if possible, designate a safety zone;
- if possible, designate a public area for worshippers and visitors and a restricted area for the staff;
- set a clear boundary indicating where the pow starts, even if it is only a symbolic boundary;
- use access control, even if it is limited to a "traditional" lock;
- for the use of small architecture, choose elements that fit in with the landscape and one's site – this will keep the PoW open and make it more welcoming for worshippers and visitors;
- organise the direction of movement of worshippers and visitors.

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