BSI Standards Publication

Prevention of crime — Urban planning and building design

Part 6: Schools and educational institutions

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National foreword

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European foreword

This document (CEN/TS 14383-6:2022) has been prepared by Technical Committee CEN/TC 325 "Crime prevention though building, facility and area design", the secretariat of which is held by UNMZ.

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EN 14383 / CEN/TS 14383 consists of the following parts, under the general title *Prevention of crime - Urban planning and building design*:

— Part 1: *Definition of specific terms*

— Part 2: *Urban planning*

— Part 3: *Dwellings*

— Part 4: *Shops and offices*

— Part 5: *Petrol stations*

— Part 6: *Schools and educational institutions*

— Part 7: *Public transport facilities*

— Part 8: *Attacks with vehicles*

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Introduction

While considering measures aimed at 'reduction of risk of crime and antisocial behaviour in schools and educational institutions (schools), one of the most important tasks is risk management. High quality risk management when planning, implementing and using schools and educational institutions depends on risk management system and its process risk assessment. A scope of security measures of physical protection design and implementation should be taken in order to reduce the risk.

The causes of crime and antisocial behaviour have been researched for many years. There are many factors that can influence the possibility of an offence being committed or not. Certain factors, for example socio-economic conditions, are beyond the scope of this document. A common factor of all the measures is the fact that it is difficult to limit unauthorized entry into a school building.

Most of crimes are committed because perpetrators use opportunities in schools such as easy access, hiding places, absence of demarcation between public and private spaces, poor lighting and/or favourable landscaping or architectural solution. By understanding the motivation of potential offenders and counterbalancing it by risk assessment, specific physical security measures combined with real or symbolic design elements with risk management, this document aims to assist designers, planners, estate managers and stakeholders in crime prevention.

It helps to have a good understanding of technical recommendations, technical standards, laws and regulations summarized in one document necessary for schools and educational institutions to implement often neglected conceptual solutions of schools' crime prevention in early stage planning.

1 Scope

This document gives guidance and recommendations for reducing the crime risk and antisocial behaviour against people and property in schools through planning and design stage by preventative risk management.

This document is usable for public and private schools and educational institutions. The document can be used particularly but not exclusively for the security risks. Proposal and implementation of crime prevention measures work with risk management. It is essential to consider changing social and cultural unwished behaviours in school and educational premises with preventive risk management.

This document is not addressed to universities. However, it can be used as methodology for crime prevention and risk management as well as to ensure the level of physical protection in universities as well.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14383-1:2006, *Prevention of crime - Urban planning and building design - Part 1: Definition of specific terms*

3 Terms and definitions

For the purposes of this document, the terms and definitions of EN 14383-1:2006 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
asset
anything that has value to an organization

Note 1 to entry: Assets include but are not limited to human, physical, information, intangible and environmental resources.

3.2
risk analysis
identification and evaluation of crime threats

[SOURCE: EN 14383-1:2006, 3.32]

3.3
secure area
mechanically and/or electronically enclosed area protected for safety and/or security purposes

[SOURCE: EN 14383-1:2006, 3.38]

3.4
security measures of physical protection
system of technical, technological and regime measures resulting in object/property protection, to prevent crime and security threats and in case an event happens, to mitigate its consequences

3.5
physical protection
system of technical and regime measures for the protection of persons against security threats resulting from unauthorized activities within or with regards the property

3.6
physical security
security services performed by school staff and/or security staff (guards)

3.7
threat
individual or a group with motivation and capability for intentional act that cause harm to people or loss of asset

3.8
location
territory with a particular appearance, part of a geographical area

3.9
risk management
coordinated activities resulting from risk assessment processes to deal with crime risks

[SOURCE: ISO 31000:2018, 3.2, modified]

3.10
local circumstances
conditions characteristic of a particular location, such as: terrain, accessibility, urban concentration, security situation, etc.

3.11
consequence
outcome of an event

[SOURCE: ISO 31000:2018, 3.6, modified]

3.12
penetration test
practical test of security measures functionality regarding access denial/control systems

3.13
perimetric space
space in close vicinity of the building (from the boundary to the building envelope – including the accesses)

[SOURCE: EN 14383-1:2006, 3.27]

3.14
building envelope
outer walls with openings, i.e. doors and windows

3.15
risk assessment
categorization of risks and measures including evaluation of their likelihood

3.16
regime measures
set of binding and clearly defined internal rules, instructions, orders and procedures to asset regime and security measures

Note 1 to entry: Regime measures provide links between security measures and objects users.

3.17
risk
probability of occurrence of an unwanted event and its consequences

Note 1 to entry: Risk is also considered in terms of effect of uncertainty on objectives.

3.18
scenario
assumed set of conditions and/or events of how a threat may achieve its objective

3.19
system of technical protection
technical system supplying prevention measures, installed as a part of physical protection of buildings

3.20
exterior space
land and neighbourhood around school property (streets, buildings, trees, vegetation, etc.)

3.21
internal space
zone located inside a building

[SOURCE: EN 14383-1:2006, 3.47]

EXAMPLES   Corridors, classrooms, offices, gyms, etc.

3.22
vulnerability
weakness resulting in susceptibility to a threat

3.23
crime risk
likelihood of becoming a victim of something unlawful, thread, harmful or loss

3.24
antisocial behaviour
anti-social behaviours are actions that harm or lack consideration for the well-being of others

3.25
crime
unlawful act, punishable by a state or authority, which may be harmful not only to some individual but also to community, society, or the state

Note 1 to entry: This definition is used for purpose of crime analysis and planning of preventive measures in the context of European standardization. It does not contradict statutory provisions in particular laws.

3.26
security audit
physical on-site control by audit of security measures, their functionality, efficiency and compatibility

4   Abbreviations

CCTV	Closed Circuit Television
ARC and MARC	Monitoring and Alarm Receiving Centre
MBE	Mechanical Barrier Equipment
MBS	Mechanical Barrier Systems
FPS	Design of Fire Safety Protection
ASES	Alarm Security and Emergency System
FDAS	Fire Detection and Fire Alarm Systems
SGMK	System of General and Main Key
EACS	Electronic Access Control Systems
TPS	Technical Protection System

5   Objectives and methodology

5.1 Objectives

The objective of this document is to embrace preventive risk management possibly occurring in schools and educational institutions providing fundamentals and design proposals for reducing risk and antisocial behaviour.

The main goal is to provide advice and ways of implementation of security measures based on risk management in schools and educational institutions.

5.2 Methodology and goals

Risk management is the fundament for creating a strategy of crime prevention. Figure 1 shows the process of risk management according to ISO 31000:2018. In each box of Figure 1 you can find a reference, the clause number of this document, which provides guidance for the context of crime prevention in schools and educational facilities.

The risk management process consists of the following steps:
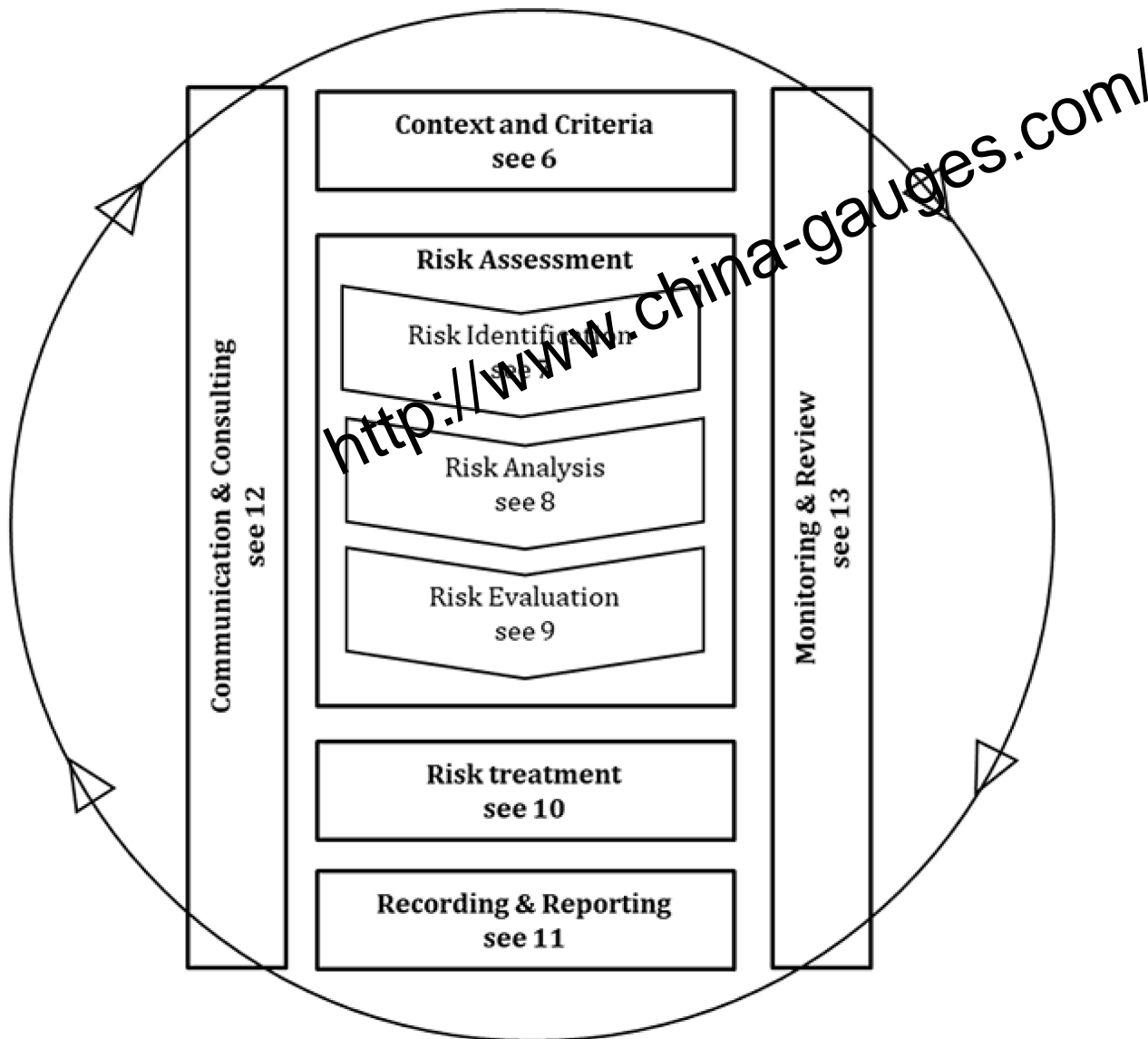
**Figure 1 — Process of risk management with references
to the related clauses of this document**

NOTE   Please find Risk Analysis for crime prevention in schools in Clause 8 of this document.

Risk assessment is the overall process of risk identification, risk analysis and risk evaluation. Risk assessment is an important tool to comprehend risks, their sources, vulnerabilities, and their consequences. It is necessary for the next process of security measures implementation.

Before the effective strategy is developed, all risk factors arising from the matters of security should be taken into consideration.

A potential aggressor is motivated by an asset. The asset is characterized by certain vulnerability towards the threat. Furthermore, the asset is protected by security measures against effects of active threats. Selected security precautions discourage / prevent the threat from activation. In order to gain access to the asset, the threat has a direct impact on the asset or the security precautions. For the threat impact, activation is needed first. The activation requires resources – special conditions.

Not only local factors should be considered preferably in order to determine the level of risk. To identify type of reported crimes it is recommended to make crime assessment, including information such as who are the victims and where and when previous events occurred.

Moreover, it is important to identify factors influencing opportunities for a crime in school area.

5.3 Roles and responsibilities

Establishment of the roles and responsibilities of each participant on a building project proposal in a stage of construction and security management.

Regardless of the project type (construction, reconstruction or adaptation and repair of buildings) it is recommended to define organization responsible for security. Stakeholders and organisations who are involved in crime prevention include:

— School participants (teaching staff, staff responsible for education and health, administrative and technical staff, students and legal representatives of pupils and students);

— External partners from central and local government entities (representatives of state police, local authorities, social workers etc.);

— External partners from private sector (e.g. service providers).

In accordance with this document, founders of schools should be responsible for school development conception and strategy. Security conception and security policy are the most relevant documents.

Directors of schools and other educational staff of the institution must ensure processing of the security documentation. In particular, risk assessment, together with other documents relating to the issue of regime and organisational measures in schools. Staff in educational institutions is required to comply with security measures, including requirement to report any non-conformity in realization of security measures.

External partners from both, private sector and government authorities shall contribute to compliance with security measures. External partners ensuring physical protection are required to be involved in processing of internal documents.

6 Context and Criteria

6.1 Establishing the context

6.1.1 General

The most important processes of risk management are establishing the context and defining parameters for risk management. Defining the external and internal context, risk criteria and perimeter is essential for the risk management policy. Together with establishing the context, aim of risk assessment should be formulated. Integral part of the establishing is defining risk management objectives.

6.1.2 Establishing the external context

Establishing the external context includes understanding the surrounding environment, in particular:

— Cultural, political, social and legal environment, whether national, regional or local.

— Key influences and trends of security impact on school.

— Perception and values of external stakeholders.

6.1.3 Establishing the internal context

Establishing the internal context includes, in particular:

— Information flows and decision-making processes.

— Internal stakeholders.

— Objectives and the strategies that are in the place to achieve.

— Policies and processes.

— Standards, guidelines and documents by schools.

— Structure (e.g. management, roles and responsibilities).

6.1.4 Establishing the context of the risk management process

Establishing the context of the risk management processes, particular decisions:

— Defining the goals and objectives of the risk management.

— Defining responsibility within the process and parts of risk management.

— Defining the scope of the risk management activities.

— Defining risk criteria.

— Defining the way performance and effectiveness is evaluated in the risk management.

6.2 Defining risk criteria

The above-mentioned section about establishing the context does not need to be final as other possible parameters which could be present. Establishing the context should follow EN 31010 "Risk management - Risk assessment techniques".

— The nature and types of cause and consequences that should be included in risk management.

— How the likelihood of an event / incident will be defined.

— Defining consequences.

— Defining risk level.

— Criteria.

7 Risk identification

7.1 General

The initial activity to process risk evaluation is risk identification. Risk identification is the overall process of finding, recognizing and describing risks. In this process, two tasks are conducted:

— Risk identification and categorization; and

— Asset identification and categorization.

7.2 Risk identification and risk categorization

Methods and techniques for risk identification can be used from EN 31010 "Risk management - Risk assessment techniques" for performing risk analysis.

First of all, the following methods and techniques are recommended to be used in order to identify risk:

— Brainstorming.

— SWOT analyses.

— Structured interviews and questionnaires.

— Check-list.

— Historical data of incidents in schools within the local, regional, national and international context.

— Security audit and security assessment conducted by a professional.

— On a new place under construction: the professional security evaluator will assess the needed state of security for the school and state the measures to be adopted.

NOTE   On an existing school: the professional security evaluator assesses the needed state of security, the actual security level (measures already in place), and states the measures to be adopted in order to cover the gap if it exists.

A security audit is the verification of physical protection and conformity with accepted and adopted security measures (technical protection, regime protection, physical guard) in accordance to the school written documents.

A security assessment is objective evaluation of the current state and functionality of physical measures applied and the primary instrument for the effective security system setting.

During the process of risk identification, risks (threats) and their sources which affect at least one asset are selected. Risk identification is followed by risk categorization.

The objective of this document is to protect people and property and therefore all possible crimes and antisocial behaviour at schools are to be considered. Individual events vary among day time. Vandalism, aggression with or without weapon, abusive language, threats, physical violence occur mostly during hours of occupancy. Some of them could happen outside the area on in close spaces, near entrances or on access routes for both students and staff. Crimes connected with property are in particular: burglary and arson. Extreme damages to property are mostly conducted out of hours when schools are closed.

Schools technical and personnel measures should be adjusted to protect against crime in accordance with resulting risk assessment. Risks can be categorized for instance by their negative consequences.

Risks related to crimes against persons should be categorized as follows:

a)   Insults, verbal offences, abusive language.

b)   Bullying.

c)   Racketeering or attempt to racketeering, money theft.

d)   Sexual physical violence.

e)   Armed physical violence.

f)   Physical violence with common object used as weapon.

g)   Physical violence without weapon.

h)   Use explosives or threat with explosives.

i)   Hostages' situations.

j)   Threat with hazardous substances.

k)   Kidnapping, attempt to kidnapping.

Risks related to crimes against property should be categorized as follows:

I.   Theft (and attempted theft)

- Trading stolen goods.

- Break-in, pick a lock.

- Robbery.

- Armed robbery.

II.   Destruction and damaging

- Graffiti.

- Throwing stones or other objects.

- Vandalism to buildings.

- Vandalism to security systems.

- Vandalism to devices other than security systems.

- Vandalism to personal property.

- Arson and attempted arson.

III.   Other

- False alarm.

- Drug consumption.

- Drug dealing.

- Entry of unauthorized persons in schools.

- Carrying of weapons.

- Illegal occupation of spaces of the school and / or its surroundings.

List of the risks is not complete as there are also other important specific conditions at some schools. It is also necessary to consider risk source dynamics and specifications capable to put protected interests at risk. Crime mapping from the given location or a similar location can be used for the process of frisk identification and categorization.

7.3 Assets identification and categorization

Asset identification means establishment of all assets located within the risk management. In terms of security management, assets are considered as protected interests, i.e. life, health and property. There are two types of property - tangible and intangible. Possible extent of harm caused by damage, destruction or loss of the assets should be considered when determining value of an asset - property. Cost characteristics of the asset can be used for this purpose. Name and in case of property also placement in the borders of risk management shall be indicated in the process of decision making of involving into the register and its risk categorization.

8   Risk analysis

8.1 General

Risk analysis is based on risk comprehension and provides assessment for deciding whether a risk should be treated or not. Risk analysis considers causes and resources of threats, their consequences and likelihood that those consequences could occur. Result of the risk analysis is the level determination of specific risks.

All types of antisocial behaviour and crimes in schools should be analysed with regards to all the stages of projects as construction, reconstruction or adaptation and repair of buildings. Risk assessment provides knowledge for effective protection measures to build environment with decreased crime occurrence.

Performance of risk assessment should be based on external risks from the surrounding environment as well as on internal risks. When building in a new area sometimes there may not be relevant information about crime activities in the area. For such situations it is recommended to consider threats of crimes from similar locations that can provide with helpful data relevant crime events in case *on-site* available information is not sufficient.

8.2 Determining the likelihood of incidents occurrence

The prior task of risk analysis is likelihood determination for risk occurrence or security events. Risk assessment is here essential. The following approaches could be used for the determination:

a)   Use of related historical data to identify events in a certain period of time in schools. This approach gives a possibility to roughly extrapolate the further likelihood. If there are no accurate historic data, crime mapping or data from similar locations can be used.

b)   Predictive techniques can be used, for example tree analysis. For predictive methods, EN 31010 "Risk management - Risk assessment techniques" for performing risk analysis can be used.

c)   Expertise or expert's estimation in risk management, due to high level of subjectivity Expertise or expert's estimation in risk management, due to high level of subjectivity, principles of likelihood estimation should be considered.

8.3 Vulnerability of assets analysis

Most of the serious threats are connected with unauthorised entrances to the school area. It is therefore important to categorize the assets aggregately. Object to protect as life and health can be analysed from a vulnerability approach.

8.4 Risk consequence analysis

Next step includes risk consequences determination with regards to certain assets. The nature and type for consequences are determined during the analysis.

The analysis can include:

— Consideration of existing tasks for risk management. For example, existing security measures for consequences mitigation.

— Consideration of immediate consequences and so-called secondary ones occurring after some time.

— Consideration of other consequences influencing associating systems, activities, facilities or organisations.

8.5 Level of risk determination

Vulnerability as characteristic of an asset, increases the consequences and therefore vulnerability is a semiquantitative method for risk evaluation.

9 Risk evaluation

9.1 General

The final activity of risk analysis is risk evaluation to determine what risks should be dealt with first. Comprehension gained during the risk analysis assists in the decision making about further security measures on the mentioned consequences and vulnerability minimization is used in the evaluation. Risk evaluation consists of the following tasks:

— Comparison among sets of risk limited by criteria;

— Level of risk acceptance determination;

— Acceptable and non-acceptable risks listing.

9.2 Comparison of determining risk level with defined criteria

For this process, criteria used in particular are: consequences, vulnerability and likelihood and should characterize line the level of the risk.

9.3 Risk acceptance determination

If the risk the level does not fulfil the defined criteria, a broader context needs to be considered to determine the risk treatment. Some rarely occurring risks do not necessarily need to be unacceptable. However, it is recommended to analyse these risks to reduce vulnerability.

9.4 List of acceptable and non-acceptable risks

The list of acceptable (conditionally acceptable) and non-acceptable risks establishment is the final part of risk evaluation. The list states the risks that have to be dealt with in the framework of physical protection at schools.

9.5 Assessment effectivity of current security measures

The evaluation of the current security measures consists of two consecutive stages. The first stage, is the evaluation of current security measures with regards to non-acceptable and conditionally acceptable. The second stage it is the assessment of the effect of the current measures.

The level of technical protection corresponds to the level of major risks.

Then, it is required to evaluate the security measures efficiency and the functionality of overall security system. An analysis of the current documentation (listed on provision 11.1 of this document) followed by security control of school/object is essential for evaluating efficiency of the measures.

9.6 Security audit

Security audit includes parameters as described in Table 1.

Table 1 — Controlled parameters

Security measures	Parameter
MBE	Physical state and resistance — Perimeter (fencing security zone boundary) — Building facades forming part of security zone boundary — Mechanical protection of important parts of object or technology (magnetic gate)
ASES	— Level of protection — Form and range of protection — Type of emergency system — Form of control — Form of signal output on ARC/MARC
EACS	— Types of identification (discretionary, mandatory, role-based). — Type of access — Form of implementation — Range of installation — Form of signalization and alarm reporting
CCTV	— Cameras installation range — Form of monitoring — It is recommended to have installed in the cameras recognition software that would pull the alarm automatically and switch the camera that recognizes an anomaly to the watch board in the security room — Form and retention period of records — Functionality links with other system of technical protection
Physical security	— Range of service — Communication method — Effectivity — Definition of (the legal limits of the) responsibility of the security staff

It is required to perform physical control of the spaces adjacent to perimeter, fencing check, identifying potential obstacles for the right security measures functionality, evaluation of prohibition, order or information signings and labels placement, availability of security instructions, visibility of security paints. Physical control should be conducted by a person adequately trained and experienced in the field.

10 Risk treatment

10.1 Design and layout of schools

All types of antisocial behaviour and crimes in schools shall be analysed with regards to all the stages of projects such as construction, reconstruction or adaptation and repair of buildings. The main requirement is ensuring effective use of building environment, which results in reduction of crime occurrence.

Planning should include social factors, crime types and location and time of construction development from a local, regional and national diversity perspective.

In particular, the following factors should be considered:

— Choice of location can be subject to urban plan request or revitalisation of certain urban or other places and other factors should be considered then (e.g. finance criteria).

— Security measures depend on chosen location and the national and local recommendations from authorities and stakeholders.

— Short distance to predefined assembly places (e.g. public traffic, public transport interconnections, sport facilities, shopping centres, restaurants and cafés, clubs, bars).

— Clearly defined lines between areas with different levels of accessibility and the use of the division of space into public, semi-public and private.

— Natural factors such as rivers, rugged terrain, vegetation in surroundings, etc.

— Factors influencing safety and security, such as distance to rescue services or gardens with tall walls and fences.

— Positive factors such as well-maintained school objects, interior or exterior lighting, surrounding public connections, etc.

— Level of security provided by the neighbourhood.

— Possibility of monitoring, i.e. views on school buildings from surrounding buildings and public spaces through maintained vegetation.

For planning process in new locations or when reusing of existing ones, it is important to follow principles of sustainable construction, including relationship between school and other objects. The possibility of building objects adjacent and their natural monitoring at night and day can increase the level of security. Natural monitoring / social control is not enough to lower the number of crimes. Thus, natural monitoring shall be combined with a system of physical protection or with remote.

10.1.1 Layout and location

10.1.1.1 Location

The assessment will the depend on whether the school is new or an already existing building as well as the neighbourhood and the number of visitors.

10.1.1.2 Access routes

It is required to ensure the security of pedestrians and cyclists and transport means between school and afterschool activities or facilities (gyms, pools, separated sport areas etc.). This can involve also transport

to separated school facilities for those cases when schools do not provide appropriate facilities in the main school area.

10.1.1.3 Schools with more areas

Existing buildings located in separated areas can be parts of one school with more than one area. More locations of school buildings can result in increased transport between the areas and related unauthorised access as well as difficulty to defence a perimeter. New schools should be planned and designed in one joint area.

10.1.1.4 Immediate surroundings

Security is influenced by its surrounding land or object usage type. Wooded lands or open sites with no perimeter allow access of unauthorised persons, as opposed to urban areas with defined perimeters, fenced, or surrounded by potential observing and notification of an event of crime or antisocial behaviour.

10.1.1.5 Layout of buildings

Following the trend of increased public use of some schools or their parts, these buildings can be built very close to public spaces. School courtyard can be a part of area for public use. This kind of layout certainly has some advantages such as high level of natural monitoring. Under these circumstances, it is recommended to maintain clear differentiation between public and private areas and maintain proper entrance to doors and school parking places or to private areas. It can be done by use of different surfaces or marks. Protection measures can involve rising bollards/barriers with ability to rise after hours of classes. This kind of protection can be used particularly for glass facades in high crime rate areas.

10.1.1.6 Spaces for sports equipment storage

It is recommended to provide spaces for safe storage of game and sports equipment including seasonal storage of goods in the main building. The space should be accessible from the outside as well as from the inside of the building. Detached buildings or spaces for sports equipment storage can be more vulnerable to unwarranted entry and subsequent theft of placed equipment.

10.1.1.7 Site roads

Pavements among school buildings and those which lead from public entrance should be direct and lead along known desired lines, or in case of new buildings, along expected desired lines. The pavements should be well-illuminated, without visual obstacles and be as wide as needed to provide non-conflict passing of people.

10.1.1.8 Public use of site

There should be signs discouraging entry to school site such as prevention from undesirable activities (for instance dog walking). Some schools open their sites to the public out of classes and during holidays under supervision of authorized employees. It is recommended to support authorized use of school sites which can help preventing from particular forms of criminality.

At the same time, it is recommended to take into consideration that the use of school sites and buildings by the public brings other risks related to security. Potential perpetrators who consider breaking into the building can have an opportunity to find vulnerable points in building security during an authorized visit.

10.1.1.9 Public roads through the site

There should not be any public roads through school sites if local circumstances do not precisely define them. It is recommended not to build public roads as they provide with opportunity for criminality within new school sites.

10.1.2 Inner area

10.1.2.1 Access for the disabled

In spite of the fact that the document does not specifically deal with access for the disabled but it takes into consideration access for all people, it is required to always ensure safe access for the disabled as well.

10.1.2.2 Access for the public

Within security planning it is necessary to take into consideration that school spaces can be shared out of classes with the public and others, for example with cultural organisations. Security measures shall be in balance with opportunity to access school space by the public.

When constructing a new school building, the spaces which can be shared with the public have to be taken into consideration as they can influence the architectural conception of the reception (drawing room) and the rest of the building. For instance, a huge reception can have more controlled doors leading to different wings of the building. It is able to let some parts of the school secured other than classrooms by alarm security system when the public use shared spaces.

10.1.2.3 Building layout

It is easier to ensure security in an individual building. Interconnection of all buildings is preferable in case of new school buildings in order not to have to leave the building, except for doing activities out of school. It is recommended to take into consideration the possibility of future building extension. Extension of current buildings is preferable to building new individual ones.

In case that a current building consists of several individual buildings, it is recommended to improve their interconnection by a perimeter security fence to be able to prevent kids, pupils and students (hereinafter Pupils) from contact with people outside during movements among buildings. Illustrative and comprehensible information system of orientation which describes access to individual parts of the building, classrooms and other facilities, is an important factor of security.

10.1.2.4 Building placement

It is recommended to place a new school building close to the site border and determine the orientation of as many parts of it as possible towards public space, which enables maximum of natural monitoring. This requirement helps to place the building near the local community and reduces the distance from the gateway to the main school entrance. It is recommended to have a complete view of the gateway from public space.

10.1.2.5 Location of after-school outdoor activities

It is recommended to consider options of different activities and their relation to the building. Informal places for games can be situated nearby the classrooms. An "outdoor classroom" can exist. Formal places for games can include multi-purpose places for various games and sheltered on the weather independent playgrounds, some of them can require fencing. It is recommended to situate the changing rooms nearby. The formal places for games which are supposed to be used by the public should be accessible only from external (public) areas.

10.2 Perimeter

10.2.1 Space protection of perimeter

Clearly marked border against unwarranted entry made up of a fence or other effective barrier is prerequisite for secure space and defined ownership. Secure boundary enables access to the school site through defined entrances for all visitors.

Secure boundary is important not only to prevent strangers from unwarranted entry but also to ensure security of pupils who are inside of the protected school site. Public roads which are close to the fence

can influence security. If the road already exists and it is not possible to relocate it, it is recommended to consider adding vegetation which would protect fencing. However, vegetation should not obstruct natural view from public areas and neighbouring buildings.

10.2.2 Building elements of fencing

10.2.2.1 Fences, barriers

Fencing is effective for slowdown or prevention from entry to the school site. It is recommended not to have any features nearby or along the fencing which allow climbing over, for example trees, poles or low-level buildings.

Suitable types of mechanic barriers on the perimeter can be made of transparent fencing:

— Steel palisades.

— Mesh.

— Metal panels.

— Welded steel net in frame.

All above mentioned types of mechanic barriers provide different difficulty levels of climbing over and entering. The chosen type and height of fencing depend on local conditions and peril rate of criminal offences. Chains as well as handrail can be used to mark borders of the perimeter.

The height of fencing will be determined according to the local environment, criminal danger and chosen type of mechanical barrier. In conditions of high crime risk, it is recommended that fences be designed to prevent overrun by appropriate height or depth in case of hedge type fences. It is usually preferred to fence the perimeter in the way that it is possible to have sightline towards the school site from the surroundings and buildings. A possibility of natural monitoring of the school site from immediate surroundings can help to discourage potential perpetrators who can be afraid of their presence at the school site being reported to the police. Designed fences must not be dangerous to students.

10.2.2.2 Protective hedge

Protective hedge can be used as an option or complement to security fencing. Its height should enable monitoring of the perimeter area from school site surroundings. When new fencing is founded, a temporary fence or "lost" fence can be used. Once vegetation is grown, the fence can be retained or removed. The choice of plants is important as the hedge requires permanent maintenance.

Protective hedge should not be higher than security fencing and should not prevent the school site from being monitored naturally.

10.2.2.3 Gates

Draft, height and construction of gates in fencing system of the perimeter has to be in accordance with fence height without compromising the overall fence security and resistance. A possibility of removing a gate from its hinges by raising it as well as a possibility of slipping under the gate should be eliminated. Hinges and lock cylinder should not facilitate climbing.

NOTE   See EN 12209 and EN 1906.

It is effective to add a guarded opening system of two gates and other entrances, for instance magnetic contacts connected to alarm systems.

10.2.3 Access for pedestrians and vehicles

It is recommended to situate the main entrance opposite to the school site gate, nearby school parking lot or bus stop.

10.2.4 Entrances

The fewest possible entrances to school site are recommended. It is optimal to use one entrance if evacuation regulations allow it. It is recommended that every entrance is with arranged monitoring of the access. Operating or technical entrances to the building should be monitored as well. Space for pedestrians and vehicles should be preferably separated by a protecting barrier preventing from committing crime offences. Some school sites can include buildings with public facilities which require their own security entrances.

If the school site is extensive, other entrances for pupils and accompanying legal representatives / adults can be suitable to ensure security. Under the circumstances that other entrances should be available during time of arrivals and departures, they will be locked the rest of the time (secured for instance by magnetic contacts to alarm systems). In view of the fact that the entrances can be unlocked and locked manually by school employees, it is recommended to control them from the distance of a school office with a possibility to identify the comers. It can be suitable for some school sites to monitor also other entrances (for example by a camera system).

Entrance spaces to the school site should be adapted to application of access systems. It is recommended for an extensive school site to have a gatehouse or a reception. In other cases, employees of school/security guards can be at school entrances and handle with controlling security system of entrance. It can be necessary to increase entry control by using gates with engine control for vehicles and pedestrians in areas of high criminality.

Physical barriers, for example blocking barriers (poles, wedge-shaped barrier) for protection against breakthrough by a vehicle, can be desirable in areas with high criminality if entrances to buildings are directly accessible from public space.

Entry of vehicles apart from entrance space of the school site and the parking lot has to be limited and enable access only for law-enforcement agencies and service vehicles. Control features can include telescopic slopes and wedge-shape barriers or firm boom gates and gates where access of service vehicles is necessary, and elevated kerbs, low walls and terrain modifications where entrance is undesirable. Controlling features also have to fulfil requirements of fire security solutions (FSC) and their design has to be in accordance with requirements for boarding sites of fire safety units and escape routes.

It is recommended to lock all gates of the school site when the school is closed and empty. When some employees or external users/employees are present, entrance gates should be controlled by particular means of entrance security control.

10.2.5 Places for getting off and on

It is recommended to arrange parking lots shared with the public for time-limited parking, which enable pupils to get off the vehicles. It is also suggested to consider a possibility to let more buses park at the time of arrivals and departures, which would provide safe access to the school site without being in contact with the traffic.

10.2.6 Signage

It is recommended to set down a signage for the school site. Essential condition is a clear, unambiguous signage at an entrance for the public and from the entrance towards a reception. Under certain circumstances, signage can use generally known symbols except for text or instead of text. Signage can be multilingual.

Colourful signage can help to identify ways to different parts of the school and its buildings. If plans of the school site are necessary, they should be correctly orientated in relation to visitors and protected against graffiti with replaceable or washable transparent coverage. It is recommended to place directional signage on the surface of roads or high on the buildings.

It is recommended to place information boards (including pictograms) notifying of bans on introducing subjects (guns, pyrotechnics, etc.). School should be equipped with safety vaults on banned subjects, not only for the ones voluntarily left while entering but also for impounded ones.

10.2.7 Vehicle parking/supply

Spaces creating way from the public entrance to the reception and to the parking lot for visitors as well as to places for supply should be short and well overlooked from the reception and they should not enable uncontrolled access to other parts of the school site.

It is recommended to arrange a parking lot for employees in view of occupied offices and classrooms. It is possible to separate the parking lot for employees by fencing with gate controlled by access system in areas with high criminality. Parking for vehicles of law-enforcement agencies such as fire brigade should be guaranteed (boarding site for fire equipment, etc.).

10.2.8 Parking for bicycles and motorcycles

It is suggested to secure safe parking spots for motorcycles and bicycles, e.g. by establishing secured covered object containing stands and anchor spots that allow to easily secure these vehicles. Walls for this object can be built from the welded net or some other materials that provide clear view to this object even from occupied school offices and classrooms. Object shall be illuminated according to the relevant standards.

10.2.9 Terrain adjustments

No terrain adjustment should have major impact on natural view of school from surrounding buildings. Ideally, there should be no trees or bushes higher than 1 m in order to maintain clear view. Monitoring of areas that contains high grass or plants can be provided by security camera system.

Trees cannot restrict the clear camera view of risk areas, decrease light diffusion of lamps or provide opportunity to climb over fence or enter the building easier.

The taller group of greens should be distanced from pedestrian walkways, school building facades and seating areas (e.g. benches) so as to eliminate the risk of potential perpetrators hiding.

If complex contains forest crop, it is recommended to remove branches that are higher than 2 m above terrain in order to maintain safety of persons and assets. On the side from which natural views from neighbouring buildings are not possible (e.g. from natural areas such as parks, forests), tall greenery may be introduced, but on condition that there is good visibility and view of the site, e.g. branches above human height.

10.2.10 Exterior equipment and features

Exterior equipment like benches, flowerpots or equipment and constructions for sports and games should be robust and immune to vandalism. It is suggested solid fixation to the ground that will protect this equipment from thefts, climbing or using it as a tool to penetrate building envelope.

10.2.11 Problematic gathering places

Students of all ages have tendencies to gather in school campus and they prefer some places over others. In cases when they gather with intention to act against school rules (e.g. smoking, bulling), they will prefer places that are not visible from school buildings.

The number of these hidden places needs to be reduced continuously. It might be difficult to already built schools but every new school should be built without any occurrence of such places.

NOTE   Places like this can be identified by broken windows, big number of cigarette stubs or damaged walls (by spray or kicking). It is necessary to spot these indicators as soon as possible to prevent the escalation.

It is possible to remove or replace problematic buildings (simple structures or light structures), cut green fence, remove overgrown vegetation or remove alcoves by simply moving the door to a wall level in schools already built.

In case of new schools, it is recommended to predict the areas where such a gathering might be occurring. Adding more windows, reducing number of doors in alcoves, reducing the number of structures built alone or terrain adjustments can help in many situations.

10.2.12 Natural supervision

When dealing with new buildings it is recommended to evade construction of areas or architectonic elements (like alcove) that are not visible from surrounding buildings or not secured by camera system. Doors located in alcoves might not provide clear view and they are also continuously filled by garbage cumulated by wind that can be easy target for the arsonists. Schools that are built around inner courtyard may lack natural view on protruding parts of buildings.

It is recommended to avoid building of isolated school areas. Areas that can be used as hiding place should be surrounded by fence.

10.2.13 Exterior lighting

Illumination of school, school facilities and their access roads (also during night-time) in combination with security camera system increases the possibility to detect offenders.

Proper illumination of buildings and access roads in combination with security camera system could be needed to protect from the risk of vandalism. Exterior lighting system and security camera system are needed to protect from any form of vandalism.

Lighting should provide enough light to do legal activities around school complex even after the sunset. It is necessary to ensure that there are no big differences between illuminated and non-illuminated areas so it will not lead to occurrence of illegal activities. Lighting system should not create shadows or dazzle, provide good colour recognition, diffuse light equally and support formal or informal supervision of area.

Exterior lighting should be present near entrance gates, access roads to doors and main entrances, on parking lots (when vehicles are there) and near observable building attachments. It is possible to use multi-level illumination in order to save energy so lighting intensity is raised while there is movement under sensors. This type of lighting is also helpful for detection of trespassers because they will be directly illuminated and drop shadows.

10.3 Building envelope

10.3.1 General requirements

To prevent violent penetration by car ramming or scenarios where a car can be used to tear off bars or doors, it is possible to create protection in form of concrete flowerpots, curbs or similar objects.

If buildings are equipped with automatic vents or accessible windows it is necessary to evaluate the risk involved and the needed protection. It is recommended to use sewers with safety covers that provide access to review telecommunication cables and power supply.

Junkyards and fuel reservoirs are recommended to be place far from main building, so they will not become target for arsonists or become access point to roofs or windows.

10.3.2 Walls

a)   Building façade

Building facades should minimalize the opportunities to create hiding spots or access windows or roofs easily. Building envelope should have minimum features that could be used to trespass the area. These features raise security risk and raise costs for mechanical and electrical security devices. For better protection of the building, facades should be smooth and provide uninterrupted lines of sight because protruding architectural elements can support illegal access of persons.

b) Construction of walls

Building materials of external walls should provide durability against violent infiltration of building. In places where light construction is used (e.g. fragile bricks) it is possible to use welded steel mesh to increase safety. If glass walls vulnerable against infiltration are designed, it is recommended to use safety glass or foil. Fine wire mash can be used as outer protection in these cases.

c) Shafts

It is necessary to prevent infiltration through shafts (elevator shaft, fuel shaft or ventilation). These shafts should remain hidden or placed in lockable chambers. Bars, ventilation and covers should be built solid so they are not movable or removable. Near mounting and fixation points is possible to strengthen building construction and to use strengthened exterior bars and jalousie.

10.3.3 Roofs

a) Limited access

During the project stages is necessary to prevent easy roof access. Eaves can provide good climbing spots and should have square or rectangle shape, embedded into wall or located in wall hollows.

Existing eaves can be secured with barbed wire or/and painted with coat that make climbing impossible with warning sign attached.

Being easier to climb on flat roof, especially if they are situated low enough, it shall for the specific case be evaluated if these roofs can be vulnerable to ceiling penetration or violent roof vents opening. The flat roofs situated in small heights increase risk of fall for students and employees who for instance climb there to collect dropped items from them.

b) Roof construction

Sloping roofs covered with tiles or slates

To prevent the infiltration or slates removal, it is recommended to strengthen them by metal cover located under the roof cover. Traditional roof slates can be damaged easily and in areas with high risk of infiltration (low roofs) is necessary to consider strengthened the roof.

In areas with high level of criminality is necessary to strengthen slate roofs to prevent infiltration through slate removal.

Flat roofs and roofs with small slope covered with waterproof membrane

Membrane penetration should be eliminated. Metal roofs, especially from steel, might be more durable than wooden ones.

It is not recommended to use flat roofs situated too low because usually they are easy to climb and increase probability of fall from them. They are as well vulnerable to infiltration and thefts of school property through vents.

Flat roofs and roofs with small slope covered with profiled sheet material

Depending on material, sheet material can be more or less vulnerable to be cut. If bars used it is recommended to anchor them safely to the building construction in a way that will not allow their removal from outside.

10.3.4 Penetration in ceilings

Penetration in ceilings, service zones (e.g. air vents) should be protected by mechanical barriers. It is suitable to fill these penetrations with security system sensible to their opening, e.g. magnetic contacts connected to PZTS.

10.3.5 Windows

All windows shall be tested and classified according to standards that can be found in Table 3. In buildings with automatic window and vent opening system controlled by computer is necessary to include feature that will close windows in case of malfunction and to consider additional security measures.

In areas in the schools and educational institutions with higher risk, buildings not used for education or similar activities (e.g. warehouses, bicycle storage buildings) shall if needed be secured by additional measures.

It is recommended to equip every accessible window with opening limitation with respect of have focus on Escape routes.

In areas where glass is used in small height and can be exposed to random violence is necessary to consult the case with its producer. Glass durability in building (manual attack) is specified and classified according to EN 356.

In areas with high criminality is recommended on flat roofs to install roof lights that are tested and classified according EN 1627. Already installed roof lights can be additionally secured by bars or magnetic contacts. Detection of penetration through this type of lights can be necessary.

10.3.6 Doors

It is recommended to use exterior doors that match security classification from Table 3 accordingly to their position in school area.

If door is designed to be used as emergency exit, they should be equipped with building hardware, according to EN 179 "Building hardware - Emergency exit devices operated by a lever handle or push pad, for use on escape routes - Requirements and test methods" operated by a lever handle or push pad, for use on escape routes - Requirements and test methods. Building Hardware - Panic exit devices operated by a horizontal bar, for use on escape routes - Requirements and test methods.

All other exits should be equipped building hardware. according to EN 1125 "Building hardware - Panic exit devices operated by a horizontal bar, for use on escape routes - Requirements and test methods" exit devices operated by a horizontal bar, for use on escape route - Requirements and test methods.

All external and internal building seals should be equipped by tested and classified product according to EN 1627 in areas with special regime and according to the risk assessment.

All other exits should be equipped building hardware according to EN 1125 "Building Hardware - Panic exit devices operated by a horizontal bar, for use on escape route - Requirements and test methods".

External ironwork should be certified in terms of EN 1627 for higher security. Any glass areas shall be suitable for its place of usage. All external doors should be secured by school security system except for service hours. Doors used as emergency exit should be secured also during service hours. Such doors shall be marked with warning sign to prevent unwanted trigger of alarm.

Doors selected as emergency exits might be used as a regular entrance during the service hours. To meet this requirement is needed to use external features allowing to enter the building. If such features are available, doors shall be safely secured with suitable fastening parts.

NOTE   An authorized employee will be responsible for locking and unlocking the door, even after evacuation. A janitor is usually responsible for this on common areas.

10.3.7 Shutters

Roller blinds should be classified accordingly to EN 1627.

10.3.8 Main entrance to school building

It is recommended for school to have one main entrance that is equipped with security systems for entry supervision which is active all day or certain part of day depending on local security risk. The entrance will usually be available during morning arrivals and afternoon departures. School can choose to control the main entrance with electric lock remotely controlled from the reception or office. In case that the controlling person does not have natural view to the controlled doors, it is suitable to mount a security camera system or video telephone to control this area. Also, it is recommended to place a safe lockable deposit. This deposit should contain keys from the building in case of emergency.

The entrance should be well illuminated and should introduce visitors, employees, legal representatives and students to a clear reception area.

The employees of the reception should have good access to the school entrance. The intensity of the illumination inside and outside of the reception area should be balanced, so there will be no reflections from glass areas.

In certain circumstances it can be suitable to have one more entrance for employees. The door can be opened by wireless readers.

10.4 Internal school system

10.4.1 General

The internal school area can be divided into public and non-public space. The non-public space can be then divided into certain zones. Every zone will have its own construction features with different levels of time durability.

10.4.2 Reception area and visitors inspection

The reception area should be nice and comfortable so visitors will have positive feelings entering the building. The colour scheme and surface of walls selected should cause a calm feeling.

It is recommended to secure the entrance to the reception area with automatic doors operated by a reception employee.

School has to meet hygienic and security standards and minimalize the risk of people being assaulted in school area. It is critical to count on the eventual occurrence of violent events even when the risk can be low in terms of probabilities.

The reception desk should provide with a clear view of the reception area for its staff and should not be accessible to the public.

Reception desks should be high enough to provide protection to its staff but this solution shall count on limited personal space for moving. The floor behind the reception desk might be elevated if it is suitable for the situation.

It is recommended that in case of an emergency the reception staff can escape to a safe place behind the reception area and can call for help by a special emergency button. The reception shall have lockable

doors and a safe place when needed. The school office can be considered as a safe place. Lockable doors here should have eyelet that provide clear view on reception area.

The reception desk should have an emergency button situated in a position where it can be used easily by the reception area staff when confronted by aggressive visitor / intruder. The Activation of this device can confuse the attacker and will inform him that support is on the way. In areas with higher criminality where these events are common, this button can be connected directly to the Police.

It is recommended that the reception staff have a complete view of the reception area and can lock and unlock every single door on the way from the reception desk.

It is possible to place toilets for visitors in the safe reception area.

When dealing with new schools it is important to consider location of places with public access. A large reception area can have multiple controlled entrance doors that lead to different parts of school. These parts of school then remain secured and safe even in time when they are not used to educate and they also stay safe and secured while public is accessing the common areas.

10.4.3 Toilets

It is not recommended to place toilets in areas too far away like the end of a corridor or even to be situated because this might create space for bullying or gathering. It is recommended to build several small toilet areas rather than few large.

In areas where the school is used by the local community is necessary to secure toilets nearby used areas like IT classrooms or gyms. This solution will reduce the movement around the school in general.

It is recommended to build fully isolated toilets for older students (with walls and doors up to ceiling) to prevent them from peaking over the wall or throwing things over it.

All pipes or its equipment, water containers or lights should be fully covered to decrease probability of wanted or unwanted damages.

It is recommended to use security scrooge and embedded attachments elements and surfaces and colours durable against graffiti, so they can be removed easily.

10.4.4 Corridors and passages

Modern school projects contain very wide corridors. They have multiple options for use other than just walking through them and can be used to present work from students or to gather students during breaks. Hollows might be architectonical features. In these cases, it is possible to maximize the view by adding some glass areas to them or reflection areas. Generally, view on corridors and passages from nearby offices or classrooms should be maximized.

It is important to use directional signs in these areas (especially for new students). These signs can be translated to more languages or pictograms. It is possible to use different colours on walls or floor for different sections of school to navigate students.

10.4.5 Access control within the school

There are plenty of rooms used for various activities within the school that require different levels of access control depending on their purpose and usage. Some rooms might be opened and accessible to all employees and students, other are accessible only during certain hours. Some of the rooms might be accessible to all employees and other just to certain type of employees. Table 2 below recommends the level of access control for certain type of rooms. Every door in these rooms shall fulfil certain level of security according to Table 2.

Table 2 — Access control level and protection of individual doors of rooms in schools

	Level of Protection 1 = Lowest, Level of Protection 4 = Highest			
Type of Room	Risk	Authorized persons	Level of Protection	Access control
Main Entrance	Access by unauthorized persons	All employees and students for limited time	3	Identification items held owned by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Technological Entrance	Access by unauthorized persons	Authorized personnel	3	Identification items held owned by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Side Entrance	Access by unauthorized persons	Authorized personnel	3	Identification items held owned by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Classroom for universal use	Work in classroom	All personnel and students for entire time	2	Lockable doors In most of cases these doors will be unlocked and locked at the beginning and the end of every day).
Hall	School work	All personnel and students for entire time	1	Lockable doors In most of cases these doors will be unlocked and locked at the beginning and the end of every day
Research Laboratory	Flammable materials and chemicals	Authorized personnel and students for limited time	3	Identification items held owned by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
IT classroom	Computers, notebooks	Authorized personnel and students for limited time	3	Identification items held owned by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical

Level of Protection 1 = Lowest, Level of Protection 4 = Highest				
Type of Room	**Risk**	**Authorized persons**	**Level of Protection**	**Access control**
				access control system (keys, codes, cards, etc.)
Workshop	Flammable materials	Authorized personnel and students for limited time	2	Identification items held owned by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Gym	Sport equipment, Possibility of injury	Authorized personnel and students for limited time	1	Keys held only by authorized persons
Language classroom	Computers	Authorize personnel and students for limited time	3	Identification items held owned by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Staff room	Lockable cabinet Personal ownership	Authorized personnel for entire time	3	Identification items held owned by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Canteen	School work	Authorized personnel and students for limited time	3	Identification items held owned by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Kitchen Food store	Flammable material Food	Authorized personnel for entire time	2	Identification items held owned by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Storages	Paper Books Cleaning agents	Authorized personnel	2	Keys held only by authorized persons. Identification items held by authorized personnel. These

Level of Protection 1 = Lowest, Level of Protection 4 = Highest				
Type of Room	**Risk**	**Authorized persons**	**Level of Protection**	**Access control**
		and students for limited time		doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
School offices	Valuable property Personal information	All personnel entire time	3	Identification items held by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Private offices	Valuable property Personal data	Authorized personnel entire time	3	Identification items held by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Protected storage	Valuable property	Authorized personnel for entire time	3	Keys held only by authorized persons. Identification items held by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Infirmary	Medical equipment	Authorized personnel for entire time	2	Identification items held by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).
Library	Computers, notebooks Another valuable ownership	All personnel and students for entire time	3	Keys held only by authorized persons. Identification of items held by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).

Level of Protection 1 = Lowest, Level of Protection 4 = Highest				
Type of Room	**Risk**	**Authorized persons**	**Level of Protection**	**Access control**
Archive	Personal data	Authorized personnel for entire time	3	Keys held only by authorized persons. Identification signs worn by authorized personnel. These doors (new or existing) are recommended to be equipped with mechanical or electronical access control system (keys, codes, cards, etc.).

10.4.6 Server rooms

It is recommended to place school servers in security cabinets in a room accessed only by authorized personnel. Their placement shall comply with requirements on flood protection. The rooms with servers and where data are archived should be protected by fire detection and fire alarm systems. Installation of fire detection and fire alarm systems arise from legislation. Inner walls of these rooms could comply with certain level of protection. More requirements on protection of server rooms are in technical standards collection of ISO/IEC 27000.

10.4.7 Changing rooms for staff

Changing rooms for school staff should provide a safe place to each person with possibility to store personal items and cloths.

10.4.8 Lockable cabinets

All the students shall have a possibility to store their personnel items safely (see legislation applicable). The cabinets are better to be located in an open space which could be monitored from offices and classrooms rather than in hidden school changing rooms.

10.4.9 Changing rooms for swimming pools and physical education

Students and teachers shall have available safe storage of personnel items during a class.

10.4.10 Temporary classrooms

Rooms for teaching in temporary use such as 'site huts' or containers can be difficult to protect because of their construction. Empty space under the huts shall be protected against trash accumulation that could be misused as fuel by an arsonist.

It is not recommended to use facilities of high value. Security alarm systems should be used also for the temporary buildings. With regards to security, these buildings should be used only for the intended purpose, i.e. provisional classrooms, and should be replaced as soon as a main building is reconstructed.

10.5 Technical protection

10.5.1 General

Technical protection is the main subsystem of physical objects protection. It is understood as the mechanical and electronical measures aiming to protect outer walls, perimeter and area around a school as well as its internal spaces. A system of physical protection is an example of technical measures.

10.5.2 System of technical protection

Set of technical measures of internal and outer protection as sub-system of physical protection for preventing, detecting or monitoring physical protection disrupt.

The system of technical protection consists of following:

— Mechanical barriers, system of general and main key.

— Alarm systems.

- Intrusion systems.

- CCTV surveillance system for use in security applications.

- Systems of access control.

- Social alarm system.

- Alarm transmitting systems and equipment.

- Combined and integrated alarm systems.

- Facilities for audio and visual entrance control systems.

— Special systems.

— Emergency acoustic and voice warning facilities.

— Safety, security and emergency lighting.

Examples of technical protection measures, their expected effects and technical standards are pointed in Table 3.

Table 3 — System of technical protection

Technical measures	Example of technical equipment	Effect	Related standards
Mechanical barriers	Fences and enclosures		EN 10223 (all parts) EN 12839
	Doors, gates, barndoors, tourniquets, windows, bars, shutters, blinds		EN 1627 EN 13123 (all parts)
	Safety glass, foils	Access elimination or limitation; Random aggressor discouragement from intrusions into protected area; Time delay to act against an aggressor (adequate response)	EN 356 EN 1063 EN 13541
	Locks and locking systems		EN 1300 EN 1303 EN 12320 EN 12209 EN 14846
	Safes, security cabinets		EN 1047 (all parts) EN 1143 (all parts) EN 14450
Intrusion systems	Perimetric protection; Area protection; Envelope protection; Object protection; Emergency systems	Early detection, indication and evaluation of unauthorized intrusion or attacking a person; Notification of intervention units and physical guards; Activation additional security systems and devices; Control of security measures compliance;	EN 50131 (all parts)

Technical measures	Example of technical equipment	Effect	Related standards
CCTV (with recordings and without recordings) [a]	Fixed cameras; Rotating cameras; Autodome cameras; Special cameras (e.g. thermal vision)	Monitoring, transmission and surveillance of persons and vehicles; Provide quick and reliable data for security, safety and monitoring activities; Recording image signals for evaluation retrospectively; Surveillance in case of personal absence	EN 50132 (all parts)
ACS	Chips; ID cards; biometric sensors	Access control in protected area; Monitoring of unauthorized access (force opening, under duress opening)	EN 50133 (all parts)
System calling for assistance	Activating devices; Portable alarm systems; Receiving alarm centre / central protection desk	Alarm activation and confirmation; Transmitting signals; Notification intervention units and physical guards; Securing communication	EN 50134 (all parts)
Portable alarm systems and devices	Portable devices	Transmitting information from protection devices	EN 50136 (all parts)
Combined and integrated systems		Automatization of defined interconnections of individual systems (simplified service); information transmission between individual alarm and non-alarm systems; using collective devices, equipment and portable lines; Providing additional information (optical, acoustic, image, etc.)	EN 50398-1

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Technical measures	Example of technical equipment	Effect	Related standards
Audio and video devices for use in entrance systems	Audio station; Video station; Audio and video station	Establishing communication with a person; Providing access; Acoustic, or both acoustic and visual verification; Remote unblocking / unlocking doors	EN 50486
Emergency acoustic systems and voice alarm devices	Systems with tone signals; Systems with voice signals	Information broadcast; Evacuation management	EN 50849 EN 54 (all parts)
Safety and emergency lights	Permanent lights where there is reduced visibility	Discouragement of causal criminals against intrusions in protected areas, Light circles selection for needed level of lightning during blackouts	EN 50172

a   If technical protection systems handle personal data, it has to be made in accordance with the relevant legislation of personal data protection.

10.6 Regime measures

Regime measures are a set of applicable internal and clearly defined rules, instructions, orders and procedures to asset regime and security measures. Regime measures provide links between security measures and objects (school) users.

Regime measures apply to:

— Staff activities in school area.

— Movement and behaviour of external persons (visitors, services providers, etc.).

— Documents and information circulation in school.

— Information, data and documents input and output in schools.

These measures include the following regimes of:

— Access and exit by persons (students, staff, external staff, visitors, legal representatives etc.).

— Access and exit by vehicles.

— Persons and vehicles movement in area.

— Tangible or intangible property movement.

— Identification element (keys, PIN codes, identification cards).

— System of physical protection staff.

— Measures and procedures in the event of an emergency.

10.7 Security services

Authorized persons to perform physical protection (link to CEN/TC 439?) should fulfil requirements of professional competence in accordance to national system of qualifications. Their knowledge shall be periodically checked.

Physical guard can be organized by school's staff or it can be subcontracted. In case that the physical guard is provided by hiring a security company, requirements and conditions should be clarified in a contract that includes the definition of the (the legal limits of the) responsibility of the security staff. Time schedule, range, conditions, rights and obligations of the physical guard operation should be clarified for instance in form of guideline for physical security operations as a part of school documentation.

The following forms of physical protection should be used in order to protect school buildings:

— Local performance on fixed or moved stages.

— Mobile security patrols.

— Remote surveillance.

For physical security conducted by remote surveillance outside the protected object, the alarm transmission shall be provided so as to avoid interruption (for example, two separate transmission systems, short connection period, etc.).

Employees of physical security mainly:

— Control entrance / exit for persons.

— Control entrance / exit for vehicles.

— Control movement of materials to/from object (persons / vehicles).

— Secure key management.

— Secure information service.

— Provide guard patrol periodical rounds on determined routes.

— Identify emergency situations.

— Provide intervention in case of life, health, physical integrity or property threat in accordance to procedures defined by security documentation.

— Report threats to life, health, physical integrity or property in accordance to procedures defined by security documentation.

— Provide the necessary measures until the qualified responders arrive.

— Collaborate with emergency services.

Physical protection performance shall be sufficiently effective. Duration from detection of an event to intervention shall be shorter than it takes to potential offender get to protected asset.

11 Recording and reporting

11.1 Security documentation in schools (in relation to object security)

School documentation focused on security declare certain level of security measures settings for civil and property protection in area of schools, including in particular:

— Security policy.

— Risk assessment.

— Operating rules / Security guidelines of the organization.

— Object plan / school area.

— Design and operation documentation for technical systems that provide protection.

— Revision reports, protocols of functionality tests completed, records of repairs carried out.

— Control plans and records for training and education.

— Scenarios for security incidents / emergency situations.

— Records of security incidents / emergency situations.

— Contracts related to an object protection.

Requirements on processing documentation are not specified in this document. It is necessary to keep the documentation updated and corresponding to the actual situation. Requirements to the current state of the documentation result from legislation, technical standards and contracts.

11.2 Incident records

Individual security incidents shall be recorded and categorized into related causes as shown in Figure 2. It is effective to elaborate causes of security breaches into security incident scenarios. Event of security breach is one of the parameters to be monitored. It is practical to record all consequences of security incidents on defined protected assets objectives. Measures proposal should then be based on security breach causes and scenarios of security incidents.

Date of incident	Type of incidents	Cause of protection Disruption	Scenario of emergency /Security incident	Disruption protected interest / asset		Design of remedies
				Health and life	Property	

Figure 2 — Record of security incidents

Production and storage followed by systematic analysis of chronological series of records about security incidents in the field of security is not a purposeless process. Chronological image of individual security incidents in series constitutes a factual basis for further trends evaluation in the area, their causes and resulting consequences are documented. This approach allows systematic and factual current security measures evaluation management of its development and improving its effectiveness.

11.3 Security documentation updating

It is required to perform an update of security documentation together with other internal regulations periodically. Keeping risk analysis up to date depends on recent security situations, new identified risks etc. Risk analysis should be periodically processed, at least 1 × 3 years is recommended.

Update of documentation is necessary also when some of following occur:

— Change of technical protection or performance of physical guarding of schools.

— Change of the use of an object / area of school.

— Finding gaps through security audits and tests of efficiency.

— Security incidents.

12 Communication and consulting

12.1 Periodical training for stakeholders and participating operators

Training for stakeholders is characterized by preparing for possible security incidents by periodical safety and security training. Specific training courses and stakeholders are described in legislation, technical standards or in internal school documentation.

School staff should be trained in accordance to the requirements of the internal school documentation. It is recommended to test all the employees in a year period.

The internal documentation should include the layout and range of the training together with information about the threats in the context with local or national occurrence. Furthermore, periodical trainings should include understanding the measures to protect assets / objectives against risks. Integral part is also the training based on actual incidents happened in the schools.

13 Monitoring and review

13.1 Requirements on regime and organisational security audits

Requirements on the security audits of regime and organisational measures result from internal security guidelines or related operating regulations. Obligations of regime measures to be implemented at schools shall be determined in the internal guidelines. For external security providers, it is required to determine regime and organisational measures in the contracts. Enforcement and obligation of the regime measures shall be bearing on verifiable training according to the training layout.

For external personnel from security companies hired, it is required to put the obligations into contracts.

Objects of security audits in the field of regime and organisational measures can only be activities mentioned in the relating security documentation dealing with regime and organisational measures.

Security audit of regime measures is often conducted together with penetration test activities performed by security guards. The objective of penetration tests is to verify the functionality of the regime and organisational measures and ensuring their compliance to protect threatened groups. The frequency of the security audits performance is stated in the following clause.

13.2 Physical security control

The control of physical security varies depending on the personnel in charge of it: For schools' own employees the control should be performed in framework of the internal guidelines or director's instructions for the guards; while for external workers the control should comply with the contracts or guidelines for external suppliers. The reasons of the controls, their scope and frequency have to be defined. The objectives of the controls in the field of physical protection can be only the activities mentioned in the related security documentation dealing with physical protection.

Control of physical security is always carried out according to:

— Contract.

— Guidelines for physical security.

— Guidelines for handling emergencies.

— Insurance conditions.

The periodical control frequency should be determined in accordance with the annual plan of controls. In order to ensure the quality of the control activities it is recommended to conduct periodical controls of physical security at school at least 4 × month. If the physical security control is conducted also out of hours, the periodicity is 2 × month out of hours as well. A comprehensive process of physical security evaluation should be conducted annually.

13.3 Requirements on functional tests and revision of technical protection (mechanical and technical measures)

Tests of functionality and system revisions including mechanical and technical measures shall be performed in accordance with legislation, technical standards and manufacturers' requirements. Specific requirements are to be found in concerning technical specifications.

Systems of technical protection shall be performed by professionals, whose expertise and knowledge base is periodically tested.

By managing a system of surveillance is understood:

— Regular maintenance (functional tests, annual inspections, revisions).

— Collaboration with external suppliers of STP maintenance and services.

— Planning updates and development of STP, proceeding and control service requirements.

— CCTV recording management.

— Operational documentation management.

— Management of access permissions.

— Training and education for staff and STP operators.

— STP failure detection and handling with the consequences.

STP management shall be provided by school personnel or by an external hired company.

13.4 Efficiency verification and implementation of security measures covering new observed risks

When new risks are observed or level of risks are increased (conditionally acceptable or non-acceptable risks), it is required to verify the efficiency of the current security measures. The verification is described in 9.5.

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