17. medzinárodná vedecká konferencia
Riešenie krízových situácií v špecifickom prostredí,
Fakulta špeciálneho inžinierstva ŽU, Žilina, 30. - 31. mai 2012

IMPORTANCE OF FACILITY DESIGN FOR SCHOOL SAFETY

Kešetović Želimir[1], Melita Mihalić[2]

ABSTRACT

School safety is of utmost importance in every society due to vulnerability of school population and great media atention that each incident in those institutions receive. Safety is vital element that should be consider when planning, projecting and building school facilities. This reffers not only to physical safety of the building but also its position in physical and social envrironment and applying priciples of crime prevention through environmental design .In the paper most important elements of school facilities designe will be presented and disscussed.

Key words:

school safety, facility design, security, crime prevention through envrionmental design

ABSTRACT

Sigurnost škola je od izuzetnog značaja u svakom društvu usled ranjivosti školske populacije i velike medijske pažnje koju privlači svaki incident koji se dogodi u ovim institucijama. Bezbednost je ključni element koji se mora imati u vidu kada se projektuju i grade školski objekti. Ovo se ne odnosi samo na fizičku bezbednost objekata već i na njihovo pozicioniranje u fizičkom i socijalnom okruženju i primenu principa prevencije kriminala kroz dizajniranje okoline. U saopšenju se razmatraju najvažniji elementi dizajniranja školskih objekata.

Key words:

sigurnaost škola, dizajniranje objekata, bezbednost. prevencija kriminala kroz dizajniranje okoline

---

[1]Želimir Kešetović, PhD, Associate Professor, Faculty of Security Studies, University of Belgrade, Gospodara Vučića 50, 11000 Belgrade, Serbia, zelimir.kesetovic@gmail.com, +38162335869, +3811164551843.
[2] Melita Mihalič, struč. spec. ing. admin. chris, Crveni križ Novska, Hrvatska, Croatia, melita.mihalic@sk.t-com.hr, +385 91 5392422

1   SCHOOL SECURITY IN RISK SOCIETY

In todays world of risk the number of security threats, wich also affect schools and educational institutions in general, has been rising. Endagering security in those institutions cause intensive public reactions and disable normal education process. Students who fear for their safety are not free to learn; teachers who fear for their safety cannot freely teach. Ensuring their safety is one of the highest priorities for schools. It is imperative for administrators, teachers, parents, police, and the community to work together to create a climate of safety in schools. There are four key reasons why school safety is a top priority:

1. Educational. Schools are created to provide a learning environment that allows teachers to effectively teach and students to actively learn. Crime and violence occurring on or around a school campus significantly interfere with providing such an environment.

2. Legal. Schools are required to provide equal education to all students. Students who are too frightened to attend school or the design of a school and its surrounding campus can play a significant role in preventing crime and facilitating school safety measures.

3. Social. Schools are unique as the only entity in society that can positively affect every student in our nation regardless of potentially negative social influences. Schools can develop programs that improve conditions and give every student a chance to reach her or his full potential.

4. Financial. Schools are responsible for managing public resources. Preventing youth violence ensures that a majority of resources go to the classroom as opposed to such things as graffiti removal and vandalism repair.

Keeping schools safe is a challenging task, as now more than ever, administrators, facility executives and security managers have to balance multiple agendas; weighing real and perceived threats and finding reasonable ways to address both; and making schools safe without making them prisons — all within budget. In addition, new threats have emerged, adding complexity to planning for school security and making it all the more crucial to set effective priorities.

2   FACILITY DESIGN AND   SCHOOL SECURITY

A number of deficiencies have become glaring over time in many schools building, highlighted by concerns over lead paint, asbestos, frayed wiring, decrepit plumbing, ergonomics, inaccessibility, antiquated fire suppression systems, energy inefficiency, and technological obsolescence. In USA, fo example, the General Accounting Office has reported that one-third of schools need extensive repairs and puts the price tag to bring them into good condition at more than $112 billion (U.S. General Accounting Office, 1995). But public alarm about those problems can be dwarfed by the fear of school violence. The Columbine masacre and other school shootings of recent years have underscored the extraordinary vulnerability inherent in the design of most schools. Although schools come in variety of shapes and sizes, two

types of school architecture are common: fortress and sprawl. Fortresses are usually solitary structures, a bit reminiscent of medieval castles and particularly common among school buildings constructed during the first half of the 1900s. Sprawl designs became more common in the 1960s in one of two ways: by design, as communities found the campus-style approach, with a number of buildings spread over a site, to be aesthetically pleasing; or by default, as add-ons to existing schools often involved "temporary" buildings, scattered onsite wherever they could be conveniently placed. Neither design was particularly concerned with security issues. Fortresses are, at first glance, easier to secure. Students are either inside or outside, and once inside they theoretically can rely on the security of a controlled environment. Sprawling campuses are much more difficult to monitor, as students are constantly traveling between buildings, exposed to potential threats on the outside. In fact, both designs fall short when it comes to safety. Containing students inside the school is no panacea: Up to one-third of school violence routinely occurs indoors. In addition, up to 70 percent of school-related violence occurs outside, half of that on campus and the rest elsewhere in the community. Neither design does a good job of taking these statistics into account.

There is no simple solution to school safety. Every campus has a unique mix of architecture, community characteristics, and funding considerations. Cost factors always loom large, and serious maintenance costs must be addressed as well. Simple fixes relying on gross security measures—ranging from metal detectors to armed guards—receive mixed reviews not only in terms of cost and effectiveness in promoting safety, but also in terms of their impact on school atmosphere.

Security is a major factor in the design of new school buildings. However many existing schools were not designed with security in mind. The security of these schools can be improved, but it should be recognized that some sites and buildings are inherently difficult to make secure. In general, when planning for school safety, the school-community team must consider three design stages:
1. Construction of new buildings
2. Retrofitting of old buildings
3. Addition of portable buildings

Most important features that commonly cause problems are:
- Open sites with long perimeters and poor fancing,
- Multiple entrances open during the day
- Reception areas located far from school entrances
- Spread out schools with many independent buildings
- Isolated building
- Split sites
- Rights of way (roads and foothpaths) through the school,
- Easy access to roofs (eg. via stepped flat roofs, low eaves, low angle roofs) and insecure foof lights
- Over-complicated building perimeters with many recesses
- Recessed doorways
- Temporary buildings

- Public access out of school hours to community facilities (eg. swimming pools and sport halls).

Concept of Crime Prevention Through Environmental Design (CPTED) should be applied when planning and buildig school facilities. CPTED is built on three considerations: natural surveillance, natural access control, and territoriality. Natural surveillance is the capacity to see what's occurring without having to take special measures to do so. Clear direct views, such as those provided by windows, provide natural surveillance. An adult presence does the same, with a notable impact on behavior. If responding to a call for help or a loud noise requires opening a solid door or stepping around a blind corner, natural surveillance is missing, and the response may be too little, too late. We see the aftermath, but we don't know what initially occurred. If lighting is inadequate, we have even less hope of determining what happened. Natural access control is the capacity to limit who can gain entry to a facility, and how. A school with dozens of unsecured exterior doors cannot hope to control comings and goings. Intruders have free rein, and schools must rely on other security measures. Without access control, a much greater emphasis must be placed on surveillance, territoriality, school climate, and security staffing in order to compensate. Territoriality is the capacity to establish authority over an environment, making a statement about who is in charge, who belongs, and who is an outsider. Graffiti is one way gangs establish territoriality; schools can take it back with vigilant maintenance. Signs directing visitors to the office or spelling out rules reinforce territoriality and influence behavior. School uniforms make it easy to identify intruders at a glance. Schneider argues that concepts of natural surveillance, natural access control and territoriality should be integrated into initial school architectural. Metal detectors can be located inside the first set of double doors. If detectors are triggered the second set of doors won't open until released by office staff. Pass-through windows into office allow visitors to empty pockets (similar to an airport.) lans or when improving existing sites. A firmly maintained awareness of the intended function of the school -- teaching -- can help avoid turning a school into a prison. With 19-35% of school-related fatalities occurring outdoors, off-campus, 35-45% occurring outdoors, on campus, and 30-35% occurring inside school buildings, security concerns should remain broad in scope. A well placed, well designed office should serve as the guardian at the gate, with excellent surveillance outside and inside the school, especially up and down hallways, the entry area, parking lots, drop off areas and playing fields. [6]

This approach blends effective design with the physical, social and psychological needs of the occupants.[1] Unfortunately, building security design features are too often considered on an ad hoc basis and are frequently given a relatively low priority. While most schools have well-defined standards for electrical, HVAC, plumbing, and life-safety issues, only a few have developed standards or design guidelines for environmental, physical, and electronic security issues.

In the absence of adopted security design standards, security concerns are often considered as late as the final stages of design development. The later security issues are addressed, the fewer the options and alternatives. This is because, at later stages,

construction budgets are well established and the architectural design is fixed, meaning that the opportunity for changes is limited and any required alterations will be more costly than if they had been part of the initial design. To avoid that type of problem, security directors should take the lead in advocating for the development of standards for campus building projects. Following is an overview of how the process should work, including who to involve, what's entailed in developing the standards, what they should include, and what benefits will accrue.

The design and implementation of the standards should be undertaken by a campus committee and a design professional working with the campus security specialist or a qualified consultant. In addition to security personnel and architects, the campus committee should include a representative from the school's physical plant or maintenance department, purchasing personnel, and engineering specialists.

Good design can make a major contribution to both the prevention of crime and reducing the fear of crime and must be the aim of all those involved in the development process.

Secured by Design' (SBD)[3] aims to achieve security for the building shell and to introduce appropriate design features that enable natural surveillance and create a sense of ownership and responsibility for every part of the development, in order to deter criminal and anti-social behaviour within the grounds of a school. These features include secure vehicle parking, adequate lighting of common areas, control of access to individual and common areas, defensible space, and a landscaping and lighting scheme, which when combined, enhances natural surveillance and safety and help to instil a sense of ownership of the local environment. Incorporating sensible security measures during the design and building of a new school combined with good management practices is shown to reduce levels of crime, fear of crime and disorder. [6]

Decisions about whether to remodel or rebuild a school are complex, and must take into account a variety of logistical, economic, and political factors. In some cases, minor improvements are all that can be done to address safety concerns. In other cases, communities are willing to shoulder bond measures to build the best possible school, from the ground up. In either case, and along the continuum of compromises in between, many improvements can be made to enhance school safety. New security-oriented design measures are often crisis-driven. Highly visible, superficial "solutions" may fail to correspond to the problems that need to be addressed. A comprehensive examination of site weaknesses must occur before an effective "solution" can be put in place. That examination can draw on a number of approaches, including user surveys and safety audits, which can vary considerably in length and complexity. As long as

---

[3] SBD is crime-prevention initiative launched initially in 1989 by the Association of Chief Police Officers, and then re-launched in 1999. It supports the principles of 'designing out crime' and is backed by the Prime Minister, the Home Office Crime Reduction unit, the DETR and local government, as well as trade, industry and standards organisations.

the perspective is broad enough to encompass all aspects of the school, the results should be useful.

Appropriate securiy mesures very with the type and size of the school and local circumstances and they should be defined after comprehensive risk assessment has been done. Some measures like CCTV, shutter or grilles on windows and doors or sprinkler system to limit fire damage should be implemented only for high risk schools. However it should be noted that approach based on risk assessment cannot address the rare, extreme incidents. [6] Physical measures vary in costs from moderate to expensive. Most common are: perimeter fencing, secure storage, heavy duty doors and locks, security lighing, window grilles and bars, and building adaptations. They are usualy used to harden target areas, relying on sthenght of materials and form of construction.

CONCLUSION

The development of appropriate security design standards for campus capital construction projects can be a time-consuming task. It is also one that requires a significant amount of professional and technical knowledge. Security design standards must be tailored to the unique risks, threats, physical environment and culture of each college or university. They cannot simply be "boiler plated" from other manuals or past projects. The design and implementation of the standards should be accomplished by a campus committee and a design professional working with a skilled campus crime prevention specialist or a qualified consultant and they should be frequently reviewed to maintain relevancy to the times. After each project is completed, the final building should be compared against the campus standard to gauge compliance and to make adjustments in the standards that will impact future projects. It is important to bear in mind that most campus buildings are designed to last for 50-100 years. The security standards incorporated into their design, therefore, will influence the protection of the buildings, its property and occupants for decades to come.

REFERENCES

[1] BLUE, D.:Safety By Design, Presented to the 3rd International CPTED Conference, Washington, DC. 1998
[2] CROWE, T. : Crime Prevention Through Environmental Design. 2nd edition. Boston: Butterworth - Heinman, 2002.
[3] KELLER, D.: Intelligent Design. Security Management, available on http://www.securitymanagement.com/article/intelligent-design accessed 10.4.20112.
[4] SCHNEIDER, T.: Crime Prevention Through Environmental Design School CPTED Basics, Presented to the 3rd International CPTED Conference, Washington, DC. 1998

[5]   SCHNEIDER, T.:Ensuring Quality School Facilities and Security Technologies, Northwest regional educational laboratory et al, 2002

[6]   Elements of campus security design guidelines. Security Management Online July 25, 2005, available on www.aegissecuritydesign.com

Článok recenzoval:
doc. Ing. Jozef Klučka, PhD.