**Module 3 Architecture & Design**

**3.9 Physical Security**

**Primary Consideration**

* Nothing should impede life safety goals
* Human life always top priority

**Physical Security Concepts**

* Protection – locks, barriers, walls, fences
* Deterrence – guards/dogs, lighting
* Delay – barricades/bollards
* Detection – cameras, motion detection

**Lighting**

* For crime deterrence
* Important to have correct lighting when using various types of surveillance equipment
* Lighting controls & switches should be in protected, locked & centralised areas
* Continuous Lighting – array of lights that provide an even amount of illumination across an area
* Controlled Lighting – organisation should erect lights & use illumination in way that does not blind its neighbours/passing cars/trains/planes
* Standby Lighting – lighting that can be configured to turn on/off at different times so potential intruders think that different areas of facility are populated
* Redundant/Backup Lighting – should be available in case of power failures/emergencies
* Response Area Illumination – takes place when IDS detects suspicious activities & turns on lights within specified area

**Perimeter Security**

* Fencing, gates & cages
* Varying heights, gauge & mesh provides security features
* Natural landscaping
* CPTED (Crime Prevention Through Environmental Design)

**Safes/Locking Cabinets**

* Safes

1. Control access
2. Fireproof
3. Tamper resistant & evident

* Locking Cabinets – paper & electronics
* Computer cable locks – reduce theft
* Key management

1. Who has keys
2. Where they are stored
3. Key duplication

**Locks**

* Combination locks – rather than use key, turn
* Cipher locks – electronic locks
* Lock grades

1. Grade 1 – commercial
2. Grade 2 – heavy duty residential, light commercial
3. Grade 3 – residential throw away locks

* Cylinder categories

1. Low – no pick/drill resistance provided
2. Medium – little pick resistance
3. High – higher degree of pick resistance

**Physical Access Control**

* Turnstiles
* Mantrap

1. Double doors, where only 1 can be opened at once
2. Used to control personnel access
3. Manually operated/automatic
4. Only room for 1 person

**Faraday Cage/Shielding**

* Shielding – process of preventing electronic emissions from computer systems from being used to gather intelligence & preventing outside electronic emissions from disrupting information-processing abilities
* Faraday Cage/Faraday Shield

1. Enclosure used to block electromagnetic fields
2. Faraday Shield may be formed by continuous covering of conductive material/mesh of such materials

**Barricades/Bollards**

* Bollards – small concrete pillars, sometimes containing lights/flowers
* Used to stop people from driving through a wall, often between building & parking lot
* Can be arranged to form natural path for walking

**Personnel Access Controls**

* There are different technologies to grant access to a building
* User Activated – user does something (swipe cards, biometrics)
* Proximity devices/transponders – system recognises presence of an object (Electromagnetic access control tokens is generic term for proximity authentication systems)

**Site Access Controls**

* Key cards

1. Centralised access controls consists of card readers, central computer & electronic door latches
2. Pros – easy to use, provides audit record, easy to change access permissions
3. Cons – can be used by others if lost, people may “tailgate”

**Biometric Access Controls**

* Based on specific biometric measurement
* Fingerprint, iris scan, retina scan, hand scan, voice, facial recognition, others
* Greater confidence of claimed identity

**Detection**

* Motion Detection – location monitoring & alarms based on movement
* Infrared Detection – detects changes in infrared radiation, thermal heat

**Environmental Controls**

* HVAC (Heating, Ventilation & Air Conditioning)
* Hot & cold aisles
* Fire suppression

**HVAC (Heating, Ventilation & Air Conditioning)**

* Redundancy
* Backup power/UPS
* Zone-based heating & cooling

**Hot & Cold Aisles**

* With hot aisles, hot air outlets used to cool equipment
* With cold aisles, cold air intake used to cool equipment
* Combining 2, have cold air intake form below aisle & hot air outtake above it, providing constant circulation

**Fire Prevention, Detection & Suppression**

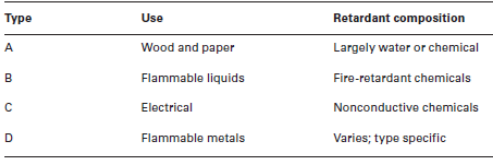
* Fire Prevention includes training employees on how to react, supplying right equipment, enabling fire suppression supply, proper storage of combustible elements
* Fire Detection includes alarms, manual detection pull boxes & automatic detection response systems with sensors etc.
* Fire Suppression – use of suppression agent to put out fire
* 2 primary types of fire-suppression systems in use are fire extinguishers & fixed systems

**Fire Support Systems**

* Different types of suppression agents

1. Water
2. Halon & Halon Substitutes
3. Foams
4. Dry Powders
5. CO2
6. Soda Acid

**Fire Extinguisher Ratings**



**Sprinkler Systems**

* Wet Pipe – filled with pressurised water
* Dry Pipe – fills with water only when activated
* Deluge – discharges water from all sprinklers when activated
* Pre-Action – dry pipe that converts to a wet pipe when alarm activated
* Foam Water Sprinkler – uses water & fire-retardant foam
* Gaseous Fire Suppression – displaces oxygen

**Video Surveillance/Cameras**

* Supplements security guards
* Work in conjunction with guards/other monitoring mechanisms
* Provide points of view not easily achieved with guards
* Locations

1. Entrances
2. Exits
3. Loading bays
4. Stairwells
5. Refuse collection areas

**CCTV Considerations**

* Purpose – to detect, assess &/or identify intruders
* CCTV Enrolment – internal/external
* Field of View – area to be monitored
* Illumination – lighting, natural or artificial
* Integration with other security controls