APTA STANDARDS DEVELOPMENT PROGRAM
RECOMMENDED PRACTICE
American Public Transportation Association
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Transit Infrastructure Security Working Group

Crime Prevention Through Environmental Design (CPTED) for Transit Facilities

Abstract: This recommended practice provides guidance regarding the use of Crime Prevention Through Environmental Design at transit facilities.

Keywords: access control, CPTED, fencing systems, gate, landscaping, lighting, threat and vulnerability assessment

Summary: This recommended practice is intended to ensure that transit agencies apply CPTED principles and strategies, as well as incorporate security considerations during planning, design and use prior to building or remodeling of transit facilities and areas.

Scope and purpose: This recommended practice provides guidance for the application of CPTED principles to enhance safety and security while reducing risk to people, operations and assets at public transit facilities. CPTED is not unique to transit, and there are no specific transit standards for CPTED.

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Participants

The American Public Transportation Association greatly appreciates the contributions of the **Transit Infrastructure Security Working Group**, which provided the primary effort in the drafting of this document.

At the time this standard was completed, the working group included the following members:

Lurae Stuart, Chair
Mark Uccardi, Vice Chair

Galen Bennett, *Sound Transit*
Michael Birch, *RAPT Dev USA*
Don Burr, *Community Transit*
Ryan Chelski, *Sound Transit*
Neil Crosier, *King County Metro*
Dean Fajerski, *TSA*
Kevin Franklin, *BART*
Paul Huston, *VIA Rail Canada*
Andy Niero, *TSA*
Mark Norton, *King County Metro*
Stephan Parker, *Transportation Research Board*
Rob Pascoe, *King County Metro*
Jacob Peltier, *Community Transit*
John Plante, METRA
Branden Porter, *Sound Transit*
Jason Powell, *Metro St. Louis*
Charles Rappleyea, *WSP USA*
Sean Ryan, *MTA Metro-North Railroad*
Harry Saporta, *WSP USA*
Lurae Stuart, *WSP USA*
Brian Taylor, *Halifax Regional Municipality (retired)*
Kirsten Tilleman, *WSP USA*
Peter Totten, *AECOM*

Project team

Polly Hanson, *American Public Transportation Association*
Eric Halzel, *Eagle Hill Consulting*

Introduction

This introduction is not part of APTA SS-SIS-RP-007-10, Rev. 1"Crime Prevention Through Environmental Design (CPTED) for Transit Facilities."

APTA recommends the use of this recommended practice by individuals or organizations that build, operate and/or maintain transit properties; individuals or organizations that contract to build, operate and/or maintain transit properties; and individuals or organizations that influence how transit systems plan, develop, inspect, build, maintain and/or evaluate transit properties.

The purpose of an APTA recommended practice is to ensure that each transit system achieves an appropriate level of protection for operations, assets and people, including employees, passengers and the general public. APTA recommended practices represent an industry consensus of acceptable security practices. However, agency-specific constraints may make compliance with every provision of an APTA recommended practice impractical.

Crime Prevention Through Environmental Design (CPTED) for Transit Facilities

1. CPTED overview

Crime Prevention Through Environmental Design (CPTED) is commonly defined as "the proper design and effective use of the built environment that can lead to a reduction in the fear and incidence of crime and an improvement in the quality of life" (Crowe 2000, p. 46). The application of CPTED focuses on designing safety and security into the natural, physical and social environment of a specific area to reinforce positive behavior. CPTED must be actively maintained as facility usage and security concepts of operations evolve.

Specifically, CPTED principles and strategies use the four interrelated principles of natural surveillance, natural access control, territorial reinforcement, and activity support and maintenance. Applied during the conceptual, planning, design and maintenance phases of a project, CPTED uses the behavior of people, a knowledge of crime generators, the physical and social environment, and the space of an area to reduce opportunities for crime that may be inherent in the design of the built environment. Planning the use of a facility, such as a bus and/or parking garage, transit center, intermodal terminal, or park-and-ride lot, should also encompass details for providing users with a safe and secure environment. CPTED can be an effective approach for many transit agencies to address safety and security issues. Additionally, the principles and strategies of CPTED have been applied for years and incorporated into the designs of facilities not related to transit.

CPTED should be used with other recommended practices, such as fencing, gates, lighting, landscaping, bus stop/shelter design, etc., to blend security with area aesthetics while adhering to local ordinances. This recommended practice is designed to provide guidance in achieving successful application of CPTED concepts and strategies at public transit facilities.

1.1 Stakeholder considerations

To the extent possible, the application of CPTED principles should be considered to meet the specific needs of users of transit facilities (parking areas, walkways, internal or underground areas, maintenance yards, employee parking, etc.). When appropriately applied, CPTED principles can be conducive to operations without becoming a financial or maintenance burden. Applying the principles of CPTED provides the following benefits:

- Affects behaviors and reduces risk
- Provides guidance to transit planners, designers and builders
- Deters criminal activity
- Increases perceived risk of apprehension
- Fosters a sense of physical and social order
- Creates a sense of ownership for authorized system users
- Maximizes the perceived presence of transit and law enforcement staff
- Minimizes out-of-sight activity
- Manages access to authorized areas and controls access to non-public areas

1.2 Risk assessment considerations

Transit agencies should evaluate risk and use system-wide and asset-specific risk assessments as a guide in determining the application of CPTED practices to maximize transit safety and security.

1.2.1 Systemwide assessment

Transit agencies should first refer to their security risk assessment findings to determine the risks to their systems' assets and the surrounding environment. Transit agencies that do not have existing security risk assessments should develop them using current government guidelines and industry best practices.

1.2.2 Facility risk assessments

Transit agencies should use a risk-based assessment approach to identify safety and security threats to their transit systems. To determine specific risk to passenger facility and nonrevenue areas, agencies should refer to each asset's criticality ranking and the security and risk management issues for each specific location under review. The approach may also evaluate system vulnerabilities to those threats and identify consequences to people, equipment and property. The findings should be used to determine appropriate security mitigations for the protection of critical infrastructure and the deterrence of crime at transit properties.

1.2.3 CPTED survey

A CPTED survey identifies vulnerabilities within a transit system's built and natural environments and recommends enhancements that reduce risks to people, operations and facilities. The survey is a component of the risk assessment process and focuses on identifying human behaviors, along with other potential vulnerabilities within specific areas. Survey findings identify mitigations that, if implemented, enhance the safety and security of transit systems. Appendix A contains a sample CPTED survey.

2. CPTED principles

These accepted CPTED principles are described below and detailed in **Table 1**:

- **Natural surveillance:** The design of an environment with clear sight lines to maximize visibility and observation. This includes the placement of physical features and activities to create a perception that individuals are under observation.
- **Natural access control:** Controlling access to a site through the strategic design of streets, sidewalks, building entrances and landscaping.
- **Territorial reinforcement:** The use of physical attributes that express ownership and notifiy users and non-users of the boundaries of a space or facility.
- **Maintenance and activity support:** Care and upkeep demonstrate ownership and intolerance for disorder. Encouraging appropriate activities preserves the intended use of the space.

TABLE 1

CPTED Principles and Applications

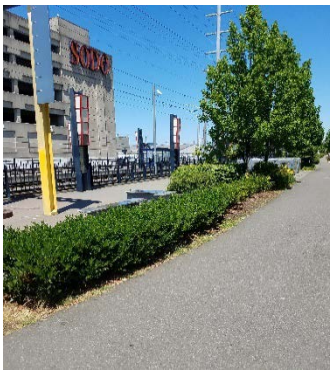
Principle	Transit Application
Natural surveillance  	• Maximize visibility by designing doors and windows to look into public areas (e.g., parking lots, roadways or sidewalks). • Ensure adequate illumination of public areas. • Keep everyone under observation. Organized surveillance strategies include use of police and guard patrols. Lighting and video surveillance are tools to support natural strategies that include windows, low landscaping and raised entrances.
Natural access control 	• Use landscape structures and architectural designs to discourage access to unauthorized areas. • Design streets, roadways, pathways, driveways and neighborhood gateways to mark public routes. • Indicate where people are allowed.
Territorial reinforcement  	• Distinguish the boundaries between restricted and public areas. • Implement landscape plantings, pavement surface treatments, fences, signage, etc., to reinforce the territory of restricted or public areas. • Create physical designs that enhance and develop a sense of ownership. Organized territorial strategies typically include neighborhood crime watches, receptionists and guard stations. Mechanical strategies can be perimeter sensing systems.

TABLE 1
CPTED Principles and Applications

Principle	Transit Application
Maintenance and activity support 	• Maintain the cleanliness and functionality of areas and spaces. • Inspect assets, equipment and facilities to ensure satisfactory operation. • Enforce a zero-tolerance policy for graffiti and vandalism. • Identify activities that create community involvement in the public space. • Ensure that public space activities complement other activities in the same space.

3. Training

Transit specific training for CPTED is available from the Transportation Safety Institute (TSI), a training program within the U.S. Department of Transportation. Other agencies, educational institutions, organizations and programs also offer CPTED courses that may be considered.

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Definitions

activity support: Placing activities in public spaces that are intended for use by residents or customers and other legitimate users and therefore discourage criminal or undesirable activity.

asset: Any real or personal property, tangible or intangible, that a company or individual owns that can be given or assigned a monetary value.

crime generators: Locations and activities that have the propensity to generate crime in the surrounding area.

crime statistics: The tabulations of crimes by time, geography, characteristics of offenders and victims, modus operandi, effectiveness of police response, arrests, convictions, sentences and other data.

design conflict: Two incompatible activities that are located next to each other and are forced to compete for the same space.

maintenance: The continued care and upkeep of a space for its intended purpose. Maintenance also serves as an expression of ownership.

natural access control: Controlling access to a site through the strategic design of streets, sidewalks, building entrances and landscaping.

nonrevenue transit facility: A non-publicly accessible transit facility or the non-publicly accessible portion of a mixed revenue/nonrevenue facility, such as operations control centers, maintenance facilities, bus vehicle

storage yards, rail vehicle storage yards, traction power substations, communication rooms, train control rooms, emergency fan plants, elevator rooms, passenger station ancillary rooms and other similar facilities.

natural surveillance: The placement of physical features, activities and people in such a way as to maximize safety and security.

revenue transit facility: A publicly accessible transit facility or the publicly accessible portion of a mixed revenue/nonrevenue facility, such as passenger stations and terminals.

risk assessment: A formal, methodical process used to evaluate risks to a transit system. The security portion of the risk assessment identifies security threats (both terrorism and crime) to the transit system; evaluates system vulnerabilities to those threats; and determines the consequences to people, equipment and property.

station: A type of public transportation passenger facility designated for the purpose of boarding and alighting passengers. Station features and amenities may include information/waiting areas, boarding and alighting platforms, ticket/fare card sales, turnstiles or other fare collection equipment, restrooms, concourses, mezzanines, vendor shops, and other related facilities.

transit agency: A representative organization that operates transit and other transportation-related services.

target hardening: Providing physical security to a target, making it more resistant to attack.

territorial reinforcement: The use of physical attributes that express ownership and notifiy users and nonusers of the boundaries of a space or facility.

unassigned space: Sites built with spaces that have no assigned purposes and no one to exercise control over them.

Abbreviations and acronyms

ADA	Americans with Disabilities Act
ASIS	American Society for Industrial Security
CPTED	Crime Prevention Through Environmental Design
FTA	Federal Transit Administration
IESA	Illuminating Engineering Society of America
NATSA	North American Transportation Services Association
NCHRP	National Cooperative Highway Research Program
OCC	Operations Control Center
ROW	right-of-way
TCRP	Transit Cooperative Research Program
TSI	Transportation Safety Institute

Summary of document changes

- Bullet points xx

Document history

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First published	—	—	—	—	June 24, 2010
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Appendix A: CPTED Considerations Survey

DIRECTIONS: Use this checklist as an example to help you decide which principles and applications may be applicable to your transit agency in conjunction with local zoning laws. Use the evaluation column to provide comments or observations.

PERFORMANCE STANDARD AND FUNCTIONAL AREA CONSIDERATIONS	EVALUATION
NATURAL SURVEILLANCE **Blind corners** *Avoid blind corners in pathways and parking lots.* ☐ Pathways are direct. All barriers along pathways are permeable (see-through), including landscaping, fencing, etc. ☐ Low-growth vegetation is used to prevent blind corners. ☐ Consider the installation of mirrors to allow users to see ahead of them and around corners. ☐ Rounded corners are used to prevent blind corners.	
Site and building layout *Allow natural observation from the street to the use, from the use to the street, and between uses.* ☐ Main entrances/exits are located at the front of the site and in view of the street. ☐ There is a clear border definition of controlled space (public to private). ☐ Transitional zones are clearly marked (for movement into controlled area). Administrative or maintenance facilities: ☐ Boxes or planters are located away from buildings. ☐ If employee entrances must be separated from the main entrance, then they maximize opportunities for natural surveillance from the street. ☐ In industrial developments, administrative offices are at the front of the building. Surface parking and parking structures: ☐ Large expanses of parking are avoided. Where large expanses of parking are proposed, provide surveillance such as security cameras. ☐ Access to elevators, stairwells and pedestrian pathways is clearly visible from an adjacent parking area. ☐ Hidden recesses are avoided. ☐ Parking areas are located in locations that can be observed by adjoining areas. Common/open space areas: ☐ Open spaces are clearly designated and situated at locations that are easily observed by people. Parks, plazas, common areas and playgrounds are placed in the front of buildings. Shopping centers and other similar uses face streets. ☐ Dumpster enclosures are designed and located to screen refuse containers without providing opportunities to hide.	

PERFORMANCE STANDARD AND FUNCTIONAL AREA CONSIDERATIONS	EVALUATION
Building interior *Provide natural surveillance for common/open space areas.* ☐ Active uses or habitable rooms are positioned with windows adjacent to main common/open space area. ☐ Adequate lighting is provided in hallways, restrooms, stairways and work areas. ☐ The building has separate areas for receiving mail, deliveries, etc. ☐ There is an integrated communication system throughout the building. ☐ There are no obstructions that prevent visibility through windows. ☐ Waiting areas and external entries to elevators/stairwells are located close to areas of active use to make them visible from the building entrance. ☐ Seating is located in areas of active use.	
Entrances *Provide entries that are clearly visible.* ☐ Entrances are designed to allow users to see into them before entering. ☐ Entrances are clearly identified.	
Fencing *Fence design should maximize surveillance from the street to the building and from the building to the street, and minimize opportunities for intruders to hide.* ☐ Front fences are predominantly open in design, such as pickets or wrought iron, or low in height. ☐ High solid front fences are designed in a manner that incorporates open elements to allow visibility above the height of 5 ft. ☐ If noise insulation is required, then double glazing is installed at the front of the building rather than solid fences higher than 5 ft.	
Landscaping *Avoid landscaping that obstructs natural surveillance and allows intruders to hide.* ☐ Trees with dense, low-growth foliage are spaced, or their crowns are raised to avoid a continuous barrier. ☐ Low groundcover, shrubs a maximum of 24 in. in height, or high-canopied trees (clean trimmed to a height of 8 ft) are used around parking areas and along pedestrian pathways. ☐ Vegetation that conceals the building entrance from the street is avoided.	

PERFORMANCE STANDARD AND FUNCTIONAL AREA CONSIDERATIONS	EVALUATION
Exterior lighting *Provide exterior lighting that enhances natural surveillance.* ☐ The lighting plan is prepared in accordance with Illuminating Engineering Society of America (IESA) standards, which address project lighting in a comprehensive manner. Lighting approach is consistent with local conditions and crime problems. ☐ Elevated light fixtures (poles, light standards, etc.) are located in a coordinated manner that provides the desired coverage. The useful ground coverage of an elevated light fixture is roughly twice its height. ☐ For areas intended to be used at night, lighting supports visibility. Where lighting is placed at a lower height to support visibility for pedestrians, it is vandal-resistant. ☐ Inset or modulated spaces on a building façade, access/egress routes and signage are well-lit. ☐ In areas used by pedestrians, lighting shines on pedestrian pathways and possible entrapment spaces. ☐ Lighting takes into account vegetation, in both its current and mature forms, as well as any other element with the potential to block light. ☐ Areas not intended for nighttime use are not lit, to avoid giving a false impression of use or safety. If danger spots are usually vacant at night, then avoid lighting them and close them off to pedestrians. ☐ "Safe routes" are selected and lit so that these become the focus of legitimate pedestrian activity after dark. ☐ Light standards and electrical equipment are located away from walls or low buildings to avoid climbing opportunities. ☐ Photoelectric rather than time switches are used for exterior lighting. ☐ In areas used primarily by older people, higher levels of brightness are provided in public/common areas.	
Mix of uses *In mixed-use buildings, increase opportunities for natural surveillance while protecting privacy.* ☐ Where allowed by city code, ticket kiosks and shops are located on lower floors and offices on upper floors. In this way, office workers can observe the businesses after hours, while the office entrances can be observed by the business during business hours. ☐ Food kiosks, restaurants, etc. are included within parks and parking structures, if applicable.	
Security bars, shutters and doors *Where used and permitted by building and fire codes, security bars, shutters and doors should allow observation of the street and be consistent with the architectural style of the building.* ☐ Security bars and security doors should be visually permeable (see-through).	

PERFORMANCE STANDARD AND FUNCTIONAL AREA CONSIDERATIONS	EVALUATION
ACCESS CONTROL **Building identification** *Ensure that buildings are clearly identified by street number to prevent unintended access and to assist people who are trying to find the building.* ☐ Street numbers are plainly visible and legible from the street or road fronting the property. ☐ Street numbers are made of durable materials, preferably reflective or luminous, and unobstructed (e.g., by foliage). ☐ For larger projects, location maps (fixed plaque format) and directional signage are provided at public entry points and along internal public routes of travel.	
Entrances *Avoid confusion in locating building entrances.* ☐ Entrances are easily recognizable through design features and directional signage. ☐ Entry access into facilities is limited. ☐ The number of entry points is minimized.	
Landscaping *Use vegetation as barriers to deter unauthorized access.* ☐ Consider using thorny plants as an effective barrier.	
Landscaping location *Avoid placement of vegetation that would enable access to a building or to neighboring buildings.* ☐ Large trees, garages, utility structures, fences and gutters are not located next to second-story windows or balconies that could provide a means of access.	
Security *Reduce opportunities for unauthorized access.* ☐ There is some kind of active surveillance (video surveillance, alarm systems, guard service or police patrols). ☐ Floor-level windows incorporate security attributes to resist shattering. ☐ Doors to critical areas are secured or have access control. ☐ The facility practices key control. ☐ The facility practices inventory control. ☐ Tamper-proof locking systems are used for the building and offices. ☐ Consider the use of security hardware and/or human measures to reduce opportunities for unauthorized access.	

PERFORMANCE STANDARD AND FUNCTIONAL AREA CONSIDERATIONS	EVALUATION
Signage *Ensure that signage is clearly visible, easy to read and simple to understand.* ☐ Strong colors, standard symbols and simple graphics are used for informational signs. ☐ There is signage to reinforce transition zones and give direction. ☐ Signs are relevant. Signage clutter implies a lack of control over the customer environment. ☐ Signs use high performance materials and are placed out of reach to help deter vandalism ☐ Use a signage State of Good Repair program to keep assets well maintained and up to date with regulatory information. Damaged and inaccurate signs imply abandonment. ☐ Signs are positioned in highly visible, well-lit locations to assist with safe navigation.	
Surface parking and parking structure ☐ Upon entering the parking area, both pedestrians and drivers can get a clear understanding of the direction to stairs, elevators and exits. ☐ In multilevel parking areas, memorable signage is used to distinguish among floors to enable users to easily locate their cars. ☐ Users are advised of security measures that are in place and where to find them, e.g., security phones or the intercom system. ☐ Signage is provided in the parking area advising users to lock their cars. ☐ Where exits are closed after hours, this information is indicated at the parking area entrance.	
OWNERSHIP **Maintenance** *Create a "cared for" perception.* ☐ Facility is well-maintained. ☐ Landscaping is well-maintained to give an impression of ownership, care and security.	
Materials *Use materials that reduce the opportunity for vandalism.* ☐ Avoid flat or porous finishes in area where graffiti is likely to be a problem. Consider using strong, wear-resistant laminate, impervious glazed ceramics, treated masonry products, stainless steel materials, anti-graffiti paints, and clear over-sprays to reduce opportunities for vandalism. ☐ Where large walls are unavoidable, vegetative screens are used. ☐ Common area street furniture is made of long-wearing, vandal-resistant materials and is secured by sturdy anchor points or removed after hours.	

PERFORMANCE STANDARD AND FUNCTIONAL AREA CONSIDERATIONS	EVALUATION
STATIONS AND TERMINALS ☐ Availability and/or placement of storage and baggage lockers are dictated by transit agency risk assessments. ☐ Information centers, ticket vending machines and concessions are placed so as not to obstruct sight lines. ☐ Street entrances are well-illuminated. ☐ Stairways are left open to increase visibility. ☐ Mirrors are installed on blind corners. ☐ Bathrooms are located near a highly traveled part of the station, not in a remote area. ☐ Bathroom doors are locked open during business hours. ☐ Clear border definition of controlled space (public to restricted) is provided. ☐ Transitional zones are clearly marked. ☐ Cul-de-sacs and alcoves are avoided. ☐ Transparent materials are used to enhance sight lines and enhance security. ☐ Walls are painted or tiled in a reflective material to increase illumination. ☐ Where possible, stations/terminals have open shafts or skylights to bring in natural light. ☐ Underpass and passageway illuminations are vandal resistant. ☐ Off-hour waiting areas are clearly marked, visible to customers, and equipped with video surveillance and intercom system. ☐ Enunciators, visual and audio, in stations alert customers of arrivals and minimize time spent on isolated platforms or mezzanines.	
Site layout ☐ Structures are set back from roads and parking areas, if applicable. ☐ Physical barriers such as bollards, road spikes and fencing enforce setbacks and/or prevent ramming. ☐ Vehicle entrances are kept to a minimum. ☐ Sight lines around the station are unobstructed.	
Architectural features ☐ “No Trespassing” signage is provided where applicable. ☐ Instructions are posted or broadcasted on how to report suspicious activity. ☐ Bright paint colors are used to increase ambient lighting.	
Interior layout ☐ Interior station layout provides unobstructed sight lines, minimizing hidden areas or remote passageways. ☐ Kiosks, ads and other information are positioned so they don’t disrupt sight lines. ☐ Columns and blind corners are minimized. ☐ Security mirrors are installed on columns and corners. ☐ Operator booth is positioned for maximum presence and visibility within station. ☐ Nonpublic facilities are hidden and not identified.	

PERFORMANCE STANDARD AND FUNCTIONAL AREA CONSIDERATIONS	EVALUATION
Systems and services ☐ Appropriate surveillance is provided at entrances, at access points to nonpublic areas and throughout the station. ☐ Sufficient lighting is provided for nighttime surveillance. ☐ Intrusion alarms are installed at access points to nonpublic areas. ☐ Communication links to administrative and emergency response centers are provided. ☐ Backup emergency lighting is installed.	
ELEVATED STRUCTURES **Site layout** ☐ Access to land below structure is restricted, where possible. ☐ Structure is set back from roads, parking areas and other buildings, if possible. ☐ Physical barriers such as fences, bollards and fenders enforce setbacks and prevent ramming. ☐ Adjacent roadways are designed to inhibit high-velocity ramming of columns. ☐ Clear sight lines are provided under and around the structure.	
Interior layout ☐ Emergency and maintenance access points are limited.	
Architectural features ☐ Emergency and maintenance access points are secured with gates, locks or other access-control measures. ☐ “No Trespassing” signage is provided where applicable. ☐ Columns are made difficult to climb (by choice of materials, dimensions or barriers such as fences).	
TRANSIT STOPS **Site layout** ☐ Physical barriers such as bollards, planters and landscaping are provided to prevent ramming or to prevent unauthorized access if the stop has a transitway.	
Interior layout ☐ Kiosks, ads and information are positioned so as to not disrupt sight lines.	
Architectural features ☐ Signage deters non-transit vehicles from the stop area.	
Systems and services ☐ Emergency call boxes are provided to report incidents. ☐ Adequate lighting is provided for surveillance.	
ADMINISTRATIVE BUILDINGS AND OPERATIONS CONTROL CENTER (OCC) **Site layout** ☐ The number of access points is minimized. ☐ Building entrances face away from unsecured areas. ☐ Sight lines are unobstructed around the building.	
Interior layout ☐ Building layout provides unobstructed sight lines, minimizing hidden areas and blind corners.	

PERFORMANCE STANDARD AND FUNCTIONAL AREA CONSIDERATIONS	EVALUATION
Architectural features ☐ Critical equipment is secured with gates, locks or other access-control measures. ☐ "No Trespassing" signage is provided where applicable. ☐ Sufficient lighting is provided for nighttime surveillance. ☐ Appropriate surveillance and an access management system are provided at entrances. ☐ Backup emergency lighting is provided.	
MAINTENANCE AND STORAGE FACILITIES **Site layout** ☐ Structure and vehicle-storage areas are set back from roads and public parking areas. ☐ Physical barriers such as bollards, fencing and grade changes are used to enforce setbacks and secure the perimeter. ☐ The number of access points is minimized. ☐ Security checkpoints are provided at site access points. ☐ Sight lines are unobstructed throughout the site. ☐ The parking area is segregated from transit vehicles and fuel storage.	
Interior layout ☐ Building layout provides unobstructed sight lines, minimizing hidden areas and blind corners.	
Architectural features ☐ Rolling doors restrict view or access into maintenance barns. ☐ Critical equipment is secured with gates, locks or other access-control measures.	
System and services ☐ Remote surveillance and alarm systems are installed. ☐ Sufficient lighting is provided for nighttime surveillance. ☐ Backup emergency lighting is provided.	

PERFORMANCE STANDARD AND FUNCTIONAL AREA CONSIDERATIONS	EVALUATION
TUNNEL AND RIGHT OF WAY ☐ Right-of-way (ROW) is protected against encroachment and unauthorized access. ☐ Vegetation is eliminated from the ROW and kept low in the areas adjacent to tracks and transitways. ☐ Signage warns of potential dangers. ☐ Natural barriers are used whenever possible. ☐ Clearly identified boundary lines are established. ☐ Tunnels are adequately illuminated. ☐ Rooms, used or unused, are well-secured. ☐ Intrusion detection prevents unauthorized entrance into tunnels, exits and ventilation shafts. ☐ Access control is provided for employees into tunnels, shafts, etc. ☐ Provisions are made for people to call for help. ☐ Walkways are clearly identified. ☐ Access points are isolated from public roadways and parking areas. ☐ Physical barriers such as ditches, bollards, road spikes and fencing are provided around portals and other access points. ☐ Vent ducts are situated in self-contained secure buildings, locked, elevated and hidden. ☐ Tunnels do not contain unnecessary niches that may conceal people or explosives. ☐ Physical barriers shield tunnel walkway from platform or portal access. ☐ Emergency exit doors lock from the outside but allow unimpeded egress during emergencies. ☐ Solid access doors are provided to ventilation shafts whenever grating is unnecessary. ☐ “No Trespassing” signage is provided where applicable.	