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Transit Infrastructure Security Working Group

Security and Design Considerations for Restrooms at Public Transportation Passenger Facilities

Abstract: This recommended practice provides security risk and design considerations for restrooms at public transportation passenger facilities.

Keywords: access control, bathroom design, Crime Prevention Through Environmental Design (CPTED), location, maintenance, monitoring, occupancy, restroom design, risk assessment, security

Summary: When building or remodeling restrooms at public transportation passenger facilities, transit agencies should consider many factors that not only address customers' operational and aesthetic expectations but also provide for a safe, secure and usable customer experience. The considerations discussed herein, including location, access control and monitoring, occupancy, design features, and maintenance, can be tailored to accommodate transit systems of various sizes and ridership levels.

Scope and purpose: This document establishes recommended practices for the planning, design, development, maintenance and operation of restrooms. APTA recommends the use of this recommended practice by any entity, public or private, that regulates, inspects, designs, specifies, builds, maintains and/or operates public transportation passenger facilities.

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Introduction

This introduction is not part of APTA SS-ISS-RP-002-21, "Security and Design Considerations for Restrooms at Public Transportation Passenger Facilities."

APTA recommends the use of this document by:

- individuals or organizations that operate transit systems;
- individuals or organizations that contract with others for the operation of transit systems; and
- individuals or organizations that influence how transit systems are operated (including but not limited to consultants, designers and contractors).

Security and Design Considerations for Restrooms at Public Transportation Passenger Facilities

1. Overview

Public transportation agencies that elect or are required to provide restrooms at passenger facilities should, at a minimum, provide for an environment that is reliably operational, secure and usable. To design and maintain restrooms that live up to these standards, agencies must first successfully reconcile the needs and expectations of passengers with security risk assessment findings, cost considerations and systemwide operational procedures.

This recommended practice is not intended to be the authoritative source for all restroom considerations. Each agency and passenger facility will have its own specific attributes, risk profile, budget, structure, climate and legal restrictions, among other unique characteristics. Agencies must therefore determine which considerations above and beyond those identified in this recommended practice apply to their facilities and consider those factors when initiating the restroom design planning process.

2. Risk assessment considerations

2.1 Systemwide assessment

Transit agencies should conduct and/or refer to their existing security risk assessments to determine both their systemwide risk profile and how the development of restroom facilities may impact that profile. At a minimum, assessments should cover risks to personnel, facilities, infrastructure and the overall operating environment. Transit systems that have not already completed security risk assessments should develop them using the APTA recommended practice “Security Risk Assessment Methodology for Public Transit” or other established guidance.

Once complete, agencies should leverage the results of their systemwide assessments to help guide restroom considerations.

2.2 Passenger facility risk assessment

Transit agencies should conduct and/or refer to their existing facility risk assessments to determine both their risk profile for that location and how the development of restroom facilities may impact that profile. At a minimum, facility assessments should cover risks to personnel, assets, infrastructure and the overall operating environment.

Site surveys should, at a minimum, include an evaluation of vehicle and pedestrian access points, congregation points, physical infrastructure locations and critical utility locations, among other factors. Once complete, agencies should leverage the results of their facility assessments to help guide restroom design considerations.

2.3 Crime Prevention Through Environmental Design survey

CPTED focuses on incorporating safety and security principles into the natural, physical and social environment of a specific area to reinforce positive behavior. Transit agencies should additionally perform a CPTED survey of their passenger facilities to help address safety and security issues in and around proposed restroom locations. Specifically, transit agencies should think about natural surveillance, natural access control, territorial reinforcement, activity support and maintenance in relation to their restroom facilities.

FIGURE 1
Bright and Clean Station for Natural Surveillance

See APTA SS-SIS-RP-007-10, "Crime Prevention Through Environmental Design (CPTED) for Transit Facilities" for more information.

3. Restroom design considerations

Restrooms can become significant security risks if they are not effectively designed and managed. Specifically, restrooms may be targeted for vandalism, assault, prostitution, illicit drug activity and other illegal or terrorist activity due to their private and easily accessible nature. Consideration must be given to the location, access control and monitoring, occupancy, design, and maintenance of proposed and existing restroom facilities. The following sections discuss factors that transit agencies should take into account during the restroom design or remodel process.

3.1 Location

All restroom facilities should be located in areas highly visible to employees, security personnel and customers. The optimum location should permit an unobstructed view in and around the entry point at all times. Once suitable locations are identified, transit agencies should carefully consider whether restrooms will be constructed before or after the paid fare zone.

3.1.1 Before the paid fare zone

While restrooms located before the paid fare zone may be designed to serve passengers and employees, they may also be accessible to the general public. Transit agencies should consider the security and maintenance risks associated with these locations given the broader population of users. Restrooms located in these areas may also require more security mitigations to assist in monitoring.

For example, restrooms before the paid fare zone may be more difficult to secure and/or monitor, which could present the opportunity for vandalism and other crimes. Furthermore, these restrooms are likely to be used

more often and therefore require more rigorous or frequent cleaning. In both scenarios, transit agencies may need to divert increased funding and/or resources for additional security and maintenance measures in these locations.

3.1.2 After the paid fare zone

Restrooms located after the paid fare zone are designed to serve passengers and employees only. Transit agencies should consider the security risks associated with these locations given the smaller population of users.

For example, infrequently used restrooms may provide people the isolation needed for unlawful behavior. Generally speaking, busier restrooms may be a deterrent to criminal behavior, as activities may be interrupted or witnessed by other customers.

3.2 Access control and monitoring

Transit agencies should predetermine their access control objectives for restrooms at their passenger facilities. Restrooms can either be open access, with little or no control over admittance, or have controlled entry, with greater authority to govern customer entry. Once a decision is reached, transit agencies should develop procedures for consistently enforcing and monitoring access with specific procedures in place to minimize potential bias.

Regardless of the access control type, entry and exit points should have clear lines of sight to encourage natural surveillance. Additionally, surveillance cameras should be aimed on restroom entry and exit points to support forensic investigations.

3.2.1 Open access

Open-access restrooms are a quick, easy and familiar option for transit agencies. Customers are invited to use these facilities at their convenience, with no physical or permissions-based barriers to entry. Transit agencies should consider that access control and monitoring can be difficult in these environments. To help circumvent this issue, transit agencies could consider ensuring a direct line of sight into the main restroom area at all times. In heightened security situations, transit agencies should pre-identify and deploy measures to restrict entry to open-access restrooms.

3.2.2 Controlled entry

Restrooms with controlled entry allow transit agencies to determine who, when and how customers enter their facilities. Restrooms of this type are typically secured by a physical or electronic locking mechanism. Locks commonly used for restroom facilities are described in **Table 1**. The table provides the type and description of each lock, as well as potential considerations for each type in the transit environment. Regardless of the entry controls applied, unauthorized entry into the restroom facility may be bypassed by “piggybacking” a customer or an employee accessing the facility. Access control measures should consider this vulnerability.

For all lock types, transit agencies should additionally consider how law enforcement, emergency medical services and other first responders can quickly and easily enter these controlled access facilities in an emergency. Transit agencies should develop procedures for such instances, which may include having master keys and tokens in an easily accessible location, developing “go-bags” to deliver to first responders upon arrival, or system-override guidance.

TABLE 1
Lock Types and Considerations

Lock Type	Description	Considerations
Keyed lock 	• Access control device securing a door or opening until a key activates a release mechanism	• Familiar • Small expense • Easy to install/use • Requires key duplication/spares • Relies on personnel monitoring key use and location
Token lock 	• Access control device securing a door or opening until a coin or token activates a release mechanism	• Small expense • Easy to install/use • Uncommon, so may be difficult to repair • Requires tokens/coins be emptied on a regular basis • Requires on-site resources and procedures to access tokens • Ongoing operational costs for tokens • Could be vulnerable to bypass with other coins • Higher maintenance costs
Keycard lock 	• Access control device securing a door or opening until a keycard (such as a metro card) activates a release mechanism	• Larger up-front expense • Easy to use • Can restrict access at certain times and to certain people • Requires keycard reader • Requires that keycards have an embedded access credential • Could be vulnerable to hacking
Keyless entry lock 	• Access control device securing a door or opening until a passcode or PIN entered into a keypad activates a release mechanism	• Familiar • Convenient • Easy to install/use • Larger expense • Requires battery changes • Relies on personnel to track and regularly reprogram passcodes or PIN numbers • May have a time lock feature • Vulnerable to the passcode being given out to everyone
Remote keyless entry lock 	• Access control device securing a door or opening until a remote user activates a release mechanism	• Convenient • No physical key or keypad required • More complicated to install/use • May be a larger expense • May rely on electricity to function • May require a buzzer, camera or other remote system • Requires personnel grant access • Could be vulnerable to hacking

3.3 Occupancy

Transit agencies should consider size constraints, passenger throughput, state and local legislation, maintenance schedules, building codes, and facility risk profiles when determining whether to develop single-occupancy or multiple-occupancy restrooms.

3.3.1 Single occupancy

In recent years, single-occupancy restrooms have gained momentum in the public domain. They are designed to be used by one person at a time, so they may be equipped with one sink and one toilet/urinal. Advocates for single-occupancy restrooms often cite inclusivity, a greater sense of privacy, increased turnover (resulting in quicker service), reduced building costs and reduced maintenance requirements as justifications for their use.

The doors of these facilities typically have a locking mechanism to provide privacy. Transit agencies should consider affixing occupancy indicators on the exterior of single-stall restrooms to alert employees, security personnel and other customers that a person is inside. Transit agencies could also consider installing a timed lock feature, prompting a single-occupancy restroom door to open after a specified period of time and an automated warning for occupants when their allotted time is near completion.

3.3.2 Multiple occupancy

Multiple-occupancy restrooms are common at businesses, schools, transit agencies and other locations that host a significant number of people. They are designed to be used simultaneously by more than one person, so they may be equipped with multiple sinks and multiple toilets/urinals. Advocates for multiple-occupancy restrooms often cite greater security due to lesser privacy and quicker service for larger groups of people.

Transit agencies could consider affixing occupancy indicators on the exterior of stall doors in multiple-occupancy restrooms to alert other customers, employees and security personnel that a person is inside.

3.4 Design features

After selecting a location and developing operational and logistical procedures for restroom use, transit agencies should turn to the fixtures, fittings and surfaces. Transit agencies must consider how these design elements will look and function, as well as how they contribute to the overall safety, security and hygiene of the passenger facility and its customers.

3.4.1 Americans with Disabilities Act compliance

ADA compliance is a critical aspect of restroom design. To ensure ADA compliance, transit agencies should consider inviting an accessibility expert to the restroom design team.

3.4.2 Signage

Restroom wayfinding signage is an important means of managing the flow of customers within the station and minimizing customer confusion.

Transit agencies can purchase static signage, such as overhead banners or placards, to indicate the direction of and distance to the nearest restroom. These signs are familiar to customers, inexpensive to buy and easy to install. Transit agencies may also consider static station directories or dynamic signage, such as LED or touchscreen displays, to direct customers. Dynamic signs are often more expensive and more complicated to install but offer greater flexibility and control over content. For example, with the help of a content management system, digital displays can be updated to indicate that a restroom is out of order for maintenance.

Signage should be clear, brief, readable at a reasonable distance, and use common nomenclature and/or symbols. Gendered bathrooms, for example, should be affixed with the international men/women symbol, and non-gendered bathrooms should be clearly marked as such.

Restrooms should also have signage reflecting the room name and number, per accessibility requirements and building codes. Signage should clearly communicate usage policy, such as single-occupancy. Signage and pictogram use should also be carefully considered within the cultural context.

At the restroom itself, transit agencies should clearly identify accessible stalls using ADA-approved signage. To prevent tampering, accessible stall signage should be integrated into the surface material of the door.

3.4.3 Amenities

Transit agencies could consider offering amenities that provide for an easier and more efficient restroom experience.

Near the sink, transit agencies could consider providing hand dryers or paper towel dispensers. Hand dryers eliminate unnecessary waste but can be loud, energy inefficient, awkward to use and less hygienic due to liquid spray. On the other hand, paper towel dispensers generate waste and can be used to clog the sink and toilets but are more hygienic and accessible. To minimize the impact of paper waste, transit agencies could consider using environmentally friendly rolls such as paper towels made from recycled content or alternative materials like bamboo. Both hand dryers and paper towel dispensers should be lockable, vandal resistant and made out of durable material such as stainless steel.

Toilet paper should be secured in a toilet paper holder constructed of vandal-resistant materials.

Transit agencies could also affix tamperproof mirrors to restroom walls to support grooming and enhance security. That being said, transit agencies have occasionally opted out of providing mirrors to reduce targets for vandalism.

Additionally, transit agencies should provide trash receptacles in and/or around restrooms, especially in conjunction with paper towel dispensers. To minimize the presence of waste, maintenance teams should empty trash receptacles regularly.

Significant consideration should be provided to the design and location of these trash bins, especially acknowledging that they could be misused to conceal criminal items or even hide an improvised explosive device. See APTA SS-SIS-WP-014-13, “Trash and Recycling Receptacles for Transit Facilities,” for more information.

3.4.4 Surfaces

3.4.4.1 Stalls and partitions

Stalls and partitions, if manufactured and installed correctly, can enhance the safety, security and cleanliness of passenger facility restrooms.

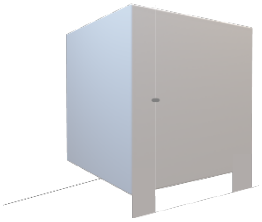
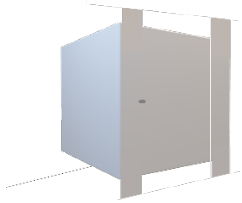
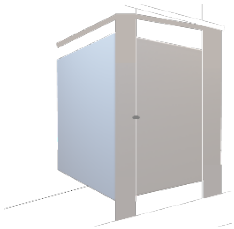
Similar to other restroom fixtures, stalls and partitions should be made of a vandal-resistant material that is easily cleaned by maintenance teams but does not as easily suffer damage or absorb moisture. Materials could include stainless steel, high-pressure laminate or painted metal, among others. Transit agencies could also consider covering materials with vandal-resistant coatings.

For accessibility and maintenance, stalls and partitions should be lifted off the floor. They should be high enough for cleaning and wheelchair maneuvering, but not so high as to risk privacy or the theft of belongings.

For higher-risk passenger facilities, transit agencies could consider reduced-privacy stalls, such as barriers without door locks.

Stalls and partitions can have a variety of mounting configurations, each with their benefits, drawbacks, and structural requirements. Several mounting options are described in **Table 2**. The table provides the type and description of each mounting option, as well as potential considerations for each type in the transit environment.

TABLE 2
Stall/Partition Mounting Options and Considerations

Mounting Option	Description	Considerations
Floor mounted 	• Doors, pilasters and panels are mounted to and flush with the floor	• Less rigid • Easily installed • Effective for high/low ceilings
Floor and ceiling mounted 	• Pilasters are anchored to the ceiling and floor	• Designed for significant use • Durable • Resist vandalism • Structural ceiling support required
Floor anchored and overhead braced 	• Pilasters are anchored to the floor and an overhead brace is anchored to the pilasters and wall	• Designed for significant use • Rigid • Cost-effective • Easily installed • May be susceptible to vandalism without anti-grip properties

3.4.4.2 Floors and counters

Transit agencies should select restroom flooring and countertops that are vandal resistant, minimize maintenance, and handle day-to-day use and foot traffic.

Restrooms can be wet environments, which raises several health and safety concerns for passenger facilities. Should floors become wet, customers are at risk of slipping and falling, and transit agencies may become liable. To minimize the likelihood of this occurring, transit agencies should install softer, slip-resistant flooring with traction. Wet floors may also become a breeding ground for mold and bacteria. Therefore, porous and overly textured flooring types should be avoided. Counters will become wet as well, so permeable countertop surfaces should likewise be avoided.

3.4.5 Plumbing and fixtures

3.4.5.1 Sinks and faucets

Transit agencies should evaluate each restroom facility to determine which sinks and faucets are best equipped to serve their customer base.

Sinks come in a variety of models, some of which are floor-mounted or freestanding, and others of which are installed onto the wall using sink clips and fasteners. As a consideration, wall-mounted sinks may provide greater space and ease of access for people with wheelchairs.

Sink models may additionally reflect a variety of surface types, including solid-surface, porcelain and stainless steel components. Solid-surface sinks are reliable as well as stain- and damage-resistant. They can either be top-mounted, with the sink rim resting at countertop level, or undermounted and flush with the countertop. Maintenance teams may find undermounted models easier to clean. Transit agencies could also consider purchasing porcelain or stainless steel sinks but acknowledge that they may not have the same durability and longevity as solid-surface sinks.

Sinks can also be constructed to deter unwanted or unhygienic behavior. For example, sink models can feature various basin depths. Deeper basins may be able to handle more water, but flatter basins may prevent people from bathing using captured sink water. Further, sinks can include strainers that inhibit the public from forcing foreign materials down the drain.

Faucets may likewise affect the customer experience, and consideration should be given to their type, height and length. For example, water should flow far enough away from the wall of the sink to prevent inadvertent contact with the sink bowl but should not be so high-profile that they become prone to splashing.

Furthermore, transit agencies should carefully assess the likelihood of vandalism within their restroom facilities. Doing so will help determine whether the underside of the sink and its plumbing components should be accessible to the public. These “countertop only” models are handy for maintenance teams but may cause undue risk. Therefore, transit agencies with a higher risk for vandalism and other property damage should opt for “complete cabinet” sinks that safely house plumbing components in a locked cabinet. To deter vandalism and other criminality, transit agencies could also consider installing sinks exterior to the main restroom area to allow for increased monitoring.

3.4.5.2 Toilets and urinals

Toilets and urinals must be clean, functional, accessible and durable to meet customer needs. Before making a selection, transit agencies should bear in mind all applicable building codes, plumbing codes and ADA guidelines, including height restrictions, weight capacities and space requirements. Transit agencies should also be cognizant of structural requirements, ensuring that walls and floors have the requisite structure to support these receptacles.

Transit agencies should conduct a careful assessment of toilet and urinal models. The two predominant models for commercial toilets are floor-mounted and wall-mounted. When determining a model, transit agencies should consider price differentials, space within stalls, aesthetics and access to plumbing. Urinals also have two predominant models: individual urinals and troughs. Individual urinals are considered more private and hygienic, while trough urinals may be less costly and quicker to use.

Transit agencies should also consider their preferred toilet/urinal flush valve, whether it be a gravity or pressure-assisted system. For example, gravity systems are simple, reliable and affordable, but are less

powerful when removing waste. On the other hand, pressure-assisted systems are small, efficient and provide for better water conservation, but may be more costly and loud.

For maintenance and cleaning purposes, both toilets and urinals should be affixed with stainless steel hardware, as it is durable and resists corrosion. Additionally, maintenance teams should stock surplus toilet and urinal parts for rapid repairs, when needed.

3.4.6 Touchless amenities

Where feasible, transit agencies should consider providing touchless amenities and fixtures, as these are frequently considered the most sanitary and are often preferred for accessibility. Touchless amenities can include, but are not limited to, faucets, paper towel dispensers, hand dryers and automatic flush valves.

3.4.7 Lighting

Effective security lighting should ensure long-distance visibility and provide for a sense of personal safety in all areas of the transit facility, including restrooms. Well-designed restroom lighting can both deter criminal behavior and minimize overall risk to customers.

For security and cleaning purposes, transit agencies should equip restrooms with clear, continuous lighting and consider the effects of lamp type, color, illuminance, uniformity, glare and shadow in the prescribed location. At a minimum, transit agencies should require that ambient restroom lighting be bright and provide at least 5 fc of illuminance. Transit agencies could also consider installing blue light bulbs to help deter illegal intravenous drug use in facility restrooms by obscuring blue-tinted veins.

See APTA SS-SIS-RP-001-10, “Security Lighting for Transit Passenger Facilities,” for more information.

3.4.8 Notification systems

Time is a significant factor for security and emergency events; therefore, transit customers should be able to both rapidly receive and report incidents to security personnel and law enforcement regardless of their location within the station. Restrooms are no different: Customers have a reasonable expectation to notify and be notified within these facilities. So, transit agencies should ensure that system- and station-wide notification systems are functional within and in close proximity to restrooms.

3.4.8.1 Alarms

Security alarms, emergency phones and other emergency reporting and notification systems should be located in or in close proximity to restrooms accessed by customers. Should an incident occur within a passenger facility restroom, affected people must be able to quickly and efficiently notify the proper authorities in accordance with transit agency emergency reporting procedures.

For fire alarms and smoke detectors, transit agencies must consult national and local fire codes. If applicable, transit agencies should also consider installing manual pull stations and fire extinguishers within or near facility restrooms.

3.4.8.2 Paging

Transit facilities that leverage system- and station-wide paging systems should ensure that customers can hear announcements from within the restroom, especially during emergency situations. To ensure that information is intelligible, restroom interiors should be affixed with loudspeakers and/or amplifiers for greater volume and sound distribution.

3.5 Maintenance

Cleanliness, safety and security are concepts that intersect and overlap. In fact, CPTED identifies maintenance as a core principle because it demonstrates ownership, encourages appropriate activities and signals an intolerance for disorder. Therefore, transit agencies should strive to meet an adequate standard for cleanliness in all restroom facilities—not just for hygiene, but also to promote safety and deter crime.

3.5.1 Maintenance staff

To determine staffing requirements, transit agencies should first consider developing a maintenance plan. Maintenance plans should identify the size (i.e., square footage) of restroom facilities, the surfaces and fixtures within each, a list of existing maintenance equipment, and expectations for cleanliness. In conjunction with budgeting requirements, this information can then be used to determine whether transit agencies have sufficient staff or require outsourced janitorial services. Frequent cleanliness checks deter criminal and other unwanted behaviors within restrooms.

Transit agencies should ensure that maintenance staff are properly trained on the maintenance plan, are knowledgeable about expected cleaning techniques and practices, and understand how to recognize and respond to observed or suspected criminal or inappropriate activities. Further, maintenance staff should reflect an appropriate gender mix, especially when gendered restrooms are present.

3.5.2 Cleaning procedures

Maintenance teams should use soap and water, detergent, and other nontoxic products for surface cleaning. To prevent dirt, dust and bacteria particles from spreading, wet cleaning methods, such as mopping, are preferred over dry cleaning methods, such as dusting. After cleaning, maintenance teams must also disinfect each facility. Pandemics and public health emergencies will require additional considerations for cleaning and disinfecting restrooms. See APTA SS-ISS-WP-001-20, “Cleaning and Disinfecting Transit Vehicles and Facilities During a Contagious Virus Pandemic,” for more information.

Additionally, transit agencies could consider purchasing self-cleaning restrooms to minimize the level of effort associated with manual maintenance.

3.5.3 Cleaning frequency

At a minimum, transit agencies must clean and disinfect facility restrooms every day.

Frequently used restrooms will need more than one daily cleaning. To determine if additional cleanings are required, transit agencies should consider how quickly restrooms begin to look dirty, how often supplies (e.g., toilet paper and soap) need replacement, budget and staffing constraints, and daily foot traffic. Maintenance teams can monitor foot traffic visually or use occupancy counters, if available. Scheduling may also impact cleaning frequency. Maintenance teams should monitor the typical foot traffic in and out of the restroom and schedule full cleanings for low- or no-traffic times.

In addition to scheduled cleaning, transit agencies could consider requirements and processes for on-call maintenance and janitorial needs caused by debris, vandalism or graffiti.

Related APTA standards

APTA SS-SIS-RP-007-10, "Crime Prevention Through Environmental Design (CPTED) for Transit Facilities"
APTA SS-SIS-RP-000-00, "Security Risk Assessment Methodology for Public Transit"
APTA SS-SIS-RP-000-00, "Security Lighting for Transit Facilities"
APTA SS-SIS-WP-014-13, "Trash and Recycling Receptacles for Transit Facilities"
APTA SS-ISS-WP-001-20, "Cleaning and Disinfecting Transit Vehicles and Facilities During a Contagious Virus Pandemic"

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Definitions

maintenance: The continued care and upkeep of a space for its intended purpose, including cleaning and janitorial activities.

passenger facilities: Facilities used by the passengers as part of their transit journey. Facilities range from simple bus stops to large, mixed-use, multimodal structures and have a wide array of supporting amenities and services.

pilaster: Column projecting from a wall that supports restroom infrastructure.

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: All areas and improvements within the boundaries of the station site, which includes structures, platforms, entries, approaches and parking lots.

Abbreviations and acronyms

ADA	Americans with Disabilities Act
CPTED	Crime Prevention Through Environmental Design
fc	foot-candle
LED	light-emitting diode

Summary of document changes

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Document history

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