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C01. Site Design

C01. Site Design

C01.1 Introduction

C01.1.1 Context

Effective and proper site design is critically important for all existing and new facilities on Tyndall Air Force Base (AFB). Site design incorporates strategies for safety, security, efficiency, resiliency, well-being, and connectivity. These focus areas promote a more cohesive base appearance and contribute to consistency and unity throughout the site design, thus establishing a connected, resilient installation.

This section presents important site design principles, strategies, and elements to be considered when planning, designing, and implementing new facilities.

The site design and development guidance provided in this section is intended to complement current design standards outlined in Unified Facility Criteria (UFC) issued by U.S. Department of Defense (DoD). Where applicable, it is intended to fill gaps not addressed either in the UFC or the updated *Tyndall AFB Installation Facilities Standards* (IFS). In that regard, this document mainly applies to proposed sites and their facilities. The prototypical site design concepts shown in this section are intended for use as references for functional and aesthetic consideration.

C01.1.2 Authority

All site development criteria must comply with Air Force Corporate Facilities Standards for Site Development: http://afcfs.wbdg.org/site-development/index.html

Additional references include the Uniform Facilities Criteria (UFC), the Whole Building Design Guide (WBDG), and Crime Prevention Through Environmental Design (CPTED):

- UFC 3-201-02*, Landscape Architecture*
- UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*
- UFC 4-022-01, *Entry Control Facilities Access Control Points*
- UFC 4-022-02, *Selection and Application of Vehicle Barriers*
- UFC 4-022-03, *Security Fences and Gates*
- UFC 3-600-01, *Fire Protection Engineering for Facilities*
- National Fire Protection Association (NFPA) Standards
- www.wbdg.org
- www.cpted.net

C01.1.3 Warranty

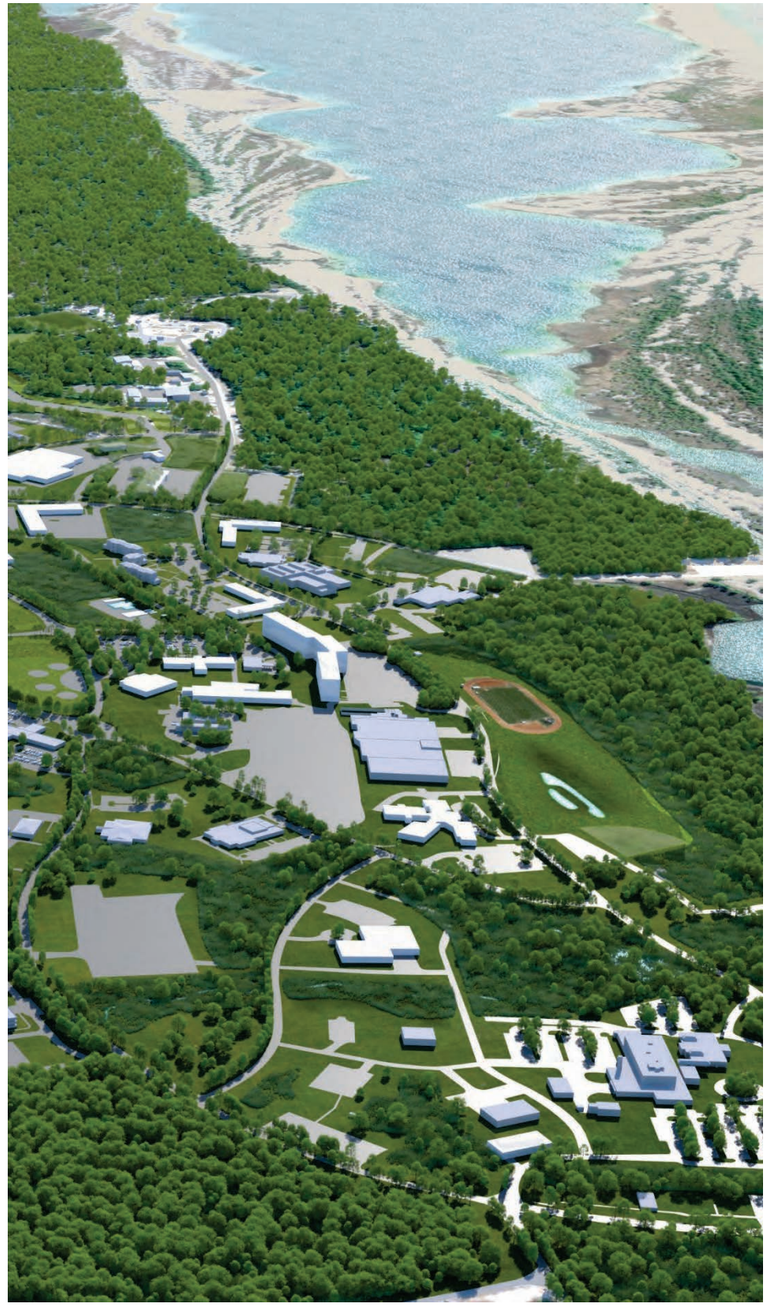
Coordination of design and construction with Tyndall AFB staff, agencies, service providers and third-party contractors is critical to the successful implementation of planned improvements. All work is required to be warrantied regarding location and installation of materials in a manner consistent with the intent of the Landscape Master Plan and IFS, and to not create a conflict for installation of adjacent improvements by others. All potential conflicts will be identified by designers/contractors in respective sections of the Compliance Checklist and reviewed by Tyndall AFB Staff.

C01.2 Design Objectives

Tyndall AFB was established and constructed in the early 1940s as an airfield. Over the decades, new facilities were added to the installation's property. As missions evolved throughout the years, buildings, streets, entrances, and supporting facilities have been demolished, constructed, and renovated. Given the growth that has occurred across Tyndall AFB over the past 80 years, the installation's appearance has an inconsistent overall appearance, building placement, orientation, access, parking, and pedestrian mobility.

During Hurricane Michael in October 2018, the base's support, Flightline, and housing areas incurred substantial damage. Although this storm caused major disruption to the base mission and operations, it has provided significant opportunity for transformation. As Tyndall AFB rebuilds into the Installation of the Future, the goal is to create a more resilient and efficient base that is better equipped to respond to future missions as well as to future environmental hazards.

Expanding on the current UFC and IFS guidance, this site design section provides additional guidance related to buildings, their siting, and supporting facilities and how these elements connect to one another. This guidance underscores the base's vision of creating a more efficient, compact, and safe installation through a planned system of interconnected, adjacent sites, rather than a more traditional approach to constructing independent facilities.



The future of Tyndall AFB

C01.3 Design Approach

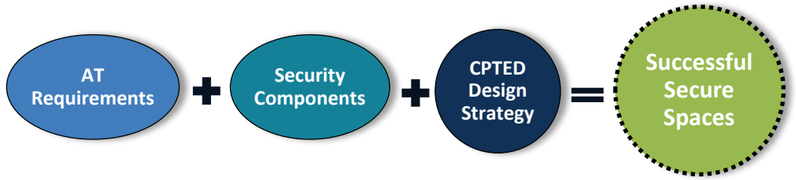
The three layers of integrating security with the design of the natural environment at Tyndall AFB is the application of antiterrorism (AT) requirements, inclusion of security-specific components, and use of CPTED principles in siting and layout. This section details how each should be incorporated to create successful and secure spaces.

C01.3.1 Antiterrorism Requirements

The DoD outlines its standards for technical criteria (UFC) and specifications (Unified Facilities Guide Specifications, or UFGS) pertaining to planning, design, construction, and operation and maintenance of Real Property facilities. The program is administered by the U.S. Army Corps of Engineers (USACE) and the Air Force Civil Engineer Center (AFCEC) to provide the current standards of development for ongoing and future projects. The UFC and UFGS are available at the WBDG website (www.wbdg.org). The DoD uses WBDG not only distribute up-to-date guidance, but also to inform the planning, programming, and design of built projects.

AT requirements are a key component of DoD installations, and a special consideration for design. As described in UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings* (2018), the requirements establish the minimum standards for incorporating AT mitigating measures that are not associated with an identified threat or level of protection. Compliance with the UFC reduces collateral damage and the scope and severity of mass casualties in the event of a terrorist. The process for incorporating AT components into planning and design projects is illustrated on Exhibit C01-1.

Force protection, a related component of AT, describes the measures needed to protect a property or facility from an attack using force. Design elements that can contribute to force protection are guided by multiple UFC in Section 4-022.



AT Requirements

Applying AT Requirements in Landscape Design

Building Foundations

- The landscape at building foundations must be low in height
- Enhance the aesthetic of the building
- Assist with positive stormwater drainage
- Plant material must be selected from the Tyndall AFB Master Plant List

Building Entrances

- The landscape at building entrances must be clean and simple
- Highly trafficked buildings must have pedestrian amenities
- Entrances must be well lit at night for safety and the lighting must act as a beacon to the front door
- Bollards can be used for AT purposes as well as light elements

Viewsheds and Corridors

- Eliminate any opportunity objects to be concealed in the AT zone around buildings
- Groundcovers should be no taller than 6 inches
- Single-stem deciduous trees installed with a minimum 3-inch caliper must be limbed up to the top two-thirds of the specimen, as shown on Exhibit C01-2
- At maturity, the landscape of the AT zone should create an open viewshed of 6 inches to approximately 7 feet
- Landscape along circulation routes create view corridors through uniform application of overstory and understory materials that provide uninterrupted lines of sight
- View corridors from building entrances to circulation routes preserved

Exhibit C01-1. Security Engineering UFC Applicability Decision Matrix

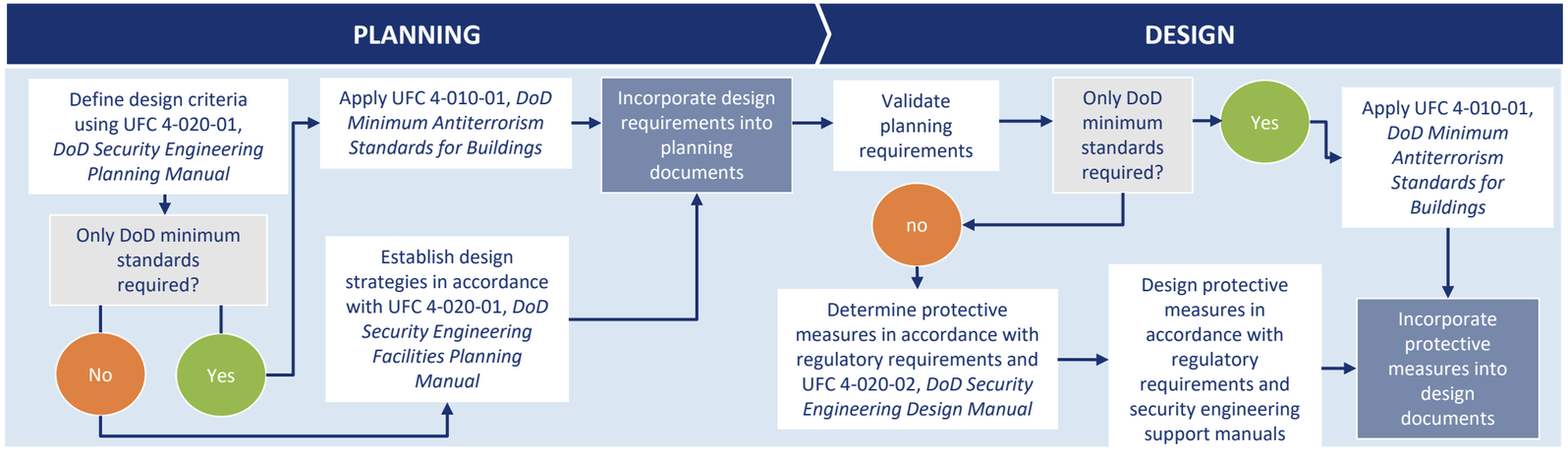


Exhibit C01-2. Landscape Maintenance to Support AT Viewshed Requirements

C01.3.2 Physical & Digital Security Systems

The installation's security, comprising both physical and digital components, is of the utmost importance at Tyndall AFB. Therefore, integrating security components must be included in all planning and design phases of work, and guided by the resources listed below.

The natural landscape and site furnishings are designed and used to perform security functions as necessary and provide cohesion to the base's security system in its entirety.

Security Components

Applying Security Components in Landscape Design

Because security will never be the only requirement associated with a project, it is imperative for security considerations to be coordinated with all the requirements from the time planning begins throughout all phases of design. Surveillance, access control, and emergency assistance components are planned within the landscape.

Surveillance

Unobstructed Space. Provide clear lines of sight and prevent visual impairment to physical threats. Unobstructed space is referred to as setback, standoff distance, and clear zone.

Lighting. Provide visibility to its surroundings.

Closed-circuit television (CCTV). Provide visibility and record everything in the camera's viewshed.

Manned Stations. Provide a space with reasonable comfort from the elements for personnel who are present for periods of time. These stations require high levels of visibility and can include outpost shacks, shade structures, and other components.

Access Control

Vehicle Barriers. Control access and circulation of vehicles and include bollards, immoveable objects, gate arms, and other preventative items.

Fencing. Control access and circulation of pedestrians and vehicles.

Obstructed space. Control visual access and deter pedestrian and vehicular access. Within the natural environment this can include heavily wooded landscape, boulders, waterways, and rock formations.

Controlled Elevation Change. Changes in elevation are meant to control visual and vehicular access and provide an extra layer of security without sacrificing visual design aesthetics. These can include trenches and waterways. Although landscaped berms are applicable in some cases, they are not recommended for Tyndall AFB due to the base's stormwater drainage patterns.

Emergency Assistance

Blue Light Phones. Blue light phones with emergency buttons may be used when a person is in need of medical assistance or in the event of a crime. They can be placed around the installation as an additional safety measure.

Landscape Design as Threat Deterrents

Well-executed design of the natural environment has proven to be an effective means of threat deterrent when applied using the principles listed below, an approach that has been successfully in use for decades. The pillars of CPTED facilitate the integration of AT requirements and security components into effective site layouts and landscape designs. When planned successfully, it both motivates positive behavior and discourages negative behavior. This strategy is appropriate for inhabited areas as a complement to AT and other security requirements.

To be most effective, the CPTED strategy must be implemented as early as possible in the planning stage. To do so, security personnel must be engaged in planning activities that involve siting, signage, lighting, and circulation. These discussions should identify the following:

- Who the legitimate users, visitors, and vendors of a space are, what their purpose is, where they should and should not be going, and when they should be there
- What risks are presented from surrounding areas

An effective, multifunctional planning and design strategy relies on the coordination of the site layout and the security features. Like with all multifunctional components, successful implementation can result in streamlined, cost-efficient site operations.

Gate arm and security camera at entrance

Blue light phone for emergency assistance

C01.3.3 Landscape Design as Threat Deterrents

CPTED Design Strategy

Applying CPTED Strategy in Landscape Design

Natural Surveillance

"See and be seen" is the overall goal when it comes to CPTED and natural surveillance. Landscape and lighting are key to effective natural surveillance by providing uninterrupted sight lines at all times. This is best achieved when viewsheds are considered from circulation corridors, exterior destination points such as plazas and parking areas, and building entrances and windows.

Natural Access Control

The goal of natural access control is to direct the flow of people while decreasing the opportunity for criminal threat. This can be accomplished with coordinated site and building layouts, proposed circulation patterns, and effective wayfinding and screening components that guide users with visual cues. These components can include signage, designated treatments of landscape and pavement materials, fences, and other barriers. These components should be overlaid with the site layout and security features and operations to create short travel distances between destinations and predictable circulation routes for users, visitors, and vendors.

Territorial Reinforcement

Clear delineation of space creates a sense or ownership or territorial reinforcement of each area. Public areas are clearly distinguished from private ones using landscape, site furnishings and pavement materials. Potential trespassers perceive this control and are thereby discouraged.

Maintenance

The "Broken Window Theory" suggests that one "broken window" or nuisance, if allowed to exist, will lead to others and ultimately to the decline of an entire installation. Neglected and poorly maintained properties can inadvertently encourage opportunity for criminal threat as they are perceived to be unsupervised.

Exhibit C01-3. Successful Secure Space

AT Requirements

- A 33’ building setback distance
- B Unobstructed space created by low/no groundcover and limbed up trees

Security Components

- I Lighting
- II CCTV surveillance
- III Vehicle barriers created with bollards and planters

CPTED Design Strategy

1. Wide viewsheds created at building entrances and clear sightlines from windows and destinations provide opportunities for natural surveillance (*Natural Surveillance, Natural Access Control)*
2. Wayfinding signage positioned in a highly visible circulation intersection with clear visible cues (*Natural Access Control)*
3. Designated landscape and hardscape materials and forms and site furnishings clearly delineate circulation routes from gather spaces (*Natural Access Control, Territorial Reinforcement)*
4. Well-maintained low-growing landscape treatment allows for uninterrupted sightlines (*Natural Surveillance, Maintenance)*
5. Short, linear travel distance between entrances eliminates blind corners and provides predictable routes (*Natural Access Control)*

C01.3.4 Typical Site Layout: Green Infrastructure Treatments

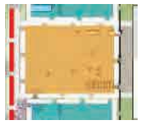
Exhibit C01-4 illustrates how stormwater facilities can be integrated into the overall site design while incorporating parking, plantings, and walkway elements into a cohesive site plan.

Refer to **Section B04, Integrated Land Management,** and **Section C04, Stormwater,** for further information regarding green infrastructure treatments, applications, components, and materials.

LEGEND

Building Perimeter
- Biofiltration
- Bioswale (edge)
- Tree trench

Open Space
- Longleaf Pine Restoration
- Biofiltration (edge)
- Bioswale (edge)
- Constructed natural wetland

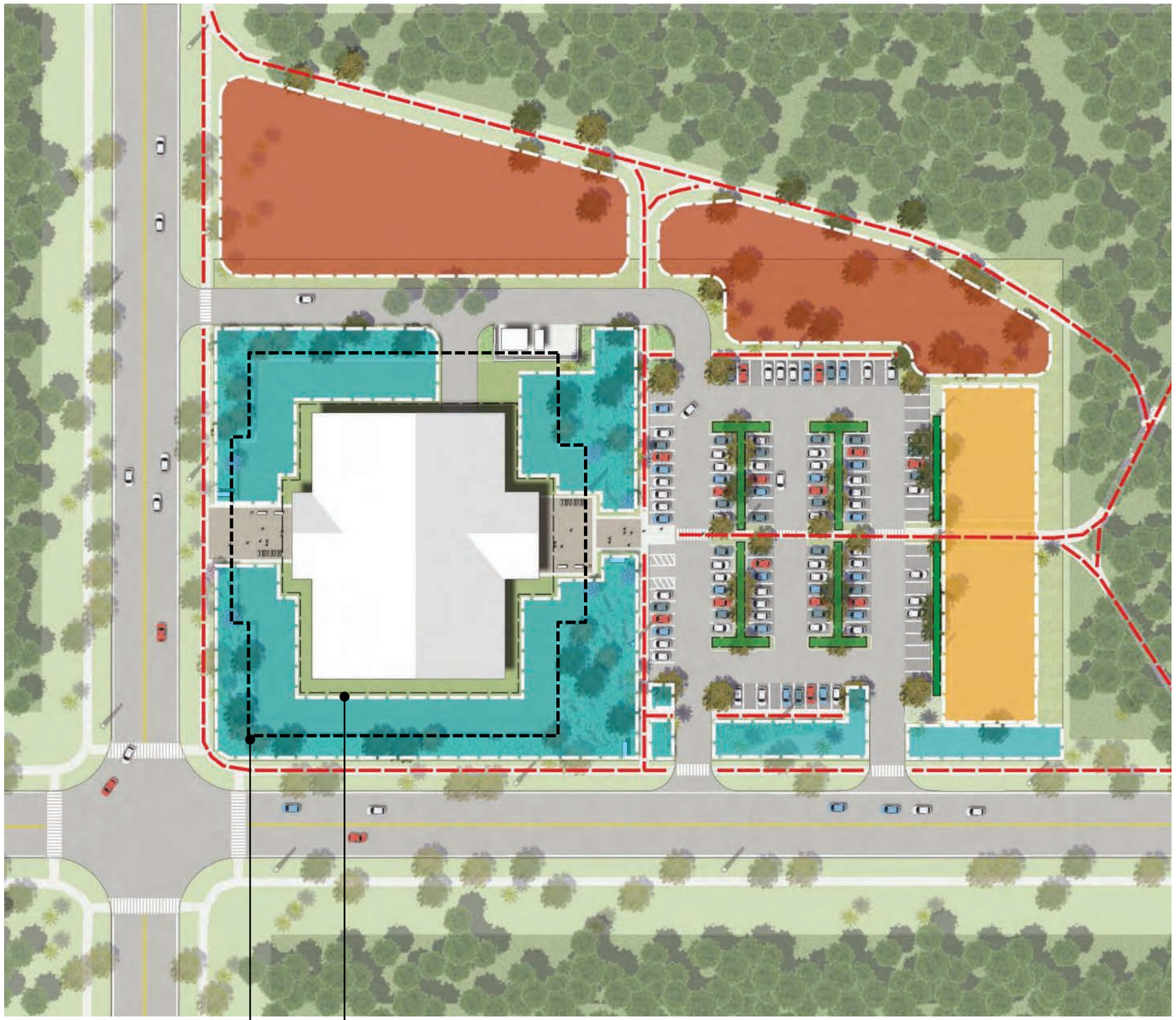


Overflow Parking Areas
- Turf or pervious paving

Site Parking Area Landscaping
- Tree trench and biofiltration

Site Sidewalks
- Standard concrete pavement design
- Specialty paving can be pervious paving
- Pedestrian walkways should not conflict with stormwater requirements

Exhibit C01-4. Integration of Stormwater Facilities into the Overall Site Design



C01.4 Design Typologies & Criteria

C01.4.1 Site Design Criteria (SDC)

The criteria in this section relate to specific design requirements, including IFS requirements, and guidelines for designer/contractors to follow and Tyndall AFB personnel to review. Additional criteria are provided in the other sections of this **Landscape Master Plan** and are not repeated in this section; however, the requirements for site design must be coordinated with other site elements. The sections that follow serve as worksheets, with supporting guidance and illustrations, for designers/contractors to use among their teams and in coordination with Tyndall AFB. These worksheets should be used to complete the **Compliance Checklist** submittal for each project. Each requirement includes a selection of check boxes to indicate the applicability of that requirement to a specific context, and to demonstrate compliance with the requirements.

Yes No N/A

☑ ☐ ☐ The designer/contractor either selects "Yes" if compliance has been met, "No" if it has not, or "N/A" if the requirement is not applicable to the project.

C01.4.2 Typical Site Layout Typology

The site design and layout of the facility must comply with the following criteria:

Yes No N/A

☐ ☐ ☐ SDC 1. Locate service areas and utility infrastructure to the side or rear of building, relative to streets and the primary building entrance.

☐ ☐ ☐ SDC 2. For sites along a shared-use path, orient the building so the primary façade addresses the path and secondary façade faces the most primary street.

☐ ☐ ☐ SDC 3. For sites not along a shared-use path, orient the building so the primary façade addresses the most primary street and secondary façade faces a parking area to rear of site.

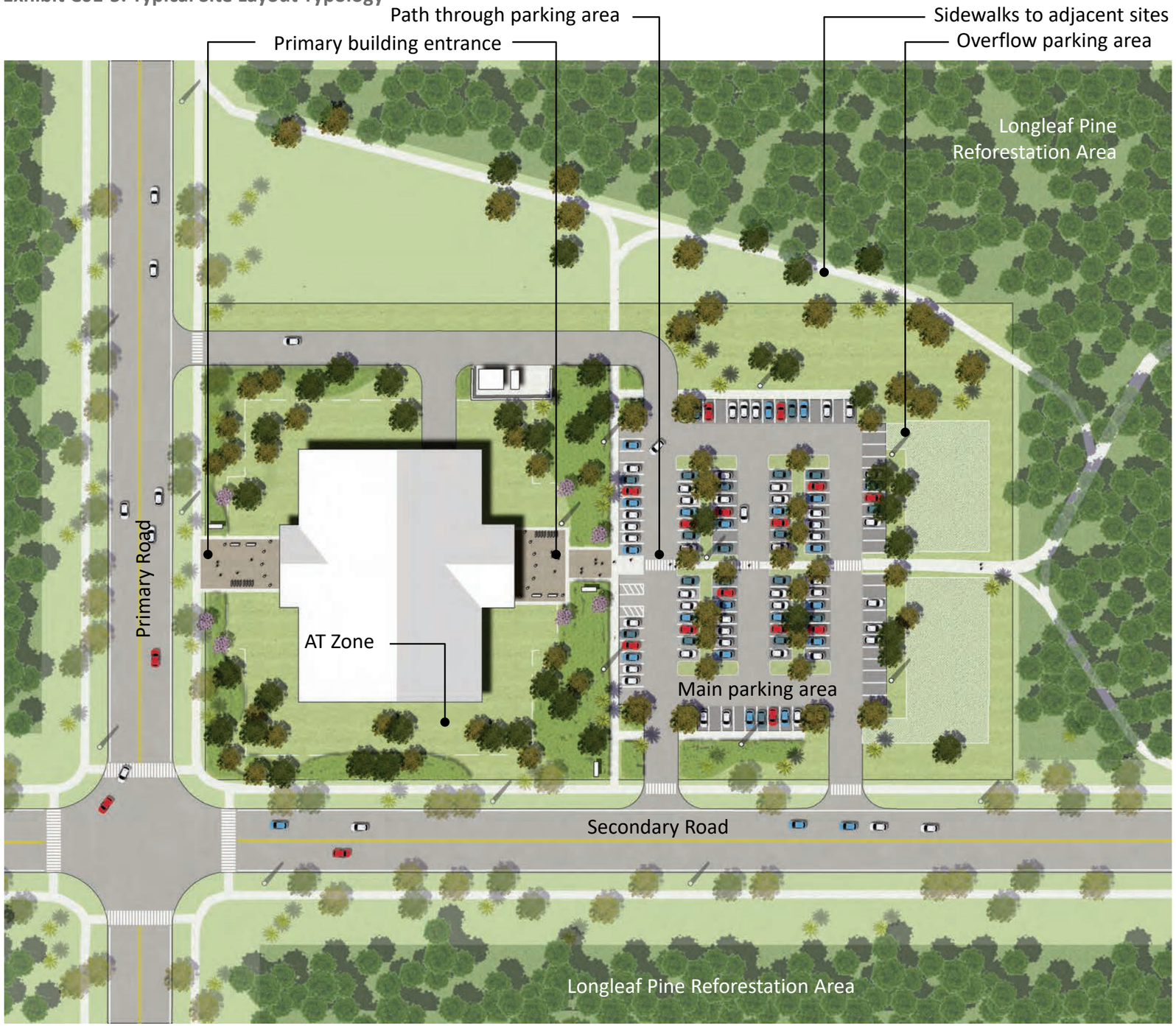
☐ ☐ ☐ SDC 4. Provide building entrances with access to both street side and parking side of structure.

☐ ☐ ☐ SDC 5. Provide site sidewalks and shared-use paths that connect to surrounding pedestrian/bike systems.

☐ ☐ ☐ SDC 6. Configure parking so areas are navigable by local emergency response apparatus. Ensure fire department access complies with UFC 3-600-01/NFPA.

☐ ☐ ☐ SDC 7. Design landscaping, fencing, bollard placement, and similar obstructions so they are located a minimum of 24-inches from the vertical centerline of fire hydrants and not directly in front of any outlet (UFC 3-600-01).

Exhibit C01-5. Typical Site Layout Typology

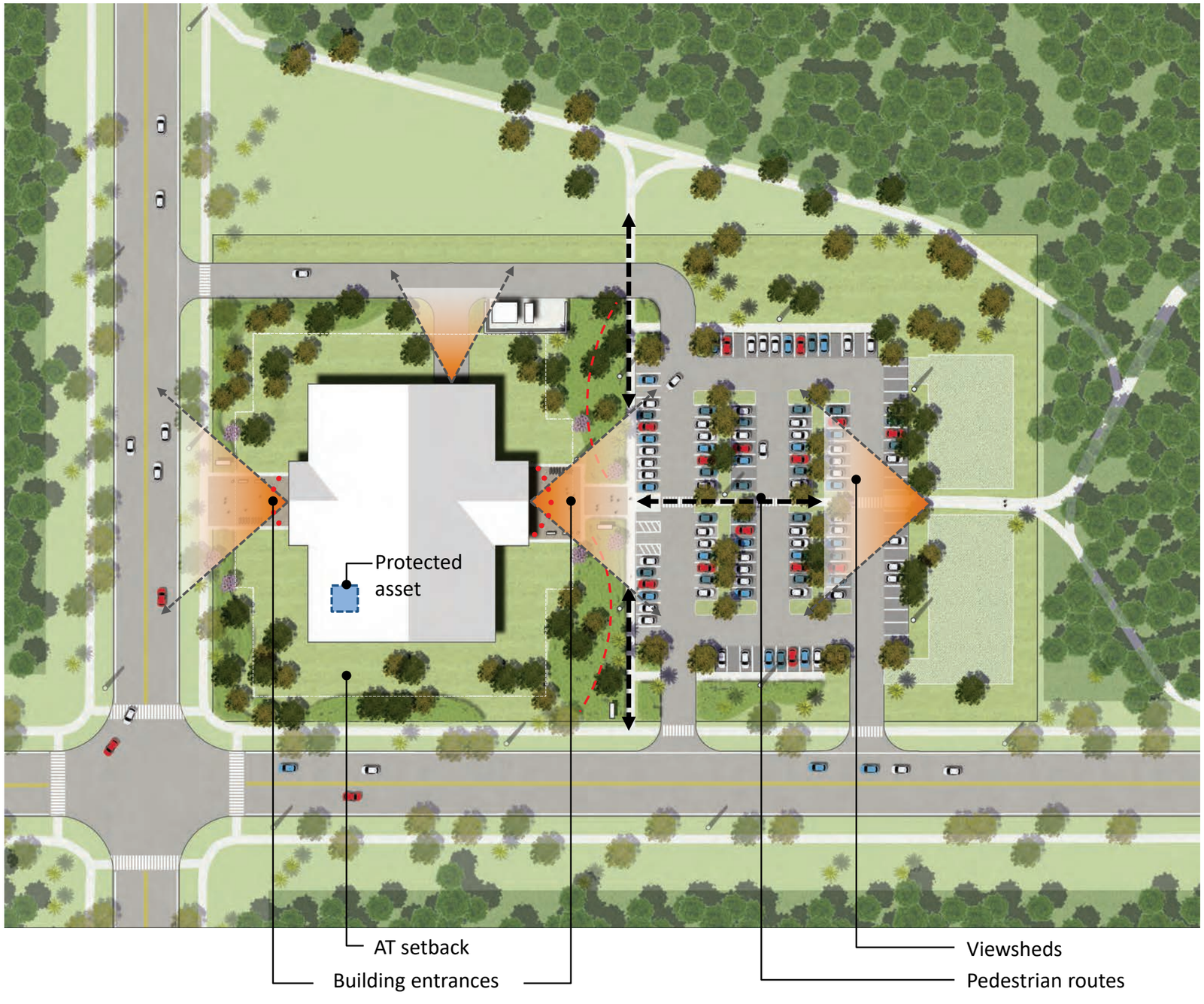


C01.4.3 Antiterrorism Strategies

The AT and force protection measures suggested in Exhibit C01-6 illustrate how these may be integrated within the overall site design. Force protection measures must follow all required regulations in the planning and design relative to the unique requirements of each site and facility. Additionally, AT applications must adhere to the following criteria:

Yes	No	N/A		
☐	☐	☐	SDC 8.	Implement force protection at entrances, such as boulders or bollards.
☐	☐	☐	SDC 9.	Maintain open view sheds to and from building entrances.
☐	☐	☐	SDC 10.	Use force protection measures such as berms, walls, or fencing, as required, between buildings and areas used by vehicles.
☐	☐	☐	SDC 11.	Use trees to further shield protected assets within buildings.

Exhibit C01-6. Antiterrorism and Force Protection Measures



C01.4.4 Building Perimeter

The site design relating to the building perimeter, shown on Exhibit C01-7, must comply with the following criteria:

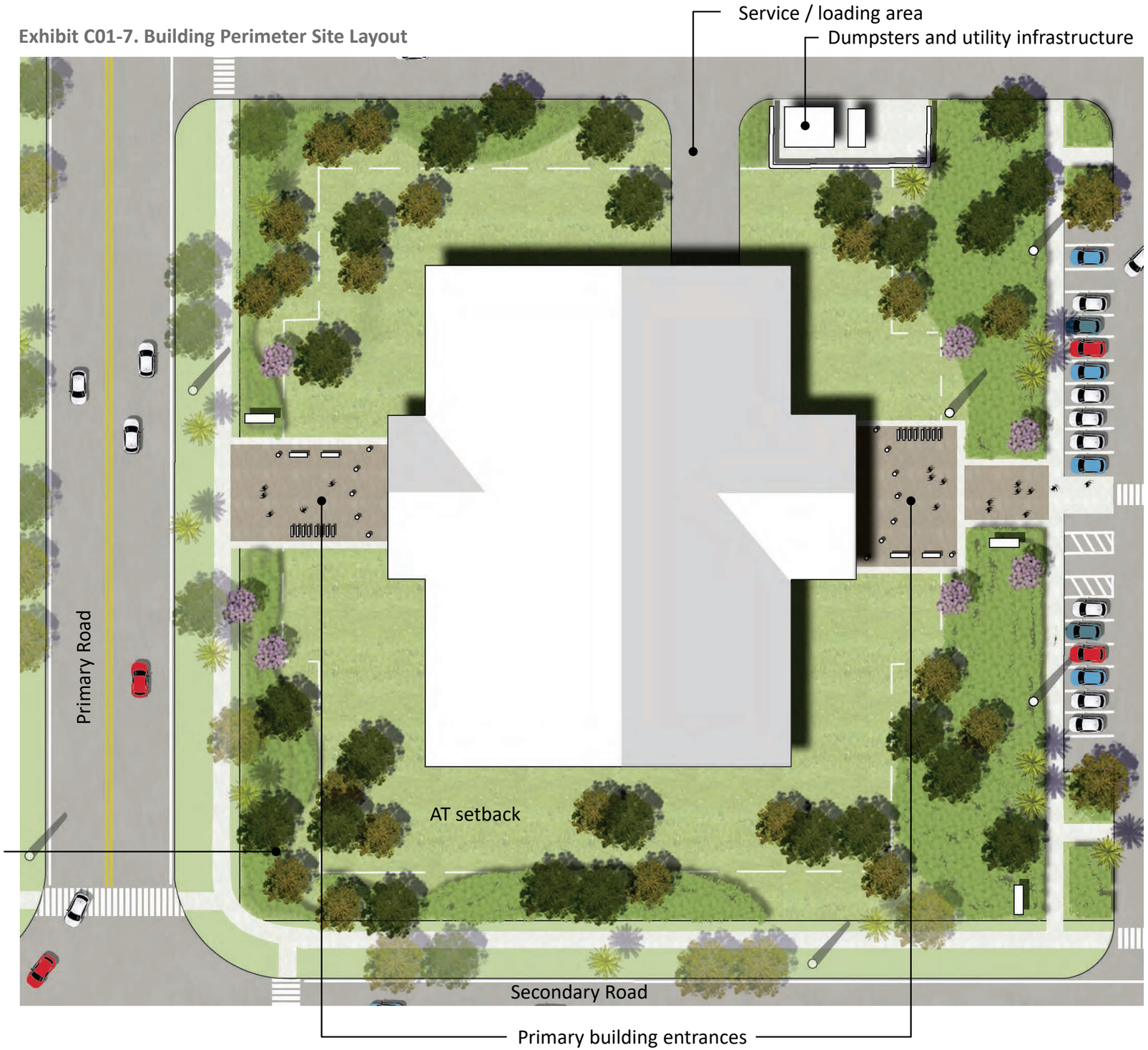
Yes No N/A

☐ ☐ ☐ SDC 12. Locate service areas and utility infrastructure to the side or rear of building, relative to streets and the primary building entrance.

☐ ☐ ☐ SDC 13. Orient service areas and loading bays to side or rear areas. Avoid orientation to primary streets, parking areas, and building entrances

☐ ☐ ☐ SDC 14. Avoid obstructing fire hydrants, fire department inlet connections, or fire protection system control valves in a manner that would prevent such equipment or fire hydrants from being immediately visible and accessible (NFPA 1).

Exhibit C01-7. Building Perimeter Site Layout



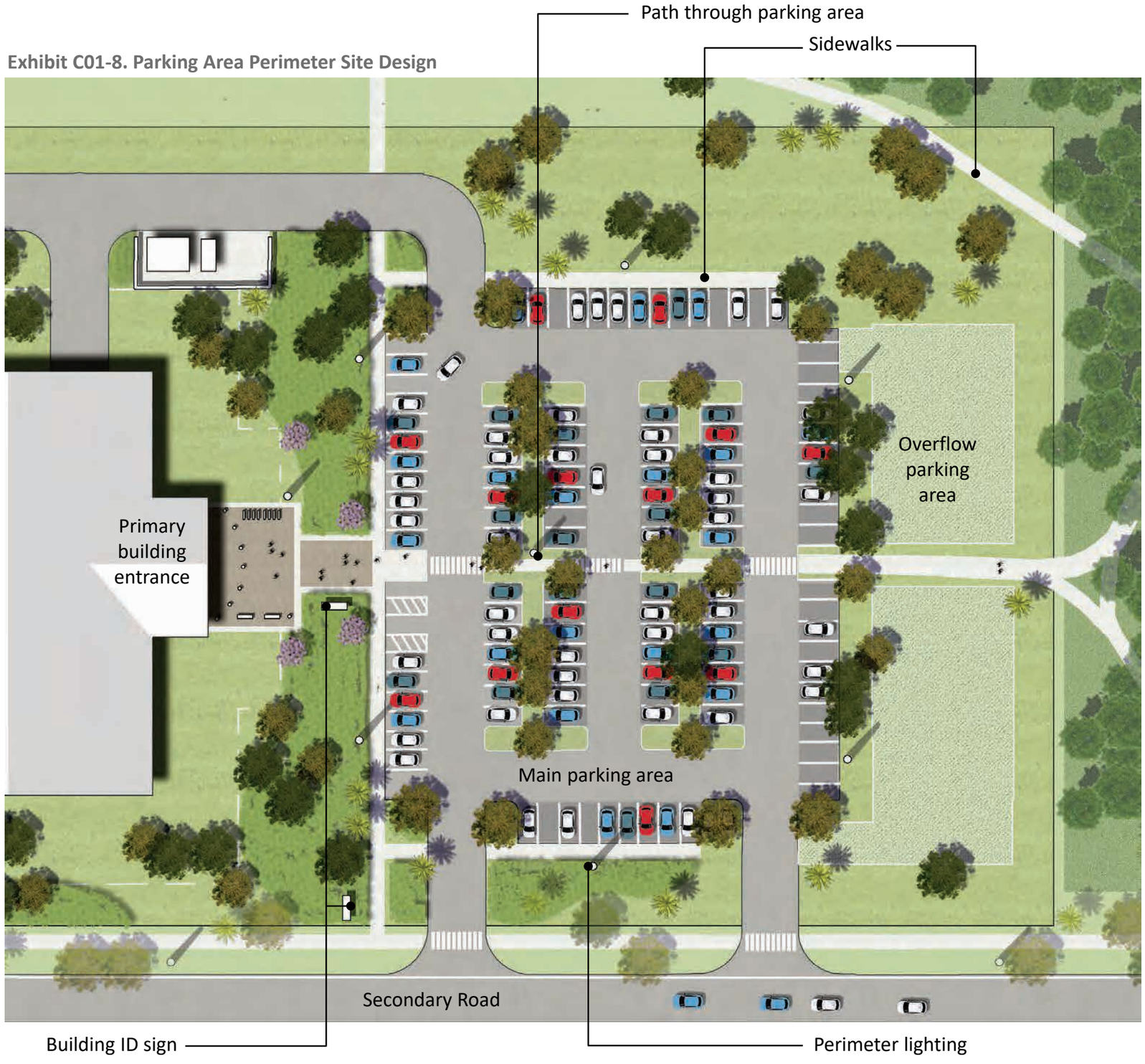
C01.4.5 Parking Area Perimeter

The site design relating to the parking area perimeter, as shown on Exhibit C01-8, adhere to the following criteria:

Yes No N/A

- ☐ ☐ ☐ SDC 15. Provide walkways through parking areas that lead to primary building entrances.
- ☐ ☐ ☐ SDC 16. Contain sidewalks and shared-use paths that connect building entrances to base-wide network of sidewalks, pathways, and trails.
- ☐ ☐ ☐ SDC 17. Use tall shade trees and low shrubs to create clear lines of sight at eye-level across parking areas and to building entrances.

Exhibit C01-8. Parking Area Perimeter Site Design



C01.5 Treatments for Specific Areas

C01.5.1 Main Entry Control Facilities

The Entry Control Facility (ECF) typically begins at the installation perimeter. The design and layout of the facility must adhere to the following criteria:

Yes No N/A

☐ ☐ ☐ SDC 18. Provide entry walls and vertical sculptural elements on each side of the entrance.

☐ ☐ ☐ SDC 19. Provide tree planting at the Tyndall Gate in the Flightline District in accordance with the landscape requirements for the Flightline District.

☐ ☐ ☐ SDC 20. Arrange trees and ground-level plantings as indicated in graphic. Ground-level species should remain low to allow eye-level visibility within the ECF areas. Place accent or flowering trees at highly visible areas.

☐ ☐ ☐ SDC 21. Provide turf only in the Maintained Zone at the back of the curb for increased visibility in the ECF areas.

☐ ☐ ☐ SDC 22. Reconfigure existing landscape elements in the ECF areas to accommodate new gate and intersection alignments.

☐ ☐ ☐ SDC 23. Select plant materials from the Manicured Zone Plant List. Refer to the Flightline Plant List for specific plant requirements in the Flightline District.

☐ ☐ ☐ SDC 24. Use low maintenance landscape treatment to include xeriscape practices that feature plant species which require low to moderate water consumption.

☐ ☐ ☐ SDC 25. Integrate traditional and/or natured-based stormwater management solutions into the overall facility layout and planting design.

☐ ☐ ☐ SDC 26. Refer to the IFS *Design Intent: Architecture Image & Character* appendix for design guidelines for any architectural elements.

Exhibit C01-9. Entry Control Facility Layout

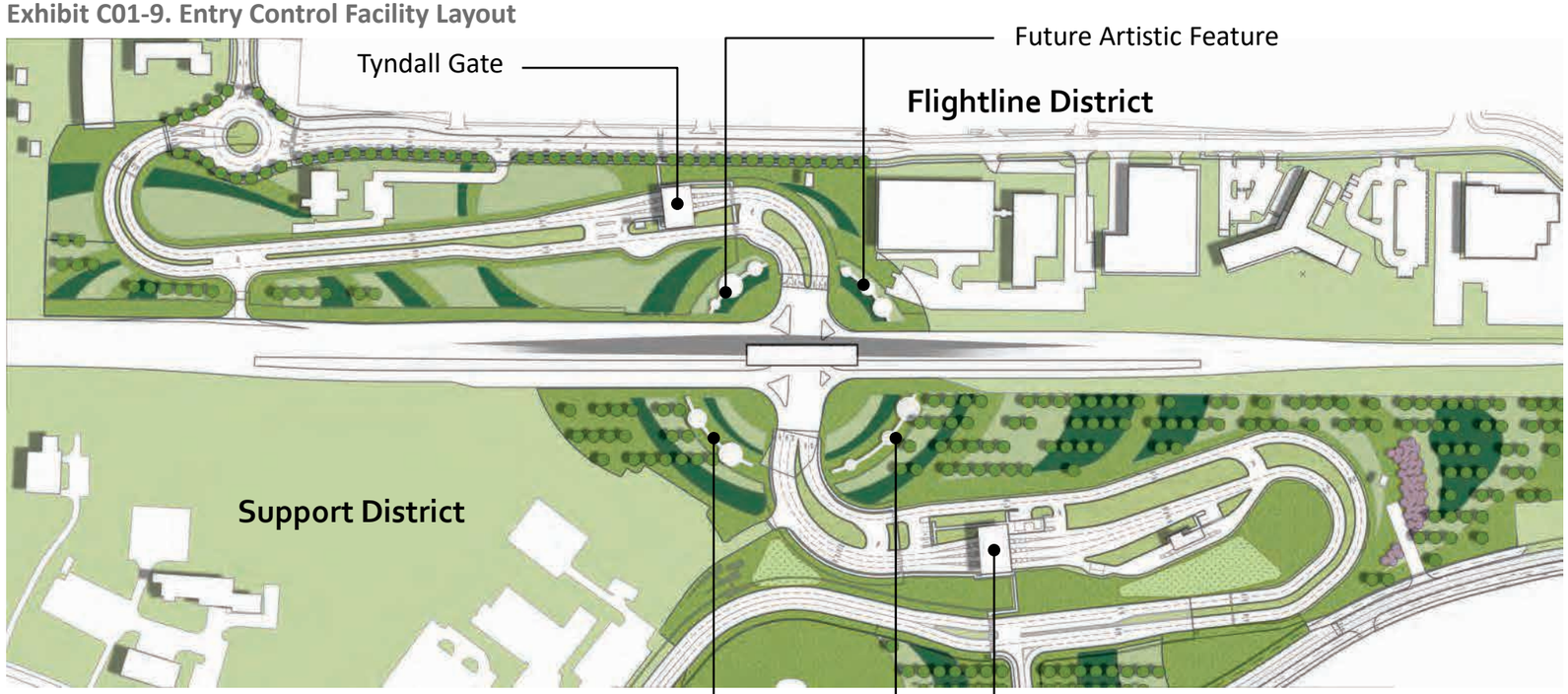
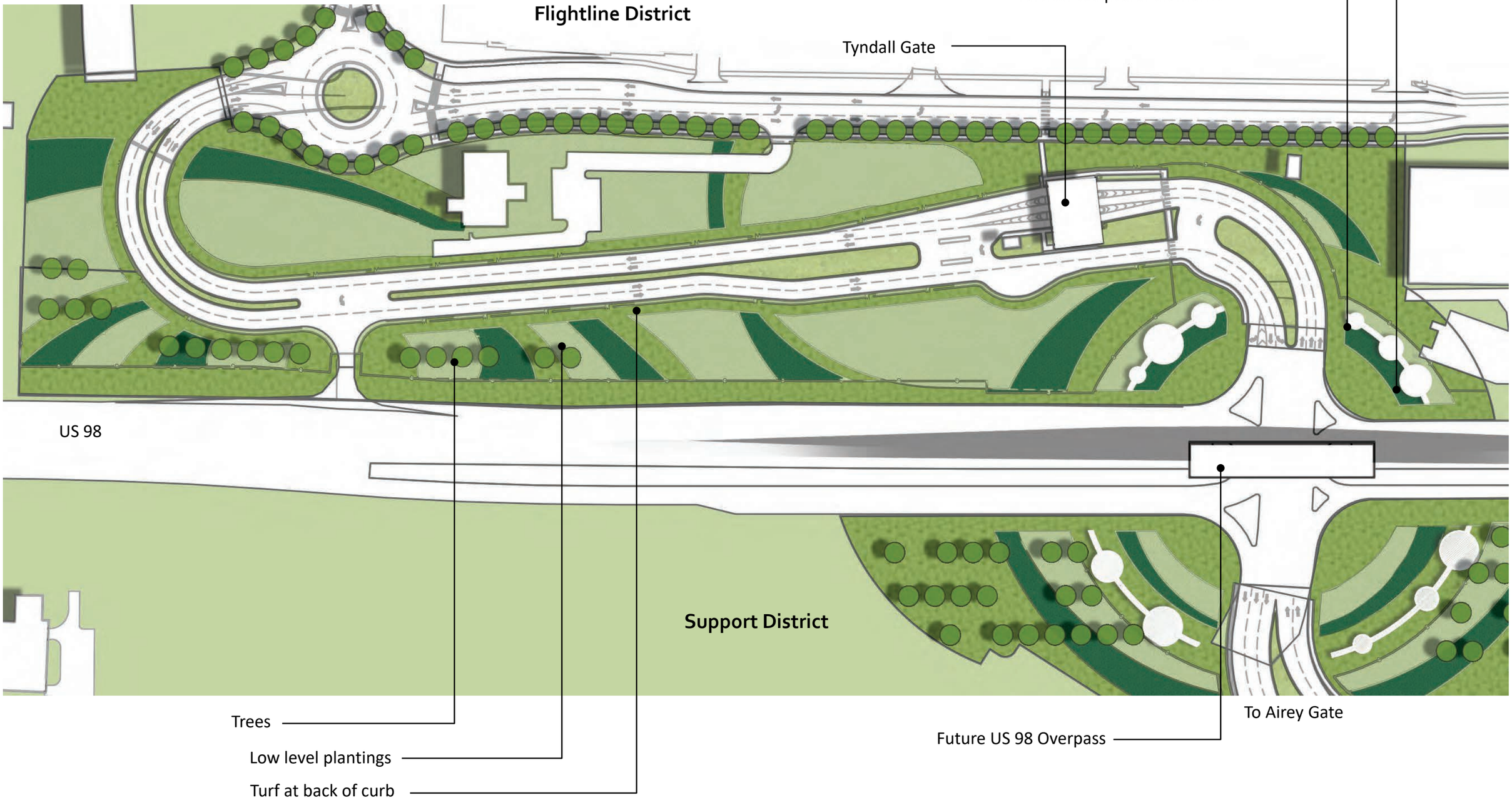


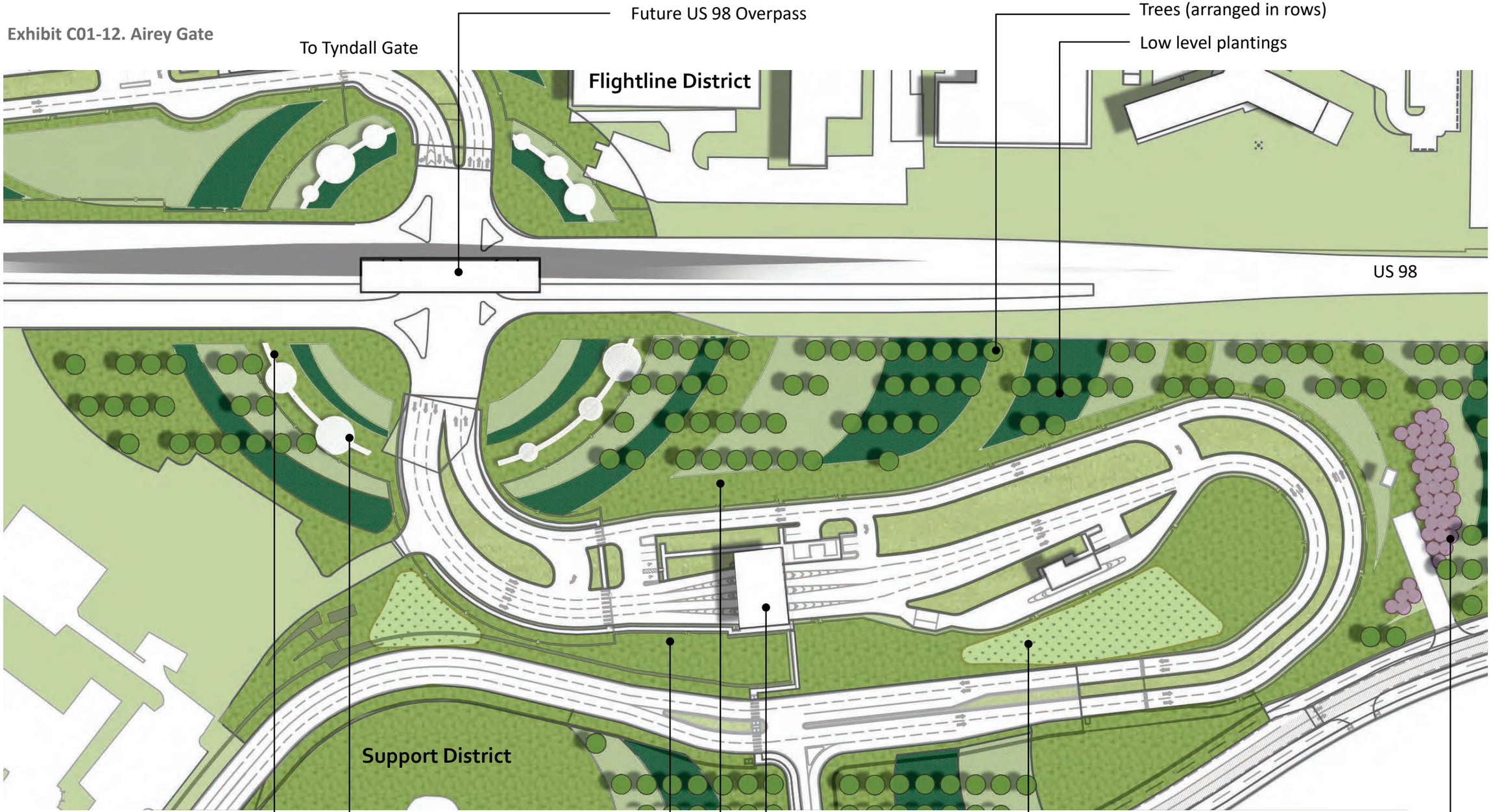
Exhibit C01-10. Entry Control Facility Airey Gate Rendering

Exhibit C01-11. Tyndall Gate



Note: ECF layout shown is representational

Exhibit C01-12. Airey Gate



Note: ECF layout shown is representational

C01.5.2 Community Common Typology

Yes No N/A

- ☐ ☐ ☐ SDC 27. Install a manicured central lawn to provide space for various activities. Design the lawn to be resilient under heavy public use.
- ☐ ☐ ☐ SDC 28. Install non-turf landscaped areas around the perimeter of the Community Common. Include a mix of evergreen ground cover, evergreen shrubs, flowering shrubs, and perennials.
- ☐ ☐ ☐ SDC 29. Provide canopy trees along both sides of the walking path for a minimum of 60% of shade for along the entire length.
- ☐ ☐ ☐ SDC 30. Maintain a clear line-of-sight line from building entrances to the Community Common. Trees should be spaced at maximum 40 feet on center.
- ☐ ☐ ☐ SDC 31. Facilitate maintenance and pedestrian movement by preserving access from the buildings to open space.
- ☐ ☐ ☐ SDC 32. Install a minimum 10-foot-wide pedestrian walking path around the Community Common. Use concrete pavers or stamped concrete. See **Section C05, Sidewalks, Pathways and Trails**, for allowed types of enhanced pavements.
- ☐ ☐ ☐ SDC 33. Include four benches at each building entrance near the edge of pavement and away from direct flow of pedestrian movement.
- ☐ ☐ ☐ SDC 34. Locate and position outdoor seating and pedestrian areas in spaces shaded by buildings, tree canopies, or shade structures. Introduce shade structures to provide shelter space when needed.
- ☐ ☐ ☐ SDC 35. Confirm individual program requirements and the need for items such as electric outlets needed for power during events.

Exhibit C01-13.1 Community Common Site Layout

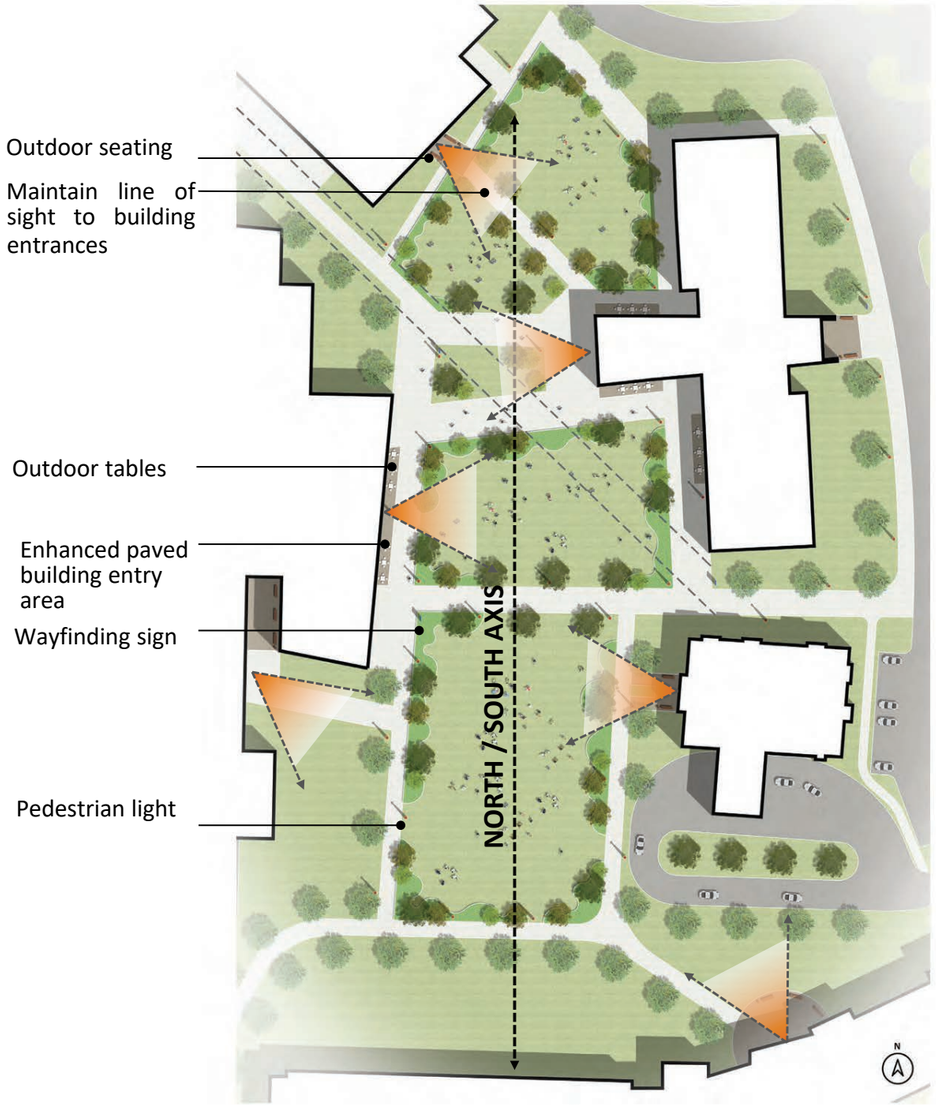
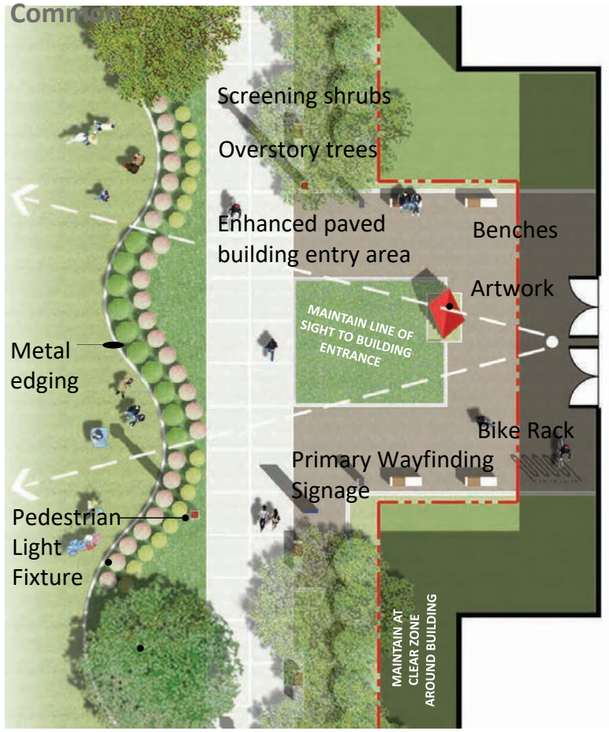


Exhibit C01-13.2 Facility Entries to the Community Common



C01.5.3 Community Common Typology, Facility Entry Areas

Yes No N/A

- ☐ ☐ ☐ SDC 36. Install metal edging along the edges of the landscaped areas.
- ☐ ☐ ☐ SDC 37. Incorporate low landscape plantings, art work, and site furnishings in the building entry area.

C01.5.4 Coastal Zone Facilities, Shorelines, & Waterfronts

Proposed Coastal Zone Marine Facilities

All design and construction activities related to the planning, design, and construction of marine-related features and shoreline protection must be conducted in collaboration with the 325 CES Environmental Element within the guidelines of the Tyndall AFB INRMP. Project teams must assess and develop opportunities for integrating Natural and Nature-Based Features (NNBF) in all shoreline protection designs. Examples of NNBF include beaches and dunes; vegetated environments such as maritime forests, salt marshes, freshwater wetlands, fluvial flood plains, and seagrass beds; coral and oyster reefs; and barrier islands, among others. These features may occur naturally in landscapes or be engineered, constructed, and/or restored to mimic natural conditions. For more information see USACE's Engineering With Nature website: https://ewn.el.erdc.dren.mil/nnbf.html.

C01.5.4.1 Piers, Docks, Bulkheads, & Other Marine-related Facilities (Shoreline/Off-Shore)

Facilities implemented along the shoreline or in waterways provide access to Tyndall AFB's unique and beautiful marine environment. These facilities must be designed and implemented with extreme care to protect and enhance this fragile waterfront ecosystem for generations.

Piers, floating docks and other marine-related facilities, at a minimum, must adhere to the following criteria:

Yes	No	N/A		
☐	☐	☐	SDC 38.	Coordinate with 325 CES Environmental Element and the Tyndall AFB INRMP to align with coastal restoration and resilience plan objectives and to identify the site-wide ecological context and potential vulnerabilities.
☐	☐	☐	SDC 39.	Follow all applicable local, state, and federal codes for planning, design, and construction activities, including but not limited to, demolition, dredging, and new construction.
☐	☐	☐	SDC 40.	Protect adjacent shorelines, waterways, wetlands, and other environments during construction.
☐	☐	☐	SDC 41.	Protect all existing facilities during construction and prohibit debris from migrating outside construction zone.
☐	☐	☐	SDC 42.	Use environmentally safe materials suitable for a marine environment that are durable and resistant to saltwater, fire, flooding, heat, cold, wind, ultraviolet (UV) sunlight, and fuels/oil.
☐	☐	☐	SDC 43.	Use deck surfaces consisting of concrete or composite (wood-plastic) material and that resist sunlight (UV), wetting/drying, freezing/thawing, and fuels/oils. Use a textured surface that is skid resistant and resists abrasion, denting from dropped objects, and cracking.
☐	☐	☐	SDC 44.	Develop, where appropriate, landscape-scale nature-based features for increased storm-related resiliency, diversity of habitat, and ecological benefits
☐	☐	☐	SDC 45.	Consider environmental loads from wind, tidal and river flows, waves, floating debris, and floods and surges, among other naturally occurring conditions and events.

Coastal Zone rendering

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C02. Utilities

C02. Utilities

C02.1 Introduction

Utilities on Tyndall Air Force Base (AFB) include vital services that support the operation of the base, including water, sewer, power, and communications. In terms of the **Landscape Master Plan**, the primary concerns for utilities are to avoid disrupting these services during construction activities, bolster system resilience in the event of emergencies and future storms, and ease maintenance activities and anticipated growth needs.

C02.1.1 Authority

All utility-related improvements are governed by utility Owners and must align with the requirements of the *Tyndall AFB Installation Facilities Standards* (IFS) as well as the recommendations of this **Landscape Master Plan**.

C02.2 Design Objectives

To achieve Tyndall AFB's vision of becoming a sustainable, resilient Installation of the Future, the utilities design and installation will:

- Maintain the desired aesthetic character of the base
- Facilitate ease of maintenance and service, particularly after a storm event
- Accommodate anticipated technological advancements, including self-monitoring analysis and reporting technology (SMART) systems

C02.3 Design Approach

The overall approach to utilities design and installation can be summed up in the phase "out of sight, out of mind." *Out of sight* refers to the use of underground utility lines as well as screening for any utility equipment required to be above ground. *Out of mind* refers to lessening the level concern about how resilient the base's utilities will be during future storm events with accompanying high wind and flooding.

Consideration is also given to the increasing demand for digital communications, which has grown exponentially in recent years. Supporting the current requirements, as well as anticipating future advancements, requires laying additional digital cables. The infrastructure that is needed to support SMART systems and hard-wired lighting requires laying additional conduit.

C02.4 Utility Typologies & Criteria

C02.4.1 Overview

Each landscape-related utility typology addresses unique circumstances found on the base. The various typologies are as follows:

- Underground utility easements
- Screening for utility infrastructure
- Low-impact development (LID)
- Flightline utility corridor

C02.4.2 Utilities Criteria (UC)

The criteria in this section relate to specific design requirements, including IFS requirements, and guidelines for designers/contractors to follow and Tyndall AFB personnel to review. Additional criteria are provided in the other sections of this **Landscape Master Plan** and are not repeated in this section; however, the requirements for utilities must be coordinated with other site elements. The sections that follow serve as worksheets, with supporting guidance and illustrations, for designers/contractors to use among their teams and in coordination with Tyndall AFB. These worksheets should be used to complete the **Compliance Checklist** submittal for each project. Each requirement includes a selection of check boxes to indicate the applicability of that requirement to a specific context, and to demonstrate compliance with the requirements.

Yes ☑ No ☐ N/A ☐ The designer/contractor either selects "Yes" if compliance has been met, "No" if it has not, or "N/A" if the requirement is not applicable to the project.

C02.4.3 Typical Underground Utility Clear Zones & Easements

Interdisciplinary coordination is necessary to design and implement utility clear zones and easement that provide ready access for maintenance and repairs and protect the utility infrastructure from damage. Easements or clear zones must be designated to prevent locating structures, trees, and other large unmovable site improvements near underground utilities. These restricted areas will reduce the possibility of underground infrastructure being damaged by tree roots or falling/uprooted trees during storm events. In addition, clear zones and easements provide easier access for performing utility maintenance and emergency repairs and limit the need to remove trees or other landscaping elements to complete these functions.

Easements and clear zones for all base-owned utilities must conform to the direction of Tyndall AFB Civil Engineer Squadron. Privatized utilities and easements must be constructed in accordance with the standards of the individual utility provider.

Yes	No	N/A		
☐	☐	☐	UC 1.	Provide a minimum 10-foot clear zone or easement for all underground utilities.
☐	☐	☐	UC 2.	Do not place structures or trees within clear zones or easements.
☐	☐	☐	UC 3.	Comply with the Utility owner's clear zone/easement requirements for all privatized utilities.
☐	☐	☐	UC 4.	Provide a minimum clear zone or easement of 10 feet from the centerline or edge of underground structure or equipment pad for all Air Force-owned.

C02.4.4 Screening for Utility Infrastructure

Screening all aboveground utility infrastructure aligns with the visual and aesthetic intent of the **Landscape Master Plan**.

Yes	No	N/A		
☐	☐	☐	UC 5.	Use evergreen shrubs to screen all aboveground utility boxes and infrastructure from adjacent road or sidewalk.
☐	☐	☐	UC 6.	Provide a minimum 4-foot offset from the shrubs' planted edge to the edge of the utility box to allow enough clearance for utility maintenance to be performed.

Exhibit C02-1. Typical Underground Utility Clear Zone/Easement Section

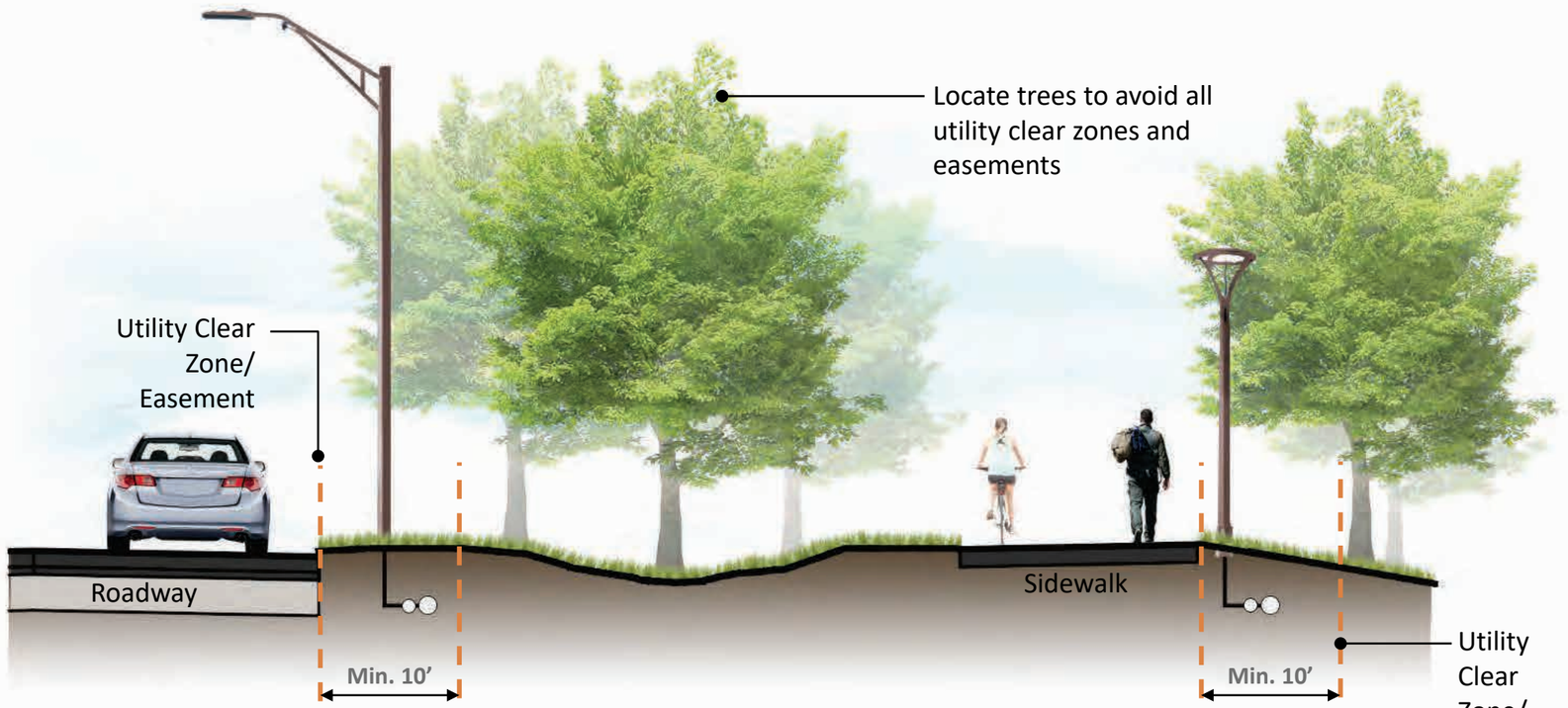
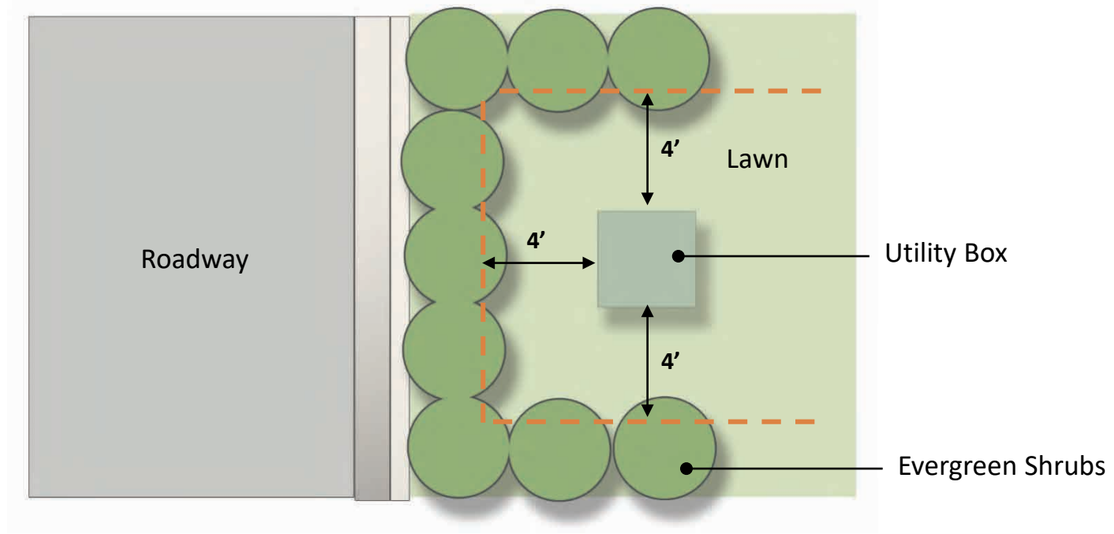


Exhibit C02-2. Typical Shrub Planting to Screen Utility Infrastructure, Plan View

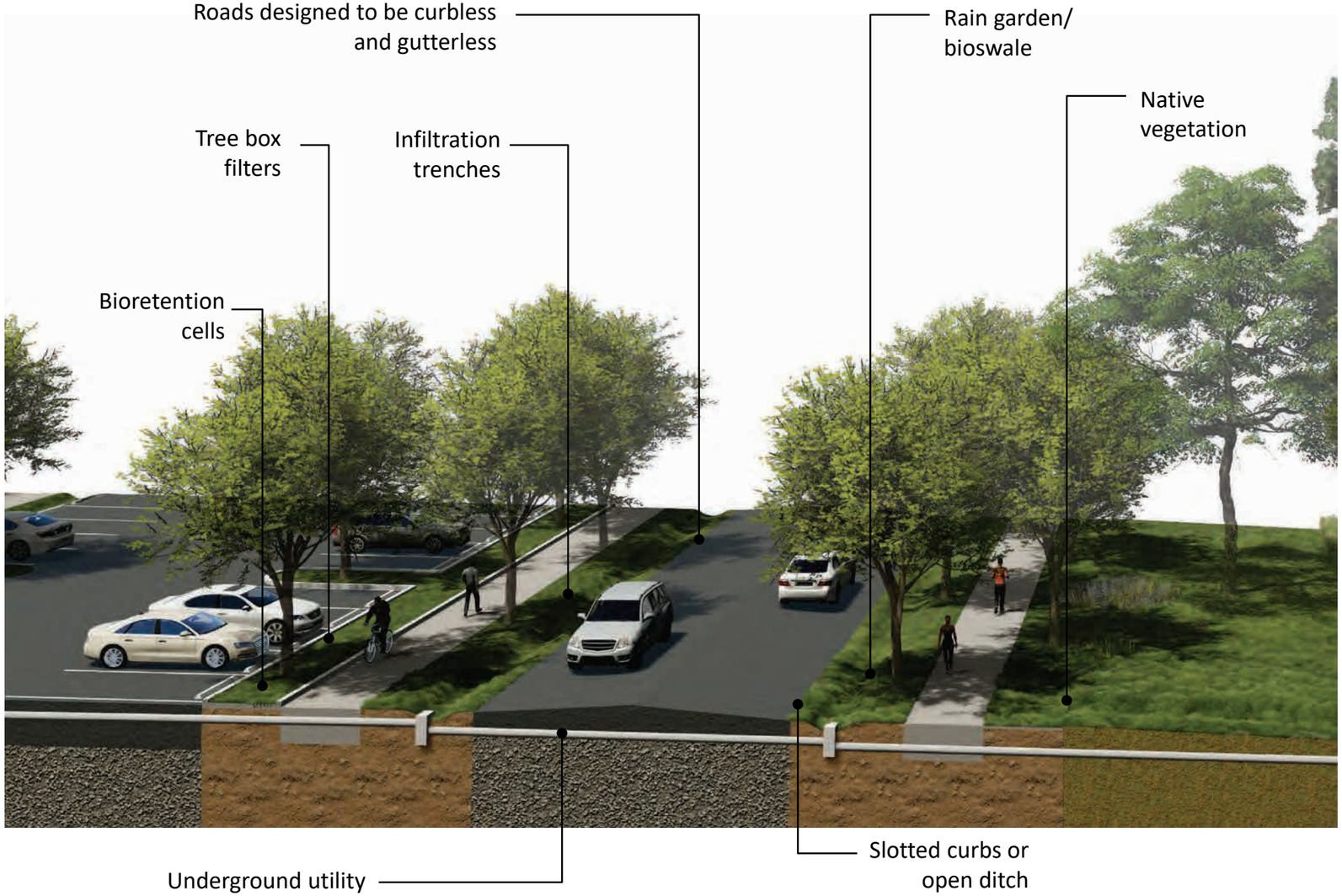


C02.4.5 Low-Impact Development

LID principles, as outlined in **Section B04, Integrated Land Management**, are used throughout major portions of Tyndall AFB. A successful LID approach requires interdisciplinary coordination to protect utility corridors.

Yes	No	N/A		
☐	☐	☐	UC 7.	Coordinate with engineered systems that filter stormwater from parking lots and impervious surfaces, such as bioretention cells, filter strips, and tree box filters. Ensure all plantings, pipes, and utilities are designed in concert with each other.
☐	☐	☐	UC 8.	Use native vegetated areas to filter, direct, and retain stormwater, such as rain gardens and bio-swales. Ensure adequate coverage and clearance requirements are met.
☐	☐	☐	UC 9.	Locate plantings and utilities so they do not interfere with water collection systems, such as subsurface collection facilities, cisterns, or rain barrels.

Exhibit C02-3. Typical LID Section



C02.4.6 Multi-Modal Spine Utility Corridor

The Multi-Modal Spine in the Flightline District is located above the underground utilities that serve the facilities in that area. This dense network of utilities provides critical services to the operation of all the Flightline missions. Design of the Multi-Modal Spine's hardscape and landscape elements, as well as the drainage systems, must be coordinated with the underground utilities so they do not impact the operation or maintenance requirements of the utilities.

Yes	No	N/A		
☐	☐	☐	UC 10.	Design the landscaped areas to collect drainage from the entire corridor.
☐	☐	☐	UC 11.	Coordinate drainage connections to the box culvert need to be coordinated with other utilities installed in the area.
☐	☐	☐	UC 12.	Do not plant trees directly over underground utilities.
☐	☐	☐	UC 13.	Coordinate with adjacent utilities and other corridor elements to avoid conflicts and allow for ease of maintenance.
☐	☐	☐	UC 14.	Coordinate parking area and building utilities with corridor utilities.
☐	☐	☐	UC 15.	Design foundations for items such as lighting and signage to avoid conflicts with underground utilities.

Exhibit C02-4. Multi-Modal Spine Utility Corridor Section