FORT
STEWART
HUNTER ARMY AIRFIELD

Installation Planning Standards

Final Submittal

Master Planning
Savannah District Corps of Engineers

June 2, 2015

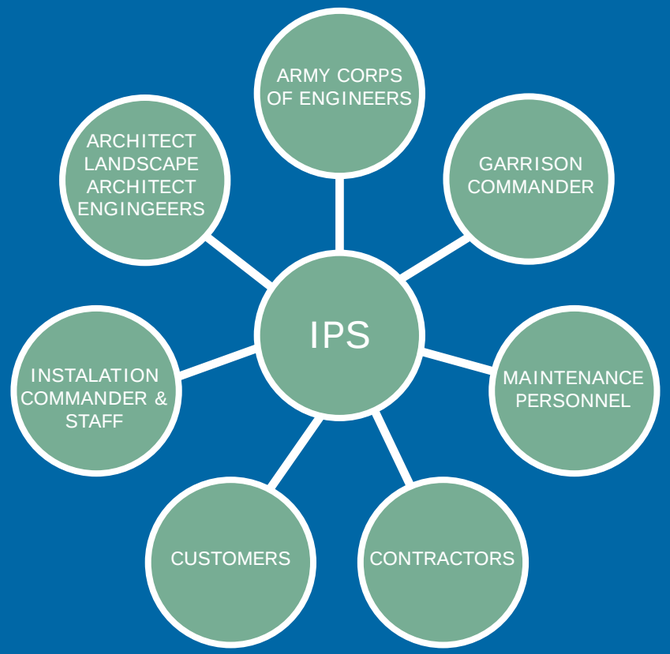
Table of Contents

Part I

Introduction

Guidelines

Installation planning standards provide a clear set of guidelines to ensure that the installation's vision and planning objectives for development are achieved, even if drastic changes to mission or program occur.



Installation Planning Standards

Introduction

Purpose

The purpose of the Installation Planning Standard (IPS) is to provide specific design guidance for standardizing and improving the quality of the total environment of the installation. This includes not only the visual impact of features on the installation, but also the impact of projects on the total built and natural environment. The improvement of the quality of visual design and development, and the use of sustainable design and development practices has a direct impact on the quality of life for those who live, work, or visit the installation. The IPS is to be used by all individuals involved in decision-making, design, construction, and maintenance of facilities.

The IPS is organized to facilitate the preparation and execution of projects to improve the visual image on the installation and ensure that the design conforms to Army standards, including sustainability.

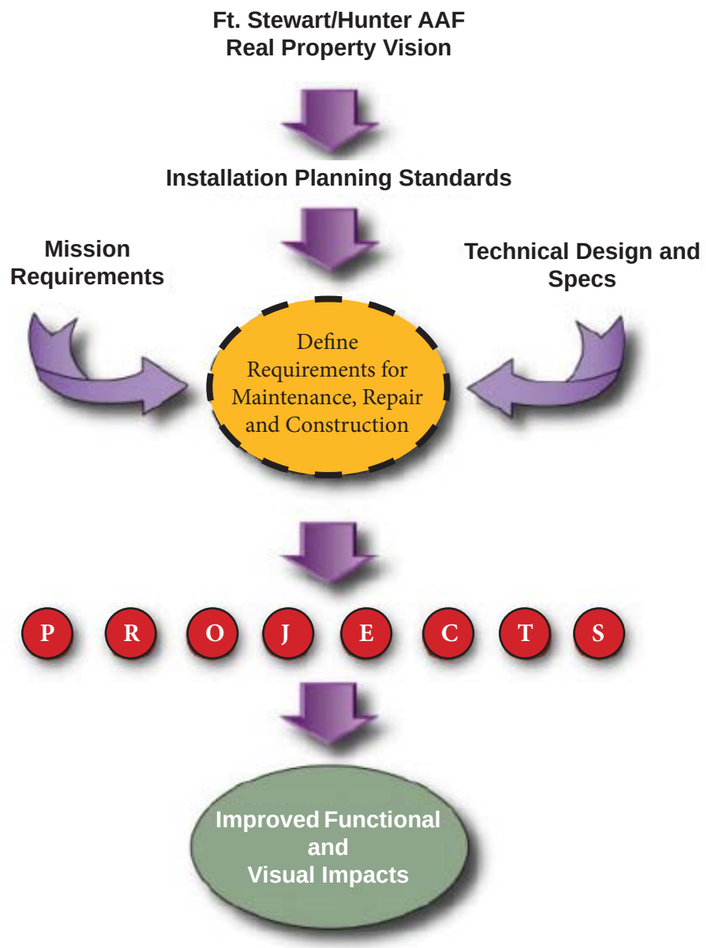
Audience

The IPS is to be used by all individuals in decision-making process for design, construction, and maintenance of facilities.

The primary stakeholders include the following:

- Garrison Commander and Staff
- U.S. Army Corps of Engineers, Savannah District
- Customers and other users of installation infrastructure
- Consulting planners, architects, engineers, and landscape architects
- Maintenance personnel
- Contractors employed by the Operations and Maintenance Division
- Supporting agencies such as AAFES, DeCA, DODEA, MEDCOM, tenants, etc.

The ultimate success of the IPS is dependent upon the commitment of the above individuals and organizations working as a team to apply the Army standards.



Organization

The IPS is organized to facilitate the preparation and execution of projects to improve the visual image of the installation and to ensure that design conforms to Army standards, to include sustainability requirements.

Part I: Discusses the process, used, and implementation of the IPS.

Part II: Design Guidance for implementation practices of installation-wide design principles.

Part III: Addresses the Building Envelope Standards including setbacks, building form, building heights, and parking requirements

Part IV: Establishes Transportation Standards for streets, intersections, service areas, and the pedestrian environment. Includes recommended dimensions, treatment of bicycle lanes, street tree spacing, and methods of incompatible use screening.

Part V: Outlines Landscape Design Standards including objectives, guidelines, recommended plant selections, and plant spacing.

When to Use the IPS

This IPS provides installation-specific design data. The general design concepts, recommendations, and standards addressed herein are applicable to Fort Stewart and Hunter Army Airfield, Ga. This document will be used as a reference to acquire recommendations and Army standards on the design of all facilities, new roads, road widening, parking, sidewalks and other pedestrian paths, bicycle paths, access control points, utility corridor selection, and utilities. Natural landscaping materials will be cleared and/or planted based on the guidance contained in the IPS.

Maintaining the IPS

Since the IPS is a "living document," keeping it up-to-date and accurate will ensure its continued applicability. The Installation Planning Standards (IPS) should be revised as mission, budget, standards, and other conditions generate new planning and design requirements. Facility user feedback should also drive revisions.

In accordance with AR 210-20, Master Planning for Army Installations, the installation Real Property Planning Board (RPPB) is the adjudicating body for the Installation Design Standards at the installation level. Violations and variances from standards will be reviewed and adjudicated by the RPPB. The IPS will be maintained by the Master Planning Office of the Directorate of Public Works (DPW). Proposed changes to the IPS will be presented to the members of the RPPB and will be subject to approval by the board. Once changes have been approved, those changes will be annotated in the IPS as such. At a minimum, the IPS will be reviewed on an annual basis.

Form Based Code

The form-based code outlined in the body of the Installation Design Standards establishes a framework for the infrastructure, facilities, and landscape of Fort Stewart and Hunter AAF. These standards determine how the installation will look and function at an elemental level, defining the structure of a transportation network and regulating the associated facilities and plantings. The planning principles on the following pages will guide design at Fort Stewart / Hunter AAF from an experiential perspective, creating standards for the pedestrian, the environment, and community. In certain cases the application of these principles may allow for exemptions from AT/FP standards. These exemptions can be found in the UFC.

Using the Planning Standards

Use this IPS to determine the general design and construction considerations in the preparation of project plans. The IPS provides design guidelines and Army-wide design standards intended to be used in all projects, regardless of the funding source. The IPS should also be used in developing requirements for programming documents for MCA construction (DD Form 1391), as well as cost estimates and designs (from both in-house and external design sources) involving exterior visual elements on the installation. The following steps illustrate how the design guide is used for the preparation of plans for new construction, renovation, maintenance and repair projects on the installation:

Step 1: Review the design goals, objectives, and principles included in area development plan for the specified site.

Step 2: Consult the regulating plan to determine the applicable standards for buildings, streets, and landscapes.

Step 3: Review the applicable standards in Parts II-V of the IPS.

Step 4: Carefully analyze the existing conditions on the site and pay special attention to mature trees, riparian corridors, and building entries.

Step 5: Design building form and site the project according to the Regulating Plan and appropriate standards.

Step 6: Select building materials, and exterior colors from Part III of the IPS.

Step 7: Select the appropriate landscape materials.

Step 8: Assemble all plans documenting conformance to applicable standards and guidelines.

Implementing the IPS

IPS Review and Approval: The Master Planning Division will develop the IPS in conjunction with the Garrison staff. The Garrison Commander will chair the RPPB to review and approve site plans, projects and IPS waiver requests.

Compliance: For the IPS to work optimally as a management tool, it is essential that the Master Planner establish an understanding of the IPS among the parties concerned with its use. This can best be established at the Real Property Planning Board (RPPB) level where all installation interests are represented. The DPW Master Planner shall ensure that the guidelines and requirements of the IPS are readily available to, and understood by, all parties involved in the design of new facilities, design of additions or alterations to existing facilities, or facility maintenance. The Master Planner or designee, acting in support of the RPPB, is the first level reviewer of projects (SRM, MCA, and NAF to include Design Build) and other requests for actions that involve compliance with IPS guidelines and standards. The Garrison Commander, supported and advised by the RPPB, is the final authority in enforcement of the IPS guidelines and standards.

Project Approval: Project requests to include a 4283 shall be submitted to the DPW or equivalent and will include the required Design Team IPS Checklist discussed below.

Request for Waiver: The Guide must be used for any project that will modify Fort Stewart buildings, landscape or infrastructure unless the project proponent has acquired a waiver from DPW. This requirement applies to all building and landscape construction, renovation, rehabilitation and maintenance projects. All projects, regardless of the funding source, are subject to this requirement, including self-help projects.

The request for proposals (RFP) for design architect and engineer will reference the IPS, and require the designer or contractor to comply with it.

Any deviation from the IPS guidance requires a waiver request be submitted to Master Planning. A DPW project manager will provide installation oversight and guidance during construction.

A request of waiver from the IPS Checklist (Appendix A) will be submitted to the Master Planning office for approval by the Director of Public Works.

Principles

Districts

- 10-Minute Walk
- Places to Gather
- Town Squares
- Pedestrian Access

Landscaping

- Squares
- Managing Stormwater
- Preserving Trees

Buildings

- LEED
- Diverse Neighborhoods
- Clustering Housing
- Mixed Use Buildings

Streets

- The Network
- Street Grid
- Rear Lanes
- Main Streets
- Reduce Congestion
- Connected Sidewalks
- Complete Streets

Part II

Planning Principles

Methodology

The planning principles on the following pages were created in support of the 10 Army Planning Tenets; Area Development Planning, Form-Based Coding, Spatial Data Management, Facility Standardization, Anti-Terrorism/Force Protection, Critical Infrastructure Risk Management, Planning for Healthy Communities, Sustainable Building Design, and Sustainable Development.

Designers can easily reference the related principles to ensure the design language supports and fulfills the planning vision for Fort Stewart/Hunter AAF.

The following principles included are:

- Districts
- Buildings
- Streets
- Landscaping

Installation planning standards provide a clear set of guidelines to ensure that the installation's vision and planning objectives for development are achieved, even if drastic changes to mission or program occur.

Installation Planning Standards

Ten Minute Walk

Consolidate facilities to encourage walking.

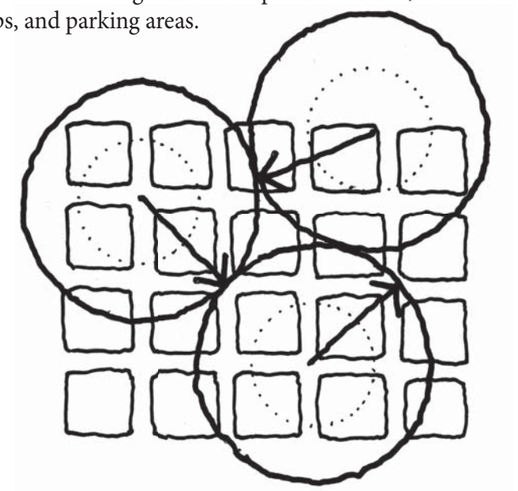
INTENT - In the United States, 91 percent of daily commuters use personal vehicles (BTS, 2001). While much of this habit can be attributed to historical patterns of development, it might also be mitigated by designing more walkable environments.

Research shows that people are willing to walk between 1,000 and 1,500 feet to workplaces and shopping areas. This equates to roughly a 10-minute walk. Importantly, the treatment of the urban context affects the willingness of pedestrians, observing greater tolerance in safe and attractive urban environments. Therefore, comfortable pedestrian access must include connected sidewalks, street trees, safe intersections, planting strips, sidewalk cafes, storefronts, clear wayfinding, and axes and focal points.

Similar principles are applied when designing perimeter parking around a centralized commercial district. In order to thoroughly serve a community, distributed parking along the fringe ensures a 10-minute walk to workplaces and shopping areas.

By creating safe and attractive urban environments, within a 10-minute walk, pedestrians are better served and therefore more inclined to walk. This results in a reduction of personal vehicle miles, less congestion on streets, fewer emissions, improved fitness, and a heightened sense of community.

IMPLEMENTATION - Organize development within 1,500 feet of housing, transit stops, and parking areas.



Bureau of Transportation Statistics. "Daily Travel Quick Facts." National Household Travel Survey, 2001-2002.
Ewing, R. "Best Development Practices: A Primer." EPA Smart Growth Network, 1999.
American Planning Association. "Planning and Urban Design Standards." John Wiley & Sons, Inc., 2006.
Dittmar, H, G. Ohland, eds. "The New Transit Town: Best Practices in Transit-Oriented Development." Island Press: Washington, D.C., 2004.

Places to Gather

Provide places for social interaction, both indoors and out.

INTENT - The formation of a strong community requires a range of services that facilitate social interaction. Among them, at the most fundamental, are places to gather. Whether indoors or out, large or small, formal or informal, designated areas for people to gather are integral to the success of a healthy, productive community.

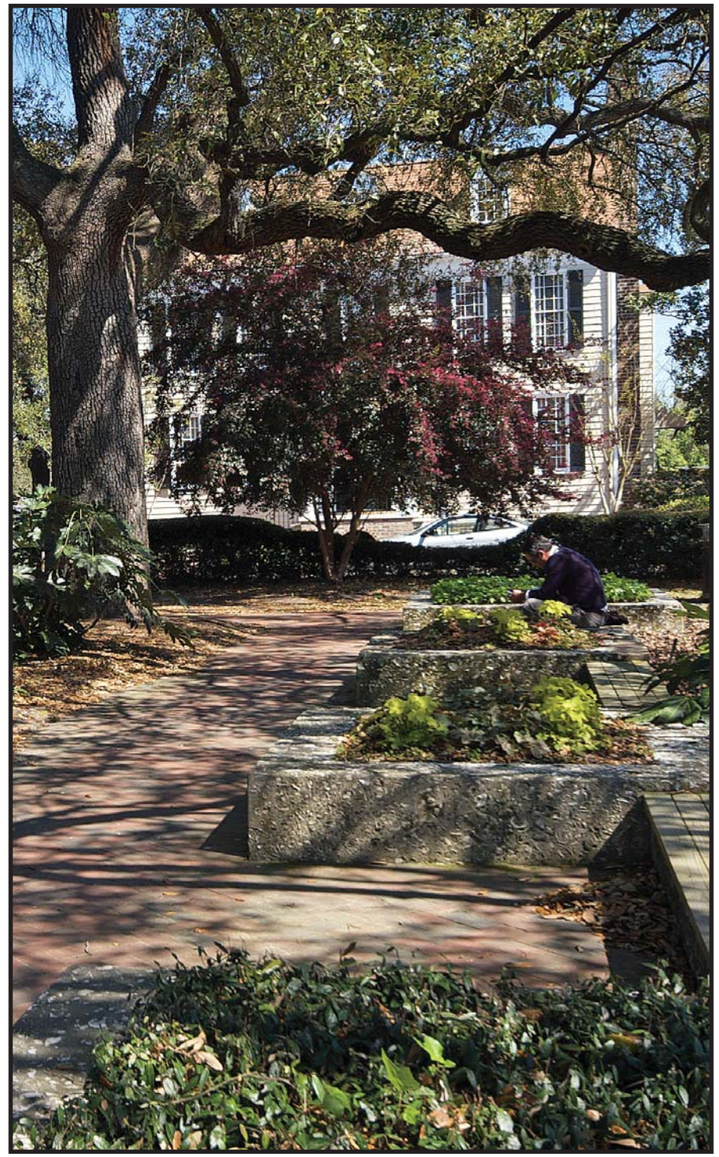
Without appropriate places for social gathering, a community has no foundation on which to take hold. Residents become isolated and the sense of community erodes, thereby compromising its overall cohesion and resiliency. Rather, preventative measures that encourage social interaction in common areas may contribute to the enduring vitality of a given community.

According to research conducted by Christopher Alexander in A Pattern Language, a common area must incorporate the following three characteristics: “it must be at the physical heart of the organization...it must be on-the-way from the entrance...it must have the right components” (i.e. kitchen, chairs, outdoor area, etc.). These combined places to gather may succeed in attracting users by being centrally located, easily accessible, and accommodating of various activities.

In urban-scale applications, the above criteria apply in similar fashion, adjustable by scale. Examples of successful allocation of places to gather in urban environments include Pioneer Courthouse Square in Portland, the Lincoln Memorial in Washington D.C., and the Boston Common in Boston.

IMPLEMENTATION - Provide places to gather at a variety of scales. For an entire community, create large, unobstructed areas such as town squares, plazas, campus quads, and parade fields that facilitate congregation. In each neighborhood, create main streets, community parks, sculptures, and areas of refuge that serve as places to gather. Finally, on the individual building scale, designate courtyards and community facilities as small places to gather that foster workplace community.

Alexander, Christopher, et al. “A Pattern Language.” Oxford University Press, 1977.



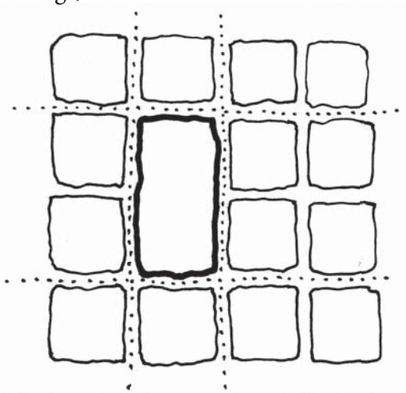
“Warren Square” - Savannah Ga.

Town Squares

Provide shared outdoor gathering space lined with a variety of community-based functions.

INTENT - A town square is a shaped outdoor space enclosed by multi-story buildings with places to live, work, shop, dine, worship, and play. Town squares are flexible nodes that support both functional and recreational community activities.
Historically, town squares have shown to help maintain strong communities. Furthermore, the edges of a town square provide opportunities for the surrounding buildings to engage with the community through horizontal and vertical mixed-use as in the neighboring town of Savannah.
Military planning has also supported the development of town squares, exemplified in the design of Savannah, Georgia in 1733 by General James Oglethorpe: "Although cherished by many today for their aesthetic beauty, the first squares were originally intended to provide colonists space for military exercises" (Hill, 2004). This example demonstrates the history of shared outdoor gathering space in military applications.
Town squares also contribute to the sustainability of an installation by providing a pervious surface within the predominantly hardscaped urban environment. Kogarah Square in New South Wales, Australia employs its town square to manage stormwater runoff and mitigate pollutants from the surrounding impervious surfaces.

IMPLEMENTATION - Locate town squares near retail centers and services with high volumes of day-to-day traffic. Design them to be no more than one block wide which will enable interactions and contribute to community cohesion; too large and they will look and feel deserted (Alexander, 1977). The length is flexible and should complement the area in which it is sited. Incorporate connected sidewalks, street trees, multi-story buildings, and a notable feature at the heart of the town center.



Booth, Geoffrey, et al. "Ten Principles for Reinventing America's Suburban Business Districts." ULI, 2002.
Hill, Robert J. "Savannah Squares." Schiffer Publishing, 2004.
Alexander, Christopher, et al. "A Pattern Language." Oxford University Press, 1977.

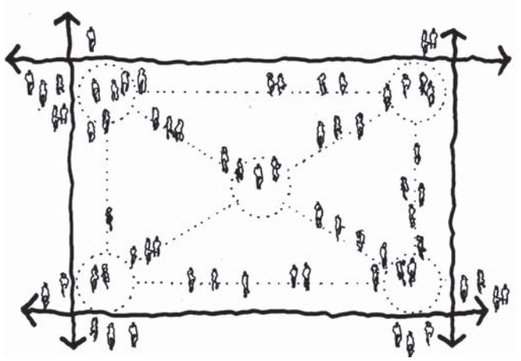
Attic Fire Photogarphy "Charles Ellis Square" - Savannah Ga.

Pedstrian Access

Create a comprehensive network of pedestrian circulation paths that promotes walkability.

INTENT - Imperative to the success of healthy communities is the extent of pedestrian access. Easily walkable communities improve resident fitness, stimulate local economies, and reduce consumption of fossil fuels, thereby contributing to a more sustainable urban environment.
Given the opportunity to walk in a safe, comfortable, and attractive setting, most people would choose to do so. Traits such as street trees, connected sidewalks, safe intersections, planting strips, sidewalk cafes, storefronts, clear wayfinding, and axes and focal points, integrated with compact development and transit-oriented development achieve a more sustainable solution.
Much of our current dependence on vehicles can be attributed to unsafe, uncomfortable, and unattractive walking environments. Often, distances between facilities are enormous and pose substantial safety risks due to the mistreatment of walking surfaces and the misalignment of priorities. Sadly, automobiles have unfairly assumed the right-of-way in many urban areas and consequently dominate traffic patterns.
Reestablishing priority early in the design process is an integral step to achieving widespread pedestrian access. From there, changing the way we interact with an urban setting by creating walkable environments can greatly improve the health of a community.

IMPLEMENTATION - In building design, create visible entries that give prominence to pedestrian access. Design active ground floors that welcome public participation.
In street design, create safe intersections and connected sidewalks that are separated from traffic by planting strips and street trees. Along main streets, encourage walking with sidewalk cafes and storefronts.
In neighborhood design, incorporate nearby recreation and community facilities within a 10-minute walk.



Zeeger, Charles V. "Design and Safety of Pedestrian Facilities." Institute of Transportation Engineers, 1998.

Buildings

LEED

Design buildings that respond to the natural environment and promote healthy living.

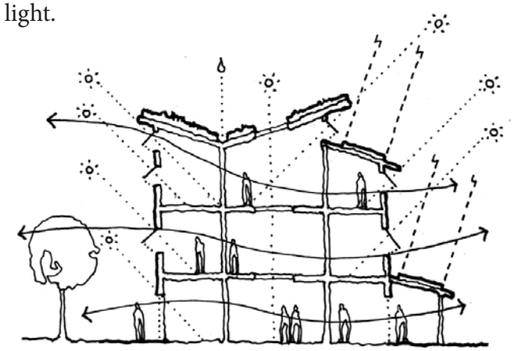
INTENT - **Sustainable buildings** aim to reduce the impact of development by employing environmental control strategies that decrease the energy demand of buildings.

Of the various approaches geared at reducing environmental degradation, passive technologies such as natural ventilation and **daylighting** can be implemented with relative ease and operate with little maintenance.

When properly implemented, daylighting provides adequate illumination without compromising visual or thermal comfort. When applied in narrow buildings or as light on two sides, daylighting can significantly decrease the need for supplemental electric lighting.

Conservation of water and other natural resources is equally imperative in creating sustainable buildings. Stormwater mitigation and greywater reuse demonstrates responsible practice, as does the selection of building materials produced from recycled or renewable sources.

IMPLEMENTATION - Select appropriate daylighting strategies for a given site early in the design process. Account for such factors as climatic conditions, latitude, surrounding obstructions, building type, and material reflectance. Apply louvers, blinds, or shading devices to help reduce glare. In deep volumes, use light shelves or clerestory windows to admit light. In large buildings, install skylights to illuminate areas far from exterior walls. To maximize savings, integrate photoelectric sensors that adjust electric lighting in response to fluctuating levels of natural light.



WBDG Sustainable Committee. "Sustainable." National Institute of Building Sciences 2010.
Building Green, Inc. "Greening Federal Facilities." DOE, 2001.
"Standard Guide for the General Principles of Sustainability Relative to Building." ASTM E2432, 2005.
Galentine, Susan C. "New Brigade Headquarters Earns LEED Gold Certification." USAEC, 2009.
Duany, Andres and Speck, Jeff. "Smart Growth Manual" McGraw-Hill books, 2010.

Diverse Neighborhoods

Create neighborhoods that enable diverse activity, a full range of housing, and satisfy daily shopping needs within each neighborhood.

INTENT - A neighborhood should endeavor to include a balanced mix of housing, working, shopping, recreating, and civic uses. While a perfect balance is rarely possible, larger parcels containing single uses must be avoided.

A healthy neighborhood includes a wide range of dwelling types. Neighborhoods should include many, if not all, of the following: rental apartments, condominiums, live/work buildings, rowhouses, cottages, houses, and mansions. Even small developments suffer when they limit housing to just one or two types.

All neighborhoods should include retail space; the amount depends upon the neighborhood's size, density, and location relative to transportation. Neighborhoods of 300 or more dwellings and/or jobs should provide a viable corner store at minimum. Where justified by its location on the regional traffic network, a neighborhood can center on a set of "main street" stores. These shops do best when they flank both sides of a low-speed thoroughfare. Businesses such as corner stores and cafes form the social center of a community. Management is also important, as shoppers tend to favor locally owned businesses anchored by known national brands, a mix that will not occur when left to chance.

Civic buildings will emerge naturally as a community matures, but only if provisions are made for them early in the planning process. Each neighborhood should reserve at least one public tract for the essential meeting hall.

IMPLEMENTATION - Designate civic sites in each neighborhood. A public green or square at the neighborhood center – where the civic building can become viable. Locate this high ground or terminate the axial vistas so that diverse activities are enhanced to the preeminence that befits a civic function; shared parking and transit access with complementary workday uses. Place a corner market within walking distance of most dwellings.

Duany, Andres and Speck, Jeff. "Smart Growth Manual" McGraw-Hill books, 2010.
Guidelines & Standards for Mixed Use Districts, October 26, 2004, City of Arroyo Grande

Clustering Houses

In rural areas, build houses in compact groupings.

INTENT - Clustering refers to the practice of preserving open space by locating housing at higher density on a portion of its site. This concept underlies the practice of Conservation Subdivision Design, an established technique for maximizing open space while limiting infrastructure costs. Clustering also allows for certain design aesthetics to be taken advantage of like hidden utilities. It is an ideal approach for sites which have large-lot development rights and not enough housing allocation to become full mixed-use neighborhoods. Many jurisdictions would welcome clustering, but few have zoning in place that actually allows, let alone encourages, it. To support this practice, municipalities must provide density bonuses that allow clustered projects to yield a return on investment equal to or greater than that of the legal large-lot alternative. The degree of incentive will vary from place to place, but only under such a policy will clustering become a common practice.

IMPLEMENTATION - Design main streets to be perpendicular to the flow of through-traffic along main arterials. This prevents the heaviest traffic from circulating through the mixed-use core while still allowing for visual access from the main arterial. Main streets can encourage sustainable growth with multi-story buildings and vertical mixed-use. They may also be split around a town square. Main streets can provide safe and comfortable pedestrian access by incorporating traffic calming features such as street trees and connected sidewalks.

Booth, Geoffrey, et al. "Ten Principles for Reinventing America's Suburban Business Districts." ULI, 2002.
Beyard, Michael, et al. "Ten Principles for Rebuilding Neighborhood Retail." ULI, 2003.

Mixed Use Buildings

Provide live/work buildings in the appropriate locations

INTENT - A mixed use building, is a building that can contain various workspace along with housing. Recent years have witnessed the revival of a number of building types specifically designed for the productive association of dwelling and working. The most popular of these is the live/work **rowhouse**, a party-wall building that contains a one-or two-story dwelling atop a ground-level shop or office. These buildings are organized as conventional **rowhouses**, except that the rear garage may be attached directly at the back of the workspace, with its roof serving as an outdoor living area for the residence above. This arrangement, by omitting the rear garden, satisfies any additional workplace parking requirement.

Other live/work building types include the loft/studio, in which work and living space commingle. Another is a conventional house tucked behind street-fronting workspace. Live/work buildings are generally located toward **neighborhood centers**, where they provide an excellent transition between the commercial buildings and houses.

Rowhouses:

Provide rowhouses in the appropriate locations.

INTENT - Rowhouses, also called townhouses, are party-wall houses placed on narrow lots, typically 16 to 30 feet wide. Interior area depends on the building height, which can be from one to four stories. Rowhouses place a garage or carport on a rear lane. The garage may be attached to the house via a narrow wing, as long as the rear garden remains large enough to receive sunlight. This garden is a key feature: it requires walls or fences on each side for privacy. The rear lane is also essential, as rowhouses with front garages destroy any prospect of pedestrian life. Rowhouses have short front setbacks – typically 5 to 10 feet, saving area for the rear garden. They have tall front stoops, as the elevation of the main living floor adds privacy, while sometimes enabling a basement apartment. A group of rowhouses may also front an alley, creating a residential mews. A more compact variant, the tuck-under rowhouse, attaches the garage directly to the rear of the first floor, allowing for a shallower lot. Familly housing with 12 units or few per building are exempt from AT/FP standards per section 1-9.2 of the UFC.

IMPLEMENTATION - Live/work buildings or Rowhouses are generally located in the intermediate zones of the rural=to-urban transect, where they are ideal for shaping squares. They are also useful for retrofitting suburban residential subdivisions, where an inserted corner store can reduce car trips and provide a social center to an otherwise homogeneous community.

"Oglethorpe Street" Savannah, Ga.

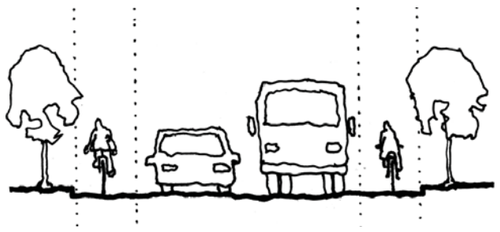
Duany, Andres and Speck, Jeff. "Smart Growth Manual" McGraw-Hill books, 2010.

Streets

The Network

Organize streets in a clear network

INTENT - Thoroughfares should be organized into an interconnected and hierarchical network. The largest thoroughfares should connect to the urban center, dividing developed areas into neighborhoods. Within each neighborhood, shorter and narrower streets should be detailed for local traffic at slower speeds. The neighborhood's network, while emphasizing its center, provides multiple routes to and from all destinations, so that traffic is dispersed and backups are limited. Multiple routes also benefit pedestrians: people who live in neighborhoods with finely grained street networks have been shown to walk more, use transit more, and drive less than those who live in conventional large-block and cul-de-sac suburbs.



Bicycle Network:

Create a network of bike paths and lanes at reduces dependency on passenger vehicles

INTENT - A comprehensive bicycle network benefits a community by providing a safe and healthy alternative to driving. By incorporating bike lanes into various street types, personal vehicle traffic can be greatly reduced, resulting in the conservation of resources and a decrease in emissions.
Further degradation associated with excessive driving habits includes expanded parking areas and congested streets. When carefully integrated into the existing transportation network, bike lanes have the positive effect of traffic calming by reducing the speed and density of vehicles (Jilla, 1974).

IMPLEMENTATION - The key to efficient transportation is to have multiple routes and types of transportation. When our streets are connected in a complete network, we can choose from many different routes to get from point A to point B.

Jilla, R J. "Effects of Bicycle Lanes on Traffic Flow." Transportation Research Board, 1974.
Stocker, David. "Bikestation: Activating the Bicycle-Light Rail Connection." ULI, 2009
Thunderhead Alliance. "Bicycling to Work." NETS: Network of Employees for Traffic Safety, 2010
Duany, Andres and Speck, Jeff. "Smart Growth Manual" McGraw-Hill books, 2010.

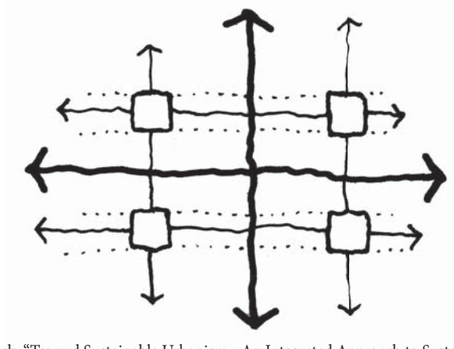
Street Grid

Define a street network that supports public transit, vehicle traffic, and pedestrian circulation.

INTENT - Clear street grids are beneficial for vehicular transportation, transit-oriented development, pedestrian access, and community cohesion. Street grids also contribute to a comprehensive transportation network with a variety of efficient route choices.
A well-planned street grid allows people to travel to and from destinations in direct fashion. Street grids play a significant role in encouraging communities to develop in a sustainable manner while reducing their energy consumption: "The North/South orientation of the grid is beneficial for solar orientation… by extending the North and South facades of the buildings to maximize passive solar and daylighting potential…" (Gallegos, 2008). Street grids have been used throughout history in facilitating efficient and effective circulation with clear wayfinding. Cities throughout the world have implemented street grids with great success, among them Savannah, Georgia, San Francisco, California, and Kyoto, Japan. As a fundamental urban gesture, street grids have the potential to contribute to a sustainable community by optimizing transportation networks.

IMPLEMENTATION - Create street grids wherever possible and build within any existing grids. A typical grid is 400 by 400 feet, but in Portland, Oregon, a grid measuring 200 by 200 feet maximizes valuable corners and improves walkability.
Grid size may vary depending on use; in housing, commercial, or horizontal mixed-use, a smaller grid is beneficial, whereas storage areas and industrial strips require a larger grid.

The Urban Land Institute recommends avoiding super blocks that exceed 12 grid blocks because they are difficult for pedestrians to navigate and therefore promote vehicle use and congestion.



Gallegos, Dominick. "Toward Sustainable Urbanism - An Integrated Approach to Sustainable Environments." UM, 2008.
Booth, Geoffrey, et al. "Ten Principles for Reinventing America's Suburban Business Districts." ULI, 2002.

Main Streets

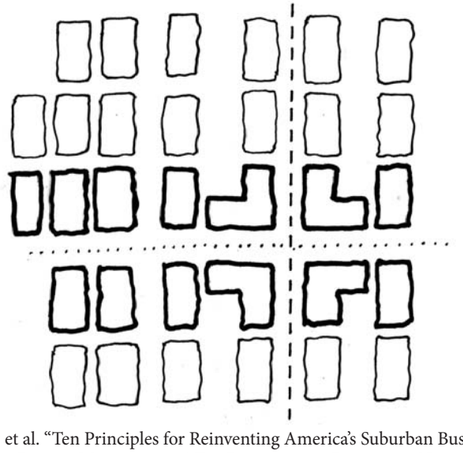
Create streets that support walkable communities, thriving businesses, and sustainable development.

INTENT - Great cities are often defined by their main streets. Most importantly, main streets are walkable and provide an opportunity for successful horizontal and vertical mixed-use development.

Historically, main streets cultivated a strong sense of community and supported a significant portion of a city's commercial activity. Over the past decade, the economy that main streets represented has been overtaken by newer suburban shopping centers that promote sprawl and inhibit pedestrian access. These suburban shopping centers occupy large areas of land, require acres of impervious parking, and are located in single-use, unsustainable developments.

In recent years, however, there has been a movement to redevelop main streets as they were originally imagined. Places such as Fifth Avenue in New York City, New York, Commonwealth Avenue in Boston, Massachusetts, and Market Street in San Francisco, California are great examples of thriving main streets in cities today.

IMPLEMENTATION - Design main streets to be perpendicular to the flow of through-traffic along main arterials. This prevents the heaviest traffic from circulating through the mixed-use core while still allowing for visual access from the main arterial. Main streets can encourage sustainable growth with multi-story buildings and vertical mixed-use. They may also be split around a town square. Main streets can provide safe and comfortable pedestrian access by incorporating traffic calming features such as street trees and connected sidewalks.



Booth, Geoffrey, et al. "Ten Principles for Reinventing America's Suburban Business Districts." ULI, 2002. Beyard, Michael, et al. "Ten Principles for Rebuilding Neighborhood Retail." ULI, 2003.

Complete Streets

Engineer neighborhood streets to low speeds accommodating pedestrians and bicyclists as well as cars and allow on-street parking.

INTENT - For some 60 years now, most American streets have been designed with the sole objective of moving cars. As a result, pedestrian and bicycle use has declined, as has the viability of closely affronting urban buildings. In addition to being traffic conduits, streets are public spaces and perhaps the primary location of American civic life. Thoroughfares, other than highways – especially streets within neighborhoods – should be designed as places of gathering. This requires the interdisciplinary participation of engineers, planners, architects, landscape architects, and utility companies. The resulting thoroughfares will typically provide narrow (slower-speed) travel lanes, **bicycle** facilities, **on-street parking**, continuous **tree cover,** ample **sidewalks,** appropriate street furniture and lighting, as well as supportive building frontages. When streets become pleasant places, more people are likely to leave the car at home.

On-Street Parking:

On-street parking provides many benefits. It slows down drivers, who are instinctively watchful of other cars in the roadway; it protects pedestrians from traffic with a thick steel barrier of cars along the sidewalk; it reduces the demand for on-site parking, decreasing the amount of parking lot pavement; and it increases sidewalk activity as drivers walk from car to destination. Depending on use and density, parking should be provided on both sides of commercial streets, and on one or both sides or residential streets. Parallel parking is preferable, but the greater capacity of head-in (or rear-in) parking may be justified on retail streets. **On-street parking** must count toward satisfying parking requirements, or developers will not provide it. Parking lanes are usually marked with a stripe on through-streets, but unmarked on local streets.

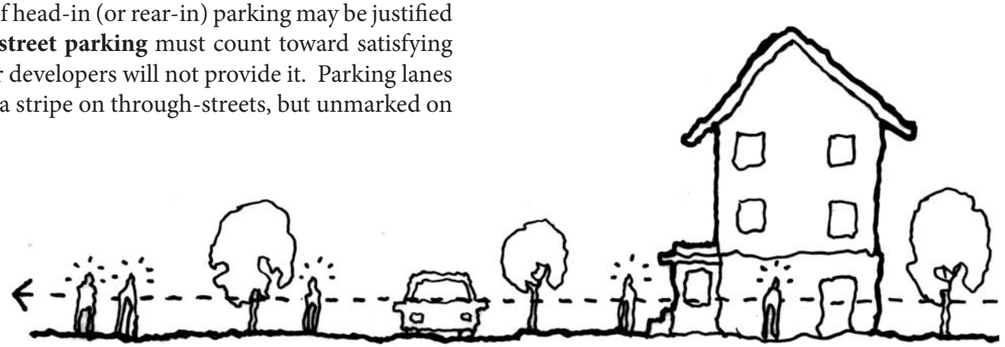
Design Speed:

The speed of vehicles is critical to pedestrian safety and comfort. At 20 miles per hour, a pedestrian has a 95 percent chance of surviving a collision, compared to only 10 percent at 40 mph. The important element of eye contact between motorists and pedestrians only occurs at lower speeds, as does the safe intermingling of bicycles. Unfortunately, motorists will drive at the perceived safe speed on roadways designed for higher velocity. These factors contribute to what engineers call design speed. While higher speeds are appropriate on highways, street design within neighborhoods should physically induce speeds of 25 mph or less.

IMPLEMENTATION - The most effective way to engineer complete streets is to control vehicular speed by narrowing lane widths, avoiding long straight-aways, introducing on-street parking, planting trees, and providing points of visual friction.

For retrofitting existing conditions, adding on-street parking can narrow roadways that were built too wide.

Streets should be designed not only to move cars but also to be safe and inviting for pedestrians, cyclists, and transit users. Such design means appropriate speeds, widths, and sidewalks, as well as buildings, trees, and even benches.



Zeeger, Charles V. "Design and Safety of Pedestrian Facilities." Institute of Transportation Engineers. 1998.
Duany, Andres and Speck, Jeff. "Smart Growth Manual" McGraw-Hill books, 2010.

Connected Sidewalks

Ensure continuity of pedestrian circulation paths for improved safety and navigation.

INTENT - Connected sidewalks are a fundamental feature in creating a sustainable urban environment. By providing a safe, efficient alternative to driving, people are more likely to walk to and from destinations. This promotes a healthier community by improving resident fitness and reducing carbon emissions from vehicle dependence.

Universal accessibility is another benefit of connected sidewalks whereby everyone, regardless of physical ability, is provided safe and efficient circulation routes. Furthermore, navigation is improved when providing clear and direct pedestrian paths that combine to create an uninterrupted network. Building hierarchy and nodes can be reinforced by aligning sidewalks with visible entries and axes and focal points.

Connected sidewalks also contribute to a safer environment by directing pedestrians along predictable routes. In doing so, drivers are aware of areas of high concentration of pedestrian traffic and can adjust their speed accordingly. Research has shown that accidents involving vehicles and pedestrians are 2.6 times more likely on streets with no sidewalks (Federal Highway Administration). The presence of pedestrians is a known traffic calming device whereby the presence of people forces slower speeds and greater vigilance from drivers. Contingent on the success of a pedestrian network is the creation of safe intersections where proper signage and appropriate markings are also implemented. Summarily, connected sidewalks provide safe and easy pedestrian circulation that greatly improves the well-being of a community.

IMPLEMENTATION - Create sidewalks that comprehensively serve pedestrian access. In addition to required markings and signage at intersections, employ traffic calming features such as bulb-outs, street trees, and planting strips.

Minimum sidewalk widths suggested by the Institute of transportation Engineers are as follows:

Central business district: 8 ft

Commercial/industrial area: 5 ft (plus 2 ft planting strip)

Residential area: 5 ft (plus 2 ft planting strip)

Local streets: 5 ft (plus 2ft planting strip)

Reduce Congestion

Minimize Road Widening

INTENT - Increased travel on new road space can come from one of two sources: diverted travel and induced traffic. Diverted travel occurs when people divert their trip from another road (change in route) or retime their travel (change in timing). Induced traffic occurs when new automobile trips are generated. This can occur when people choose to travel by car instead of public transport, or decide to travel when they otherwise would not have.

"Induced traffic" explains the failure of new and wider roads intended to reduce traffic congestion: the new road capacity is absorbed by drivers who previously avoided getting on the congested road.

Roadway infrastructure spending should be directed toward measures that have proven to reduce congestion, such as **network**, **bikeways,** and **mixed-use** zoning.

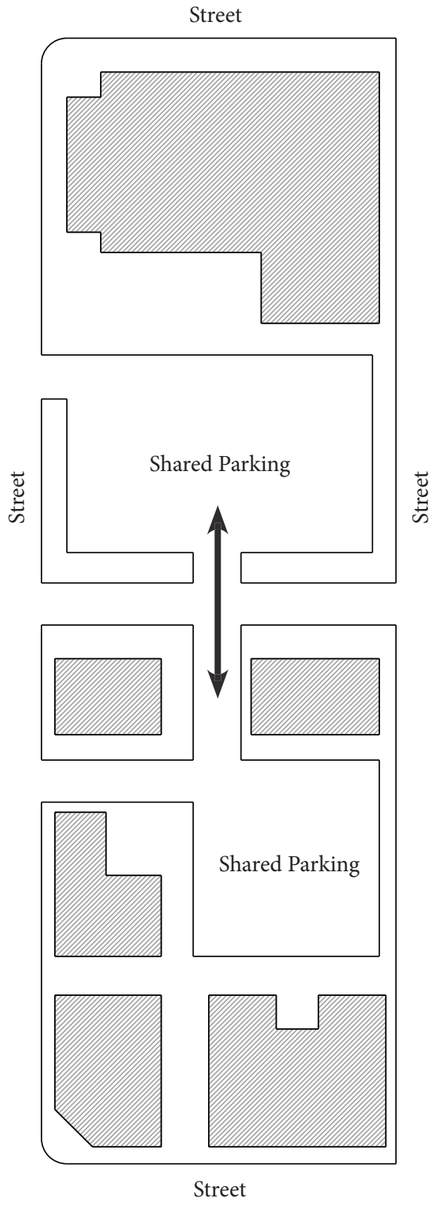
IMPLEMENTATION - Reject projections that ignore induced traffic.

Hide Parking:

Locate parking lots out of sight

INTENT - There are few greater deterrents to pedestrian life than the exposed parking frontages of suburbia, which are simply too boring to walk past. Planning codes must not allow parking lots along walkable streets. Surface parking lots should be located at the centers of blocks, which may be enlarged for this purpose, so that they are masked by habitable buildings. Multistory parking structures should be similarly located, but may also be placed along street edges if they have habitable space at street level. Many cities now require that all new parking structures include ground-floor retail space. Ideally, upper stories should also be hidden behind shallow apartments. At the very least, garage facades should be detailed to resemble a habitable building. In communities blighted by exposed parking lots, shallow, inexpensive, and temporary "lot liner" building s should be considered as a retrofit. These either wrap an existing parking structure or sit atop garages containing the outer row of a surface lot. When no other solution is available, an attractive wall or hedge can be built along the sidewalk frontage - but this should be considered a last resort.

IMPLEMENTATION - Create street grids wherever possible and build within any existing grids. A typical grid is 400 by 400 feet, but in Portland, Oregon, a grid measuring 200 by 200 feet maximizes valuable corners and improves walkability.

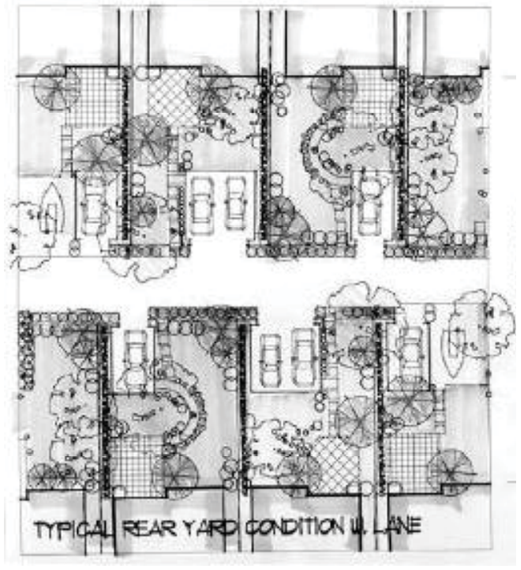


Rear Lanes

Provide rear alleys and lanes to allow walkable frontages.

INTENT - In widespread use in the early twentieth century, lanes and alleys have reemerged as a means of handling the growing parking and servicing demands of dense urbanism. These thoroughfares run down the center of their blocks to provided discreet access to service areas and garages. Alleys are located in urban and commercial areas and are paved from edge to edge, while lanes belong in more residential areas and consist of a narrow pavement, typically 10 feet wide, flanked by groundcover. In less urban conditions, lanes can be unpaved, with gravel or another permeable surface to recycle stormwater. Both alleys and lanes generally require a right-of-way width of 24 feet. For large cars to turn easily into garages, opposing garage faces should be kept about 30 feet apart. In addition to concealing parking, alleys provide a place for transformers, communications boxes, meters, and the other utilities that blight the streetscape with their ever-growing size. In most new towns, the wet utilities (water and sewer) run in the front street, while cable utilities are placed in the rear alleys and lanes.

IMPLEMENTATION - Design main streets to be perpendicular to the flow of through-traffic along main arterials. This prevents the heaviest traffic from circulating through the mixed-use core while still allowing for strong visual aesthetics.



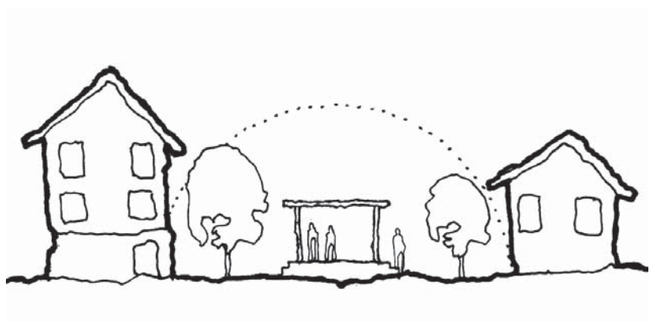
Duany, Andres and Speck, Jeff. "Smart Growth Manual" McGraw-Hill books, 2010.
Guidelines & Standards for Mixed Use Districts, October 26, 2004, City of Arroyo Grande

Squares

Design areas between buildings with the intention of creating outdoor rooms.

INTENT - Shaped outdoor space refers to the deliberate allocation of landscape as inhabitable area. In other words, the space between buildings and alongside natural features is no longer considered leftover. Rather, there is a conscious decision to create positive outdoor rooms.
Some of the most successful urban environments are characterized by their shaped outdoor space. The National Mall in Washington D.C., Piazza San Marco in Venice, and Central Park in New York City are prime examples of how the area between buildings can be a valuable asset to a city. Whether lined with cultural institutions or mixed-use development, public outdoor space contributes to the sustainable development of healthy communities.
Some experts on urban design have gone so far as to say "exterior space should be the force that gives definition to the architecture" (Carmona, 2007). Instead of creating buildings set apart from their surroundings as isolated interventions, the idea of shaped outdoor space intends to weave buildings into a consistent urban fabric.
In addition to creating a more profitable urban environment, shaped outdoor space also contributes to the performance of individual buildings. From inside, occupants enjoy views to nature, borrowed landscapes, and daylighting. When directly accessed from active ground floors as courtyards or street cafes, an outdoor room serves as a valuable expansion of a building's usable area.

IMPLEMENTATION - Establish strong edges along the perimeter of a shaped outdoor space to give it a sense of enclosure. Use building edges, street trees, water features, groundcover, canopies, and partial walls to demarcate the outdoor room. Examples of shaped outdoor space include community gardens, courtyards, campus quads, usable rooftops, town squares, social streets, and plazas.



Ewing, Reid. "Pedestrian and Transit-Friendly Design: A Primer for Smart Growth." American Planning Association, 1999.
Carmona, Matthew, Steve Tiesdell. "Urban Design Reader." Architectural Press, 2007.

Managing Storm Water

Preserve hydrological patterns where possible

INTENT - The best way to manage stormwater is to follow existing drainage and percolation patterns. This is most easily achieved by maintaining a site's topography and allowing low areas to continue performing their role, and by using infiltration devices and permeable surfaces. Storm water runoff can be further reduced by placing buildings away from porous soil so that it can continue to perform its function. But these techniques are not universally appropriate. Stormwater regulations must have different standards for more urban sites. True urbanity is made impossible by regulations that enforce the generic sub-urbanism of grassy swales and on-site detention ponds, precluding the dense development that reduces sprawl.

Preserving Wetlands:

Protect wetlands with upland buffers.

INTENT - Environmental standards typically disallow construction within wetlands. But more than the wetland itself must be protected if its ecosystem is to thrive. Buffers are needed to protect wetlands from erosion, nutrient loading, and the loss of the many species that require transitional habitats. Rather than just leaving wetlands untouched, plans should surround them with parks. Studies suggest that upland buffers should maintain a minimum width of 50 feet and an average width of at least 100 feet. When artificial **stormwater** retention ponds are created, they should be designed for maximum habitat value, with planted littoral shelves and shorelines. Islands, sandbars, and mudflats further contribute to the habitat's richness. Such new wetlands, when modeled closely on nature, can eventually function as natural ones do.

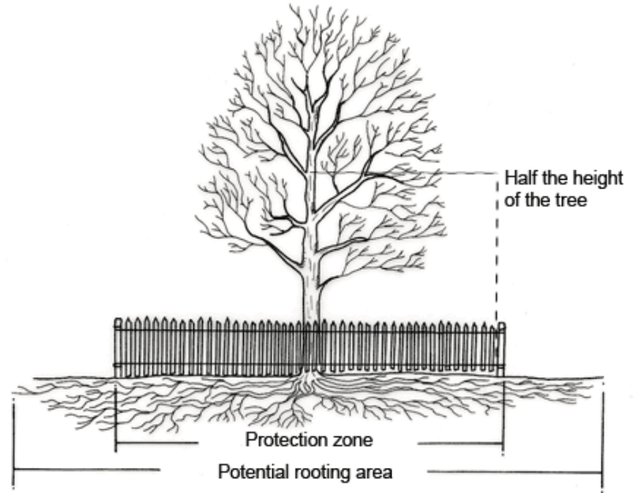
IMPLEMENTATION - The options available for managing this water are based on infiltration, evapotranspiration, and harvesting. Examples of storm water best management practices (BMPs) that fall under those categories include rain gardens, bio-retention, infiltration basins, green roofs, rain barrels, and cisterns.(All BMP's shall be designed to satisfy state permitting)

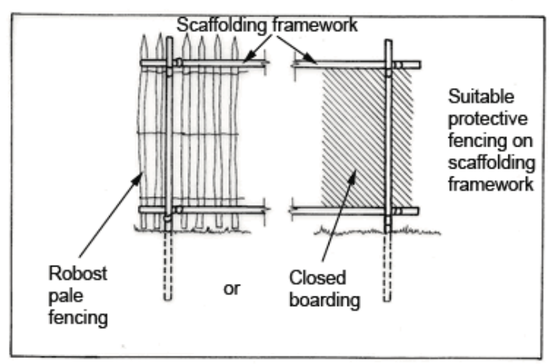
Preserving Trees

Design public places around existing trees.

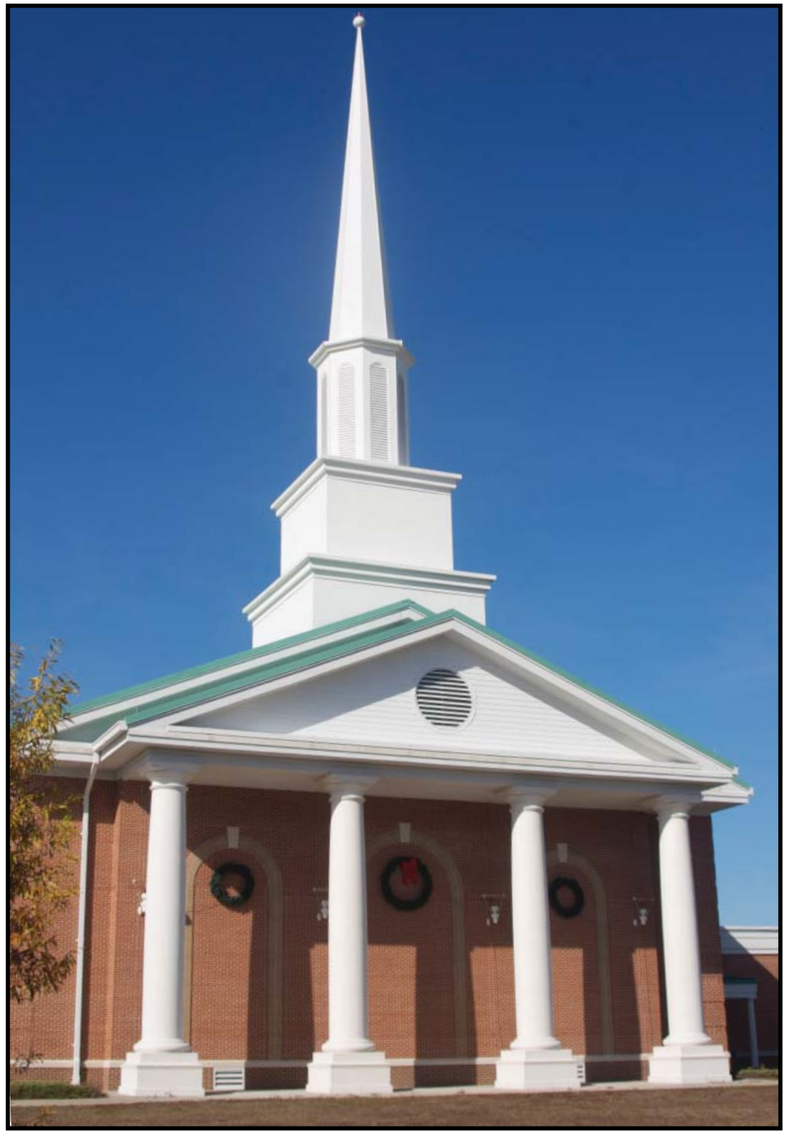
INTENT - The preservation of trees should be a major determinant of any site plan. Among the first steps of design should be a tree survey locating specimen trees and significant tree stands which will then serve as the location of parks, green space, squares and other public spaces. These spaces help keep site work at a distance from root mass, so that the trees do not subsequently wither and die.

IMPLEMENTATION - Linear allees and hedgerows may be assigned to avenues, again taking care to protect tree roots. Where possible, trees that cannot be maintained in their location should be transplanted in tree-save areas.





This section includes aesthetic and structural standards for buildings as well building envelope standards that regulate the form, setbacks, uses, and support requirements of any given construction project at Fort Stewart/ Hunter AAF. Together with the Regulating Plan, these standards create a form-based code that will facilitate mission readiness, energy-efficiency, and walkable development patterns in support of the installation's vision. The design character of an installation's buildings affect the installation's overall image. The building design component encompasses the character of the buildings as well as their relationships to one another and the environment. The continued preservation of historically and culturally significant structures adds to an installation's character.



Fort Stewart Chapel

Fort Stewart - Troop Medical Center

Hunter AAF - Community Center

Part III

Building Standards

Objectives

Building Standards shape and detail public space that is safe, comfortable, and functional through placement and envelope controls for each building type. The standards aim for the minimum level of control necessary to meet the planning goals, and include building standards, site planning standards, and building-related force protection standards.

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Installation Planning Standards

Building Standards - Introduction

Regional Setting

The expansive Fort Stewart military installation covers portions of five counties in the coastal plain of southeast Georgia. The cantonment area is located about 40 miles southwest of Savannah near Hinesville, Georgia.

The Fort Stewart installation also includes Hunter Army Airfield (HAAF) which is geographically separated and located in nearby Savannah, Georgia.

The IPS provides for the visual aspects of the Fort Stewart/Hunter AAF RPMP. The goal is to create a community environment where soldiers and their families want to be stationed. The desired visual aspects are to be taken from the core of Savannah, Georgia—a National Historic Landmark since 1966. The city contains a series of wards, or neighborhoods, each wrapped around a park-like square and connected by arrow-straight streets with median strips resembling linear forests. The squares calm the relentless traffic in the bustling city center, while the border streets speed it toward farther destinations.

Within the squares, live oak trees wave banners of Spanish moss, creating large patches of shade punctuated by shafts of sunlight. The squares are orderly but populous, benches and sculpture invite contemplation while generous brick walkways encourage strolling.

These aspects of Savannahs squares are the IPS goals to be achieved through planning, design and construction services at Fort Stewart/

"Telfair Square - Savannah Ga."

How to Use the Standards

- **Step 1:** Look at the Regulating Plan and find the site. Note the Required Building Line (RBL) and the Parking Setback Line. Note the color of the site block this determines the building envelope standard for all buildings in this area. See the key in the regulating plan.
- **Step 2:** Look at the appropriate building envelope standard page in this section. This page outlines the basic requirements for building on this site in terms of height, siting, elements and uses.
- **Step 3:** Refer to the Aesthetic Design Guidelines in Part III for building construction methods, materials, and colors.

Example of how buildings can shape open space

Building Envelope Standards

Use

Regulates allowable building uses on the ground floor an upper floors.

Parking

Regulates parking requirements, lane widths of lot entry points, and mature tree canopy coverage.

Notes

Regulates the treatment of street corners, locations of entries and service elements, length of double-loaded corridors, visual appearance of exterior walls, roof pitch and sustainability strategies.

Fenestration

Regulates the required percentage of facade area to be glazed.

Placement

Regulates building setback from other buildings, roads, parking, permittable RBL encroachment and buildable area boundary.

Shape

Regulates building width, length, and what percentage of the building envelope must be built to the RBL.

Height

Regulates building height, floor-to-floor height, first floor ceiling height and first floor finish ground elevation.

Existing Buildings

When existing buildings are renovated or additions are constructed, the architectural character of the renovation or addition should be compatible with the "Colonial Revival" design style. This compatibility considers the architectural character of the each zone and the scale of adjacent buildings. However, when renovating or adding to historical buildings, one should be able to differentiate between the historic fabric and the new material.

- When additions or major alterations are made, the new work should complement the existing building. Replication of historic buildings is not required, however, it is imperative that modifications and ongoing building maintenance respect and enhance the existing or intended character of each building.
- All additions or alterations will be designed by following the guidelines of the regulating plan and coordinating building envelope standards.

The **Standards for Rehabilitation** currently implement an architectural design theme called "Southern Living Station of Choice," implying straightforward volumes with side wings and porches, an orderly symmetrical relationship of windows, doors and building mass and columned porticos delineating entry. This style easily translates to the recently adapted Southern Colonial Revival style which incorporates architectural features such as porticos, verandas, columns, low pitched hip or gable roofs. Building materials such as brick, concrete masonry units, metal siding and stucco are used and the range of colors is limited to emphasize earth tones and white. When properly combined, these elements create an architectural image which expresses continuity with Georgia architectural traditions.

Detached Storage : Applicable to small and medium-size institutional buildings and to internal-access residential buildings.

- Storage sheds must be located in an organized fashion near or adjacent to existing structures rather than in open spaces; but as the size of buildings increases, they can be located proportionately farther away.
- Storage sheds must be located on the private, rather than the public, side of a building.
- Materials and colors must harmonize with adjacent buildings.
- The size of storage sheds must be proportionate to the size of adjacent related buildings - between 5% and 10% of floor area of main building.
- Must meet AT/FP standards.

Attached Storage : Applicable to small residential and institutional buildings.

- Must be located at rear or side of building, out of public view, and screened with vegetation where applicable.
- Materials, colors, and architectural details must match existing building.
- Not appropriate for large buildings.
- Must meet AT/FP standards.

Windows: Maintenance/Replacement

- Maintenance of the original window(s) is the preferred solution for historic buildings and situations where original window cannot be replicated.
- Replacement of the original window(s) with identical new window(s) is acceptable.
- Character of new window must match old. Materials, colors, and architectural details must match existing building. All replacements shall be reviewed by DPW and the State Historic Preservation Office (SHPO).
- Replacement of the original window(s) with insulated glass window(s) is acceptable.
- Replaced windows in historic buildings must match character, configuration, arrangement and profiles of the original.

Modification

- Modification of glass area is acceptable when original proportions are maintained.
- Modify windows in industrial/warehouse buildings only when necessary for thermal efficiency.
- New fenestration pattern must respect forms and character of windows in existing building.

Doors

- Wood or metal doors with glass should generally have between 50 and 75 percent glass area.
- Glazing may be subdivided by narrow mullions, vertically or vertically and horizontally, but not horizontally only.
- When building in areas where new buildings match or are similar to existing ones, doors should mimic the aesthetics of their historical prototypes.

Building Standards Introduction

New Buildings

New facilities must be built to accommodate emerging requirements and new missions. The goal of the building designer should be to blend the new building with its surroundings and achieve a cohesive appearance on the installation. The building design must respect the context of its surroundings, and ensure compatibility between new and old buildings. New facilities will be designed by following the guidelines of the regulating plan and coordinating building envelope standards.

- All new construction should be compatible in scale with adjacent buildings. Relief should be provided through roof form, fenestration, building projections, and landscape plantings.
- Building heights shall be limited to no more than three stories with low-pitched (between 3:12 and 5:12 pitch) hipped or gabled dormered roofs.

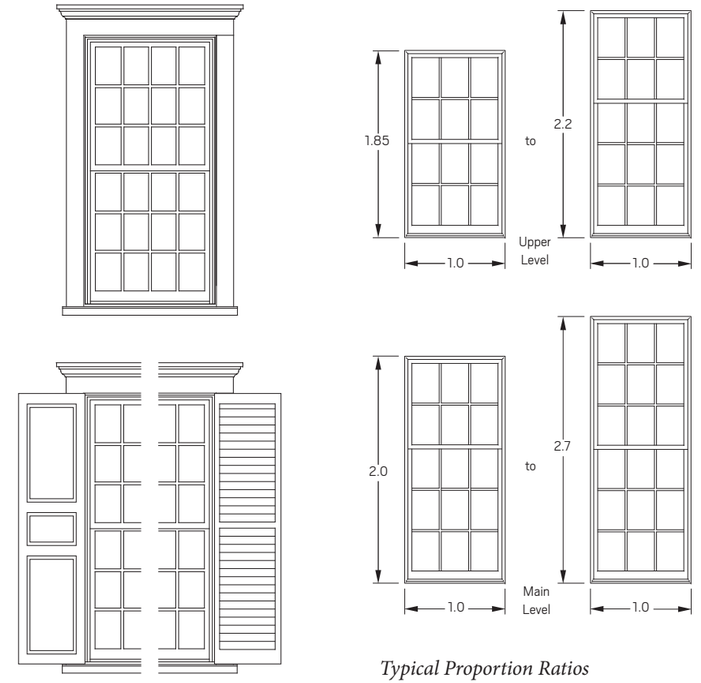
Southern Colonial Revival

Fort Stewart/Hunter AAF are currently implementing the "Colonial Revival" design aesthetic as seen throughout the various visual zones within the cantonment area. This theme should be continued and extrapolated to all future construction projects at the installation.

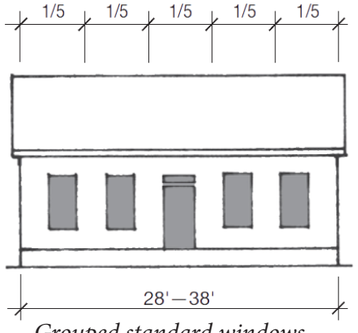
The Colonial Revival style of architecture is characterized by :

- Formal symmetrical design, usually with center door
- Pedimented front facade portico with classical columns
- Front facing gable on porch or main roof
- Broken pediment over entry door
- Decorative door surrounds, columns, or sidelights
- Regular patterns of fenestration

Quintessential Primary Window with Trim



Typical Proportion Ratios



Grouped standard windows

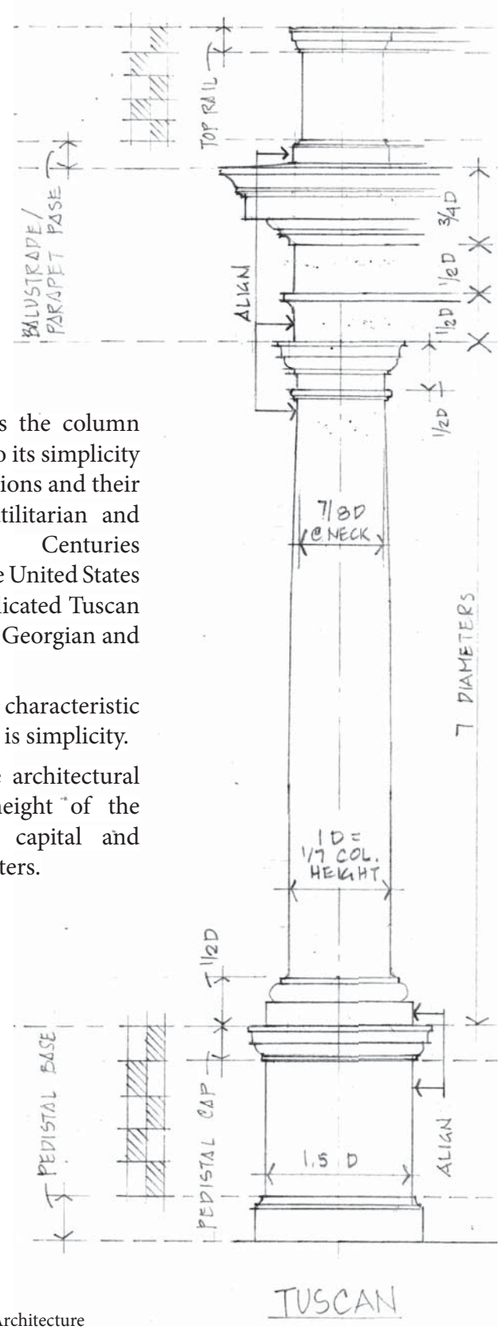
Classical Colonial Composition

- Repetitive window patterns; equally spaced
- Symmetrical compositions with an odd number of bays
- Emphasis through

  Accent windows

  Panes should be similar in proportion to the standard windows used

2012 Andersen Architectural Collection Windows
Gerogian/Federal, Primary Windows



Tuscan Column is the column style of choice due to its simplicity of form and proportions and their historical use in utilitarian and military buildings. Centuries later, buildings in the United States adopted to uncomplicated Tuscan form for vernacular Georgian and Greek Revival.

The distinguishing characteristic of the Tuscan Order is simplicity.

When used in true architectural proportions, the height of the column, including capital and base, is seven diameters.

The Classical Orders of Architecture
by Michael Rouchell

Exterior Building Materials

American Colonial Revival is the design preference at Fort Stewart/ Hunter AAF. American Colonial Revival can be characterized by a symmetrical façade often featuring a Classical cornice; cupola; widow's walk; colonial detailing; bevel siding or a smooth brick wall finish with fine joints; brickwork often set in a Flemish bond pattern; splayed lintels; a hipped, gabled, or gambrel roof covered with slate tiles or wood shingles; louvered shutters; double-hung rectangular sash windows with multiple panes in both the upper and lower sashes; a light over the main entry door and sidelights on each side of door; the front door commonly crowned by a pediment, extending forward and supported on columns so as to form an entry porch.

Structural Systems

- Concrete Masonry Units (CMU)
- Masonry
- Brick
- Steel Frame
- Light Steel Frame
- Concrete
- Wood Frame
- Integrally colored Concrete Masonry Units (CMU)

Exterior Materials

- Brick
- EIFS. drainable
- Pre-Finished Metal Standing Seam

Trim

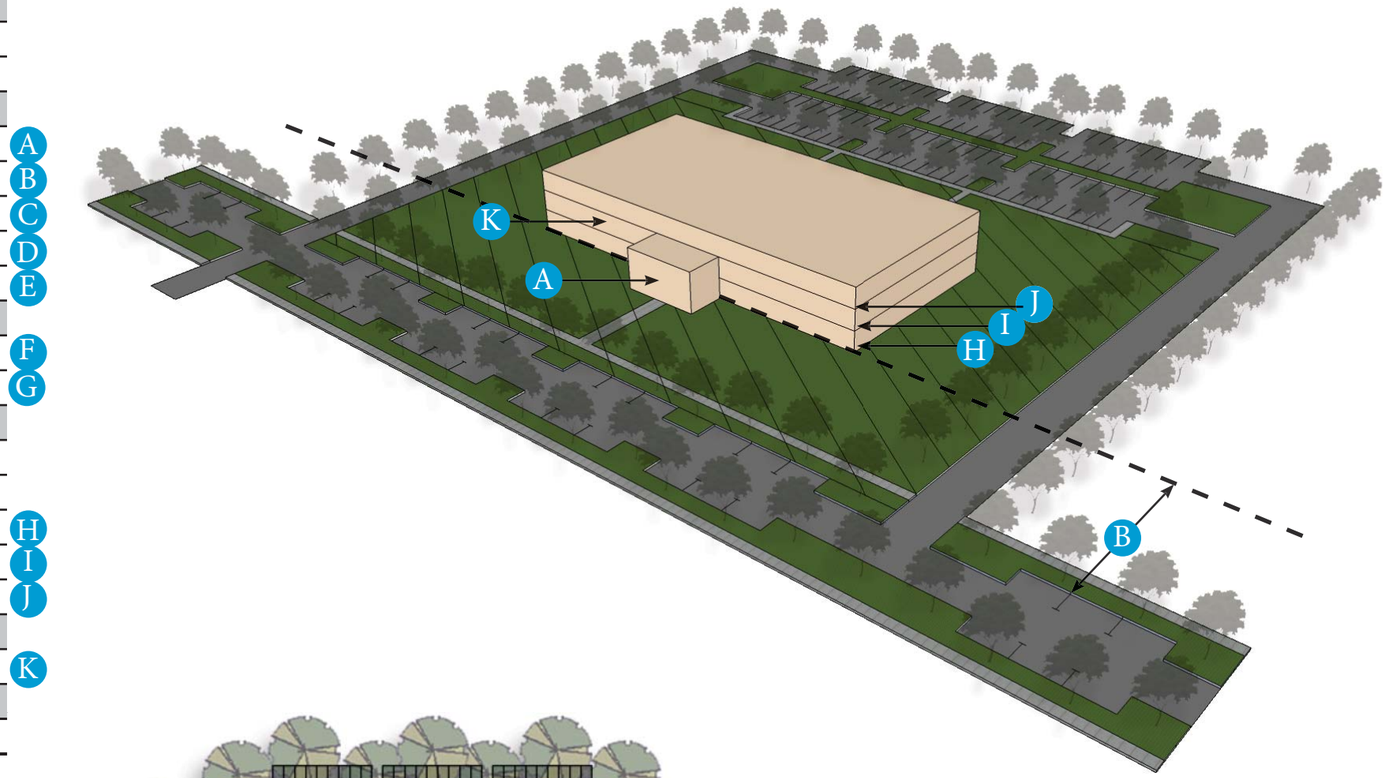
- Window
- Soffits
- Pre-Finished Gutters
- Pre-Finished Down Spouts

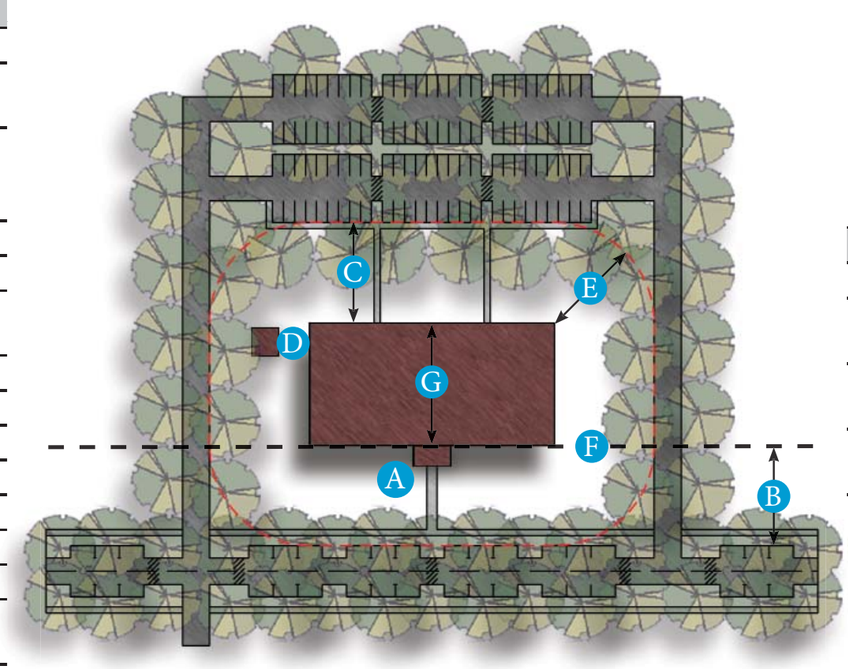
Fort Stewart - Warriors in Tranisition Barracks

General Building Standards

Use			
Ground Floor	Administrative, Commercial		
Upper Floor(s)	Administrative		
Placement	Primary Occupied	Unoccupied	
Entry to Building shall face the primary street			A
Required Building Line (RBL) setback form roads/parking	25 m	10 m	B
Setback from roads/parking	25 m	10 m	C
Setback from other buildings	10 m	any	D
ATFP set back	Refer to current UFC		E
Shape			
Primary street built to RBL	70% min.		F
Building width	50’ max.		G
Height			
Minimum number of floors	Refer to Regulating Plan		
Maximum number of floors	Refer to Regulating Plan		
Finish ground floor level	18” min above sidewalk		H
First floor ceiling height	12’ min. clear 20’ max.		I
Floor-to-floor height	14’ max.		J
Fenestration			
Percent of façade	40%-90%		K

Notes
Corner lot street facades must be built to RBL within 30’ of street corner
Setback from roadways and other buildings must conform to minimum current anti-terrorism/force protection guidance
Where RBL is designated, a building may occupy any portion of the site within the buildable area boundary
Primary entries must occur where designated on the regulating plan
Loading docks, overhead doors, and other service entries may not be located on RBLs
Buildings shall be divided into bays not exceeding 50’ in length: bays may be articulated using place changes (+/-6” min.), material changes, window rhythm, etc.
Double-loaded corridors shall not exceed 200’ in length
Black lengths of wall exceeding 15’ are prohibited on RBLs
All windows shall be operable, with the exception of clerestory and storefront
Balconies, bay windows , arcades, etc. can encroach up to 2’ beyond RBL
Refer to the Color Palette for materials and colors
Roof pitches of 3:12 to 5:12 are allowable
South-facing windows shall be shaded from summer sun (overhangs, recesses, etc.)
Designer shall incorporate sustainability strategies to include light shelves, clerestory window, and maximum glazing areas





Parking
Max. 3 spaces per 1,000sf of floor space
Trees shall be planted such that 70% of parking area will be shaded within 15 years
If access in controlled, government vehicle parking is not subject to setbacks
Parking lots shall be located in the rear of buildings with a minimum of two entry/exit points
On street parking shall be incorporated wherever possible with the inclusion of intermittent tree planting bulb-outs separating parallel parking spaces. There should be a minimum of two bulb outs per block. With additional bulb-outs as needed for areas with higher pedestrian traffic

Fort Stewart

Roof

Patina Green
HEX: #6fa287
H,S,B: 148,31,64
Pantone: 556c
C,M,Y,K: 54,8,47,14
R,G,B: 111,162,135

Roof

Colonial Red
HEX: #6e2a29
H,S,B: 1,63,43
Pantone: 7609c
C,M,Y,K: 0,62,63,57
R,G,B: 110, 42,41

Split Faced CMU

Texas Cream
HEX: cec6c0
H,S,B: 26,7,81
Pantone: 406c
C,M,Y,K: 19,18,21,0
R,G,B: 196,188,183
Grout: Almond

Brick

Cherry Velour
HEX: #914c3c
H,S,B: 11,59,57
Pantone: 7581c
C,M,Y,K: 0,48,59,43
R,G,B: 145,76,60
Grout: Almond

Accent Brick

Quaker Blend
HEX: #cbad93
H,S,B: 28,28,80
Pantone: 466u
C,M,Y,K: 0,15,28,20
R,G,B: 203,173,147
Grout: Almond

EIFS/Metal Panel

Dutch Gray
HEX: e4cdb9
H,S,B: 28,19,89
Pantone: 4685u
C,M,Y,K: 10,18,25,0
R,G,B: 228,205,186

Fort Stewart

Soffit/ Trim/ Gutters & Downspouts

White
HEX: #ffffff
H,S,B: 0, 0, 100
Pantone: 663
C,M,Y,K: 0, 0, 0, 0
R,G,B: 255,255,255

Hunter AAF

Roof

Hunter Green
HEX: #004e24
H,S,B: 148,100,31
Pantone: 357c
C,M,Y,K: 100,0,54,69
R,G,B: 0,78,36

Roof

Terracotta Red
HEX: b65518
H,S,B: 23,87,71
Pantone: 471c
C,M,Y,K: 21,76,100,10
R,G,B: 183,86,39

Split Faced CMU

Texas Cream
HEX: cec6c0
H,S,B: 26,7,81
Pantone: 406c
C,M,Y,K: 19,18,21,0
R,G,B: 196,188,183
Grout: Almond

Brick

Sunglo Velour
HEX: #b47c5b
H,S,B: 22,49,71
Pantone: 8022
C,M,Y,K: 0,31,49,29
R,G,B: 180,124,91
Grout: Almond

Accent Brick

Quaker Blend
HEX: #cbad93
H,S,B: 28,28,80
Pantone: 466u
C,M,Y,K: 0,15,28,20
R,G,B: 203,173,147
Grout: Almond

EIFS/Metal Panel

Dutch Gray
HEX: e4cdb9
H,S,B: 28,19,89
Pantone: 4685u
C,M,Y,K: 10,18,25,0
R,G,B: 228,205,186

Soffit/ Trim/ Gutters & Downspouts

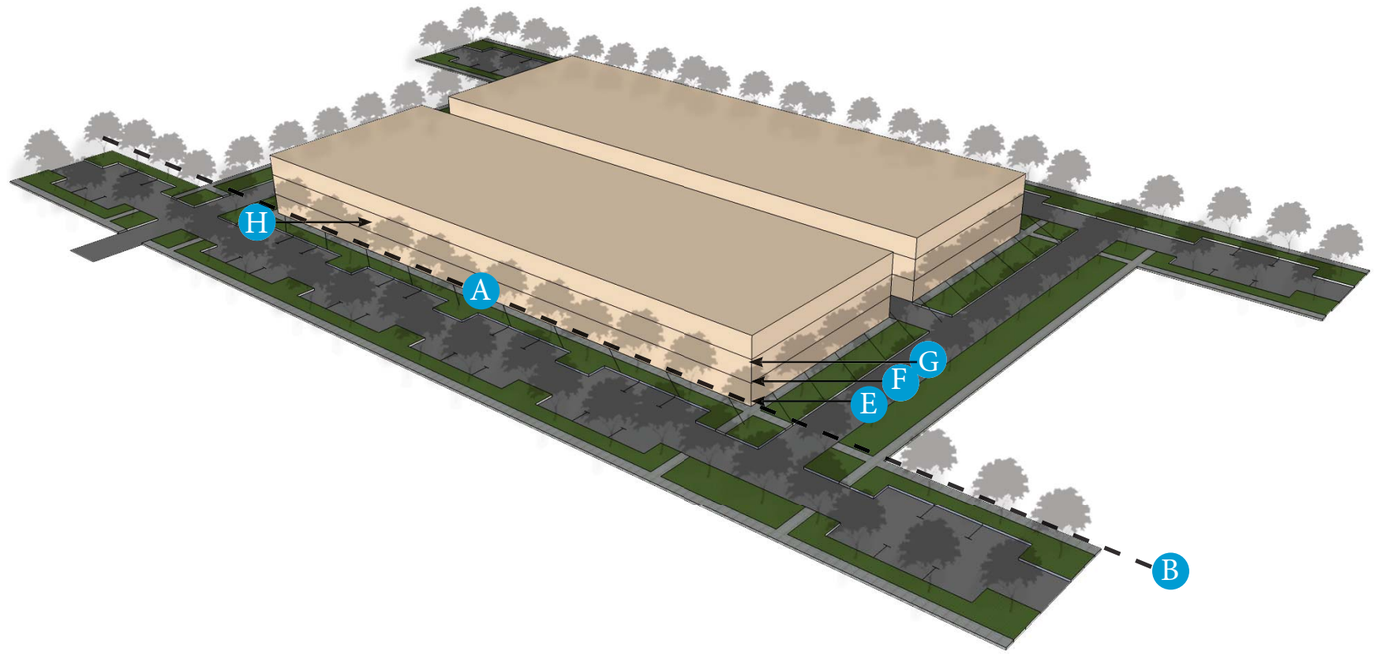
White
HEX: #ffffff
H,S,B: 0, 0, 100
Pantone: 663
C,M,Y,K: 0, 0, 0, 0
R,G,B: 255,255,255

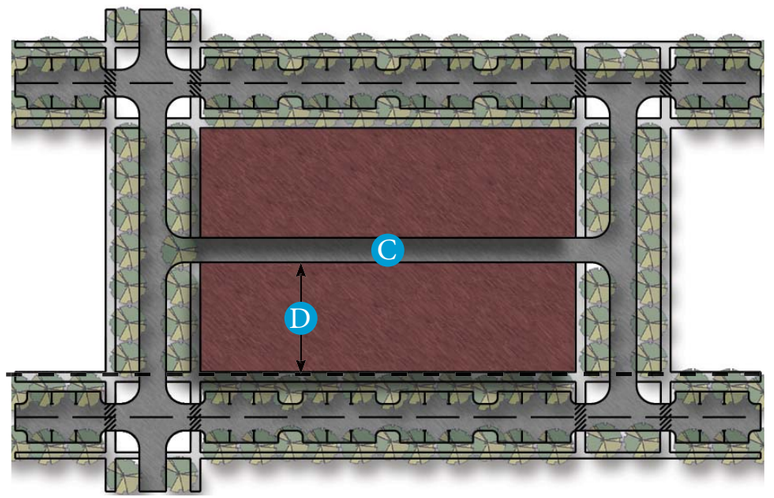
Hunter AAF

Mixed Use Building Standard

Use		
Ground Floor	Administrative, Commercial	
Upper Floor(s)	Administrative	
Placement	Primary Occupied	Unoccupied
A Entry to Building shall face the primary street		
B Required Building Line (RBL) setback form roads/parking	25 m	10 m
C Setback from other buildings	10 m	any
ATFP set back	Refer to current UFC	
Shape		
Primary street built to RBL	70% min.	
D Building width	50’ max.	
Height		
Minimum number of floors	Refer to Regulating Plan	
Maximum number of floors	Refer to Regulating Plan	
E Finish ground floor level	18” min above sidewalk	
F First floor ceiling height	12’ min. clear 20’ max.	
G Floor-to-floor height	14’ max.	
Fenestration		
H Percent of façade	40%-90%	

Notes
Corner lot street facades must be built to RBL within 30’ of street corner
Setback from roadways and other buildings must conform to minimum current anti-terrorism/force protection guidance
Where RBL is designated, a building may occupy any portion of the site within the buildable area boundary
Primary entries must occur where designated on the regulating plan
Loading docks, overhead doors, and other service entries may not be located on RBLs
Buildings shall be divided into bays not exceeding 50’ in length: bays may be articulated using place changes (+/-6” min.), material changes, window rhythm, etc.
Double-loaded corridors shall not exceed 200’ in length
Black lengths of wall exceeding 15’ are prohibited on RBLs
All windows shall be operable, with the exception of clerestory and storefront
Balconies, bay windows , arcades, etc. can encroach up to 2’ beyond RBL
Refer to the Color Palette for materials and colors
Roof pitches of 3:12 to 5:12 are allowable
South-facing windows shall be shaded from summer sun (overhangs, recesses, etc.)
Designer shall incorporate sustainability strategies to include light shelves, clerestory window, and maximum glazing areas





Parking
On street parking shall be incorporated wherever possible with the inclusion of intermittent tree planting bulb-outs separating parallel parking spaces. There should be a minimum of two bulb outs per block. With additional bulb-outs as needed for areas with higher pedestrian traffic

Fort Stewart

Roof

Patina Green
HEX: #6fa287
H,S,B: 148,31,64
Pantone: 556c
C,M,Y,K: 54,8,47,14
R,G,B: 111,162,135

Roof

Colonial Red
HEX: #6e2a29
H,S,B: 1,63,43
Pantone: 7609c
C,M,Y,K: 0,62,63,57
R,G,B: 110, 42,41

Split Faced CMU

Texas Cream
HEX: cec6c0
H,S,B: 26,7,81
Pantone: 406c
C,M,Y,K: 19,18,21,0
R,G,B: 196,188,183
Grout: Almond

Brick

Cherry Velour
HEX: #914c3c
H,S,B: 11,59,57
Pantone: 7581c
C,M,Y,K: 0,48,59,43
R,G,B: 145,76,60
Grout: Almond

Accent Brick

Quaker Blend
HEX: #cbad93
H,S,B: 28,28,80
Pantone: 466u
C,M,Y,K: 0,15,28,20
R,G,B: 203,173,147
Grout: Almond

EIFS/Metal Panel

Dutch Gray
HEX: e4cdb9
H,S,B: 28,19,89
Pantone: 4685u
C,M,Y,K: 10,18,25,0
R,G,B: 228,205,186

Fort Stewart

Soffit/ Trim/ Gutters & Downspouts

White
HEX: #ffffff
H,S,B: 0, 0, 100
Pantone: 663
C,M,Y,K: 0, 0, 0, 0
R,G,B: 255,255,255

Hunter AAF

Roof

Hunter Green
HEX: #004e24
H,S,B: 148,100,31
Pantone: 357c
C,M,Y,K: 100,0,54,69
R,G,B: 0,78,36

Roof

Terracotta Red
HEX: b65518
H,S,B: 23,87,71
Pantone: 471c
C,M,Y,K: 21,76,100,10
R,G,B: 183,86,39

Split Faced CMU

Texas Cream
HEX: cec6c0
H,S,B: 26,7,81
Pantone: 406c
C,M,Y,K: 19,18,21,0
R,G,B: 196,188,183
Grout: Almond

Brick

Sunglo Velour
HEX: #b47c5b
H,S,B: 22,49,71
Pantone: 8022
C,M,Y,K: 0,31,49,29
R,G,B: 180,124,91
Grout: Almond

Accent Brick

Quaker Blend
HEX: #cbad93
H,S,B: 28,28,80
Pantone: 466u
C,M,Y,K: 0,15,28,20
R,G,B: 203,173,147
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HEX: e4cdb9
H,S,B: 28,19,89
Pantone: 4685u
C,M,Y,K: 10,18,25,0
R,G,B: 228,205,186

Soffit/ Trim/ Gutters & Downspouts

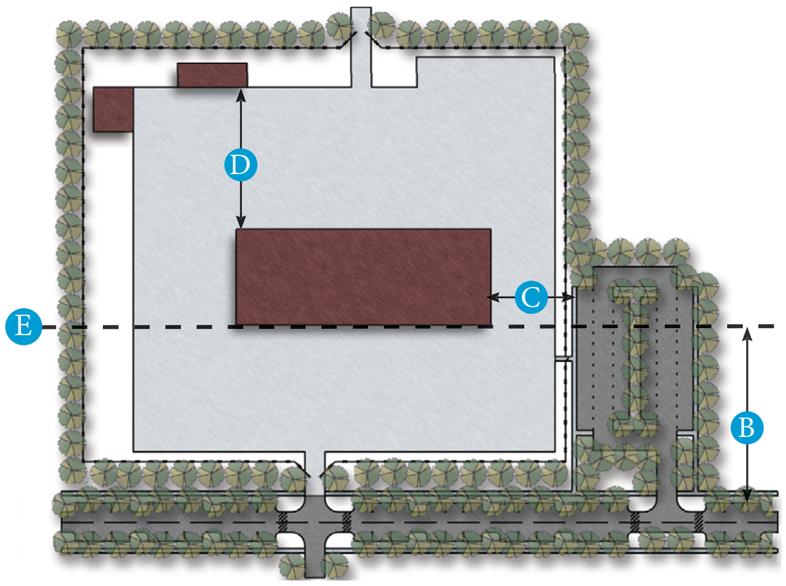
White
HEX: #ffffff
H,S,B: 0, 0, 100
Pantone: 663
C,M,Y,K: 0, 0, 0, 0
R,G,B: 255,255,255

Hunter AAF

Controlled Perimeter Building Standard

Use			
Ground Floor	Administrative, Commercial		
Upper Floor(s)	Administrative		
Placement	**Primary Occupied**	**Unoccupied**	
Entry to Building shall face the primary street			A
Required Building Line (RBL) setback form roads/parking	25 m	10 m	B
Setback from roads/parking	25 m	10 m	C
Setback from other buildings	10 m	any	D
ATFP set back	Refer to current UFC		
Shape			
Primary street built to RBL	70% min.		E
Building width	Refer to COS		
Height			
Minimum number of floors	Refer to Regulating Plan		
Maximum number of floors	Refer to Regulating Plan		
Finish ground floor level	18” min above sidewalk		F
First floor ceiling height	12’ min. clear 20’ max.		G
Floor-to-floor height	14’ max.		H
Fenestration			
Percent of façade	Refer to COS		

Notes
Corner lot street facades must be built to RBL within 30’ of street corner
Setback from roadways and other buildings must conform to minimum current anti-terrorism/force protection guidance
Where RBL is designated, a building may occupy any portion of the site within the buildable area boundary
Primary entries must occur where designated on the regulating plan
Loading docks, overhead doors, and other service entries may not be located on RBLs
Buildings shall be divided into bays not exceeding 50’ in length: bays may be articulated using place changes (+/-6” min.), material changes, window rhythm, etc.
Double-loaded corridors shall not exceed 200’ in length
Black lengths of wall exceeding 15’ are prohibited on RBLs
All windows shall be operable, with the exception of clerestory and storefront
Balconies, bay windows , arcades, etc. can encroach up to 2’ beyond RBL
Refer to the Color Palette for materials and colors
Roof pitches of 3:12 to 5:12 are allowable
South-facing windows shall be shaded from summer sun (overhangs, recesses, etc.)



Parking
Max. 3 spaces per 1,000sf of floor space
Trees shall be planted such that 70% of parking area will be shaded within 15 years
If access in controlled, government vehicle parking is not subject to setbacks
Parking lots shall be located in the rear of buildings with a minimum of two entry/exit points
On street parking should be used as often as possible with every fourth space being used a tree planting bed

Fort Stewart

Roof

Shasta White
HEX: #ffffff
H,S,B: 0, 0, 100
Pantone: 663
C,M,Y,K: 0, 0, 0, 0
R,G,B: 255,255,255

Roof

Colonial Red
HEX: #6e2a29
H,S,B: 1,63,43
Pantone: 7609c
C,M,Y,K: 0,62,63,57
R,G,B: 110, 42,41

Split Faced CMU

Texas Cream
HEX: cec6c0
H,S,B: 26,7,81
Pantone: 406c
C,M,Y,K: 19,18,21,0
R,G,B: 196,188,183
Grout: Almond

Brick

Cherry Velour
HEX: #914c3c
H,S,B: 11,59,57
Pantone: 7581c
C,M,Y,K: 0,48,59,43
R,G,B: 145,76,60
Grout: Almond

Accent Brick

Quaker Blend
HEX: #cbad93
H,S,B: 28,28,80
Pantone: 466u
C,M,Y,K: 0,15,28,20
R,G,B: 203,173,147
Grout: Almond

EIFS/Metal Panel

Dutch Gray
HEX: e4cdb9
H,S,B: 28,19,89
Pantone: 4685u
C,M,Y,K: 10,18,25,0
R,G,B: 228,205,186

Fort Stewart

Soffit/ Trim/ Doors/ Gutters & Downspouts

Seal Brown
HEX: 5e4f4a
H,S,B: 13,21,37
Pantone: 411c
C,M,Y,K: 55,60,60,35
L,a,b: 35,6,5

Hunter AAF

Roof

Shasta White
HEX: #ffffff
H,S,B: 0, 0, 100
Pantone: 663
C,M,Y,K: 0, 0, 0, 0
R,G,B: 255,255,255

Roof

Terracotta Red
HEX: b65518
H,S,B: 23,87,71
Pantone: 471c
C,M,Y,K: 21,76,100,10
R,G,B: 183,86,39

Split Faced CMU

Texas Cream
HEX: cec6c0
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R,G,B: 196,188,183
Grout: Almond

Brick

Sunglo Velour
HEX: #b47c5b
H,S,B: 22,49,71
Pantone: 8022
C,M,Y,K: 0,31,49,29
R,G,B: 180,124,91
Grout: Almond

Accent Brick

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Seal Brown
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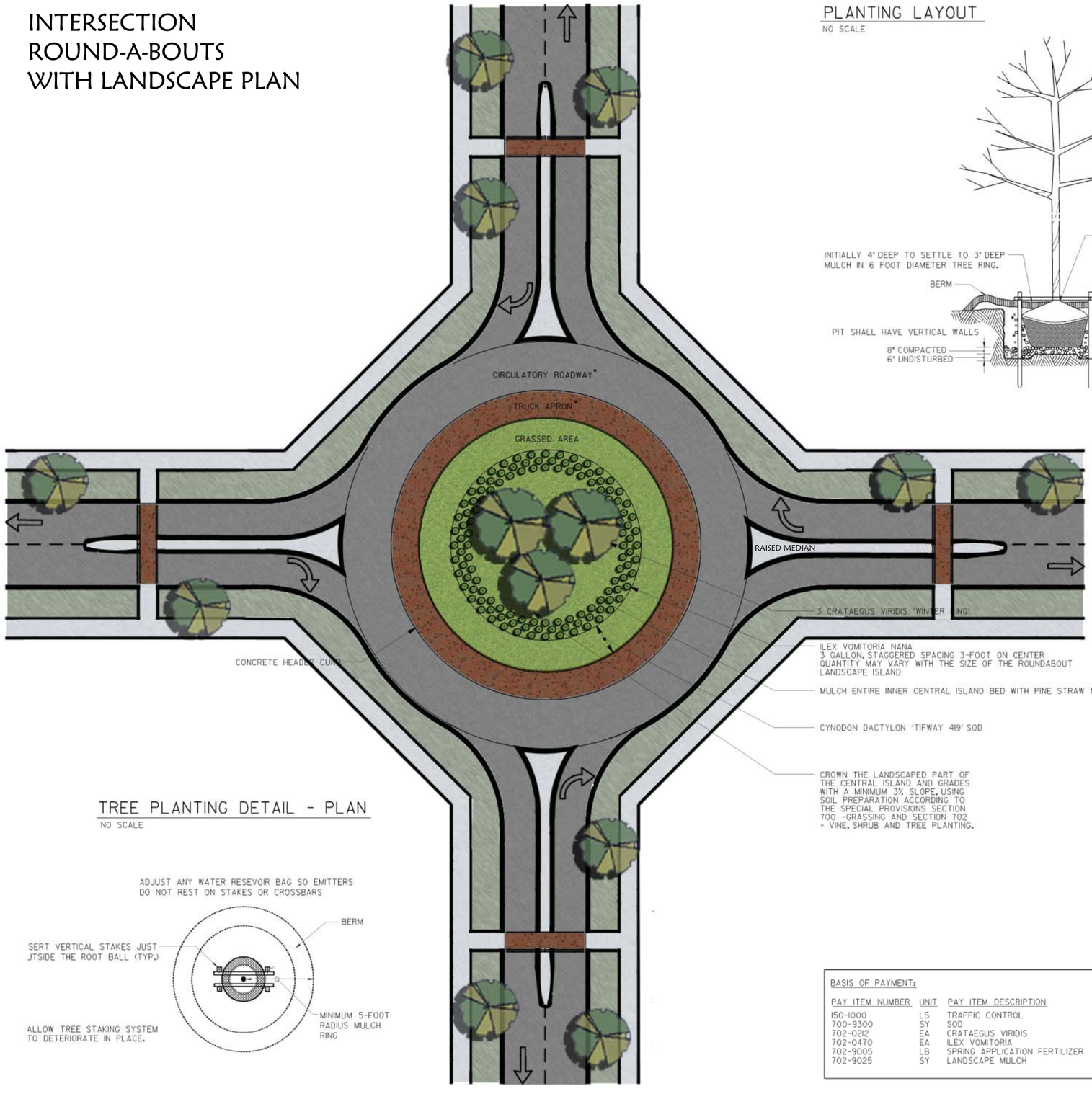
H,S,B: 13,21,37
Pantone: 411c
C,M,Y,K: 55,60,60,35
L,a,b: 35,6,5

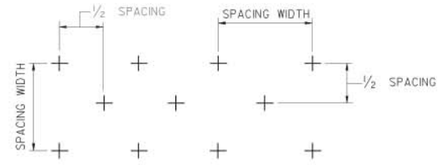
Hunter AAF

INTERSECTION ROUND-A-BOUTS WITH LANDSCAPE PLAN



PLANTING LAYOUT

NO SCALE

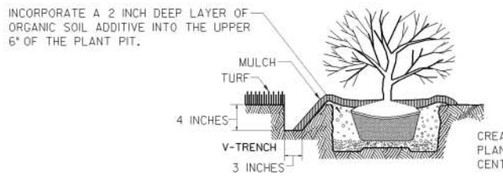


ON CENTER SPACING - STAGGERED ROW

NO SCALE

TREE PLANTING DETAIL - ELEVATION

NO SCALE



CREATE A CONTINOUS MULCH BED FOR PLANTS SPACED 8-FEET OR LESS ON CENTER.

VINE AND SHRUB PLANTING DETAIL

NO SCALE

TREE PLANTING DETAIL - PLAN

NO SCALE

GENERAL NOTES:

1. SPECIFICATIONS: GEORGIA STANDARD CURRENT EDITION, AND SUPPLEMENTS THERETO.
2. SEE SPECIAL PROVISIONS 700 AND 702 FOR PLANTING REQUIREMENTS.
3. SEE PLAN SHEETS FOR THE WIDTH OF THE PERIMETER CENTRAL ISLAND LANDSCAPING.
4. THE DESIGNER MAY SPECIFY ALTERNATE PLANT MATERIALS WITH PRIOR REVIEW AND APPROVAL BY THE OFFICE OF MAINTENANCE. IF ALTERNATE MATERIALS ARE SPECIFIED, THEY WILL BE DESCRIBED ELSEWHERE IN THE PLANS.
5. THIS DETAIL CAN BE INCORPORATED INTO PROJECT PLANS AFTER THE DEPARTMENT HAS ENTERED A SEPARATE RIGHT-OF-WAY MOWING AND MAINTENANCE AGREEMENT.

BASIS OF PAYMENT:

PAY ITEM NUMBER	UNIT	PAY ITEM DESCRIPTION	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
150-1000	LS	TRAFFIC CONTROL	-	-	-	-
700-9300	SY	SOD	CYNODON DACTYLON 'TIFWAY 419' SOD	HYBRID BERMUDA GRASS	-	-
702-0212	EA	CRATAEGUS VIRIDIS	CRATAEGUS VIRIDIS 'WINTER KING'	WINTER KING HAWTHORN	3 INCH CALIPER	SPACING AS SHOWN
702-0470	EA	ILEX VOMITORIA	ILEX VOMITORIA 'NANA'	DWARF YAUPON HOLLY	3 GAL	SPACING AS SHOWN
702-9005	LB	SPRING APPLICATION FERTILIZER	SPRING FERTILIZER	FERTILIZER	-	-
702-9025	SY	LANDSCAPE MULCH	-	PINE STRAW MULCH	-	-

Part IV

Transportation Standards

Circulation

The circulation system provides a primary vantage point from which all installations are viewed. Safe and efficient vehicular movement results in better orientation and contributes to the development of a positive environment for installation personnel and visitors.

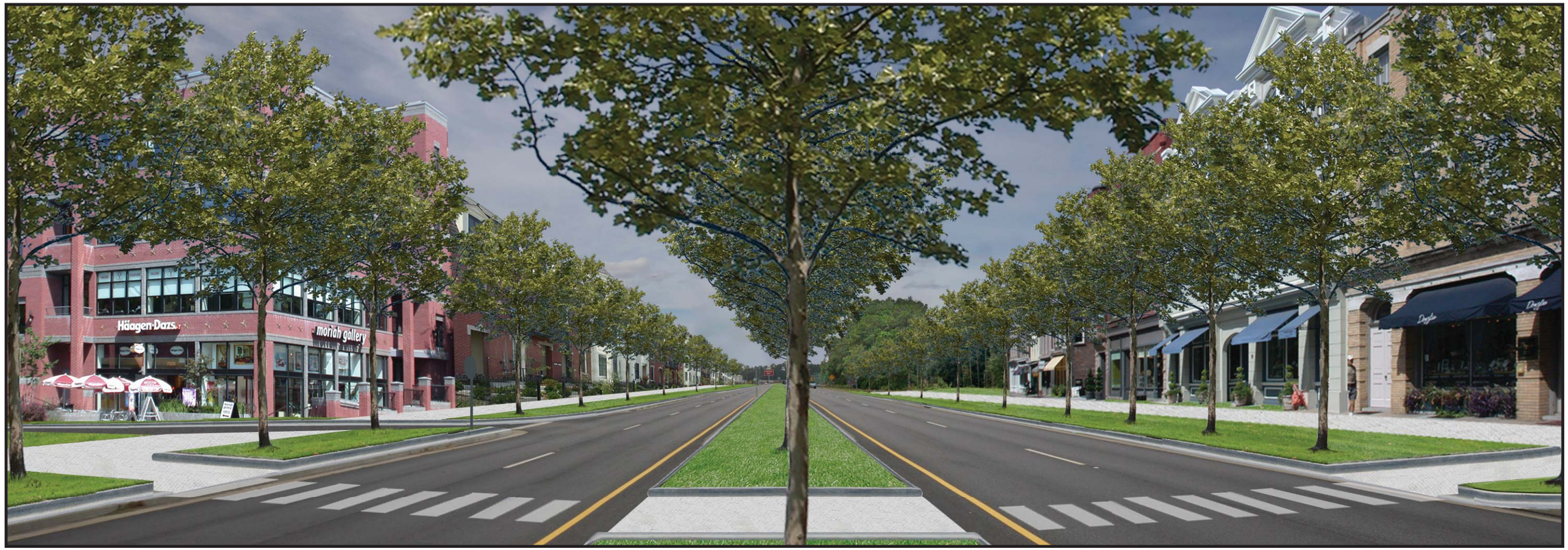
Roadways, pedestrian walkways, and bicycle trails will be designed to provide a hierarchy of circulation design and carrying capacity.

Functionally, a hierarchical network can be created that separates incompatible types of traffic. This separation of traffic promotes sustainability because it results in more efficient energy consumption.

Visually, the circulation hierarchy can be reinforced through design, planting, signage, and lighting to promote a more attractive visual experience and promote a sense of orientation.

Installation Planning Standards

Transportation Standards Introduction



Fort Stewart - same typical street

Fort Stewart - typical street

Design Guidelines

The image and functionality of the installation is greatly determined by the design and location of roadways, walkways, entrances, and parking lots. The primary roadway system and parking lots consume considerable amounts of land and are a visually dominant element of any installation.

Proposed circulation systems must be reviewed to ensure the capacity and desired functions are considered. The uses and users must also be considered. Sustainability should be approved by qualified personnel to provide quality assurance and promote design consistency.

How to Use the Standards

Step 1: Refer to the Regulating Plan and determine the name of the street or intersection in question.

Step 2: Refer to the appropriate street or intersection standard page in this section. This page provides specific design details for vehicular traffic lane widths, curb radii, sidewalk, bike lane, and tree planting area dimensions, and on-street parking configurations for each street of intersection type illustrated in the plan. This page outlines the dimensions of each component of the transportation network, shows their interactions, and where necessary, their separations.

Step 3: Refer to the Landscape Design Standards for trees, shrubs, and ground cover species recommended for use in planting strips and medians.

Overall Widths

Regulates the widths of the right-of-way.

Lane & Edges

Regulates the widths of individual street components.

Typical Lane Width for Desired Street Speed

Lists lane widths to accommodate various speeds.

Building Setbacks

References current Anti-Terrorism/Force Protection guidelines.

Street Dimensions

Regulates the width of each street and the protrusion of curb bulb-outs.

Crosswalk Dimensions

Regulates the length and width of each crosswalk.

Street Corner Radius

Regulates the radius of the curb.

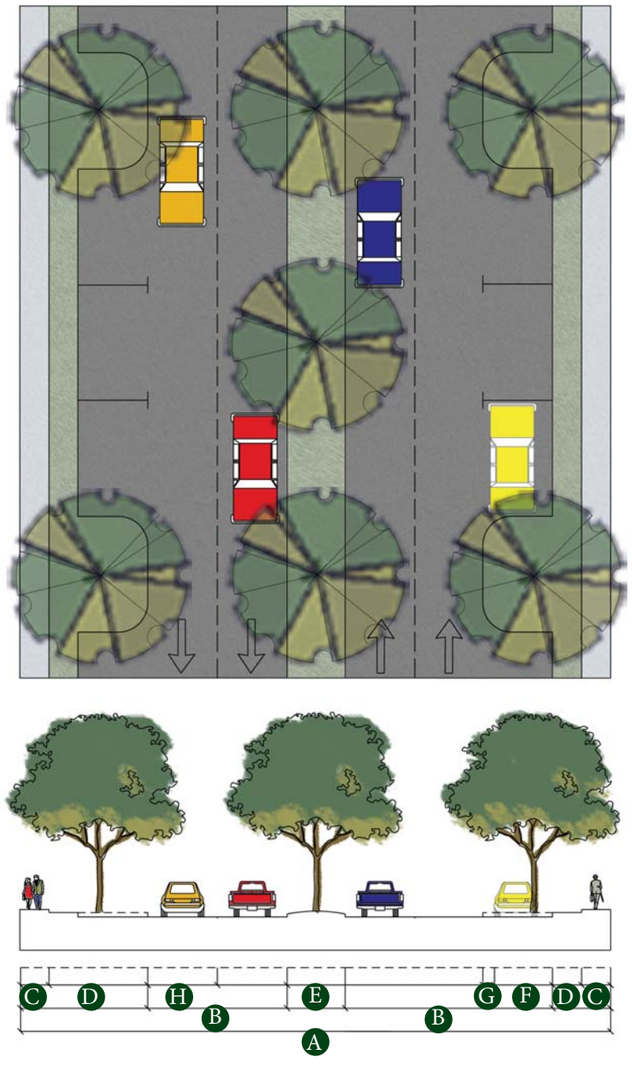
Planting Strip Dimensions

Regulates the width of planting strips and the spacing of street trees within the planting strip.

Intersection Locations

Lists the locations where the intersection occurs.

Arterial Street Standard

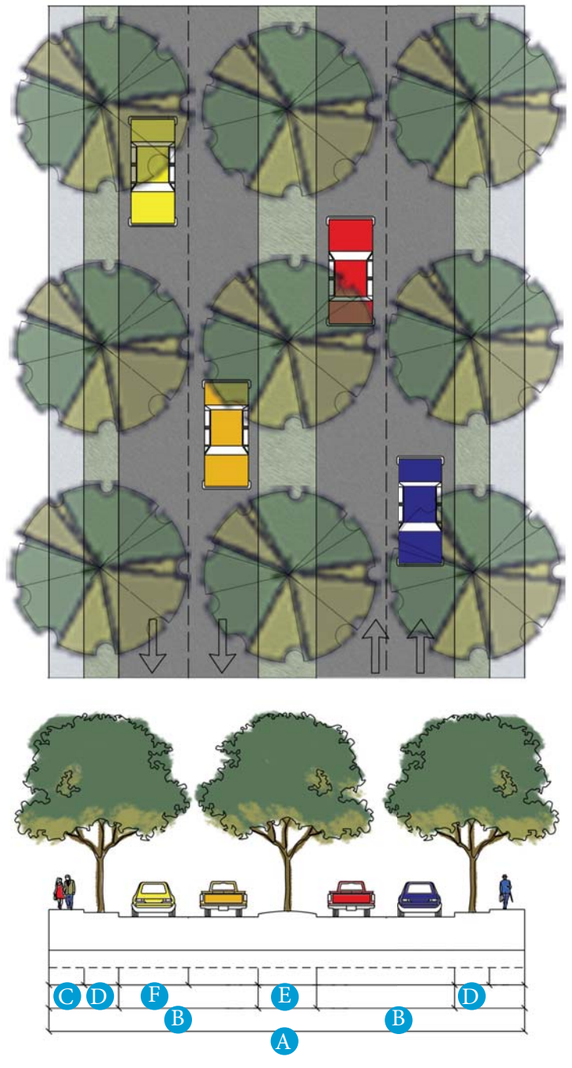


2 Lane with on Street Parking

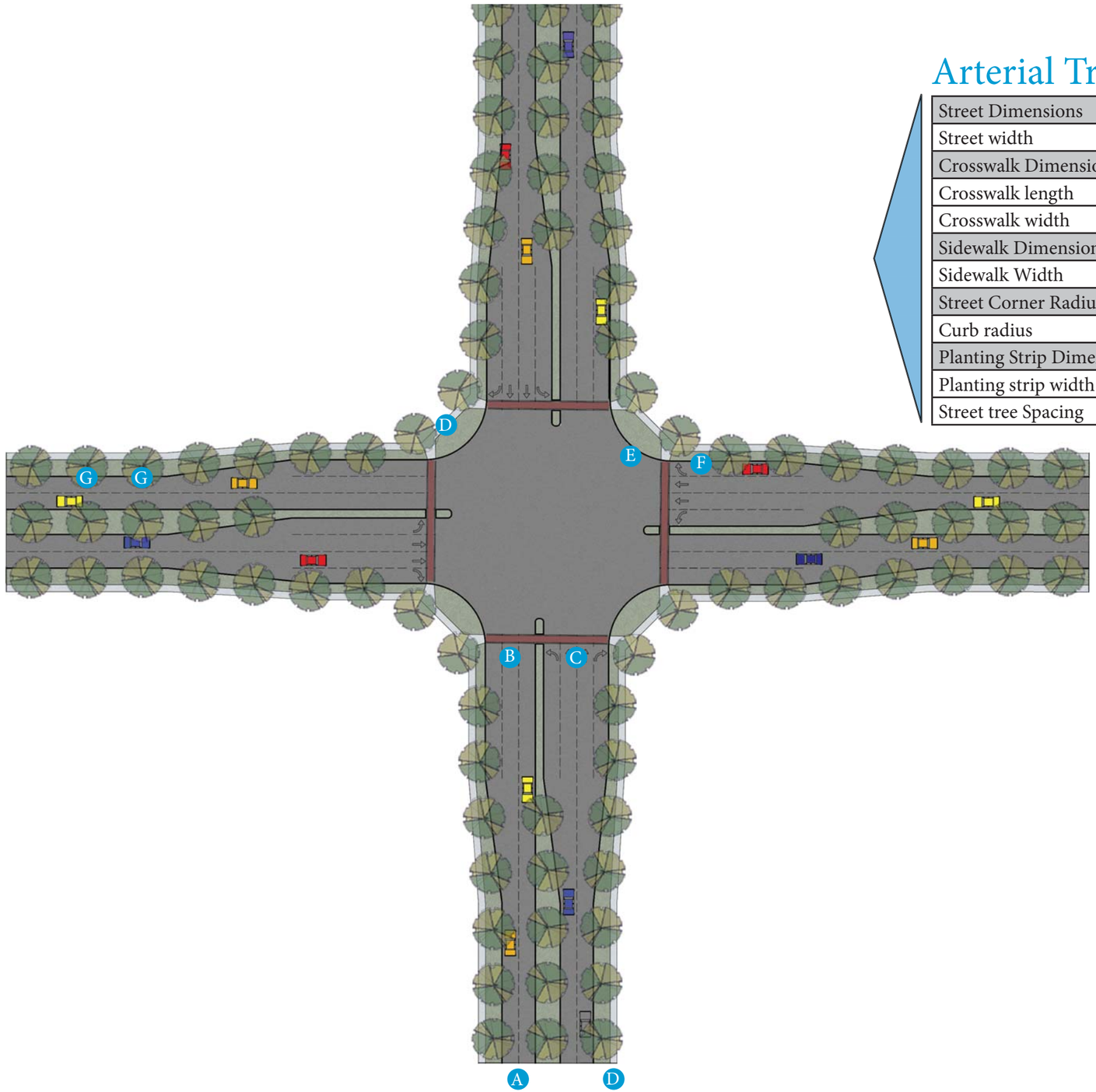
Overall Widths	Min.	Max.	Recommended	
Right-of-Way (ROW) Width	82’	unlimited	102’	A
Through Lanes Overall Width	20’	24’	24’	B
Lane & Edges				
Sidewalks	5’	unlimited	6’	C
Planting Strips	4’	unlimited	6’	D
Center Median Planting Strip	6’	unlimited	10’	E
Parallel Parking	7’	9’	8’	F
Parallel Parking Door-Swing	2’	3’	2’	G
Traffic Lanes	10’	12’	12’	H
Notes				
Tree planting bump outs should be a minimum of two bump outs per block				
Parallel Parking should be at least 30’ from any intersection				

2 Lane Median with no on Street Parking

	Overall Widths	Min.	Max.	Recommended
A	Right-of-Way (ROW) Width	64’	unlimited	82’
B	Through Lanes Overall Width	20’	24’	24’
	Lane & Edges			
C	Sidewalks	5’	unlimited	6’
D	Planting Strips	4’	unlimited	6’
E	Center Median Planting Strip	6’	unlimited	10’
F	Traffic Lanes	10’	12’	12’



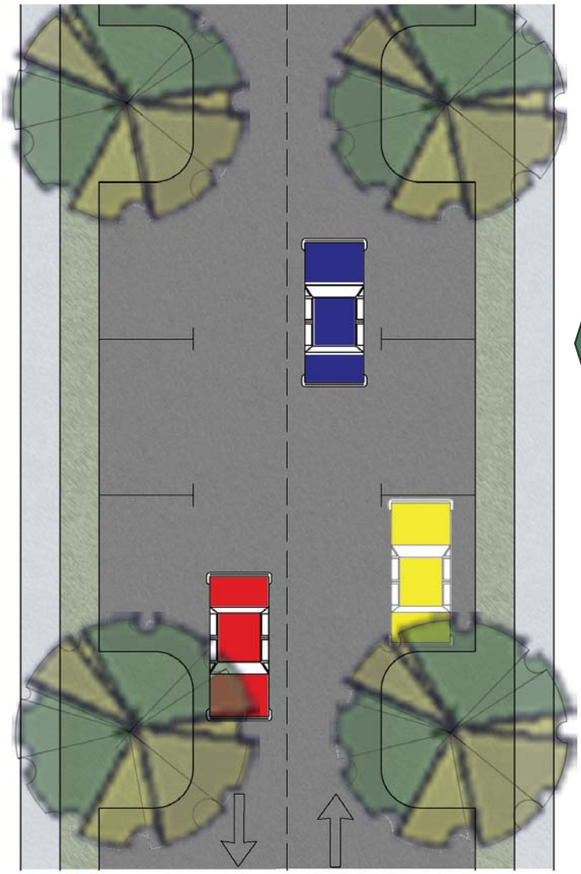
Arterial Intersection Standard

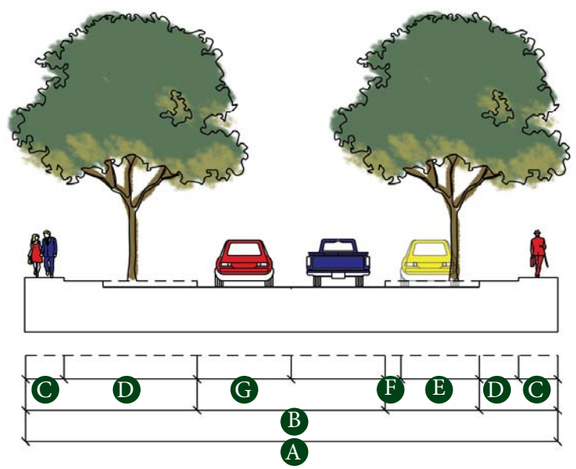


Arterial Traffic Intersection

Street Dimensions	Min.	Max.	Recommended	
Street width	20’	24’	24’	A
Crosswalk Dimensions				
Crosswalk length	36’	48’	36’	B
Crosswalk width	6’	12’	6’	C
Sidewalk Dimensions				
Sidewalk Width	5’	unlimited	6’	D
Street Corner Radius				
Curb radius	40’	unlimited	45’	E
Planting Strip Dimensions				
Planting strip width	4’	unlimited	6’	F
Street tree Spacing	20’ o.c.	30’ o.c.	30’ o.c.	G

Collector Street Standards



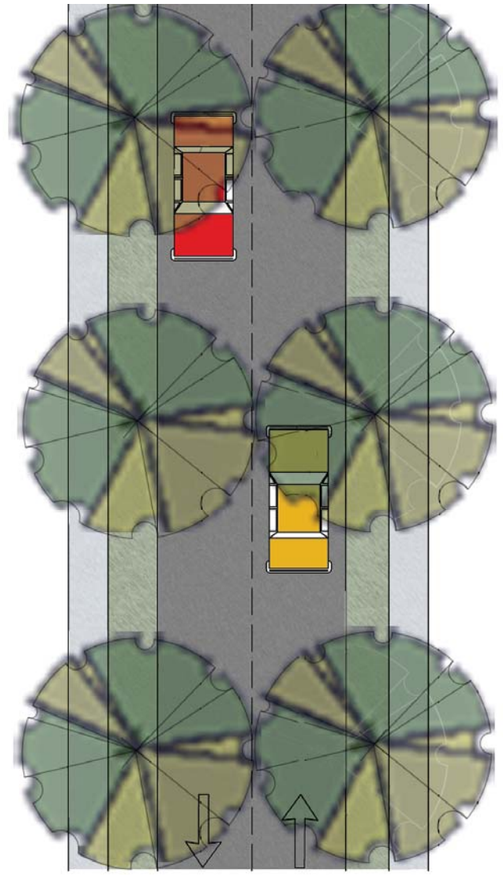


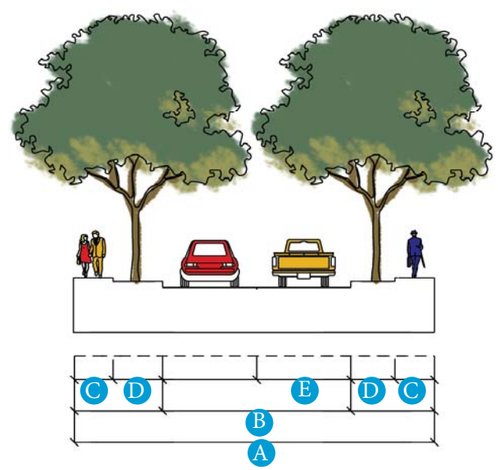
Collector with on Street Parking

Overall Widths	Min.	Max.	Recommended	
Right-of-Way (ROW) Width	56’	unlimited	68’	A
Through Lanes Overall Width	20’	24’	24’	B
Lane & Edges				
Sidewalks	5’	unlimited	6’	C
Planting Strips	4’	unlimited	6’	D
Parallel Parking	7’	9’	8’	E
Parallel Parking Door-Swing	2’	3’	2’	F
Traffic Lanes	10’	12’	12’	G
Notes				
Tree planting bump outs should be a minimum of two bump outs per block				

Collector with no on Street Parking

	Overall Widths	Min.	Max.	Recommended
A	Right-of-Way (ROW) Width	38’	unlimited	48’
B	Through Lanes Overall Width	20’	24’	24’
	Lane & Edges			
C	Sidewalks	5’	unlimited	6’
D	Planting Strips	4’	unlimited	6’
E	Traffic Lanes	10’	12’	12’
	Notes			
	Tree planting bump outs should be a minimum of two bump outs per block			

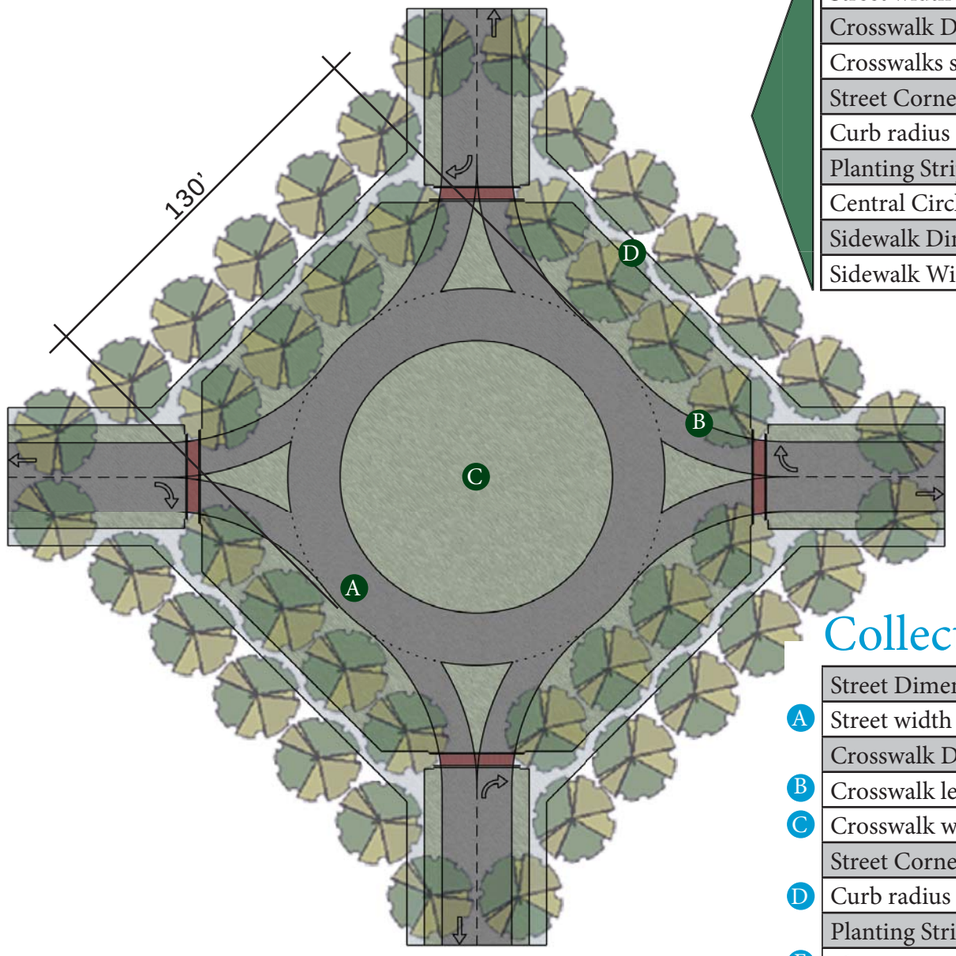


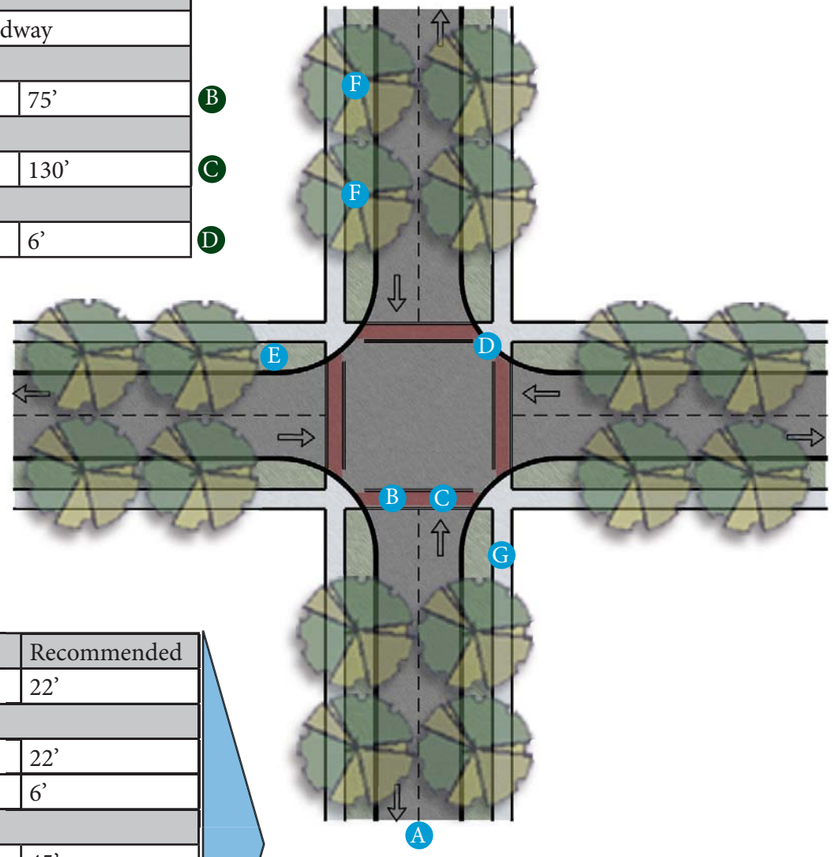


Collector Intersection Standards

Collector Traffic Circle

Street Dimensions	Min.	Max.	Recommended	
Street width in circle	15’	24’	18’	A
Crosswalk Dimensions				
Crosswalks shall be a minimum of 30’ from circulatory roadway				
Street Corner Radius				
Curb radius	45’	unlimited	75’	B
Planting Strip Dimensions				
Central Circle	100’	unlimited	130’	C
Sidewalk Dimensions				
Sidewalk Width	5’	unlimited	6’	D

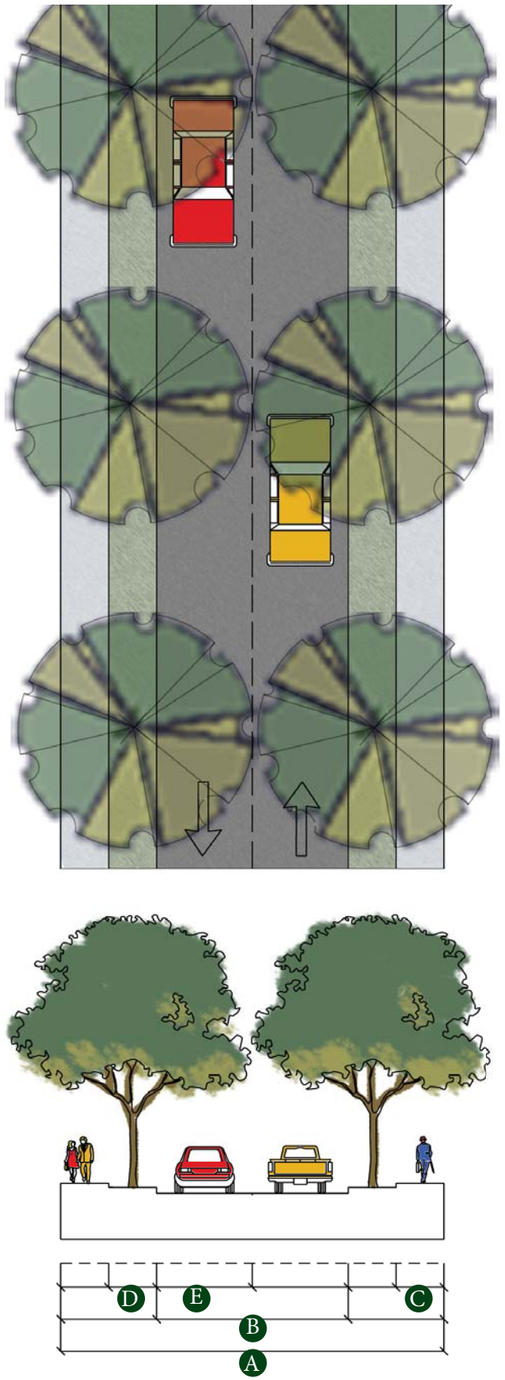




Collector Traffic Intersection

	Street Dimensions	Min.	Max.	Recommended
A	Street width	20’	24’	22’
	Crosswalk Dimensions			
B	Crosswalk length	20’	24’	22’
C	Crosswalk width	6’	12’	6’
	Street Corner Radius			
D	Curb radius	15’	unlimited	45’
	Planting Strip Dimensions			
E	Planting strip width	4’	unlimited	6’
F	Street tree Spacing	15’ o.c.	30’ o.c.	15’ o.c.
	Sidewalk Dimensions			
G	Sidewalk Width	5’	unlimited	6’

Local Street Standards

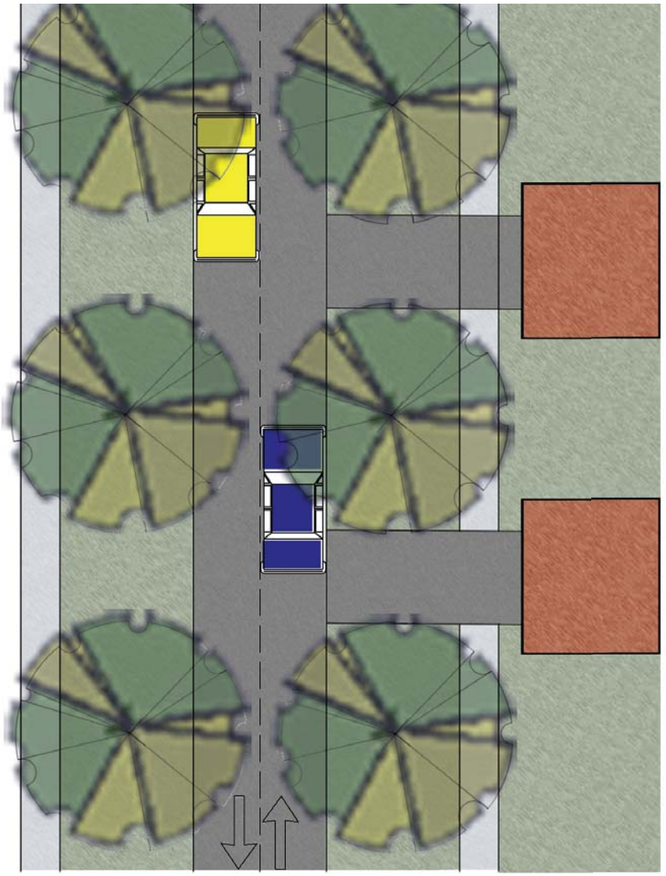


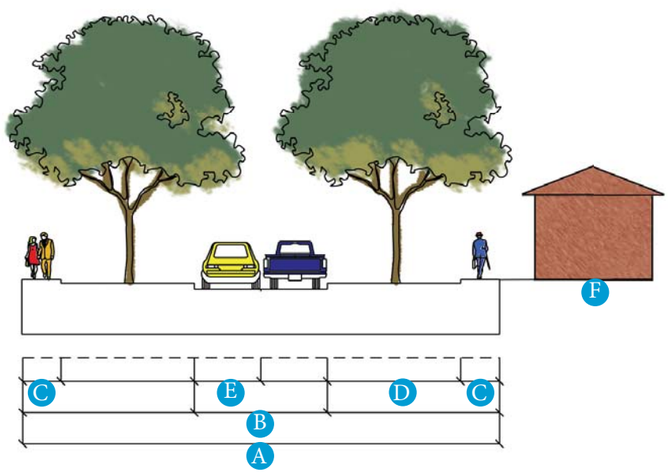
Local Lane

Overall Widths	Min.	Max.	Recommended	
Right-of-Way (ROW) Width	38’	unlimited	46’	A
Through Lanes Overall Width	20’	24’	22’	B
Lane & Edges				
Sidewalks	5’	unlimited	6’	C
Planting Strips	4’	unlimited	6’	D
Traffic Lanes	10’	12’	11’	E

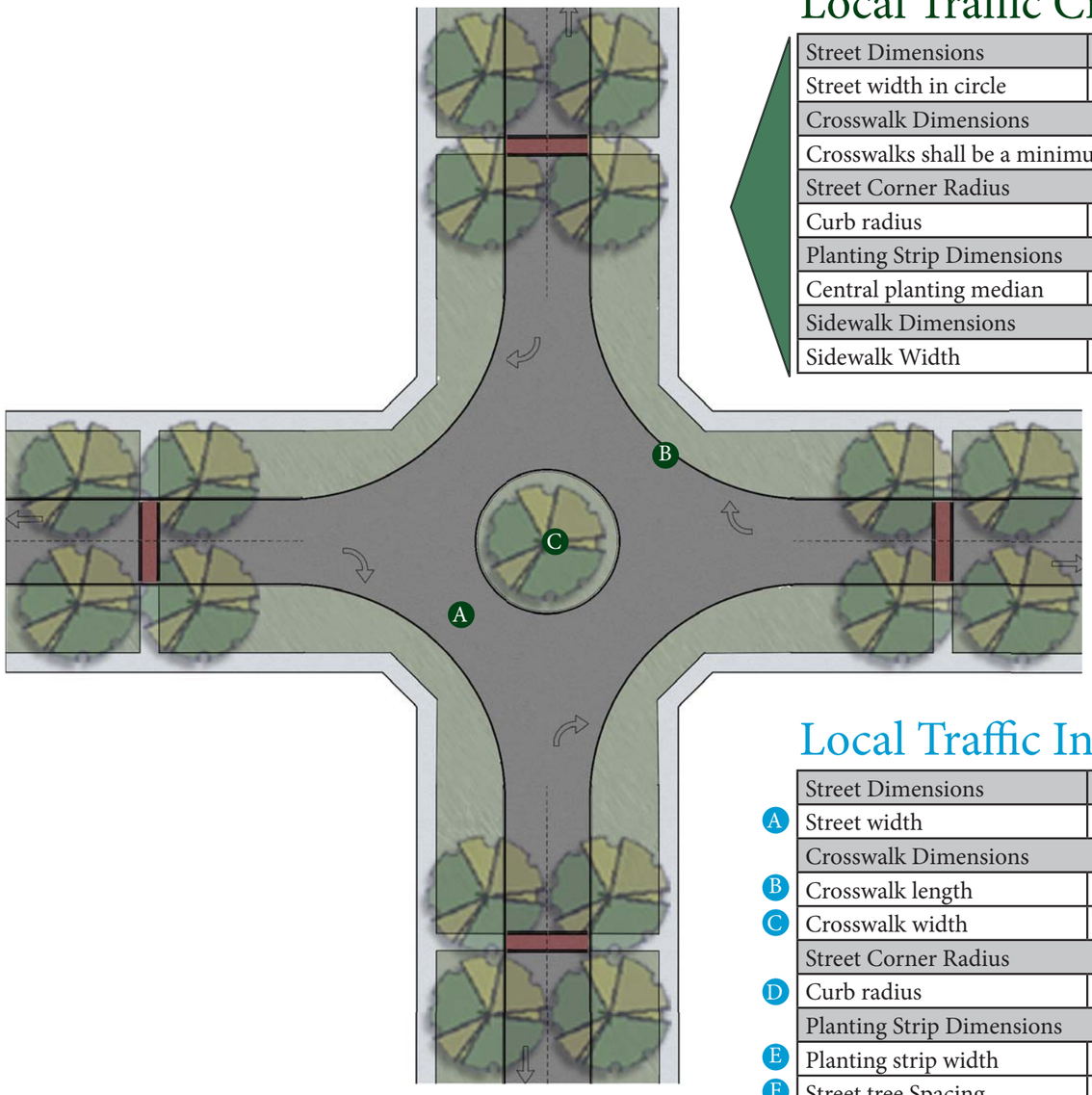
Local Rear Lane

	Overall Widths	Min.	Max.	Recommended
A	Right-of-Way (ROW) Width	35’	unlimited	59’
B	Through Lanes Overall Width	17’	24’	22’
	Lane & Edges			
C	Sidewalks	5’	unlimited	6’
D	Planting Strips	4’	unlimited	20’
E	Traffic Lanes	8.5’	12’	11’
F	Garage	20x15	25x25	See Note
	Garage size will be dependent on the number of residents expected to be living in the associated house. Garage should be at least 9’ from the edge of street to allow for side-walks and planting strips in the ROW and for a proper turning radius in and out of the garage.			
	Planting strips need to be wide enough to allow for a vehicle to park in the driveway with out blocking the sidewalk where possible.			



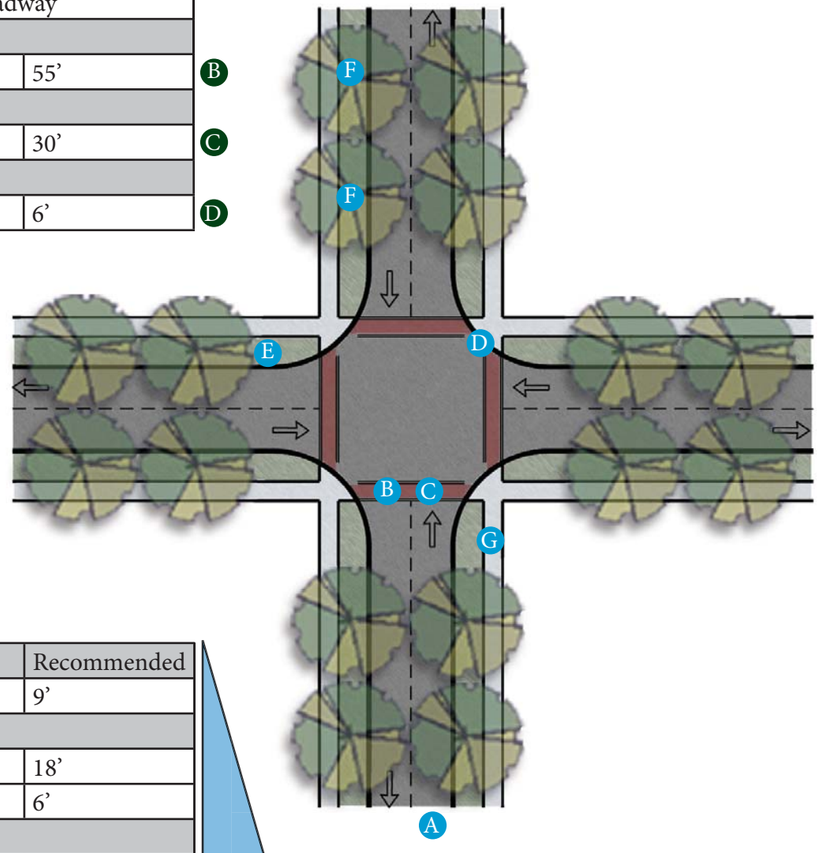


Local Intersection Standards



Local Traffic Circle

Street Dimensions	Min.	Max.	Recommended	
Street width in circle	17’	22’	18’	A
Crosswalk Dimensions				
Crosswalks shall be a minimum of 30’ from circulatory roadway				
Street Corner Radius				
Curb radius	50’	60’	55’	B
Planting Strip Dimensions				
Central planting median	12’	36’	30’	C
Sidewalk Dimensions				
Sidewalk Width	5’	unlimited	6’	D



Local Traffic Intersection

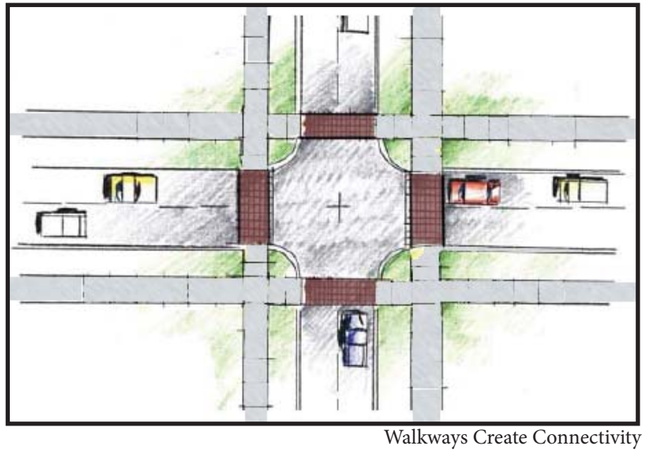
	Street Dimensions	Min.	Max.	Recommended
A	Street width	8.5’	11’	9’
	Crosswalk Dimensions			
B	Crosswalk length	17’	22’	18’
C	Crosswalk width	6’	12’	6’
	Street Corner Radius			
D	Curb radius	15’	25’	20’
	Planting Strip Dimensions			
E	Planting strip width	4’	unlimited	6 ’
F	Street tree Spacing	15’ o.c.	30’ o.c.	30’ o.c.
	Sidewalk Dimensions			
G	Sidewalk Width	5’	unlimited	6’

Pedestrian Standards

Walkways provide connections for pedestrians between buildings and ancillary facilities such as parking lots and other areas. Well designed and located pedestrian walkways also provide a desirable alternative to total dependence on motor driven vehicles. The goal is to encourage the use of walkways as an alternative means of circulation. Pedestrian walkways should be designed and located to provide a comfortable, enjoyable experience for the user. The use of walkways within the installation promotes development sustainability by conserving energy, reducing air pollution, and decreasing the land requirement for parking. In addition, these walkways provide a means to increase physical fitness. In order to achieve this goal, the following objectives must be met:

- Provide walkways that are designed at a pedestrian scale to be comfortable and pleasant.
- Provide safe and secure pedestrian facilities that are separate from vehicular and railroad traffic.
- Provide amenities for pedestrians.
- Provide accessibility to all users, including physically impaired or challenged persons. All street and driveway crossings shall be ramped, marked, and accessible to persons with disabilities in accordance with requirements of the UFAS. See the following UFAS paragraphs for the respective standards: Curb Ramps, paragraph 4.7; Ramps, paragraph 4.8; Stairs, paragraph 4.9.
- Provide links to major attractions and generators of pedestrian traffic.
- Provide design consistency throughout the walkway and be well drained.

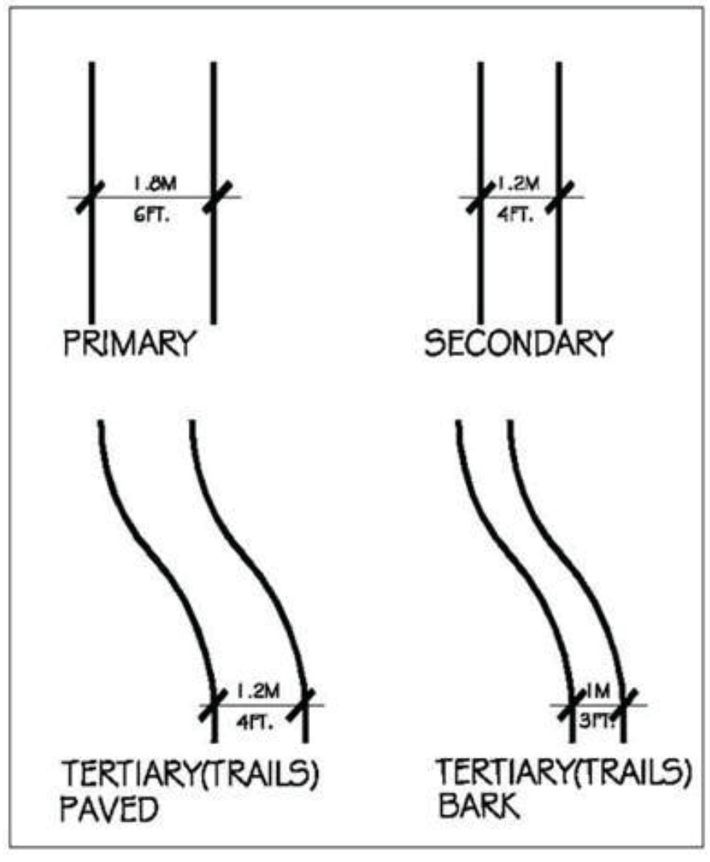
Walkways provide an alternate means of transportation and, if properly encouraged, save energy and reduce the demand for parking facilities.



Walkways Create Connectivity

Walkway Network Hierarchy

Sidewalks are classified to conform to the hierarchy roadway system - primary walkways, secondary walkways, and tertiary walkways. Non-roadway oriented sidewalks should be sized and placed where people will use them rather than creating worn "shortcut" paths. Railroad track crossing should be avoided, but where necessary, they should be well marked and have good line of sight. Walkways through railroad track ballast should be maintained with small, well-drained rock.



Primary Walkways

Primary walkways should be placed along both sides of arterial roadways wherever possible within the cantonment areas. These walkways are also used for high volume pedestrian routes to facilities and should be designed along axis lines relating to adjacent building entries, plazas, or streets. They should be paved with concrete, brick, or other pavers.

- Primary walkways should be sized to accommodate anticipated pedestrian use. They should have a minimum width of 1.8 meters (6 feet), and a maximum width should be 3-3.5 meters (10-12 feet) in high-use areas.
- All street and driveway crossings shall be ramped, marked, and accessible to persons with disabilities in accordance with requirements of the ADAAG and the UFAS, with the most stringent standards applied in the event of conflict.

Secondary Walkways

Secondary walkways should be provided along one or both sides of collector and local streets. They are designed to carry moderate volumes of pedestrians between activity centers and housing areas. They should provide access to building entrances, plaza areas, or streets. They should be paved with concrete, brick, or other pavers.

- These walkways should be sized to accommodate anticipated pedestrian use, but not less than 1.2 meters (4 feet), and a maximum of 3-3.5 meters (10 - 12 feet) in high use areas.
- All street and driveway crossings shall be ramped, marked, and accessible to persons with disabilities in accordance with requirements of the ADAAG and the UFAS, with the most stringent standards applied in the event of conflict.

Tertiary Walkways

Tertiary walkways provide pedestrian walkways in recreational and scenic areas for casual walking and hiking. They can be paved with concrete or bituminous asphalt or constructed with woodchips. The layout of the walkway should have a meandering and curvilinear alignment. Paved walkways should have a minimum width of 1.2 meters (4 feet). Wood chip trails should have a minimum width of 1 meter (3 feet) (Fig. 7.31). Where paths are designated for use by bicyclists and pedestrians, these widths should be increased an additional three feet for each bike lane.

Troop Running Trails

Troop running trails should be provided for soldiers both in and out of formation. The width should be 3-3.5 meters (approximately 11.5 -12 feet) to provide the width necessary for three soldiers abreast with a cadence caller. Primary, secondary, and tertiary walkways can be designed to provide this function.

Troop Movement Paths

In locations where troops need to move four abreast; for example, troops marching in formation between classrooms, barracks/dinning hall facilities, a hard surface walkway of adequate width should be provided with a width of 2.75-3.25 meters (9-11 feet).

Site Amenities at Walkways

Utilize site furnishings to reinforce the walkway system hierarchy. Provide directional and informational signage where appropriate. Provide a physical separation between pedestrian and vehicular routes. Locate site furnishings, such as benches, tables, waste receptacles, drinking fountains, and signage in response to travel distance and traffic volume. Site furnishings should be placed at regular intervals along walkways, parallel to the walk and facing the flow of pedestrian traffic.

Landscaping at Walkways

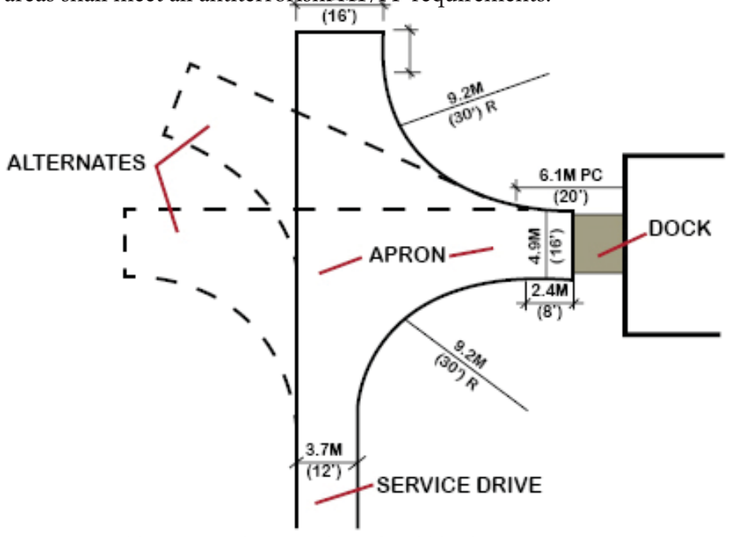
Use a combination of canopy and ornamental trees along sidewalks to provide shade, define the path, provide visual interest, and discourage the creation of "shortcuts." Utilize evergreen buffer plantings to screen harsh winds and undesirable views. Discourage the use of flowering/ fruit bearing trees and shrubs along walkways because of the threat of insects or other problems.

Drop-Off Areas

Facilities that include a high percentage of persons arriving by vehicle (such as headquarters, child development centers, schools, dining facilities, and clubs) should include a vehicle drop-off area for users. AT/FP requirements state that the access drive must be clearly defined and marked to prevent parking of vehicles in those areas. Drop-off lanes will not be located under any inhabited portion of a building (UCF 4-010-01, paragraph B-1.4). It is recommended that physical barriers be used to define the area. These barriers may include curbing, planters, or other barriers together with signage to identify and restrict access. The driveway will be configured so that vehicles can be restricted during times of high alert. Access to the driveway shall be located outside the standoff area with the initial approach parallel to the building, or a barrier must be erected to prevent a direct vehicular movement toward the building.

Service Areas

Facilities that require pickup and deliveries should have a service area that allows for easy access to a loading dock exclusively for service vehicles. These areas should be designed to provide direct, easy access for vehicles and not conflict with railroad operations. They should be screened from public view to reduce negative visual impacts. Service areas shall meet all antiterrorism AT/FP requirements.



Turn Around For Medium Sized Trucks

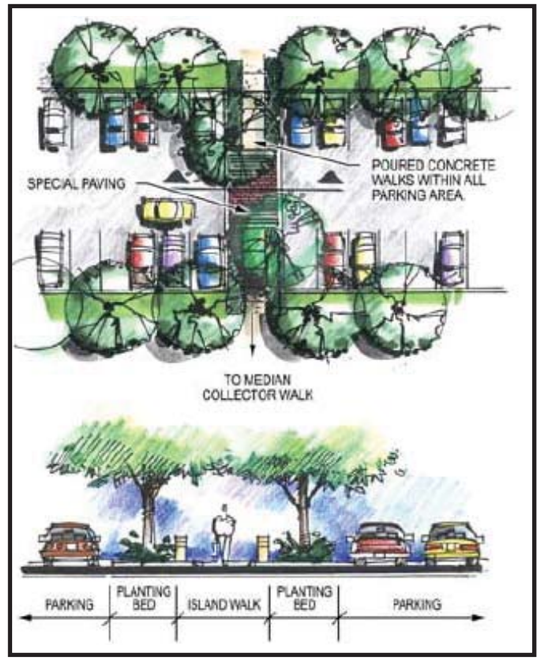
Parking

Parking areas can be designed to make a more pleasing impact and a more comfortable physical experience for the user.

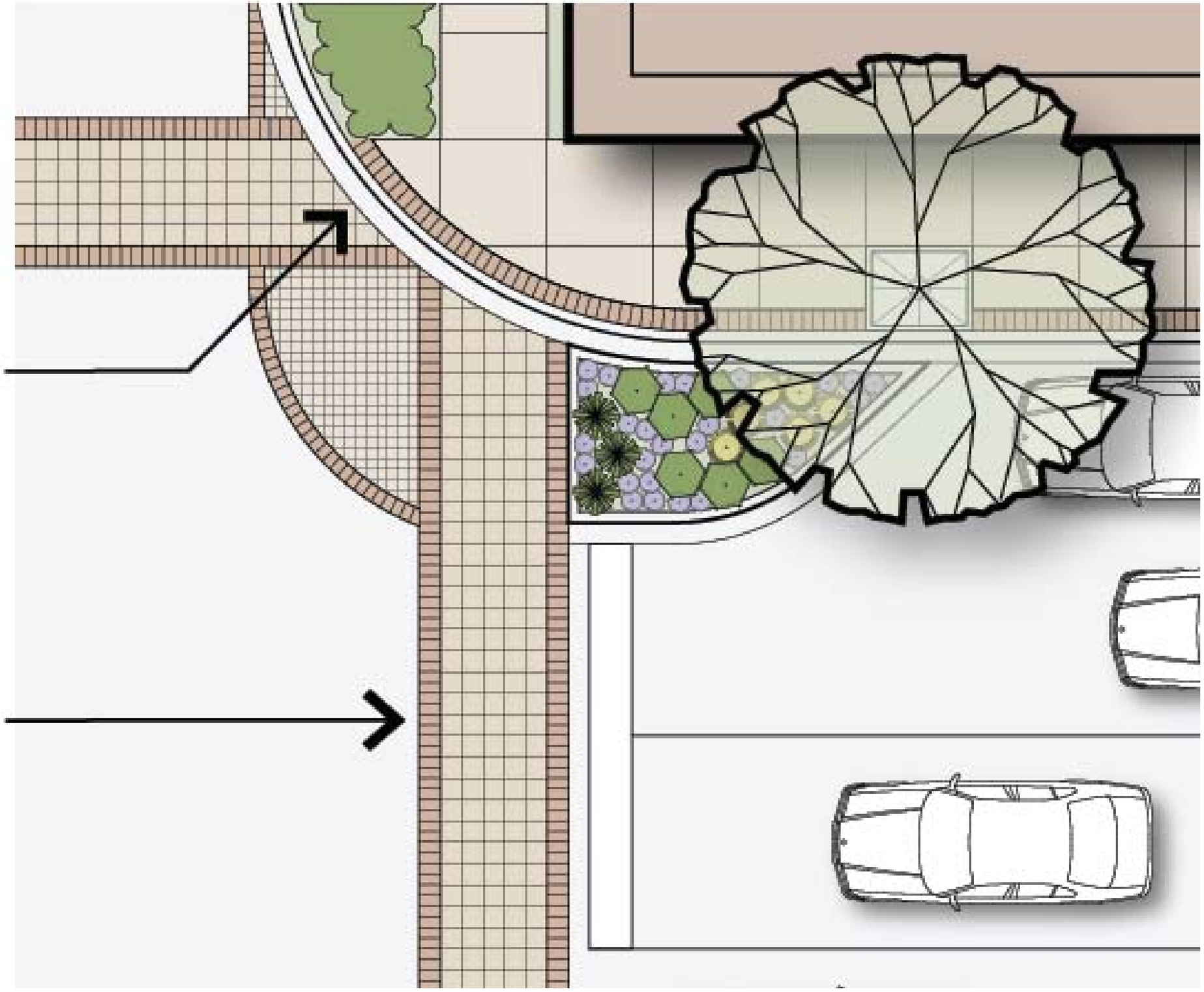
Design parking lots to be efficient in the placement of access drives and parking spaces. All drives providing direct access to parking spaces should provide spaces on both sides of the drive.

- Utilize parking islands as rain gardens, routing all drainage from parking lots into these bio-retention areas.
- Provide planting islands with trees and in areas at the ends of all rows of parking spaces to soften the visual expanse and serve as shade and/or wind breaks.
- Use pervious paving on a minimum of 25 percent of the parking lot area. These spaces can be utilized for overflow parking.

On street parking shall be incorporated wherever possible with the inclusion of intermittent tree planting bulb-outs separating parallel parking spaces. There should be a minimum of two bulb outs per block. The purpose of bulb-outs is to provide traffic calming effects and create areas where pedestrian can cross with ease. Additional bulb-out can be added as needed for areas with higher pedestrian traffic.



Parking Diagram



Crosswalk Diagram

Part V

Landscape Standards

Design

The Landscape Design Standards include the selection, placement, and maintenance of plant material on the installation. The visual image conveyed by a military installation is defined not just by architectural character and site organization, but also by an attractive, organized landscape design. The presence of plant material on the installation greatly enhances the visual character and environmental quality of the installation. Plantings add an element of human scale to open spaces and can be used functionally to screen undesirable views, buffer winds, reinforce the hierarchy of the circulation system, or provide a visual transition between dissimilar land uses.

Installation Planning Standards

Introduction

Objectives

The overall objective of the use of plant material within the installation is to improve the physical and psychological well being of the people who live and work on the installation. This is achieved through the following objectives:

- Preserve and enhance mature trees, forest lands, and detailed planting features such as shrubs and groundcovers.
- Improve the overall visual quality of the installation through the use of native plant material to:
- Blend the built and natural environment.
- Provide scale and comfort to pedestrian environment.
- Reinforce the hierarchy of the circulation system.
- Screen unsightly views or elements.
- Buffer incompatible land uses.
- Minimize maintenance through the use of native plant materials that require less maintenance to survive.

Design Guidelines

Proposed plantings must be reviewed to ensure that site conditions (soil, topography, adjacent uses, and architecture) and climatic criteria (sun, shade, and moisture requirements) are considered in the desired plant design and selection (i.e. form, texture, color, size). The uses and users of the site must also be considered. Landscape planting plans should be approved by qualified personnel to provide quality assurance and promote design consistency.

Foundation Planting:

Foundation planting provides a green background for additional plantings, adds scale and character to the building, helps to integrate the building with its surroundings, screens HVAC and other utilities and helps create a sense of arrival. When planning foundation planting, consideration should be given to AT/FP measures.

- Focal and seasonal plantings should be located at building entries for pedestrian interest.
- Use the architecture of the building to evaluate the planting design and selection of plants.
- Plant materials should not block windows and views from interior spaces.
- Trees shall be set back from the building walls to provide space for mature growth and to prevent root systems from damaging the foundation.
- A symmetrical foundation planting design should be used for a symmetrical building.
- Due to the possibility of insect problems (bee stings, etc.), do not plant flowering plants near entrances.

Screening

- Windscreens: Use a combination of evergreen and deciduous trees to provide windbreak protection from prevailing winds. Windbreak plantings should be irregular in form, rather than straight and evenly spaced, in order to provide more effective wind control and to visually blend with the natural character of the installation.
- Screening of dumpsters: Landscape planting should be used to supplement permanent wall dumpster enclosures.

Buffer Planting:

Use a mixture of evergreen and deciduous trees and shrubs to visually separate land uses and to help separate visual zones.

Open Space Planting

- Enhance open space areas with planting.
- Use a mix of evergreen, deciduous, and flowering trees.
- Plant the same kind of trees in massive groupings to impact vast open areas.

Image Planting:

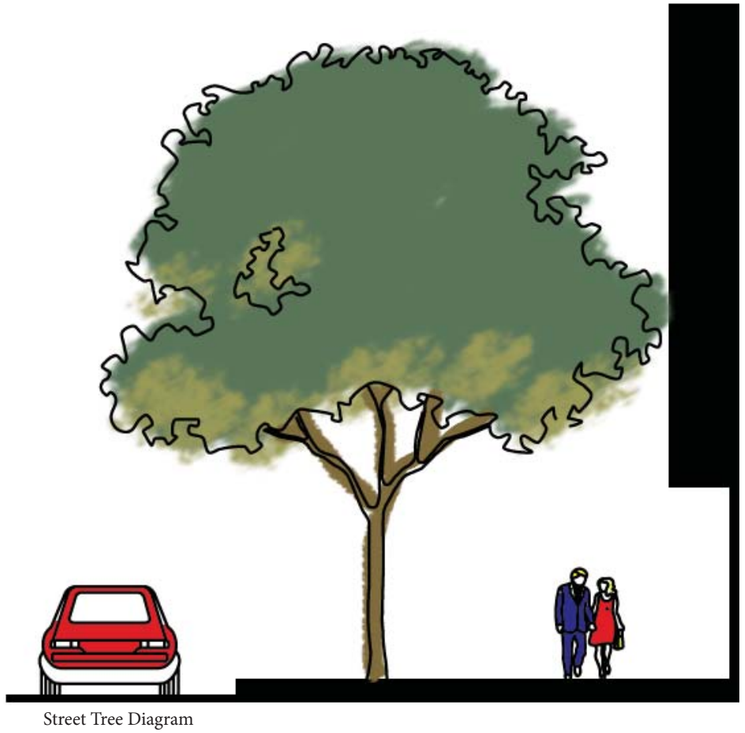
The image of the installation is formed by the visual impressions that exist within the installation.

- The primary locations of highly visible images are the main gate, along primary circulation systems, and at areas of high concentrations of people.
- Features such as signs, statues, static displays, and other primary visual images can be improved by the use of trees, shrubs, and ground cover.

Street Trees:

Street tree plantings should be used to reinforce vehicular hierarchy, orient and direct traffic, upgrade views, and to visually de-emphasize on-street parking. Also, in the design of a street tree planting, separate plant species may be used to identify distinctive details or areas of the installation (e.g. a particular land use relationship, historical district, community area, or other similar entity).

- Use formal street trees in single rows to provide continuous shade to streets, buildings, and walkways and to visually reinforce primary and secondary roads.
- Use informal groupings of street trees along tertiary routes. Utilize medium size deciduous trees to screen on-street parking along roadways. Set trees 1 to 2 meters (3 to 6 feet) from the back of curbs. Spacing should be uniform, except where curb cuts interrupt regular spacing.
- As a general rule, street trees should be deciduous species, resistant to salt and root pressure, and should have a 10 feet to 12 feet high clearance between the street pavement and branch height to allow adequate clearance for pedestrian and vehicle traffic to pass unimpeded by lower branches.
- The street tree layout should be coordinated with the layout of the proposed street lighting.
- Appropriate plant heights should be used within sight triangles to ensure safe views from intersections.
- Weeping trees should not be used in locations where they may hang over the roadway or block views.



Street Tree Diagram

Parking Lot Planting:

Parking lots are often the least attractive elements on a military installation. The use of landscape plant material and earth berm can greatly improve the appearance of these areas as well as help define circulation and reduce heat gain during summer months.

- Use shade tree plantings at parking lots to reduce glare and moderate ambient air temperatures on the lot. Optimum spacing of parking lot shade trees is 4.5 to 9 meters (15 to 30 feet) on center.
- Choose trees and shrubs that require minimum maintenance and will not litter the parking area with leaves, fruit, or nuts.
- Consider sight distances near entrances and exits when selecting and placing plant material..
- Use a mix of evergreen and deciduous plant material to screen parking areas from adjacent uses.
- Environmental Control Planting. When properly placed, plants can provide environmental benefits, as well as address visual concerns.
- Use deciduous trees and shrubs at courtyards, buildings and along streets to provide shade, moderate temperatures and reduce glare during the summer months while allowing solar exposure in the winter.
- Locate deciduous plantings on the southeast and southwest corner of buildings or courtyards to mitigate solar radiation and glare due to heat build-up and lower sun angles in the mid-morning and late afternoon hours.

Xeriscaping and Low Impact Development:

Xeriscape is the conservation of water and energy through creative and adaptive landscape design. Xeriscape landscapes provide attractive solutions that conserve water, limit necessary maintenance, and save money. The use of on-site natural features to control stormwater runoff quantity and quality in lieu of traditional 'end-of-the-pipe' solutions is a land planning and engineering design approach termed Low Impact Development (LID). These features include not only open space and natural features, but also man made features such as building roofs, streets, and parking surfaces. LID applies equally to new construction and redevelopment, and is best accomplished at the installation level. Additional information on LID is available in UFC 3-210-10.

Access Control Point Diagram

Entrances to the Installation:

Landscaping at the entrances and along the streetscapes of the installation will develop a strong visual image and provide visual interest during all four seasons. The entrance to the installation creates the first visual impression for the visitor.

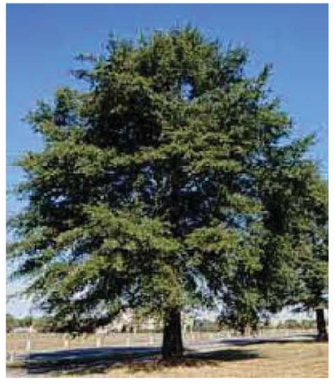
- The landscape materials and planting areas should be proportional in scale to the hierarchy of the street on which they are located.
- Landscaping must be integrated with AT/FP. Low shrubs, groundcover, annual/perennial plants and canopy trees provide seasonal interest as well as maintain views required to ensure force protection measures. Large evergreen trees are discouraged in these locations because they may obstruct sight lines and impact the need for force protection. Adequate lines of sight must be maintained for guard personnel to observe vehicular and pedestrian traffic.

Plant Material Selection

	PLANT SELECTION LIST Material Sustainability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
			Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/Shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover	Specimen
	Botanical Name	**Common Name**	**Characteristics**														**Culture**								**Use**							
TREES	SHADE TREES																															
	Acer rubrum	Red Maple	●				●						●	●	●	●						●	●		●	●		●				●
	Betula nigra	River Birch	●				●					●			●						●	●	●			●		●				●
	Liriodendron tulipifera	Tulip Popular	●				●			●	●		●			●							●			●		●				●
	Magnolia grandiflora	Southern Magnolia		●			●			●	●		●		●	●					●		●		●	●		●				●
	Platanus occidentalis	London Planetree	●				●						●		●	●						●	●		●	●		●				●
	Quercus falcata	Southern Red Oak	●		●								●		●	●							●		●	●		●				●
	Quercus laurifolia	Laurel Oak			●								●		●	●					●	●	●		●	●		●				●
	Quercus phellos	Willow Oak	●		●								●		●	●						●	●		●	●		●				●
	Quercus shumardii	Shumard Oak	●		●								●		●	●					●	●	●		●	●		●				●
	Quercus virginiana	Live Oak			●								●		●	●					●	●	●		●	●		●				●

Red Maple

Willow Oak



Live Oak

River Birch

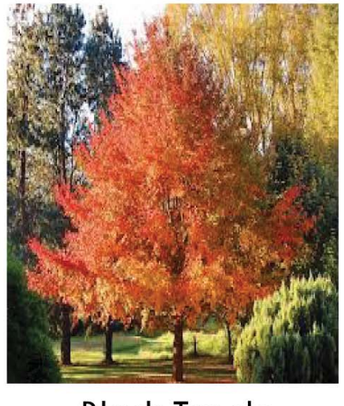
Plant Material Selection

TREES

PLANT SELECTION LIST Material Sustainability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Decedious	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/Shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover	Specimen
Botanical Name	**Common Name**	**Characteristics**														**Culture**								**Use**							
INTERMEDIATE TREES																															
Carpinus caroliniana	Blue Beech	●				●						●	●	●							●	●									●
Cercis Canadensis	Redbud	●				●			●	●			●	●	●				●	●		●					●				●
Cornus florida	Flowering Dogwood	●		●					●	●		●	●	●					●	●		●					●				●
Koelreuteria paniculata	Golden Raintree	●				●		●				●			●				●	●	●	●	●								●
Lagerstroemia indica	Crapemyrtle	●		●			●	●		●	●	●			●							●					●				●
Magnolia soulangeana	Saucer Magnolia	●		●					●	●	●		●	●						●		●									●
Magnolia virginiana	Sweetbay Magnolia		●	●					●	●	●	●	●	●						●	●	●					●				●
Myrica cerifera	Southern Wax Myrtle		●			●			●			●		●	●					●		●					●				●
Nyssa sylvatica	Black Tupelo	●		●								●		●	●					●	●	●				●	●				●
Pyrus calleryana 'Aristocrate'	Aristocrat Pear	●				●			●	●		●			●				●	●		●	●								●
Sapium sebiferum	Chinese Yellowtree	●				●		●				●		●						●	●	●	●		●						●
Taxodium distichum	Common Bald Cypress	●				●					●	●		●	●						●	●		●			●				

Common Bald Cypress

Saucer Magnolia



Black Tupelo

Blue Beech

Plant Material Selection

TREES	PLANT SELECTION LIST Material Sustainability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
			Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/Shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover	Specimen
	Botanical Name	**Common Name**	**Characteristics**														**Culture**								**Use**							
	EVERGREEN TREES																															
	Butia capitata	Butia Palm		●	●								●			●							●					●				●
	Eriobotrya japonica	Loquat		●	●			●			●		●		●	●					●		●	●				●	●			●
	Juniperus virginiana	Eastern red Cedar		●			●					●			●	●					●			●	●				●	●	●		●
	Pinus elliottii	Slash Pine		●			●						●		●	●								●					●	●	●		●
	Pinus palustris	Longleaf Pine		●			●						●		●	●								●					●	●	●		●
	Sabal palmetto	Cabbage Palmetto		●	●								●			●					●			●	●				●				●
	Trachycarpus fortunei	Windmill Palm		●	●								●			●				●				●	●				●				●

Butia Palm

Loquat

Longleaf Pine

Windmill Palm

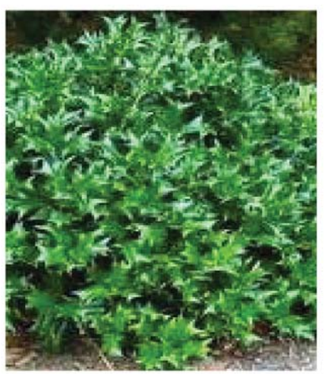
Plant Material Selection

SHRUBS	PLANT SELECTION LIST Material Sustainability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
			Decedious	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/Shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover	Specimen
	Botanical Name	**Common Name**	**Characteristics**														**Culture**								**Use**							
	EVERGREEN SHRUBS																															
	Buxus Microphyllum	Japanese Boxwood		●	●			●			●		●		●	●						●	●					●		●		●
	Camellia sasanqua	Fall-blooming camellia		●	●			●			●		●		●	●						●	●				●					●
	Cotoneaster horizontalis	Rockspray Cotoneaster		●	●								●		●	●							●					●				●
	Cycas revolute	Sago Cycas		●	●								●		●	●					●		●					●				●
	Eleagnus pungens	Thorny Eleagnus		●			●						●	●	●	●					●		●	●			●					●
	Fatsia japonica	Japanese Fatsia		●	●			●			●		●		●	●							●					●				●
	Hypericum patulum 'Sungold'	Sungold Hypericum		●			●		●		●		●		●	●				●	●		●	●					●				●
	Ilex cornuta 'Burfordii'	Burford Holly		●	●								●		●	●					●		●				●	●				●
	Ilex cornuta 'Carissa'	Carissa Holly		●	●								●		●	●				●	●		●				●	●				●
	Ilex cornuta 'Rotunda'	Dwarf Chinese Holly		●	●								●		●	●				●	●		●				●	●				●

Japanese Boxwood

Japanese Fatsea

Burford Holly



Dwarf Chinese Holly

Plant Material Selection

SHRUBS

PLANT SELECTION LIST

Material Sustainability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/Shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover	Specimen
		Characteristics														**Culture**								**Use**							
EVERGREEN SHRUBS (Continued)																															
Ilex crenata	Japanese Holly		●	●								●		●	●					●		●				●	●		●		●
Ilex crenata 'Helleri'	Heller Jamanese Holly		●	●								●		●	●							●					●		●		●
Ilex opaca 'Fosteri'	Fosters Holly		●	●								●		●	●					●		●				●					●
Ilex opaca 'Savannah'	Savannah Holly		●	●								●		●	●					●		●				●					●
Ilex vomitora	Yaupon Holly		●	●								●		●	●					●		●				●	●				●
Ilex vomitoria 'Stokes dwarf'	Dwarf Yaupon Holly		●	●								●		●	●					●		●				●	●				●
Illicium parviflorum	Yellow Anise-Tree		●			●	●			●		●	●	●	●					●	●	●					●				●
Illicium floridanum	Florida Anise-Tree		●			●	●			●		●	●	●	●					●	●	●					●				●
Juniperus chinensis 'Torulosa'	Hollywood Torulosa Juniper		●	●								●			●							●					●				●
Juniperous chinensis 'Pfitzeriana'	Pfitzer Juniper		●	●								●			●				●			●	●				●				●
Juniperous conferta	Shore Juniper		●	●								●			●				●			●	●				●				●

Savannah Holly

Dwarf Yaupon Holley

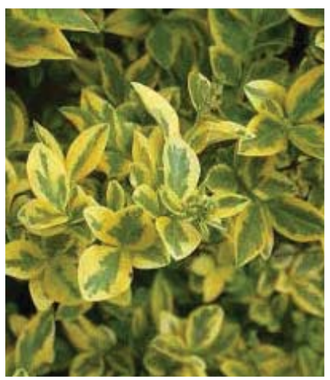
Florida Anise-Tree

Shore Juniper

Plant Material Selection

SHRUBS	PLANT SELECTION LIST Material Sustainability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
			Decedious	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/Shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover	Specimen
	Botanical Name	**Common Name**	**Characteristics**														**Culture**								**Use**							
	EVERGREEN SHRUBS (Continued)																															
	Juniperus horizontalis 'Plumosa'	Andorra Juniper		●	●								●			●				●			●	●				●				●
	Ligustrum japonicum	Jamanese Privet		●	●		●			●	●		●		●	●				●			●					●	●				●
	Ligustrum luidum	Golden Privet		●			●			●	●		●		●	●				●			●					●	●				●
	Mahonia bealei	Leatherleaf Mahonia		●						●	●		●	●	●								●						●				●
	Nandia domestica	Heavenly Bamboo		●	●		●			●	●		●	●	●	●				●			●	●					●				●
	Osmanthus americanus	Devilwood Osmanthus		●				●			●		●	●	●								●						●				●
	Osmanthus fragrens	Fragrant Tea Olive		●	●		●	●			●		●	●	●						●		●					●	●				●
	Photinia serrulata	Chinese Photinia		●			●			●	●		●		●	●					●		●	●				●	●				●
	Pittosporum tobira	Japanese Pittosporum		●			●			●	●		●	●	●	●							●	●				●	●				●

Andorra Juniper



Golden Privet

Heavenly Bamboo

Chinese Photinia

Plant Material Selection

SHRUBS	PLANT SELECTION LIST Material Sustainability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
			Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/Shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover	Specimen
	Botanical Name	**Common Name**	**Characteristics**														**Culture**								**Use**							
	EVERGREEN SHRUBS (Continued)																															
	Podocarpus marrophyllus 'Maki'	Shrubby Yew		●	●					●	●		●	●	●	●				●	●		●	●		●	●	●				●
	Prunus caroliniana	Cherry Laurel		●	●					●	●		●		●	●							●			●						●
	Pyracantha coccinea	Scarlet Firethorn		●			●		●		●					●							●				●					●
	Raphiolepis indica	Indian Hawthorn		●	●					●	●		●	●	●	●				●		●	●	●			●					●
	Rhododendron indicum	Indica Azalea		●			●			●	●		●	●	●							●	●				●					●
	Rhododendron obtusum	Karume Azalea		●	●					●	●		●	●	●							●	●				●					●
	Ternstroemia gymnathera	Japanese Cleyera		●	●					●	●		●		●	●				●	●		●	●		●	●					●
	Viburnum odoratissumus	Sweet Viburnum		●			●			●			●		●								●	●		●	●					●

Shrubby Yew

Scarlet Firethorn

Karume Azalea

Sweet Viburnum

Plant Material Selection

SHRUBS	PLANT SELECTION LIST Material Sustainability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
			Decedious	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/Shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover	Specimen
	Botanical Name	**Common Name**	**Characteristics**														**Culture**								**Use**							
	DECIDUOUS SHRUBS																															
	Clethra alnifolia	Summersweet Clethra	●				●		●		●			●	●	●					●		●					●				●
	Hibiscus syriacus	Shrub Althea	●		●						●			●	●	●					●		●	●				●				●
	Hydrangea macrophylla	Bigleaf Hydrangia	●				●		●		●			●	●							●	●					●				●
	Hydrangea quercifolia	Oakleaf Hydrangea	●				●		●		●	●			●	●					●		●					●				●
	Jasminum nudiflorum	Winter Jasmine	●		●					●	●				●	●				●	●		●	●				●				●
	Lonicera fragrantissima	Winter Huneysuckle	●				●			●	●				●						●		●				●	●				●
	Spirea thunbergii	Thunberg Spirea	●				●		●		●					●							●					●				●
	Spirea x vanhouttei	Vanhoutte Spirea	●				●		●		●					●							●					●				●

Summersweet Clethra

Bigleaf Hydrangia

Winter Jasmine

Vanhoutte Spirea

Plant Material Selection

GROUNDCOVERS

PLANT SELECTION LIST Material Sustainability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/Shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover	Specimen
Botanical Name	**Common Name**	**Characteristics**														**Culture**								**Use**							
GROUNDCOVERS / VINES																															
Ajuga reptans	Carpet Bugle	●				●			●	●		●	●	●	●				●	●	●	●	●				●				
Euonymus fortunei 'Radicans'	Common Wintercreeper		●	●								●		●	●							●					●				
Hadera canariensis	Algerian Ivy		●	●						●			●	●						●		●					●				
Hadera helix	English Ivy		●	●						●			●	●						●		●					●				
Hemerocallis	Daylilly	●				●	●	●		●		●		●	●					●		●					●				
Juniperous chinensis 'Sargentii'	Sargent Juniper		●	●								●		●	●							●					●				
Juniperous conferta 'Blue Pacific'	Blue Pacific Juniper		●	●								●		●	●							●					●				
Juniperus horizontalis	Creeping Juniper		●	●								●		●	●							●					●				
Juniperus procumbens	Japgarden Juniper		●									●		●	●							●					●				
Vinca major	Bigleaf Periwinkle		●			●			●	●		●		●	●							●					●				

Carpet Bugle

Daylily

Creeping Juniper

Bigleaf Periwinkle

Plant Material Selection

GROUNDCOVERS	PLANT SELECTION LIST Material Sustainability Matrix		Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
			Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/Shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street Tree	Shade Tree	Screen	Massing	Windbreak	Hedge	Bank Cover	Specimen
	Botanical Name	**Common Name**	**Characteristics**														**Culture**								**Use**							
	GRASSES																															
	Axonopus affinis	Carpet Grass	●				●						●		●								●					●				
	Cortaderia selloana	Pampas Grass	●				●		●		●				●	●					●		●	●				●				
	Cynodon dactylon 'Tiflawn'	Common Burmuda Grass	●										●			●							●					●				
	Ermochloa ophiuroides	Centipede Grass	●		●						●				●	●							●					●				
	Liriope muscari	Big Blue Lilyturf	●				●		●		●		●	●	●					●			●	●				●				
	Liriope spicata	Creeping Lilyturf	●				●		●		●		●	●	●					●			●	●				●				
	Stenotaphrum secundatum	St. Augustine Grass	●				●						●	●									●					●				

Carpet Grass

Pampas Grass

Centipede Grass

Big Blue Lilyturf

Fort Stewart

Ft. Stewart is located near Hinesville, GA, 41 miles southwest of Savannah, GA. Ft. Stewart is home to 3rd Infantry Division.

Hunter Army Airfield

Hunter Army Airfield is located in historic Savannah, GA. Hunter now houses the 1st Battalion 75 Ranger Regiment, 224th Military Intelligence Brigade, Coast Guard Air Station Savannah, and 3rd Infantry Aviation Brigade.