

Landscape and Streetscape Design

2.5

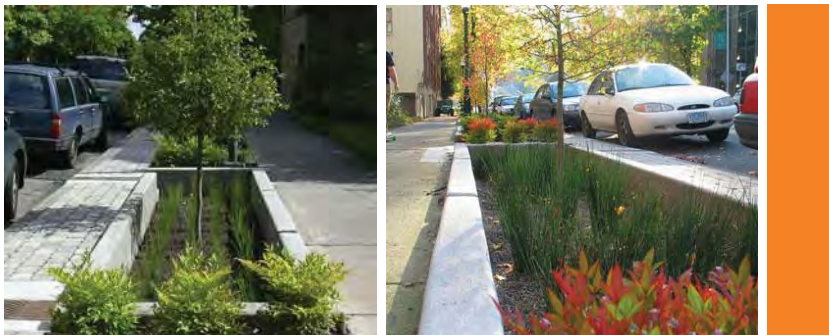
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2.5 LANDSCAPE AND STREETScape DESIGN

2.5.1 Goals

- *Landscape and streetscape design should unify the campus and help establish a distinct identity.*
- *Develop streets and public spaces that are pedestrian and bicycle friendly, environmentally responsible and aesthetically pleasing.*
- *The campus landscape plan should mimic natural systems to manage water quantity and quality, reduce heat island effects, respond to seasonal temperatures and support wildlife habitat.*
- *All landscape elements should provide for and reinforce the function of each specific space: vehicular-oriented streets, pedestrian-oriented streets, other pedestrian spaces, areas that frame views and vistas, stormwater management, wildlife habitat.*



2.5.2 Planting

- Landscaped areas should be continuous from one lot to another and should use landscape materials that are compatible with adjacent lots, streets, drainage corridors, and landscape easements.
- Landscape areas should be an integral part of the site stormwater management strategy, through rain gardens, bioswales and street planters and curb extensions.
- The campus plan and individual building site plans should utilize the plant palettes of both: Landscaping with Native Plants (East Tennessee), Tennessee Department of Environment and Conservation; Site Design Guidelines, University of Tennessee, Knoxville (July, 2008).

- Trees should be generally grouped to mimic naturally occurring forest type groups specific to soil, aspect, and water requirements, with a variety of types, sizes and species.
- Rows of trees should appropriately parallel and reinforce street corridors. The use of a variety of types, sizes and species, however, is encouraged to emphasize different micro-climates, building entrances, roadway intersections, walkway locations, and other functional variations.
- Shrubs and understory or small flowering trees should be used, along with flower beds, to provide seasonal color, visual emphasis and a comfortable scale for human interaction.

Sustainable Design:

- *Utilize native and adapted vegetation that are climate-tolerant to Tennessee and applicable to sustainable design.*

Reference: *State of Tennessee Sustainable Design Guidelines (Draft), section 1.02; (A.4.b.i) Design to reduce heat islands.*

2.5.3 Sidewalks and Pavement

- Sidewalks should have a minimum width of 5 feet.
- Sidewalks should be brick on a sand base with brick edging.

Sustainable Design:

- *Seek to design no less than 50% of site area as highly reflective or non-absorptive (excluding building footprint).*
- *Use pervious/open-grid paving materials to promote stormwater water infiltration and reduce heat island effect.*
- *Use light colored paving surfaces with a Solar Reflectance Index greater than 29 to limit heat island effect.*

Reference: *State of Tennessee Sustainable Design Guidelines (Draft), section 1.02; (A.5.) Design to reduce heat islands.*

2.5.4 Furnishings

Amenities such as outdoor seating and plaza areas for meetings and gatherings are encouraged throughout the campus (See Appendix A). Selected furnishings will add character as well as create environments for community interaction. The degree to which site furnishings vary among building sites and campus spaces should be minimal.

- A single style of streetscape and landscape furnishings should be used to establish a distinct and unified campus.
- High quality, durable material such as metal should be selected to minimize maintenance.

Benches

- Benches should be located in courtyards and along major pedestrian paths, associated with landscaping and shading, and shielded from vehicles.
- Benches with armrests should be 6 feet in length, solid steel frame, powder coated, finish color to be determined.
- Backless benches with armrests should be positioned at appropriate locations for multi-directional seating.



Table Sets

- Table sets, all steel components with powder coated finish, finish color to be determined, should be located throughout the campus in outdoor seating areas and plazas.



Seat walls

- Seat walls should be used throughout the campus to provide convenient sitting opportunities and define landscaping, especially in outdoor gathering spaces and along major pedestrian paths.
- Seat walls should have smooth cut stone, precast or brick caps.
- Seat walls should be consistent with surrounding buildings in materials, patterns, and colors.
- Seat wall heights should range from 12 to 20 inches, and the width should be no less than 16 inches.





Trash Receptacles

- Trash containers should be placed unobtrusively throughout the campus at logical gathering areas such as building entries, outdoor seating locations, intersections of walkways, bus stops and parking lots.
- Receptacles should be setback 3 feet from walkways.
- Use 24 gallon receptacle with dome lid and 10 inch stainless steel ashtray.
- All steel components should have powder coated finish, color to be determined. Lid attached via vinyl-coated aircraft cable, high density plastic. Liner, rubber tipped leveling feet.

Bicycle Racks

- Recommended bicycle parking guidelines established by the Association of Bicycle and Pedestrian Professionals (APBP) should be referenced when determining appropriate bicycle racks and rack area design.
- Bicycle rack areas should be immediately adjacent to the entrance it serves, preferably within 50 feet, and clearly visible, without impeding pedestrian movement in and out of the building.
- Rack elements, such as an inverted “U”, should support the bicycle upright by its frame in two places, prevent the wheel of the bicycle from tipping over, and enable the frame and one or both wheels to be secured.
- Comb, toast, schoolyard, and other wheel bending racks that provide no support for the bicycle frame are not recommended.



Bollards

- Bollards should be used to reinforce street curbs in the absence of planting strips to provide additional pedestrian safety, especially adjacent to the main lawns.
- Bollards should not interfere with loading areas, including bus stops.
- Bollards must accommodate emergency fire access.



Additional Furnishings

- Planting containers or planters should be limited to priority locations such as building entrances, courtyards and plazas.
- Newspaper boxes and kiosks should be limited to major building entries, parking areas, and transit stops.
- All additional furnishings should be consistent in style with the overall streetscape design and avoid the appearance of visual clutter.

2.5.5 Retaining Walls

- The design and materials for retaining walls should complement the principal buildings with regard to color, quality, scale and detail.

2.5.6 Lighting

Lighting is an integral component of the overall campus design, helping to establish campus identity, support wayfinding, contributing to safety and security, and highlighting important nodes, public spaces and building entries.

- Recommended light level guidelines and uniformity ratios established by the Illumination Engineering Society of North America (IESNA), in the IESNA Lighting Handbook (current edition), should be considered when determining appropriate lighting design solutions.
- Lighting should minimize glare and light trespass, maximize energy conservation, and maintain dark skies.
- Street lighting should have a uniform height and be a maximum 25 feet high above the street.
- Pedestrian lighting should have a uniform height and be a maximum 15 feet above the walkway.
- Lighting should be coordinated with tree locations, proposed landscaping, buildings, driveways, on-street parking, street furnishings, signage, and sub-street structures.

- Step or bollard lighting should be used to clearly illuminate level changes and handrails for stairs and ramps. Bollard height shall not exceed 42 inches and should only be used where a pole light fixture is not appropriate.

Sustainable Design:

- *Design building façade and site lighting with lighting power densities that promote safety but, minimize light pollution from the building site.*
- *Design exterior area lighting power densities to be 20% less than lighting power densities defined in ASHRAE 90.1-2007, Exterior Lighting Section.*
- *Design building façade lighting to be 50% less than the lighting power densities defined in ASHRAE 90.1-2007, Exterior Lighting Section.*
- *Design the placement and fixture styles of site lighting to minimize illumination above the horizontal plane and to minimize light trespass at the site boundary.*
- *Use fixture types designed as “cutoff” and “full-cutoff” styles to minimize fixture lumens emitted at 90 degrees or higher from straight down.*
- *Select exterior fixtures and locate them on the site to minimize light trespass at the site boundary. Document the foot-candle levels at the site boundary with a site illumination model.*

Reference: *State of Tennessee Sustainable Design Guidelines, section 1.02; (A.7), Exterior Site Lighting.*



2.5.7 Stormwater

Stormwater management offers a twofold opportunity: addressing water quantity and quality from the site while enhancing public spaces and wildlife habitat.

- Stormwater management elements such as bioswales, rain gardens and rain harvesting features should be integrated into the campus and building site design.
- Stormwater management, grading design and planting selection and location should be fully coordinated to slow the conveyance and discharge of water from the site, and provide for groundwater recharge and planting irrigation.

- Plantings should be supported, to the greatest extent possible, by detained or captured rainwater, and through drought resistant and native planting principles. Supplemental irrigation should be confined to building entry areas.
- To minimize erosion, planting designs should be fully coordinated with the grading of walkways, parking lots/islands, lawns, pedestrian plazas/terraces and streets.
- Fine surface grading in the archaeological site should slow and reduce sheet flows. Groupings of trees should be planted to further reduce run-off.



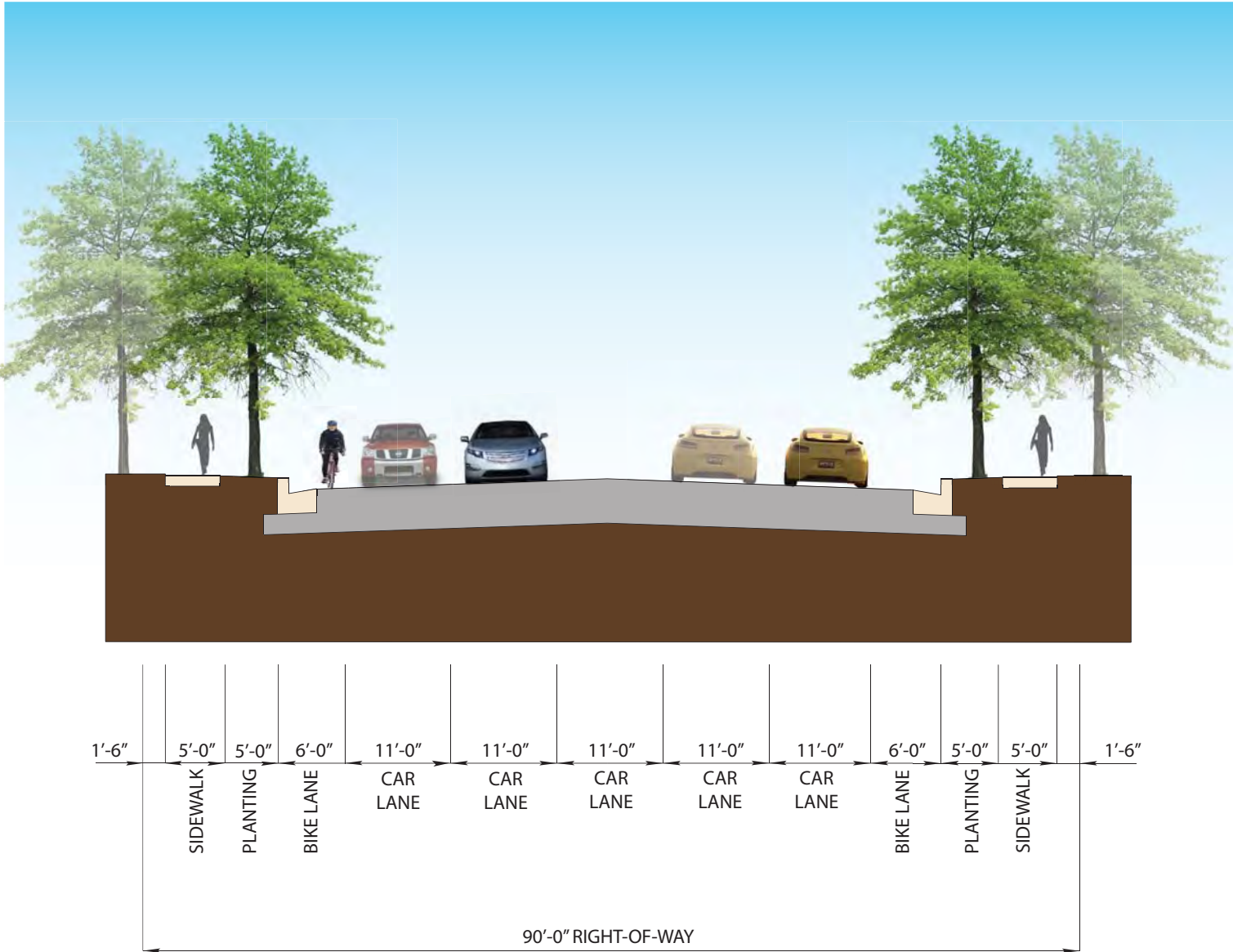
Sustainable Design:

- *On previously undeveloped sites, design the stormwater management for post-development site discharge rate and volume not to exceed pre-development discharge rate and volume.*
- *Design to remove 80% of total suspended solids from first inch of rain for each rainfall event.*

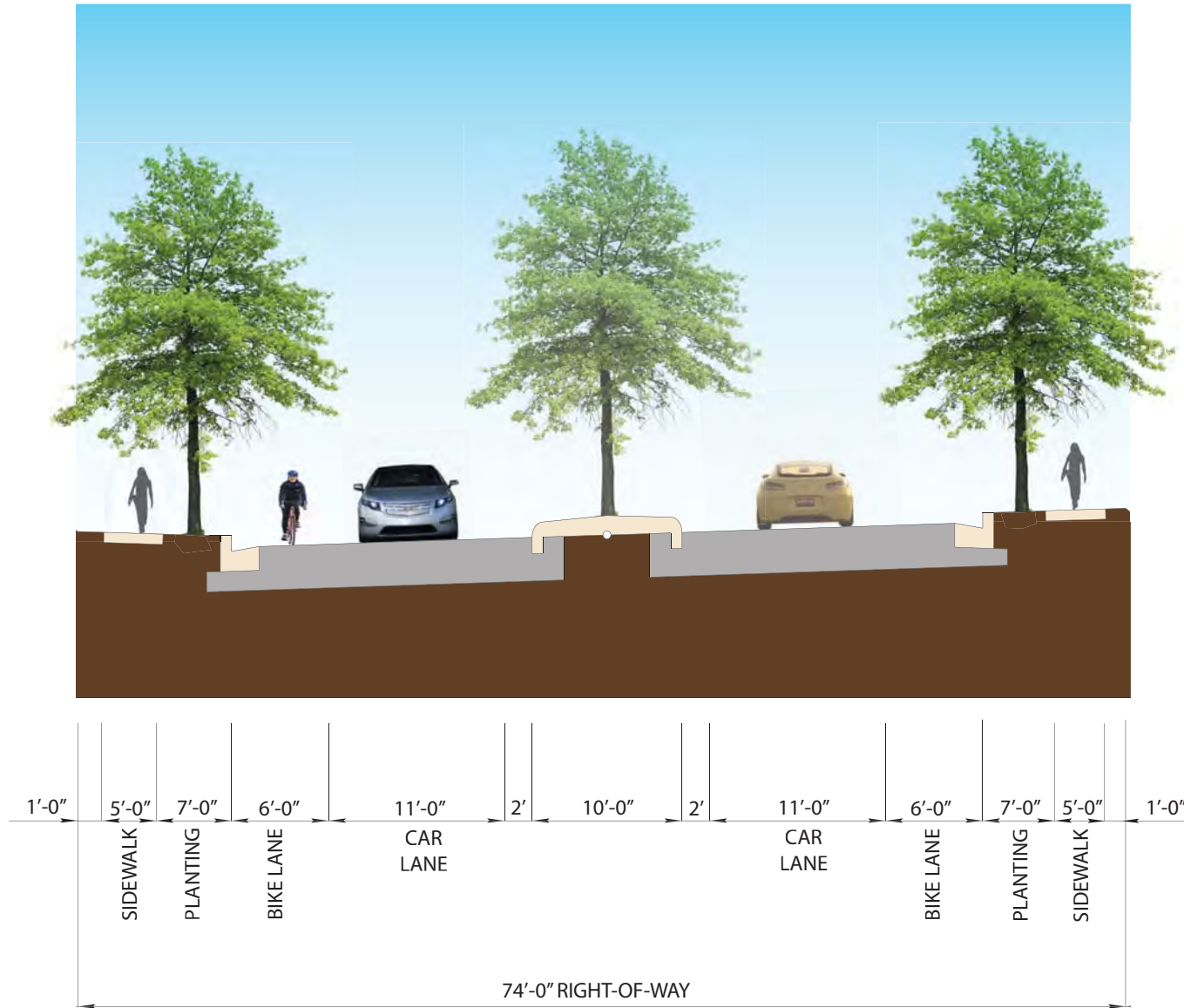
Reference: *State of Tennessee Sustainable Design Guidelines, section 1.02; (A.6.) Stormwater Design Considerations.*



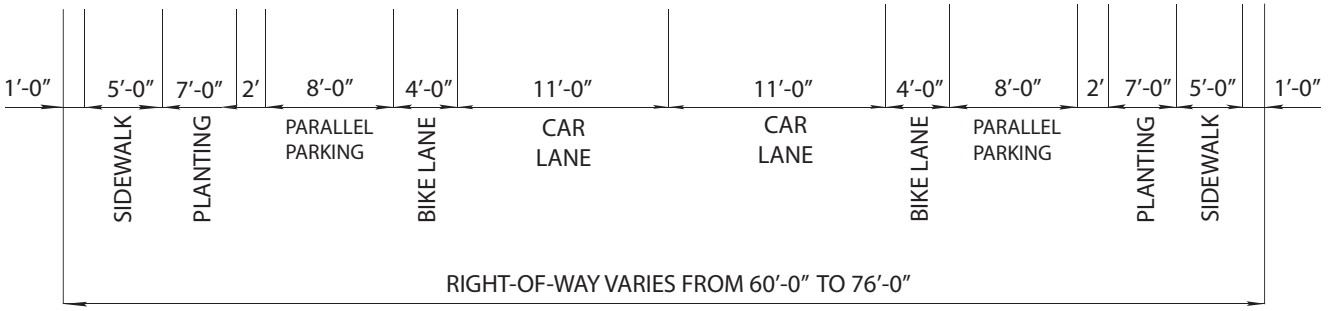
2.5.8 Street Cross Section: ACCESS DRIVE



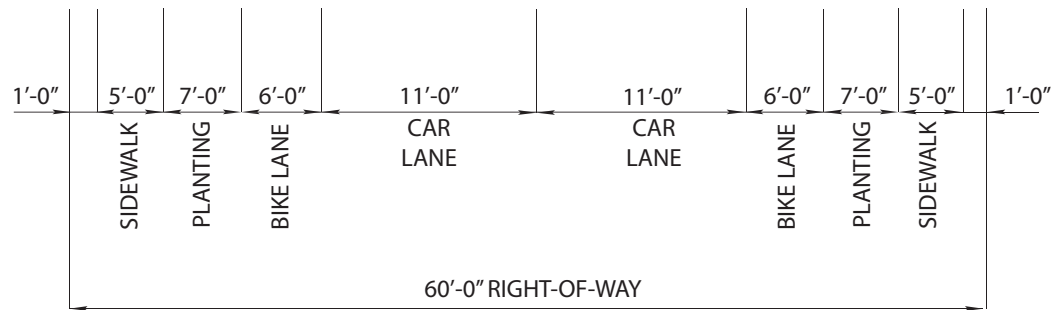
2.5.8 Street Cross Section: MAIN STREET



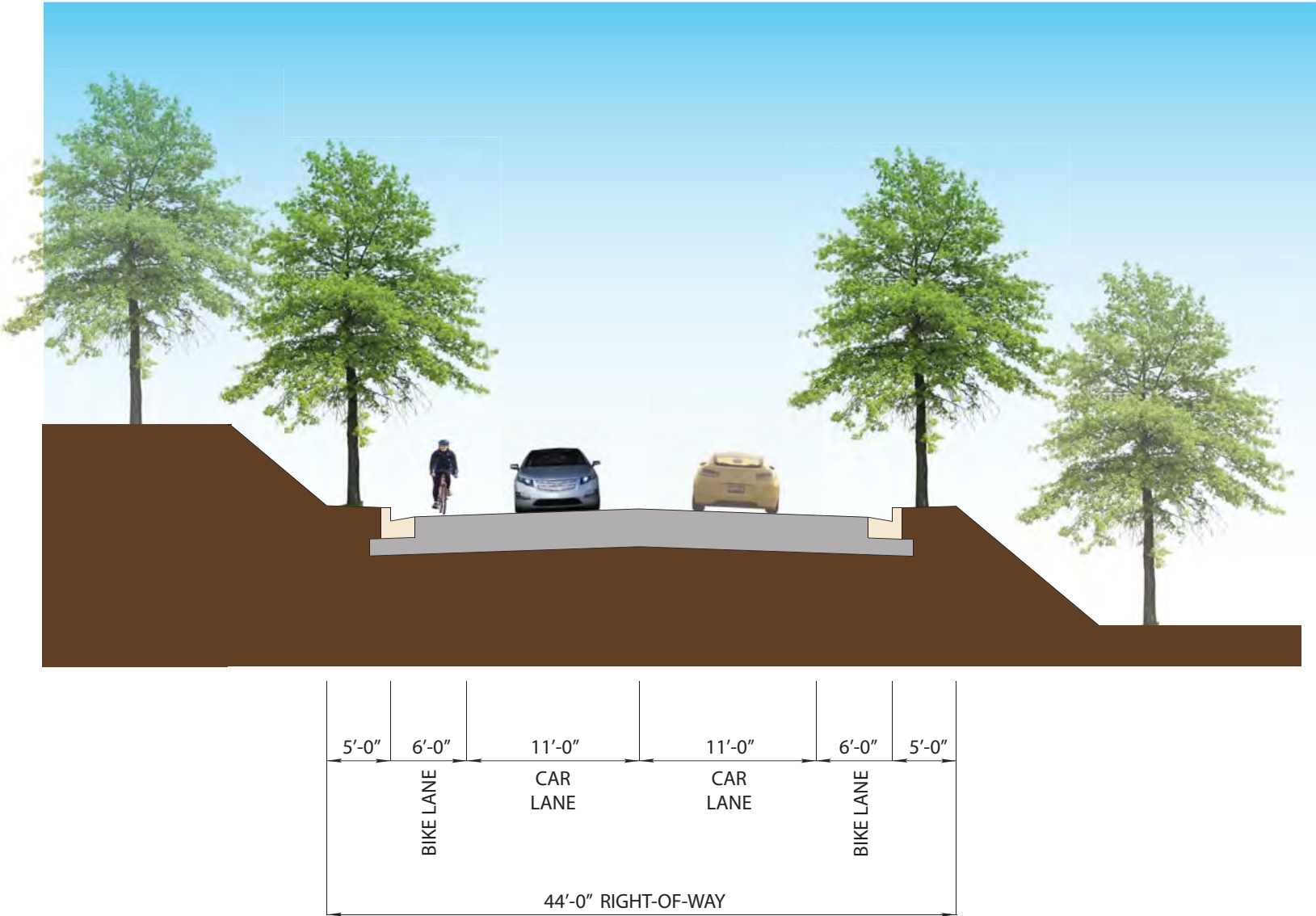
2.5.8 Street Cross Section: INNER DRIVE WITH PARKING



2.5.8 Street Cross Section: INNER DRIVE WITHOUT PARKING



2.5.8 Street Cross Section: OUTER DRIVE



2.5.8 Street Cross Section: **MAIN STREET THROUGH "THE PRESERVE"**

