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## CHAPTER 6

# SAMPLE DESIGN SOLUTIONS

The guidelines throughout this manual explain the fundamentals of designing within the roadside environment. They illustrate how to maximize aesthetics and environmental benefits through maintenance practices and the selection and placement of plant and hardscape materials. This chapter applies the guidelines of this manual to hypothetical scenarios that will be encountered in various landscape classifications and types. The design solutions in this chapter are provided as examples of the design process described throughout this manual. They are not intended to be copied into similar situations.

Example design solutions have been provided for the most common roadside landscape types: interchanges, rights-of-way and intersections. Each solution responds to the site constraints and opportunities, but shows the flexibility that can be achieved in a seemingly constrained roadside environment. In each classification, at least two solutions are presented for each landscape type showing an ornamental, naturalized or monoculture design. Some design solutions show methods of improving existing landscapes with minimal intervention. These examples offer perspective on the quality of design that can be achieved with different levels of maintenance and funding resources.

Following the design solutions for common roadway landscape types are examples of how to apply the guidelines of this manual to highway facilities, scenic roadways, streetscapes and gateways.

## DESIGN CONSIDERATIONS

### Interchanges

A well-designed interchange provides curb appeal that reflects a positive image of an entire community. Interchanges are typically points with higher volumes of traffic that allow motorists time to experience the roadside environment. Interchange enhancement projects should not be distracting, but do not have to be featureless. A clean and simple approach to design is very effective.

Interchange and overpass landscaping should not obstruct scenic vistas or views to features like city skylines. Low-growing shrubs, grasses or perennials should provide a

foreground for the view. Small trees may also be appropriate at the bottom of steep slopes to create the foreground.

Urban interchanges can present many challenges. The nature of the urban landscape is diverse, so urban interchanges and their design treatments can be very unique. Urban interchanges are often contained in a smaller area of land compared to suburban and rural interchanges, which affects the size and type of plant materials used in a design, as well as the maintenance practices.

Suburban and rural interchanges often occupy large areas of land and offer a greater flexibility in design. When designing the interchange landscape, use ground covers, low-growing shrubs, grasses and perennials to create an attractive foreground. Small evergreen and flowering trees may be used in the interior spaces of the interchange to provide a middle ground, while larger trees species provide the background.

### **Interstate Right-of-Way**

Interstate right-of-way widths vary greatly within each landscape classification. Urban interstate rights-of-way are often minimal and can be limiting to roadside enhancements. These areas may require more creativity in design, but terraces, seat walls, alternative fencing materials and aesthetic treatments to hardscape components can be applied in narrow right-of-way corridors to enhance visual appeal.

Suburban and rural interstate rights-of-way are typically much wider than urban rights-of-way. Often the goals when designing a suburban or rural interchange are to provide an attractive screen for adjacent property owners and also to enhance the roadside appearance for traveling motorists. Larger deciduous and evergreen trees create effective visual screens. Conversely, some areas will have attractive views that should be preserved. This can be achieved through selective removal of vegetation or by planting vegetation to frame desired views.

New mowing patterns can improve aesthetics with little to no additional cost. Native or adapted prairie grasses may be used in areas outside of the sight triangles (page 1.9) to create an attractive alternative to higher-maintenance turf areas.

Fences are major visual features in the interstate right-of-way. These fences are a necessity, used as a safety precaution as well as to mark the boundaries of the right-of-way. Alternative solutions could be as easy as using powder-coated chain link or ornamental fencing. Right-of-way fences become visually distracting when they are unkempt and overgrown. Metal fences will rust and weeds can invade over time, becoming a tangle of vegetation. To prevent the growth of woody plant species at the fence line, maintain a mowed strip on either side of the fence. Allow tall vegetation to grow up to the mowed strip within the right-of-way in order to screen the fence. Managing the fence line can prevent damage and warping of the structure, which contributes to an unpleasant aesthetic.

Noise barriers are often a component in the design of urban and suburban interchanges. Plant material may be used to soften the appearance of these walls or screen them entirely where appropriate. Other treatments such as stamped patterns and paint, as described in Chapter 4, can be applied to enhance these features as well.

### **State Route Right-of-Way**

In the urban and suburban landscape, structures, utilities and pedestrian facilities are likely to be close to or directly adjacent to the edge of the roadway. Right-of-way space is very limited along urban and some suburban state routes because of existing hardscape components, utilities and required sight lines.

Design solutions should take pedestrian and cyclist needs into consideration. For instance, placing a vegetated buffer of even a couple of feet between the roadway and sidewalk can create a safer and preferred walking environment.

Walking, bicycling and advertising are a few activities that occur more frequently within the urban and suburban state route right-of-way than in rural landscapes. Curb cuts and the presence of stop lights and utility fixtures contribute to visually cluttered corridors. The arrangement of these factors, along with plants and proper maintenance techniques, will make urban and suburban areas more appealing. For instance, repeating one or two tree species along the length of a road at regular intervals can make a visually cluttered corridor appear more orderly and create a unified appearance.

Many four-lane interstates and state routes also have wide medians. Medians in urban and suburban environments are often raised with curbs and planted with trees or shrubs, but may also function as drainage swales. Aesthetic median enhancements depend heavily on maintenance. Because medians are a focal point along roadways, litter, overgrown or unhealthy plants, improper pruning and weeds are highly noticeable. The lifespan of vegetation in a median is less than other areas due to the harsh conditions plants must endure to survive. Heat, pollution, salt and limited water can all contribute to a plant's mortality in roadway medians. Choose urban tolerant plants that require little maintenance and survive harsh conditions, especially periods of drought. Choose plants that naturally have the form you would like to achieve instead of plants that will require pruning to achieve the effect. Create large planting beds or space trees evenly and wide enough apart to accommodate a mower. Mulch thoroughly or plant ground covers to prevent mower damage to trunks and to reduce the amount of turf that must be maintained.

In the rural landscape, state route right-of-way space is usually more abundant. Design solutions should take advantage of this opportunity for additional green space. Even though rural state routes rarely have sidewalks or bike lanes, pedestrian and cyclist needs should also be taken into consideration in areas where foot traffic and cyclists are anticipated.

The presence of litter can become a problem on rural state routes. Planting taller vegetation, such as native or adapted prairie grasses, at the edge of the roadway can create a physical barrier that will contain the majority of litter close to the roadway where it can be easily picked up by state maintenance or volunteer crews.

## Intersections

Several different alignments exist for intersections, as described in Chapter 2. Like interchanges, intersections are typically points with higher volumes of traffic that allow motorists time to experience the roadside environment. They are also points of decision-making and should be treated with caution when designing planting beds and signs that may obstruct sight lines. Be mindful of signage at these intersections, which can often be abundant and distracting to motorists. Signs should be designed and placed to minimize the negative visual impact on the landscape.

## Community

Unique design elements can be enhanced or incorporated into a project to promote a sense of identity for a community. Creating a unique community character can attract tourism, investment, and foster a sense of civic pride. These design elements may include signage and “branding,” gateway features, standardized light fixtures and site furnishings, and other streetscape elements. Refer to the *Unique Landscapes* for more community design ideas.

## Highway Facilities

### Welcome Centers and Rest Areas

Most welcome centers and rest areas are found in the rural landscape classification. Design solutions at welcome centers and rest areas are most influenced by regional factors. The landscaping at these facilities must retain visibility for safety and security, but also blend into their surroundings. Other landscaping needs include providing shade for picnickers and dog walking areas.

The Tennessee Groves program, administered by the TDOT Office of Beautification in partnership with the Tennessee Urban Forestry Council (TUFC), will provide tree plantings at welcome centers and rest areas. The program was developed to accomplish a variety of goals. The primary goal is to allow donors to contribute to the beautification of the state, but it also provides an alternative to roadside memorials.

Through this program, donors can choose from one of three types of plants: shade trees, flowering trees or flowers. Individual tree species choices will be made by TDOT depending on what is regionally native to the planting site.

The first round of Tennessee Groves sites are the welcome centers on Interstate 81 in Sullivan County (Bristol), Interstate 55 in Shelby County (Memphis), Interstate 75 in Hamilton County (Chattanooga), and Interstate 65 in Giles County (Ardmore). In time, the program will be implemented at welcome centers and rest areas across the state.

### Weigh Stations

Weigh stations are another common feature along interstates. Open sight lines for ingress and egress are important considerations when designing landscapes for weigh stations. Enhancements typically include foundation plantings, such as shrubs and ground covers, around the weigh station buildings.



### **Maintenance Compounds**

Maintenance compounds can be found in all landscape classifications. From a functional standpoint, these areas must be easily accessible. Visually, their industrial nature can dominate a viewshed. Existing facilities should be screened and enhanced to blend into the surroundings to the extent possible. New projects should consider how the arrangement of multiple buildings will appear from the roadway without compromising safety or accessibility.

### **Unique Landscapes**

#### **Scenic Byways/Highways**

Corridors designated as Scenic Byways and Highways are often two-lane roadways that traverse scenic landscapes of historical significance. Two examples are the Natchez Trace Parkway in Middle and West Tennessee and the Cherohala Skyway in East Tennessee. Scenic Byways and Highways attract tourism and are intended for recreation, education and enjoyment. They often have lower speed limits compared to other state routes and feature recreation and interpretive points of interest. Landscape improvements along these corridors should be designed to enhance the natural and cultural character of the surrounding environment. Adjacent properties that detract from the character of these landscapes should be screened from view.

#### **Gateways**

A gateway is a specific point or area along a transportation corridor that has been identified as a point of entry. Gateways can usually be found at the edge of a city or town, neighborhood or community, or they may mark a dramatic change in land use. Gateways usually have unique signage or markers and may be heavily landscaped in order to let travelers know that they have arrived in a special place. Communities usually choose to adopt specific signage standards and plant material guidelines to effectively brand these areas. Gateways may occur in all landscape classifications.

#### **Streetscapes**

Streetscape is a term used to describe the character of the space surrounding the street. The streetscape is composed of elements such as buildings, sidewalks, street trees, on street parking, plant materials, signage, above ground utilities, paving patterns, site furnishings and light fixtures. In a successful streetscape, these elements work together to create a space that is attractive to all users,

including pedestrians, cyclists and motorists. The creation of a successful streetscape requires careful planning and coordination between public entities and private stakeholders, but when completed, a successful streetscape can result in a safe and healthy environment that is attractive for all users.

## DESIGN SOLUTION 1: Urban Interchange

**Design Approach:** Ornamental

**Resources for Installation:** High

**Resources for Long-term Maintenance:** High

### Goals:

- Improve the image of the city
- Improve maintenance crew safety
- Improve air quality

### Objectives:

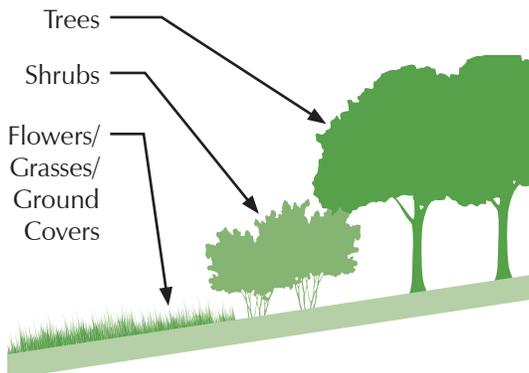
- Create a gateway into the city
- Use crisp lines and bold color
- Choose plants with ornamental qualities
- Reduce total mowed area
- Screen views to adjacent industrial properties
- Open up and/or frame views of city skyline

### Vegetation:

- Urban tolerant plant species
- Large deciduous and evergreen trees for seasonal interest and to screen views
- Small flowering trees for spring and summer color
- Flowering and evergreen shrubs and flowering annuals and perennials for year-round interest
- Ornamental grasses and spreading evergreen ground cover in areas inaccessible to mowing equipment
- Turf in areas accessible to mowing equipment

### Solution Summary:

This urban interchange has been identified as a primary gateway into a city. The designers decided to adopt an ornamental design approach to create a sense of arrival and a formal entrance for the city. An ashlar pattern was chosen for the face of the retaining walls to add visual interest. In addition, terracing was used to create different levels for planting along the roadway. The internal retaining walls follow a serpentine line, which creates an interesting visual rhythm.



**Ornamental Approach:** Create a pattern within the plant hierarchy for an ornamental appearance. Landscape installation is easily phased with a design of this type. Trees can be installed the first year and the other plant materials can be installed as funds become available.

Preserve open sight lines at intersections

Use shrubs and ground covers in areas inaccessible to mowing equipment

Use the height of plant materials to create visual interest in sloped areas



Preserve existing vegetation and supplement with masses of evergreens to screen undesirable views

Use small flowering trees to soften the appearance of large retaining walls

Create focal points with flowering annuals and perennials



**Plant Material Variety:** Create masses of shrubs, ornamental grasses, flowering plants and small trees in an ornamental landscape.

## DESIGN SOLUTION 2: Urban Interchange

**Design Approach:** Monoculture

**Resources for Installation:** Moderate

**Resources for Long-term maintenance:** Low

### Goals:

- Improve the image of the city
- Improve maintenance crew safety
- Improve air quality

### Objectives:

- Create a gateway into the city
- Use crisp lines and rows of identical plants to lead eye towards view of city skyline
- Choose with ornamental qualities
- Reduce total mowed area
- Screen views to adjacent industrial properties

### Vegetation:

- Urban tolerant plant species
- Large evergreen trees to screen views
- Small flowering trees for seasonal interest
- Evergreen shrubs and ornamental grasses to create large plant masses and provide year-round interest
- Spreading evergreen ground cover in areas inaccessible to mowing equipment
- Flowering perennials for seasonal interest
- Turf in areas accessible to mowing equipment

### Solution Summary:

This is the same urban interchange as Design Solution 1. In this scenario, the project has a more modest budget for installation and maintenance but has the same goals and similar objectives. In order to achieve a similar effect, less expensive, lower maintenance plant materials are used in large masses to create a bold visual impact. Additional long-term maintenance costs are reduced by only using perennial flowering plants in the accent beds.

Preserve open sight lines at intersections

Use shrubs and ground covers in areas inaccessible to mowing equipment

Use the height of plant materials to prevent erosion and create visual interest in sloped areas



Preserve existing vegetation and supplement with masses of evergreens to screen undesirable views

Use small flowering trees to create a visual rhythm

Create focal points with flowering perennials



**Strength in Numbers:** Large monoculture plantings of shrubs, ornamental grasses, and flowering plants can be used to create a bold impression.

### DESIGN SOLUTION 3: Urban Intersection and Right-of-Way

**Design Approach:** Ornamental

**Resources for Installation:** Moderate

**Resources for Long-term Maintenance:** Moderate

**Goals:**

- Enhance a historic neighborhood
- Improve the pedestrian experience
- Attract private reinvestment to adjacent properties

**Objectives:**

- Use surrounding character and building materials to make materials selections
- Choose plants with ornamental qualities
- Eliminate small turf areas that are difficult to mow
- Implement traffic calming measures

**Vegetation:**

- Urban tolerant plant species
- Large vase-shaped, deciduous street trees on outer edges to frame street
- Small flowering and evergreen trees in median for vertical element and to add human scale to landscape
- Evergreen and flowering shrubs, spreading evergreen and flowering ground covers, and flowering annuals and perennials for seasonal interest and to reduce mowing

**Solution Summary:**

This urban intersection and right-of-way is in the heart of a historic neighborhood. The designers chose to improve the pedestrian environment and implement traffic calming measures by providing street trees, a brick herringbone pattern on the sidewalks, parallel on-street parking spaces to separate pedestrian and vehicular traffic, and heavily landscaped medians. The majority of the landscape materials will have low maintenance requirements following establishment so that the majority of the long-term maintenance resources can be directed towards maintaining the annual planting beds at the intersections.

Hardscape improvements, such as specialty paving patterns, create an enlivened streetscape

Eliminate small turf areas, which can be difficult to maintain

Preserve open sight lines at intersections



Preserve views of the city skyline

Select trees that are urban tolerant

Create focal points with flowering annuals and perennials



**Create Pedestrian Environments:** Street trees, landscaped medians, mid-block cross walks, parallel on-street parking and wide sidewalks help to create an environment that pedestrians find inviting.

## DESIGN SOLUTION 4: Urban Intersection and Right-of-Way

**Design Approach:** Monoculture

**Resources for Installation:** Moderate

**Resources for Long-term Maintenance:** Low

### Goals:

- Enhance a historic neighborhood
- Improve the pedestrian experience
- Attract private reinvestment to adjacent properties

### Objectives:

- Use surrounding character and building materials to make materials selections
- Choose identical plants with ornamental qualities
- Eliminate small turf areas that are difficult to mow
- Implement traffic calming measures

### Vegetation:

- Large vase-shaped, deciduous street trees on outer edges to frame street
- Evergreen shrubs and spreading evergreen ground covers in sidewalk planting beds for year-round interest
- Flowering perennials in median and intersection planting beds for seasonal interest and to reduce mowing

### Solution Summary:

This is the same urban intersection and right-of-way as Design Solution 3. In this scenario, the project has a more modest budget for installation and maintenance but has the same goals and similar objectives. In order to achieve a similar effect, less expensive, lower maintenance plant materials are used in large masses to create a bold visual impact. Additional long-term maintenance costs are reduced by only using flowering perennials in the accent beds.

Hardscape improvements, such as specialty paving patterns, create an enlivened streetscape

Eliminate small turf areas, which can be difficult to maintain

Preserve open sight lines at intersections



Preserve views of the city skyline

Select trees that are urban tolerant

Create focal points with flowering perennials



**Lower Maintenance:** Once established, street trees require annual or semi-annual maintenance and pruning; large perennial planting beds and spreading evergreen ground covers also require little maintenance once established.

## DESIGN SOLUTION 5: Suburban Interchange

**Design Approach:** Monoculture

**Resources for Installation:** Moderate

**Resources for Long-term Maintenance:** Low

### Goals:

- Attract motorists into the community
- Improve maintenance crew safety

### Objectives:

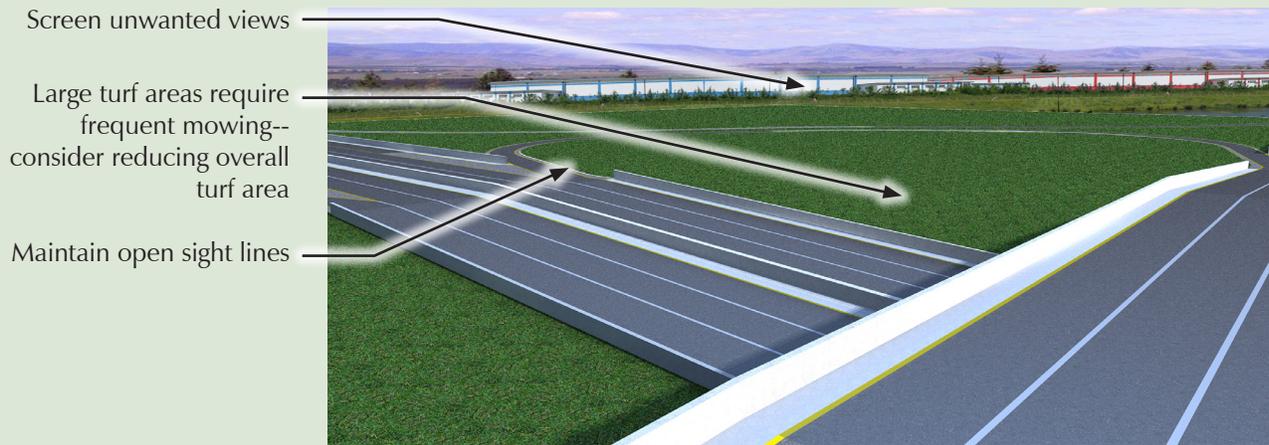
- Create a gateway into the community
- Choose plants that are low maintenance following establishment
- Reduce total mowed area
- Screen unpleasant views of adjacent warehouses

### Vegetation:

- Large deciduous trees
- Small flowering trees for seasonal interest
- Turf

### Solution Summary:

This example is presented to show a conventional approach to designing an interchange landscape. This suburban interchange has been identified as a primary gateway for a community. The designers decided to adopt a monoculture design approach to meet the goals and objectives of the project for budgetary reasons. This approach will minimally reduce the total amount of turf area, but the majority of the interchange will still require mowing. The deciduous tree plantings will partially screen the unwanted views of adjacent land uses, but neither completely nor year-round. This design is an aesthetic upgrade from a turf-only landscape; however, it does not completely achieve the goals and objectives of the project. Design Solution 6 presents a more effective alternative.



**Plan for a Positive Effect:** The landscape, as designed, does enhance the interchange; however, it does not make a strong impression.

## DESIGN SOLUTION 6: Suburban Interchange

**Design Approach:** Naturalistic

**Resources for Installation:** Moderate

**Resources for Long-term Maintenance:** Low

### Goals:

- Attract motorists into the community
- Improve maintenance crew safety

### Objectives:

- Create a gateway into the community
- Choose plants that are low maintenance following establishment
- Reduce total mowed area
- Reduce stormwater run-off
- Screen unpleasant views of adjacent warehouses

### Vegetation:

- Large native canopy trees (deciduous and evergreen) for year-round interest
- Small native flowering trees for seasonal interest
- Native shrubs
- Native grasses and wildflowers
- Turf

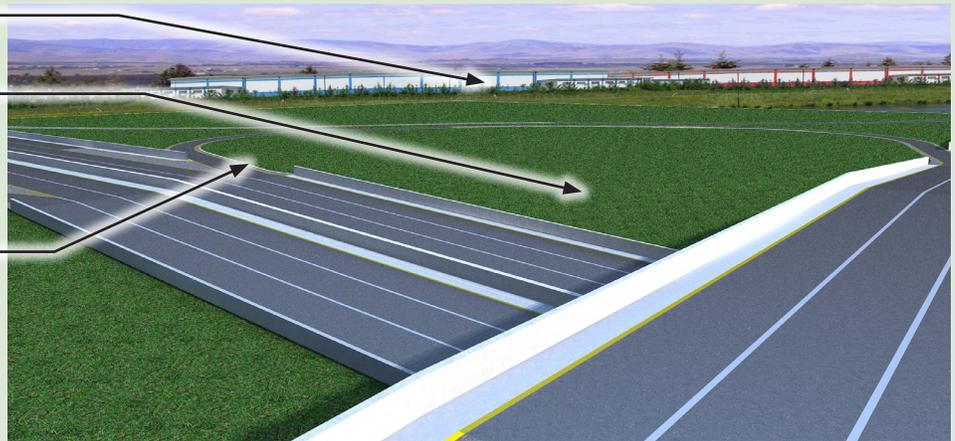
### Solution Summary:

This is the same suburban interchange as Design Solution 5. In this scenario, the project has the same budget for installation and maintenance but uses a naturalistic design approach to more effectively meet the project goals and objectives. The designers chose to delineate areas inside of the ramps and at the periphery of the rights-of-way, outside of the sight triangles and clear zones, that will be allowed to return to a forest landscape environment. This can be done by either eliminating mowing while selectively removing unwanted trees over a period of years or by planting desirable native canopy trees in these areas. The designers then delineated annual mow or semi-annual mow areas. A regularly mowed edge will be maintained adjacent to the roadway. Beyond the mowed edge, native grasses and wildflowers will be allowed to grow and will be mowed annually to prevent the growth of woody plant species. Over time, these areas will develop a prairie landscape aesthetic. This aesthetic can be enhanced by tilling the soil and then using a seed drill to plant native wildflowers and grasses. This design approach may require more upfront investment, but it will reduce the long-term maintenance costs while greatly enhancing the aesthetics of the interchange and rights-of-way.

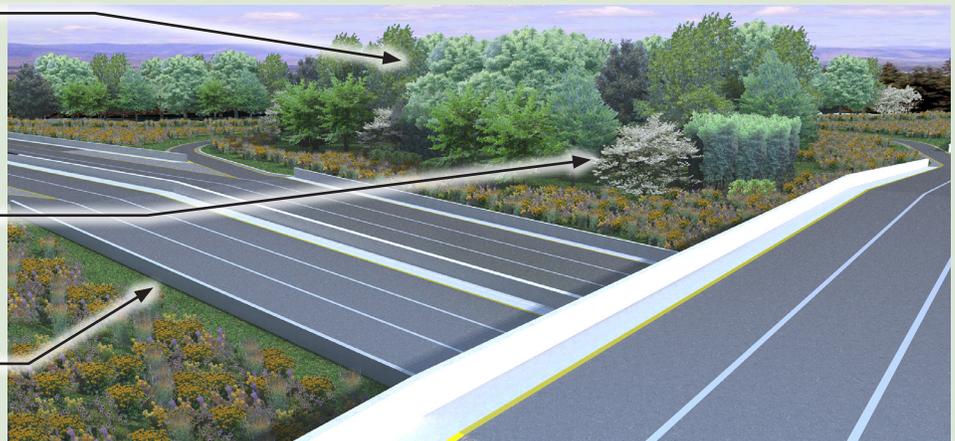


**Exterior Right-of-Way Maintenance:** Allow tall vegetation to grow to the edge of the clear zone. Mow annually or semi-annually to the edge of large trees to prevent the establishment of woody plant species and to achieve a naturalistic aesthetic.

- Screen unwanted views
- Large turf areas require frequent mowing--consider reducing overall turf area
- Maintain open sight lines



- Preserve existing vegetation and supplement with masses of evergreens to screen undesirable views
- Use small flowering trees at forested edge to enhance borders
- Maintain a mowed edge



**Plan for a Positive Effect:** This mature naturalistic landscape will make a strong impression on visitors to this community, as well as provide enjoyment for the local residents

## DESIGN SOLUTION 7: Suburban Intersection and Right-of-Way

**Design Approach:** Ornamental

**Resources for Installation:** Moderate

**Resources for Long-term Maintenance:** Moderate

### Goals:

- Enhance appearance of growing business district
- Enhance the pedestrian and motorist experience
- Increase safety for users of all modes of transportation
- Attract private investment and/or reinvestment to adjacent properties

### Objectives:

- Use bold color
- Choose plants with ornamental qualities
- Eliminate small turf areas that are difficult to mow
- Create a consistent theme at business district intersections and throughout transportation corridors
- Preserve scenic vistas and views to businesses

### Vegetation:

- Urban tolerant plant species
- Large, vase-shaped deciduous street trees on outside edge of roadway and columnar trees in landscape islands
- Small flowering and evergreen trees in medians for year-round interest and to create a complementary scale with street trees
- Evergreen and flowering shrubs, spreading evergreen and flowering ground covers, and flowering annuals and perennials for seasonal interest and to reduce mowing

### Solution Summary:

This suburban intersection and right-of-way is located in a rapidly developing community. The designers chose to improve the pedestrian and motorist experience by providing street trees, well-defined sidewalks, crosswalks and bike lanes, and heavily landscaped medians and islands. The majority of the landscape materials will have low maintenance requirements following establishment so that the majority of the long-term maintenance resources can be directed towards maintaining the annual planting beds at the intersections.

Well-defined crosswalks and bike lanes promote safety for users of all modes of transportation

Eliminate small turf areas, which can be difficult to properly maintain

Preserve open sight lines at intersections



Preserve views of adjacent businesses and to the hills beyond

Select trees that are urban tolerant

Create focal points with flowering annuals and perennials



**Multi-modal:** This intersection has been designed to safely accommodate pedestrians and bicycles as well as motorists.

## DESIGN SOLUTION 8: Suburban Intersection and Right-of-Way

**Design Approach:** Naturalistic

**Resources for Installation:** Moderate

**Resources for Long-term Maintenance:** Low

### Goals:

- Enhance appearance of growing business district
- Enhance the pedestrian and motorist experience
- Increase safety for users of all modes of transportation
- Attract private investment and/or reinvestment to adjacent properties

### Objectives:

- Use bold color
- Choose plants with ornamental qualities
- Eliminate small turf areas that are difficult to mow
- Create a consistent theme at business district intersections and throughout transportation corridors
- Preserve scenic vistas and views to businesses

### Vegetation:

- Urban tolerant plant species
- Large native canopy trees (deciduous) on outside edge of roadway
- Small native flowering trees in medians for seasonal interest
- Native shrubs, native grasses and flowering perennials in median and perennials for seasonal interest and to reduce mowing
- Turf

### Solution Summary:

This is the same suburban intersection and right-of-way featured in Design Solution 7. In this scenario, the resources for long-term maintenance are more modest and there is a higher level of desire from the community to create a unique identity with a streetscape design. The designers again chose to improve the pedestrian and motorist experience by providing street trees, well-defined sidewalks, crosswalks and bike lanes, and heavily landscaped medians and islands. However, in this case they chose to select only native and adapted species of plants. They also designed the groupings of plants to resemble the way those plants are found in nature. By doing this they will reduce the need for long-term maintenance expenditures. Also, by using plants that are native to the area they have created an aesthetic that reinforces the local community's unique identity.

Well-defined crosswalks and bike lanes promote safety for users of all modes of transportation

Eliminate small turf areas, which can be difficult to properly maintain

Preserve open sight lines at intersections



Preserve views of adjacent businesses and to the hills beyond

Select trees that are urban tolerant

Create focal points with flowering perennials and grasses



**Community Identity:** By using plant materials that are native to this region, the designers have helped reinforce this community's sense of identity.

## DESIGN SOLUTION 9: Rural Interchange

**Design Approach:** Monoculture

**Resources for Installation:** Low

**Resources for Long-term Maintenance:** Low

### Goals:

- Create a sense of arrival for motorists
- Improve maintenance crew safety
- Resolve erosion control issues at overpass abutments

### Objectives:

- Choose plants that are low maintenance following establishment
- Reduce total mowed area
- Use vegetation with deep root systems to stabilize slope
- Preserve scenic vistas and views to businesses

### Vegetation:

- Large deciduous trees
- Spreading evergreen ground cover to stabilize slope
- Flowering perennials at intersection islands for seasonal interest
- Turf

### Solution Summary:

This example is presented to show how minimal investment can result in a substantial impact by improving the aesthetics of a rural interchange and right-of-way. In order to improve maintenance crew safety, the designers chose to place a spreading evergreen ground cover on the steep slopes adjacent to the overpass abutments. This will reduce the need for maintenance crews to operate mowing equipment on dangerous slopes. Flowering perennial landscape beds are located at the end of each ramp to provide a mass of color which will improve the visual interest of the interchange. Once established, the long-term costs of maintaining this interchange landscape will be minimal.

Preserve scenic vista

Steep slopes can be difficult to maintain as turf and can be dangerous for maintenance crews

Preserve open sight lines

The vertical height of the canopy trees on both sides of the overpass create a “gateway” and the trees will aid slope stabilization

Spreading evergreen ground cover reduces maintenance and will stabilize slopes

Create focal points with flowering perennials

**Right Plant - Right Place:** The spreading ground cover next to the overpass abutments is visually appealing but does not block the required sight lines.

## DESIGN SOLUTION 10: Rural Interchange

**Design Approach:** Naturalistic

**Resources for Installation:** Low

**Resources for Long-term Maintenance:** Low

### Goals:

- Create a sense of arrival for motorists
- Improve maintenance crew safety
- Resolve erosion control issues at overpass abutments

### Objectives:

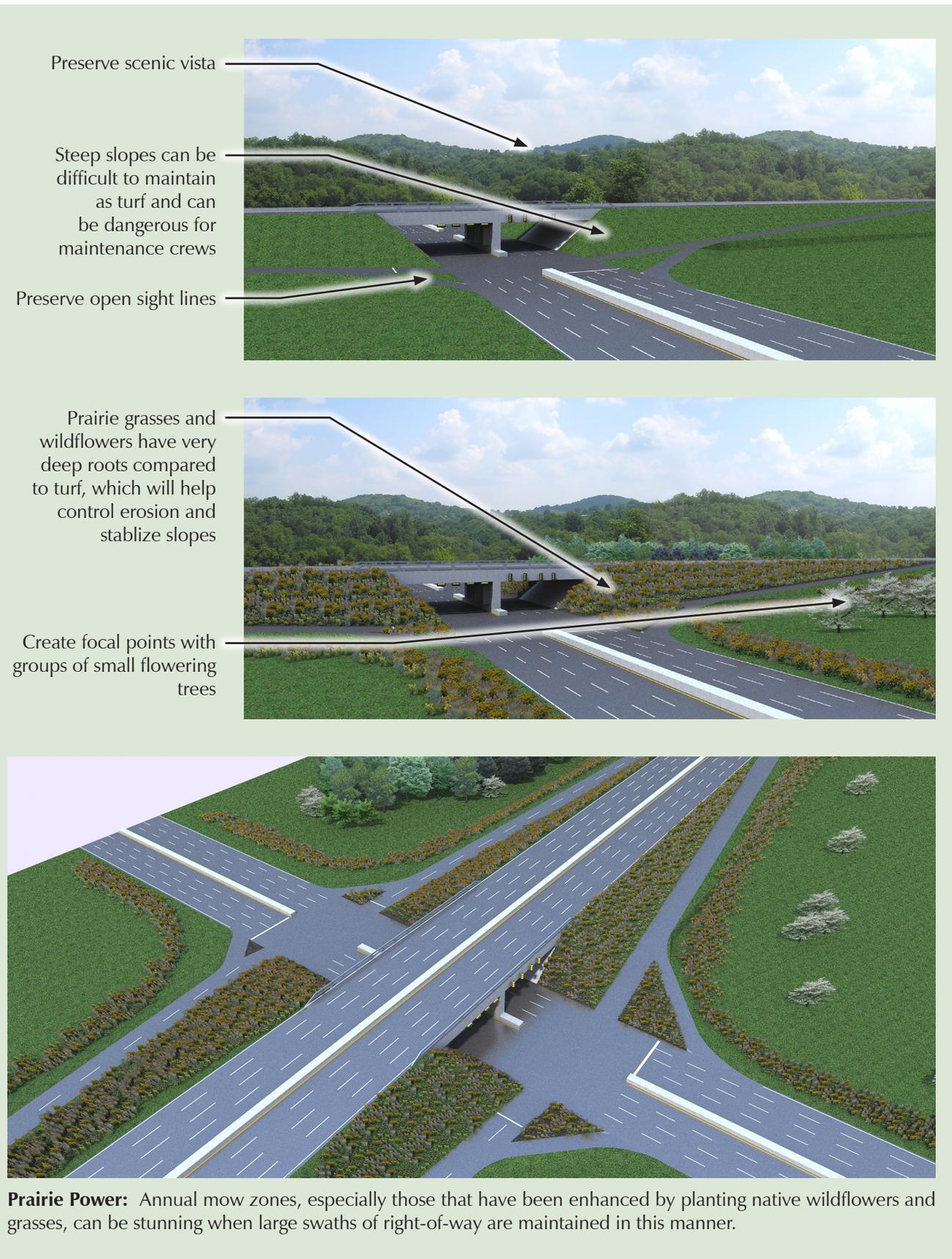
- Choose plants that are low maintenance following establishment
- Reduce total mowed area
- Use vegetation with deep root systems to stabilize slope
- Preserve scenic vistas and views to businesses

### Vegetation:

- Large native canopy trees
- Small native flowering trees and native shrubs for season interest
- Native grasses and wildflowers for seasonal interest and to stabilize slope
- Turf

### Solution Summary:

This is the same rural interchange as Design Solution 9. In this scenario, the project has the same budget for installation and maintenance but uses a naturalistic design approach to more effectively meet the project goals and objectives. Areas outside of the ramps and at the periphery of the rights-of-way will be allowed to return to a prairie landscape environment.



## DESIGN SOLUTION 11: Rural Right-of-Way

**Design Approach:** Naturalistic

**Resources for Installation:** Low

**Resources for Long-term Maintenance:** Low

### Goals:

- Create a sense of arrival for motorists
- Improve maintenance crew safety
- Preserve the visibility of existing signage

### Objectives:

- Choose plants that are low maintenance following establishment
- Reduce total mowed area
- Use vegetation with deep root systems to stabilize slope
- Preserve scenic vistas and views
- Screen undesirable view of power lines

### Vegetation:

- Large native canopy trees
- Native understory trees
- Native grasses and wildflowers for seasonal interest and to stabilize slopes

### Solution Summary:

This rural setting is a prominent gateway into the state of Tennessee. There is an existing welcome sign, billboard and power line. The right-of-way is currently maintained as turf. In order to reduce maintenance and improve the aesthetics of this important gateway, the designers chose a naturalistic approach to blend with the rural surroundings. The power line is screened from view by creating a massing of native trees, which are planted away from the power lines at a distance greater than their mature canopy spread. Views of the existing billboard and sign are preserved by maintaining a prairie landscape along the roadside.



**Welcome to Tennessee:** Using a naturalistic design approach with plants that are native to Tennessee creates a welcoming feeling and enhances the beauty of this rural setting.

## DESIGN SOLUTION 12: Rural Intersection

**Design Approach:** Naturalistic

**Resources for Installation:** Low

**Resources for Long-term Maintenance:** Low

### Goals:

- Create a unique sense of place
- Improve maintenance crew safety
- Preserve and/or enhance intersection safety

### Objectives:

- Choose plants that are low maintenance following establishment
- Reduce total mowed area
- Use vegetation with deep root systems to stabilize soil
- Preserve scenic vistas and views
- Preserve sight triangles at intersection

### Vegetation:

- Native grasses and wildflowers for seasonal interest and to stabilize slopes

### Solution Summary:

This rural intersection is the crossroads of a major rural arterial and a minor rural collector. The right-of-way is currently maintained as turf. In order to reduce maintenance and improve the aesthetics, the designers chose a naturalistic approach to blend with the rural surroundings. The intersection islands have received a lush treatment of wildflowers while the rights-of-way will be maintained by semi-annual mowing. Noninvasive plant species have been chosen to ensure that there will not be encroachment into the adjacent agricultural fields. Views of the surrounding agricultural fields and the sight vision triangles of the intersection have been preserved by maintaining a prairie landscape along the roadside.

Preserve sight triangles at intersection

Four way stop; preserve visibility of stop signs

Existing turf shoulder and border



Prairie grasses and wildflowers will improve aesthetics

Plant species that will not obstruct signage or sight triangles at intersection



**Unique Sense of Place:** Using a naturalistic design approach with plants that are native to Tennessee enhances the natural beauty of this rural setting.

These sample design solutions show how the processes and guidelines provided throughout this manual can be applied. Use these examples to help guide your design and development and to provide inspiration for how you might create your own unique design solution.