



Design Guidelines: Interchange Landscape & Hardscape

Version 1 - April 15th, 2024



City of Memphis & Shelby County

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CHAPTER 1: INTRODUCTION

INTRODUCTION:

Interchanges are a part of daily life. To get from one place to another we often take the highway and interact with at least two interchanges. The care and design of an interchange can transform what was once an eyesore and make it a source of enjoyment. When well designed and planted, interchanges promote driver safety and awareness, highlight local character, and inspire civic duty to reduce litter.

Often overlooked, interchanges can be an untapped resource for a municipality to showcase local character, provide an opportunity to create an inviting impression for visitors through visual appeal, improve driver attentiveness, and promote local flora and fauna.

Landscaping an interchange can seem daunting. There are numerous safety and environmental concerns that must be addressed and future maintenance strategies should be considered and documented. This document was created to provide clear guidance on how to go about designing an interchange landscape plan to improve the visual quality of those within the City of Memphis and Shelby County area.

These guidelines provide **design strategies** to enhance the natural beauty of the gateways to our communities. They showcase **hardscape treatments & plant species** found throughout the region, that provide year round color, thrive under harsh conditions, mitigate safety concerns, and provide a consistent aesthetic for interchanges in the region. The design guidelines are not meant to be a regulation for interchange design, but rather, tools for designing a safe and visually attractive interchange that can be maintained and enhanced over time.

PURPOSE:

This booklet provides a step by step outline for designing a safe and successful interchange landscape. It highlights important motorist safety considerations such as sight distance and clear zone, areas, as well as, appropriate plant species and hardscape solutions for interchanges. It also outlines different planting areas and appropriate plant materials for each that address the problems associated with the area.

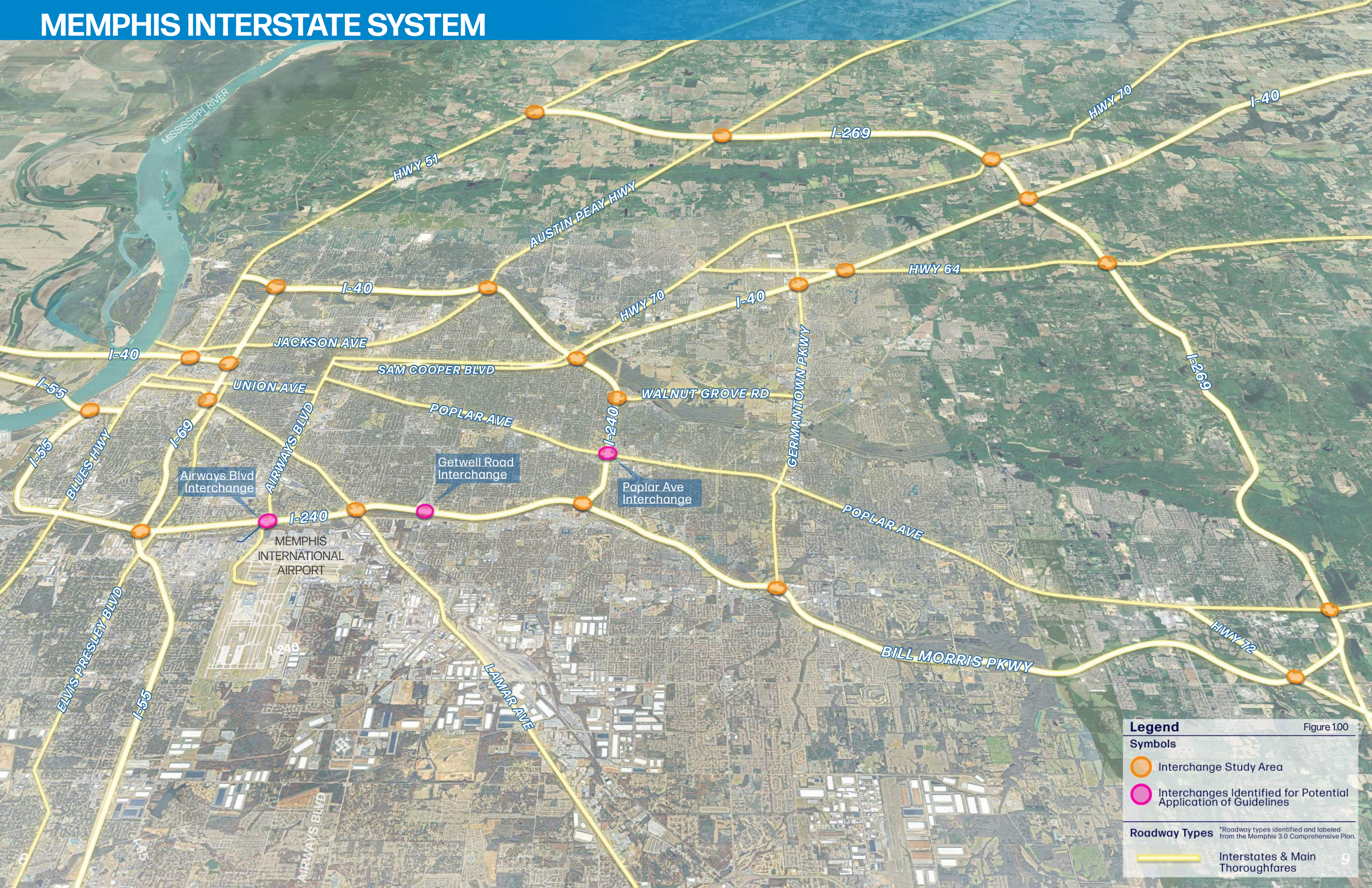
ACKNOWLEDGMENTS:

These Interchange Design Guidelines for the City of Memphis and Shelby County were created through a partnership between the Tennessee Department of Transportation - Highway Beautification Office, the Greater Memphis Chamber of Commerce, Ragan Smith and Associates, and Kimley Horn. We would like to thank the transportation staff and elected leaders of the City of Memphis and Shelby County for their collaboration.

"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."

***TDOT Landscape Guidelines Chapter 6*

MEMPHIS INTERSTATE SYSTEM



Legend Figure 100

Symbols

- Interchange Study Area
- Interchanges Identified for Potential Application of Guidelines

Roadway Types *Roadway types identified and labeled from the Memphis 3.0 Comprehensive Plan.

- Interstates & Main Thoroughfares



CHAPTER 2: DESIGNING INTERCHANGE LANDSCAPES

DESIGNING INTERCHANGE LANDSCAPES

INTERCHANGE DESIGN PROCESS

- Step 1. Conduct a **site analysis**
- Step 2. Based upon the results of the site analysis, draft **goals & objectives**
- Step 3. Determine the **interchange classification**
- Step 4. Determine the appropriate **landscape design strategy**
- Step 5. Consult with the TDOT Design Division Engineers for guidance on **Clear Zone & Sight Distance** requirements for the site
- Step 6. Outline **area classifications** of the interchange
- Step 7. Design an appropriate **landscape & hardscape** solution for the interchange that meets the goals & objectives
- Step 8. Develop a **maintenance plan**

1. SITE ANALYSIS

Take an inventory of **existing conditions** and determine how they may affect the project. These include, but are not limited to: **scale, direction of travel, planting areas, existing hardscape material, erosion control, views, anticipated development near the interchange,** and **interchange classification.**

2. GOALS & OBJECTIVES

Based on the site analysis, draft **goals & objectives** to address any issues or possible improvements to the interchange. The established goals and objectives should be used throughout the process to assess the effectiveness of the design.

3. INTERCHANGE CLASSIFICATION TYPES

Interchanges can be classified as **urban, suburban** or **rural**. Location, population of surrounding community, amount of traffic, and traffic speed are examples of factors designers should consider to determine the appropriate interchange classification. Identifying the interchange classification will influence design for the landscape and hardscape plan.

For example: an **urban interchange** might have a more ornamental, showcase of design to make a statement of welcome, or define the character of the city. While a **rural interchange** might have fewer plantings and be more open to capture scenic views and minimize cost in an area with less traffic.

4. LANDSCAPE DESIGN STRATEGY

Determining the interchange classification will help inform selection and intensity of plant material. There are three types of landscape strategies: **monoculture, naturalistic, & ornamental.**

For example: an **urban interchange**, may have an ornamental landscape, a **suburban interchange** will have a more naturalistic landscape, and a **rural interchange**, may have a monoculture landscape.

5. CLEAR ZONE & SITE DISTANCE

Along the edge of every roadway, there is a **clear zone** (see Figure 2.01). For safety and motorist visibility, this area must be clear of tall plantings. Turf grass and low growing groundcovers are typically the most appropriate plants in the clear zone. **To find the clear zone boundaries, consult with a TDOT Design Division Engineer.**

Sight distance (see Figure 2.02) is dependent upon several aspects such as road type, design speed, vertical & horizontal roadway geometry. **To determine sight distance, consult with a TDOT Design Division Engineer.**

6. AREA CLASSIFICATION

For the purpose of these guidelines, several area classifications were developed to help designers determine appropriate landscape and hardscape applications within an interchange. The Area Classifications are: **Clear Area, Core Area, Stabilization Area, & Edge Area.** See Chapter 3 for additional detail.

Note: *The clear area coincides with the TDOT defined clear zone but is specifically named for landscape design.*

7. LANDSCAPE & HARDSCAPE SOLUTIONS

Landscape is used to **enhance the beauty, add character,** and **create a sense of place** within interchanges. Specific plant types are addressed in Chapter 3.

Hardscape can be used to **emphasize local character, address safety issues,** and **break up long, featureless areas.** Specific types are addressed later in this chapter.

8. MAINTENANCE PLAN

A maintenance plan is necessary for all interchange designs. These plans should **outline specific plants, areas to be maintained,** and **the frequency the maintenance should be completed.** Cost and the entities responsible for funding and/or sponsoring maintenance should also be identified via contract.

Owners of outdoor advertising devices are allowed to remove vegetation on TDOT rights-of-way to increase visibility of their signs. Vegetation removal for billboards is not allowed in the interchange quadrants but in some instances is allowed along and near Interstate ramps and along rights-of-way adjacent to the device.

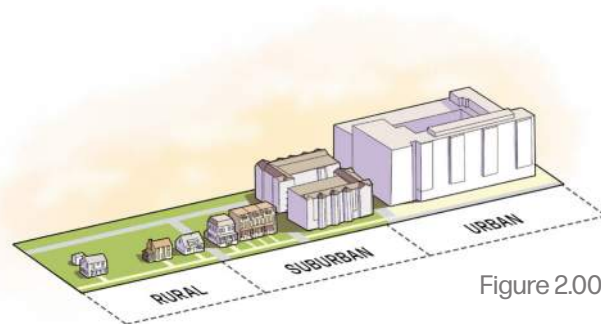


Figure 2.00

CLEAR ZONE & SIGHT DISTANCE

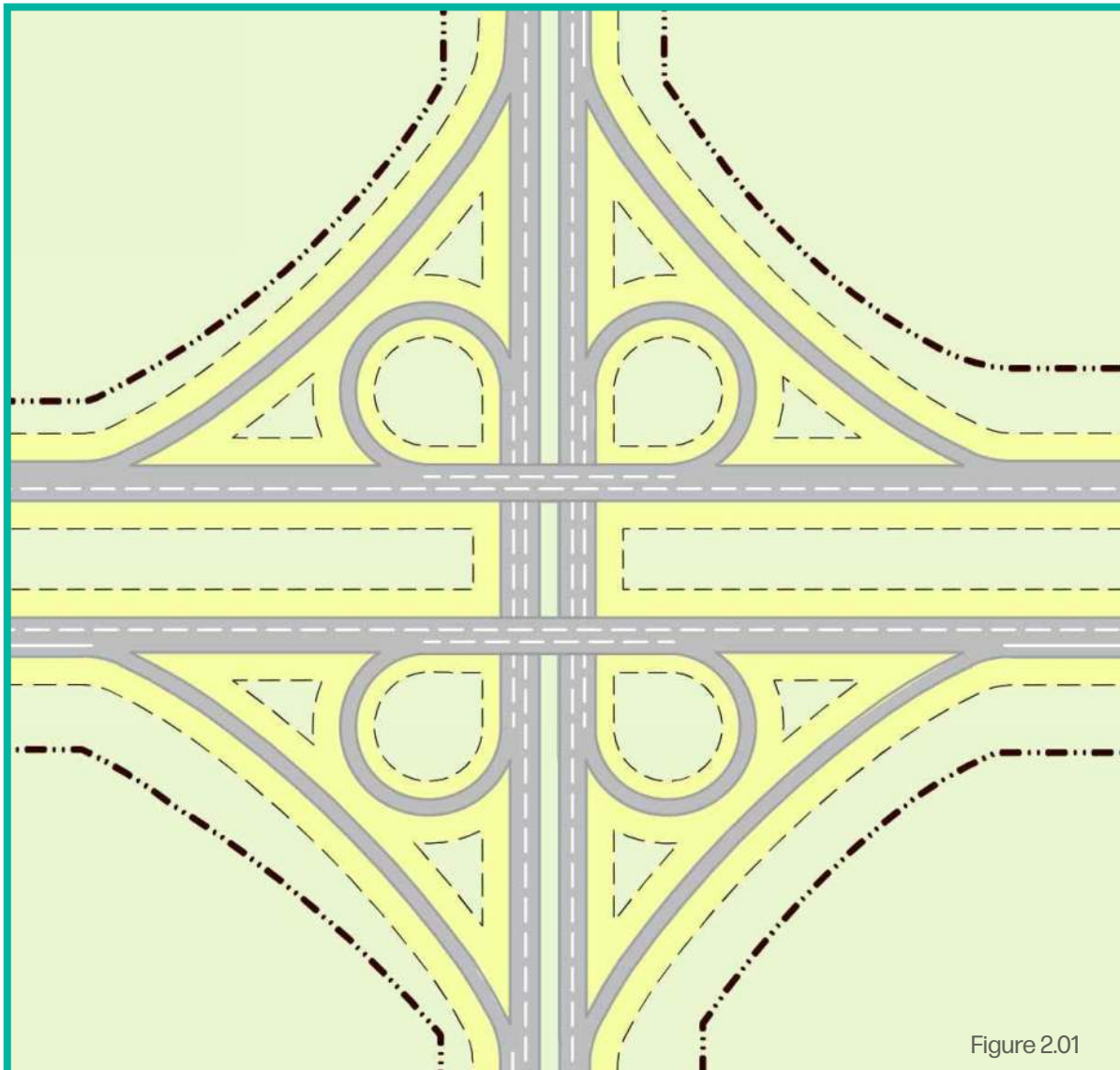


Figure 2.01

CLEAR ZONE

The clear zone is a **determined amount of space** immediately adjacent to the road that must remain **free of any obstructions**.

The exact clear zone must be determined and **outlined by a TDOT Design Division Engineer**. Speed limit plays a major role in interchange landscape design. Only turf or low growing groundcovers are appropriate in the clear zone. Refer to Figure 2.01 above.

**Note: All information from [Chapter 3](#) of the TDOT Landscape Guidelines and [FHADOT](#)*

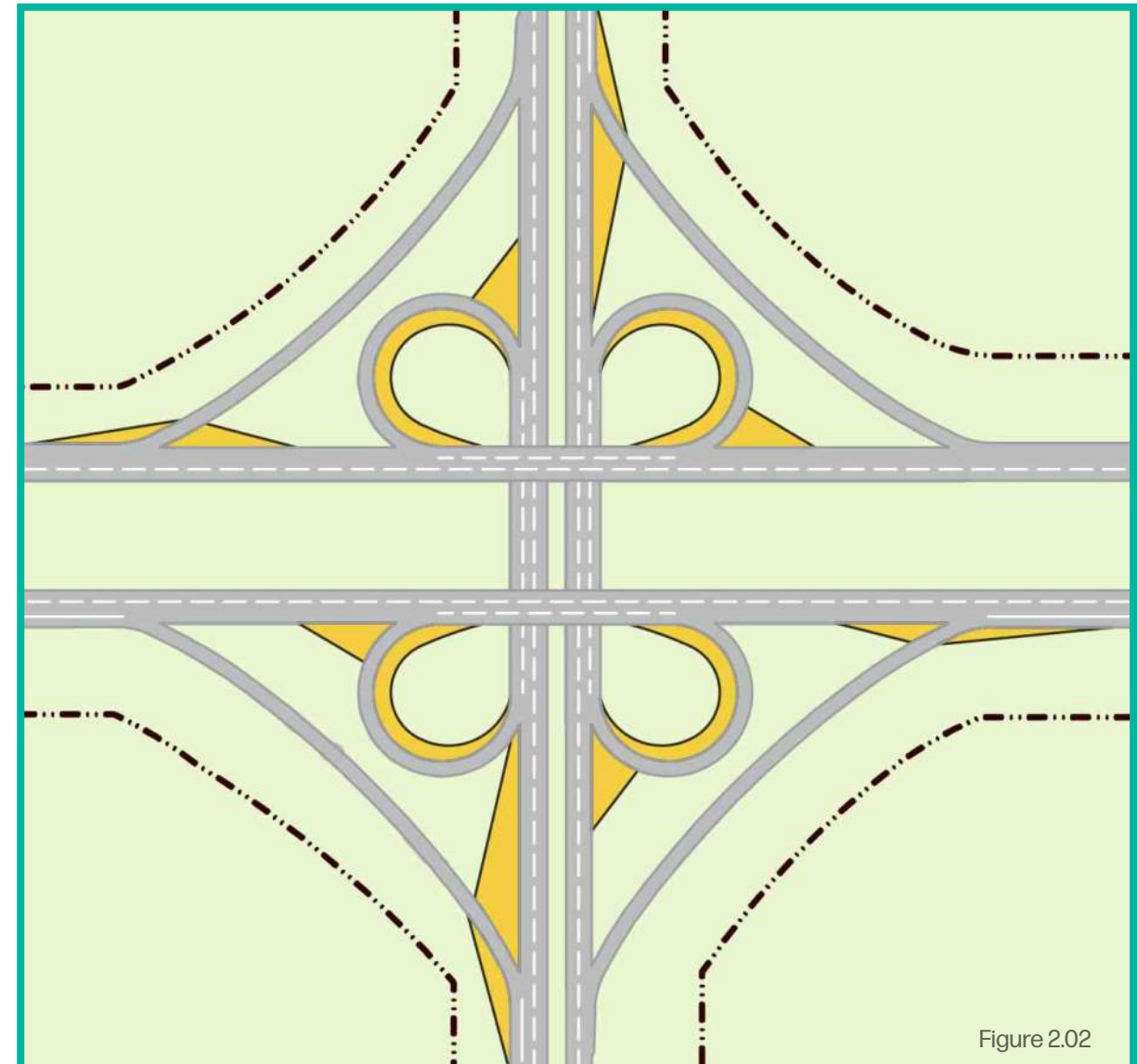


Figure 2.02

SIGHT DISTANCE

Sight distance is the **area adjacent to a roadway** where vehicles are merging into traffic that **must be kept clear of sight obstructions**. There are two components of sight distance: intersection sight distance and stopping sight distance. Refer to Figure 2.02 above.

**Note: All information from [Chapter 3](#) of TDOT Landscape Guidelines and [FHADOT](#)*

HARDSCAPE ELEMENTS

Along with plant material, *hardscape is an integral component of successful interchange design*. It can be functional, such as sound barriers, retaining walls, and guardrails, however it can also showcase local character and provide visual interest to drivers in areas with long spans of walls or greenery.

The City of Memphis prioritized the selections of hardscape being Concrete, Concrete Engraving, Stamped Concrete, and Colored Concrete. These prioritized materials will be classified as **Tier 1 Materials**. A recent local example using Tier 1 materials can be found at the I-40 & Canada Road Interchange.

Additional materials such as brick, modular block, and stone may be appropriate in some instances. These additional accent materials will be classified as **Tier 2 Materials**.

Whether it is a retaining wall, guardrail, local mural, or boulder surrounded by plantings, hardscape can provide safety, as well as, complement the landscape material to create a finished look for the interchange.

Tier 1 - Materials



Figure 2.03

Concrete

is the most cost effective material choice. It can be colored or stamped to add more visual interest or provide some sense of place (Figure 2.03).



Figure 2.04

Stamped Concrete

is currently used widely by TDOT. It helps to create a uniform but also interesting aesthetic to retaining walls or sound barriers (Figure 2.04).



Figure 2.05

Colored Concrete

may be appropriate at interchanges with pedestrian access. Colored concrete can provide more interest in the ground plane and can emphasize local character through color (Figure 2.05).

**Note: Tri-Star is FHWA approved.*



Figure 2.06

Concrete Engraving

and stenciling can be used to decorate or engrave walls or overpasses to add to the local character of an interchange (Figure 2.06).

Tier 2 - Accent Materials



Figure 2.07

Brick

is a vernacular material of Tennessee. Use of brick in the landscape design might be appropriate in more urban or developed areas. Use of brick would not be appropriate at a rural interchange as it has a more urban and developed design connotation (Figure 2.07).



Figure 2.08

Modular Block

comes in a variety of sizes, colors, and textures. Modular block can be used for retaining or sound proofing walls. Because of its variety it can make long spans of walls feel less monotonous and help drivers stay engaged (Figure 2.08).



Figure 2.09

Stone

also, a vernacular material of Tennessee and often naturally found along roadways, can be used for wall or landscape interest, as well as, a wall base and roadway shoulders (Figure 2.09).

Site Furnishings & Lighting Elements

Pedestrian Guardrails

are used to protect pedestrians from grade change and falls. Preferred handrails are to be decorative, black powdercoated steel. (Figure 2.10).



Figure 2.10

Vehicular Guardrails

are used to prevent accidents in areas with non-recoverable slopes. The typical galvanized steel can have a strong visual impact especially in areas with natural scenery. Paint can be applied to limit their visual impact (Figure 2.11).



Figure 2.11

Lighting

there are three types of lighting fixtures that are appropriate in the interstate setting: High Mast (Figure 2.14), Mast Arm (Figure 2.13), and Multi-Mount (Figure 2.12).



Figure 2.12



Figure 2.13



Figure 2.14

**Note: All material information and additional materials found in Chapter 4 of the TDOT Landscape Guidelines.*

MAINTENANCE PLAN

A maintenance plan is important in preserving the landscape design to keep it healthy and attractive. Choosing plants and designing landscapes that are low maintenance will ensure they present well throughout the year.

TDOT Asset Management Division provides basic mowing and litter pickup along the interstate system. TDOT does not provide watering, annual tree and shrub trimming, fertilization and weed maintenance. Public and Private partnerships and local support are key to the success and sustainability of enhanced landscaping at the interchanges and along the interstate system. These partnerships are recommended and the key to sustaining ongoing maintenance along with ensuring the success of enhanced landscape beautification along Tennessee's interstates.

Contractors are required to provide maintenance of landscape elements for a minimum of one year after substantial completion. Prior to any construction award, and preferably once design documents are approved, a plan for maintenance continuity should be reached by the county and/or the city. This maintenance plan may include non profit groups vetted by either public entity as able to meet the requirements of the contract.



Figure 2.15

Topics that can be addressed as part of the maintenance plan can include but are not limited to:

- Types of maintenance required for an area
- Frequency of maintenance
- Time of year that tasks are to be completed
- Necessary equipment

Information about the intended use of the landscape should be included so that the designer's decisions are carried out.

For instance if an area is to remain open for views, that should be noted as part of the plan so shrubs or trees can be pruned or cut back rather than being allowed to grow together.

**Note: All information is from Chapter 5 of the TDOT Landscape Guidelines*

Funding

It is possible to work with local groups to ensure funding for interchange maintenance; however these agreements must be overseen and approved by various members of the Shelby County Board of Commissioners and TDOT.

Service	Months	Frequency
Full - Service Visit	Apr - Oct	Weekly (26)
Retention Areas	Apr - Oct	N/A
Bush Hog Areas (5 services)	May - Sept	N/A
Spring Cleanup	Jan - Mar	Twice per Month
Mulch	Feb or Mar	1
Pine Straw	Feb or Mar	N/A
Spring Annual Color	Apr or May	N/A
Fall Annual Color	Oct	N/A
Leaf Season Service	Nov - Dec	Twice per Month
Irrigation Start-up	Mar or Apr	1
Irrigation Service Checks	May - Sept	5
Irrigation Winterization	Nov - Dec	1
Backflow Test (Mandatory at startup in TN)	Mar or Apr	1
Turf Late Winter Pre/Post Emergent		
Turf Spring Pre/Post Emergent		
Turf Summer Fertilizer		
Turf Summer Post Emergent - Spot		
Turf Fall Pre/Post Emergent		
Bed Pre-Emergent		
Bed Fertilization	Apr or May	
Roundup for Weeds Growing in Cracks		

Figure 2.16

**Note: Figure 2.16 is an example of a maintenance schedule. The Landscape Contractor must set up their own maintenance schedule based on the interchange and landscape classifications.*



CHAPTER 3: INTERCHANGE DESIGN: PLANTING AREAS

INTERCHANGE DESIGN: PLANTING AREAS

CLEAR AREA

The clear area coincides with the TDOT clear zone dedication and is **characterized** by low growing plant material or seed mixes. Plants in this area should not grow taller than 24 inches above grade to allow for **unobstructed views** for drivers and a safe easy area to pull off in case of emergencies.

Objectives:

- **Provide** a ground plane variety of landscape and hardscape materials
- **Establish** roadway vs. landscape
- Continuous driver **visibility**

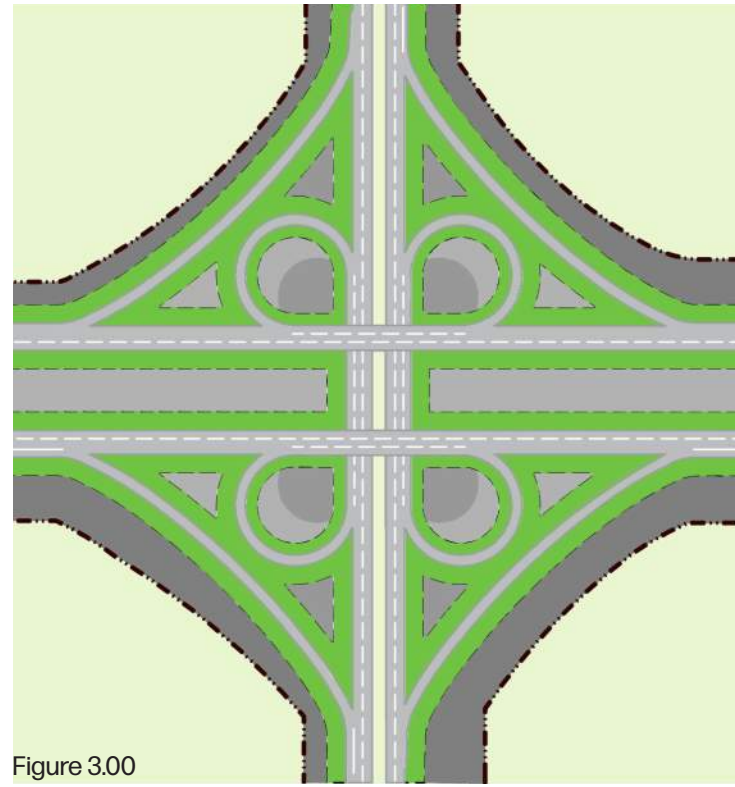


Figure 3.00

STABILIZATION AREA

Stabilization areas typically feature large **topographic changes** that might require soil stabilization strategies. The strategy for these areas is to use deep rooted trees, shrubs or groundcovers that will mitigate possible erosion.

Objectives:

- **Establish** plantings that promote slope stabilization and erosion control
- **Maintain** storm drainage patterns
- Provide a **consistent** visual identity

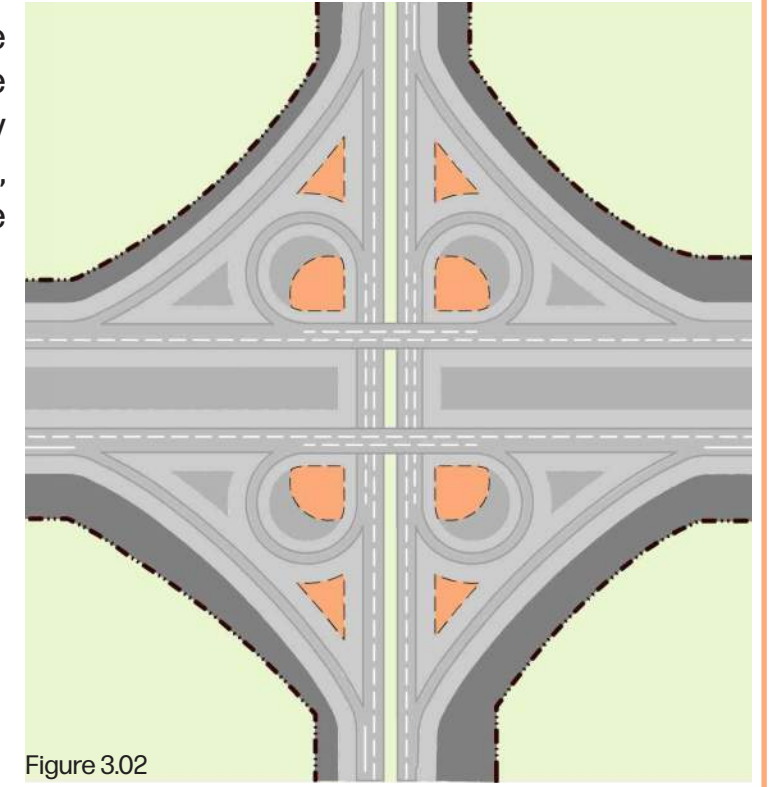


Figure 3.02

CORE AREA

Core areas often have **high water retention** and little to no grade change. These areas require plants that are both **drought & wet soil tolerant**. Interchanges found with this zone may require more engineered draining strategies depending on the amount of water in the area.

Objectives:

- **Re-establish** canopy cover within the interchange
- **Promote** plantings that are drought, heat, and water tolerant
- Continued driver **visibility & safety**



Figure 3.01

EDGE AREA

Edge areas are located at the **perimeter** of the interchange. During a site analysis any need for visual and audible screening will be determined and is focused in this area. Unseemly buildings, picturesque or borrowed views may be **screened or highlighted** through planting strategies in this area.

Objectives:

- **Re-establish** edge boundaries
- Provide **multi-seasonal screening** to and from surrounding properties
- Incorporate **native landscape** that is consistent with the region

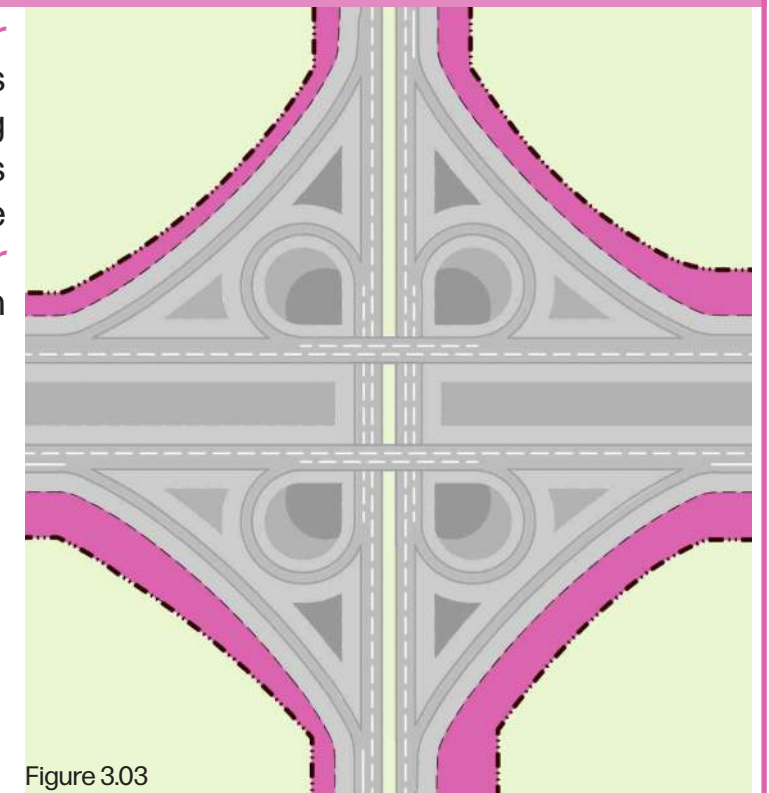


Figure 3.03

CLEAR AREA PLANT PALETTE & COLOR SCHEDULE

The area directly adjacent to vehicular lanes requires low plantings and hardscape strategies that allow for a clear line of sight and a **clear area** for vehicles to exit the roadway in case of an emergency.

On roadways with a speed of 45 mph or greater, only turf, native and low growing ornamental grasses, groundcovers, and flowers are appropriate vegetation for the clear area. Plant material must not exceed 24" above grade at maturity.

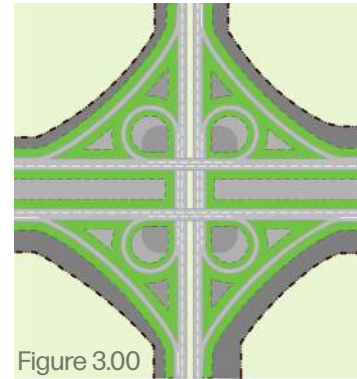


Figure 3.00

List of Acceptable Plant Material for the Clear Area

Evergreen Groundcover

- Creeping Juniper - *Juniperus horizontalis*
- Lily Turf - *Liriope muscari*
- Allegheny Spurge - *Pachysandra procumbens*
- Foam Flower - *Tiarella cordifolia*
- Shore Juniper - *Juniperus conferta*
- Garden Juniper - *Juniperus procumbens* 'Nana'

Deciduous Groundcover / Perennials

- Wild Ginger - *Asarum canadense*
- Pussytoes - *Antennaria plantaginifolia*
- Daffodil - *Narcissus*
- Lobed Tickseed - *Coreopsis auriculata*
- Eastern Bluestar - *Amsonia tabernaemontana*
- Prairie Phlox - *Phlox pilosa*
- Pinks - *Dianthus*
- Lanceleaf Coreopsis - *Coreopsis lanceolata*
- Wood Sorrel - *Oxalis violacea*
- Creeping Jenny - *Lysimachia nummularia*
- Creeping St. John's Wort - *Hypericum anagalloides*
- Daylily - *Hemerocallis*
- Wild Bleeding Heart - *Dicentra eximia*
- Green and Gold - *Chrysogonum virginianum*
- Golden Star - *Chrysogonum virginianum* var. *australe*
- Creeping Phlox - *Phlox stolonifera*



Daffodil - *Narcissus*



Lobed Tickseed - *Coreopsis auriculata*



Eastern Bluestar - *Amsonia tabernaemontana*



Pinks - *Dianthus*



Lanceleaf Coreopsis - *Coreopsis lanceolata*



Wood Sorrel - *Oxalis violacea*



Creeping St. John's Wort - *Hypericum anagalloides*



Daylily - *Hemerocallis*



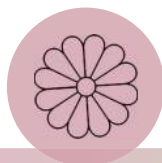
Wild Bleeding Heart - *Dicentra eximia*



Golden Star - *Chrysogonum virginianum* var. *australe*



Creeping Phlox - *Phlox stolonifera*



MAR - APR - MAY - JUNE - JULY - AUG - SEPT - OCT - NOV - DEC - JAN - FEB



Figure 3.04

CORE AREA PLANT PALETTE & COLOR SCHEDULE

The **core area** is characterized by high water retention and little to no grade change. This area requires hardy plants that can tolerate both wet and dry soils.

Designs should have an emphasis on drainage and controlling stormwater runoff. Plantings should be a mixture of deciduous and evergreen trees and shrubs, native ornamental grasses, and flowers of varying heights.

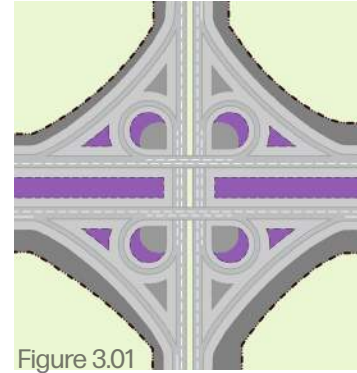


Figure 3.01

List of Acceptable Plant Material for the Core Area

Evergreen Trees

- American Holly - *Ilex opaca*
- Southern Magnolia - *Magnolia grandiflora*

Deciduous Trees

- Bald Cypress - *Taxodium distichum*
- Swamp Chestnut Oak - *Quercus michauxii*
- Water Oak - *Quercus nigra*

Ornamental Trees

- Kousa Dogwood - *Cornus kousa*
- Redbud - *Cercis canadensis*
- River Birch - *Betula nigra*
- Crape Myrtle - *Lagerstroemia Indica*

Evergreen Shrubs

- Chinese Holly - *Ilex cornuta*
- Spreading Cotoneaster - *Cotoneaster divericatus*

Deciduous Shrubs

- Red Chokeberry - *Aronia arbutifolia*
- Virginia Sweetspire - *Itea virginica*
- Summersweet Clethra - *Clethra alnifolia*
- Redosier Dogwood - *Cornus sericea*

Ornamental Grasses

- Feather Reed Grass - *Calamagrostis x acutiflora*
- Shenandoah Switchgrass - *Panicum virgatum* 'Shenandoah'
- Fountain Grass - *Pennisetum setaceum*
- Standing Ovation Little Bluestem - *Schizachyrium scoparium* 'Standing Ovation'
- Maiden Grass - *Miscnathus sinensis*

Perennials

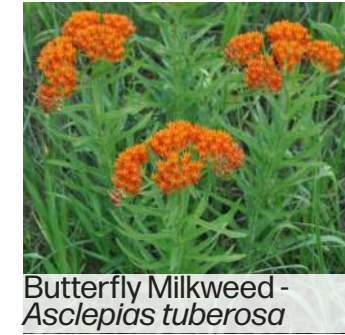
- Butterfly Milkweed - *Asclepias tuberosa*
- Bee Balm - *Monarda didyma*
- Cardinal Flower - *Lobelia cardinalis*



Red Chokeberry - *Aronia arbutifolia*



Bald Cypress - *Taxodium distichum*



Butterfly Milkweed - *Asclepias tuberosa*



Redbud - *Cercis canadensis*



Swamp Chestnut Oak - *Quercus michauxii*



River Birch - *Betula nigra*



Virginia Sweetspire - *Itea virginica*



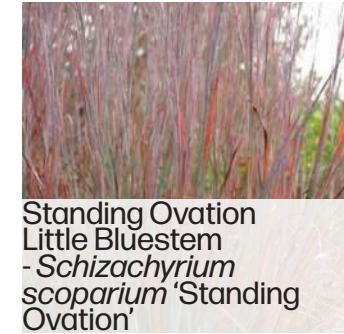
Bee Balm - *Monarda didyma*



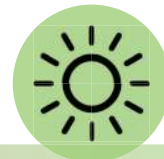
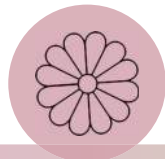
Redosier Dogwood - *Cornus sericea*



Shenandoah Switchgrass - *Panicum virgatum* 'Shenandoah'



Standing Ovation Little Bluestem - *Schizachyrium scoparium* 'Standing Ovation'



MAR - APR - MAY - JUNE - JULY - AUG - SEPT - OCT - NOV - DEC - JAN - FEB

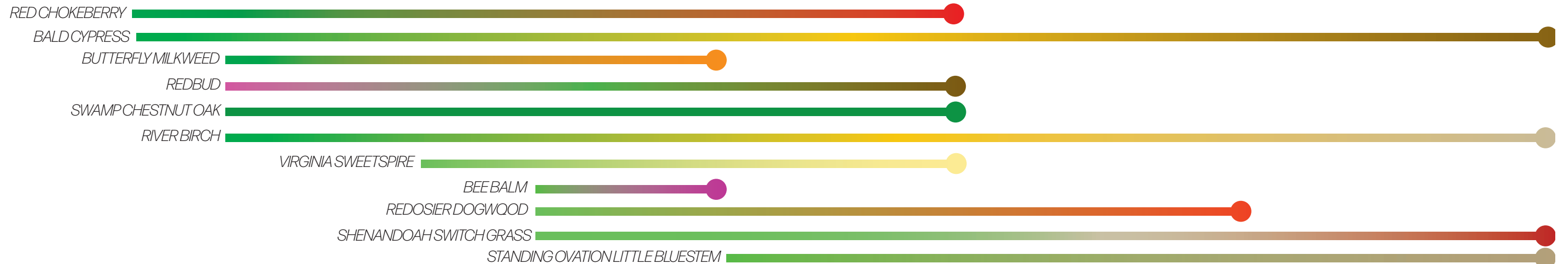


Figure 3.05

STABILIZATION AREA PLANT PALETTE & COLOR SCHEDULE

Stabilization areas typically feature large topographic changes and require soil stabilization to prevent erosion.

In the Stabilization Area it is appropriate to have deep rooted plants of varying heights to help with stabilizing the slope and control erosion. Plants should include a mix of deciduous and evergreen trees and shrubs, native and ornamental grasses and flowers.



Figure 3.02

List of Acceptable Plant Material for the Stabilization Area

Evergreen Trees

- American Holly - *Ilex opaca*
- Eastern Red Cedar - *Juniperus virginiana*

Deciduous Trees

- Willow Oak - *Quercus phellos*
- American Hophornbeam - *Ostrya virginiana*
- Tulip Poplar - *Liriodendron tulipifera*

Ornamental Trees

- Autumn Brilliance Serviceberry - *Amelanchier grandiflora*

Evergreen Shrubs

- Andorra Juniper - *Juniperus horizontalis* 'Plumosa Compacta'
- Chinese Holly - *Ilex cornuta*

Deciduous Shrubs

- Red Chokeberry - *Aronia arbutifolia*
- Eastern Bluestar - *Amsonia tabernaemontana*
- Oakleaf Hydrangea - *Hydrangea quercifolia*
- American Beautyberry - *Callicarpa americana*

Ornamental Grasses

- Feather Reed Grass - *Calamagrostis x acutiflora*
- Sioux Blue Indian Grass - *Sorghastrum nutans* 'Sioux Blue'
- Shenandoah Switchgrass - *Panicum virgatum* 'Shenandoah'
- Standing Ovation Little Bluestem - *Schizachyrium scoparium* 'Standing Ovation'
- Big Bluestem - *Andropogon gerardii*

Perennials

- Wild Columbine - *Aquilegia canadensis*
- Creeping St. John's Wort - *Hypericum anagalloides*
- Wild Bleeding Heart - *Dicentra eximia*
- Purple Coneflower - *Echinacea purpurea*
- Creeping Phlox - *Phlox stolonifera*
- Black-Eyed Susan - *Rudbeckia hirta*



Autumn Brilliance Serviceberry - *Amelanchier grandiflora* 'Autumn Brilliance'



Wild Columbine - *Aquilegia canadensis*



Red Chokeberry - *Aronia arbutifolia*



Oakleaf Hydrangea - *Hydrangea quercifolia*



Eastern Bluestar - *Amsonia tabernaemontana*



Feather Reed Grass - *Calamagrostis x acutiflora*



Purple Coneflower - *Echinacea purpurea*



Creeping Phlox - *Phlox stolonifera*



Black-Eyed Susan - *Rudbeckia hirta*



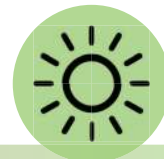
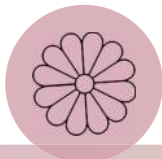
Sioux Blue Indian Grass - *Sorghastrum nutans* 'Sioux Blue'



Shenandoah Switchgrass - *Panicum virgatum* 'Shenandoah'



Big Bluestem - *Andropogon gerardii*



MAR - APR - MAY - JUNE - JULY - AUG - SEPT - OCT - NOV - DEC - JAN - FEB

AUTUMN BRILLIANCE SERVICEBERRY

WILD COLUMBINE

RED CHOKEBERRY

EASTERN BLUESTAR

OAKLEAF HYDRANGEA

KARL FORESTER FEATHER REED GRASS

PURPLE CONEFLOWER

CREEPING PHLOX

BLACK EYED SUSAN

SHENANDOAH SWITCH GRASS

BIG BLUESTEM

Figure 3.06

EDGE AREA PLANT PALETTE & COLOR SCHEDULE

Edge areas are located at the perimeter of the interchange. Design of the edge area should consider both the visual and audible experience beyond. Unseemly buildings, loud roadway noises, picturesque or borrowed views may be screened or highlighted through planting and hardscape strategies in this area.

In the Edge Area, it is appropriate to have a mixture of deciduous and evergreen trees and ornamental shrubs, native and ornamental grasses, and flowers.

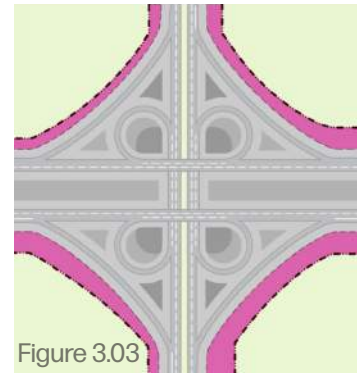


Figure 3.03

List of Acceptable Plant Material for the Edge Area

Evergreen Trees

- Foster Holly - *Ilex x attenuata* 'Fosteri'
- Eastern Red Cedar - *Juniperus virginiana*
- Southern Magnolia - *Magnolia grandiflora*

Deciduous Trees

- Bald Cypress - *Taxodium distichum*
- American Hophornbeam - *Ostrya virginiana*
- Tulip Poplar - *Liriodendron tulipifera*

Ornamental Trees

- Flowering Dogwood - *Cornus florida*
- Winged Sumac - *Rhus copallina*

Evergreen Shrubs

- Chinese Holly - *Ilex cornuta*
- Andorra Juniper - *Juniperus horizontalis* 'Plumosa Compacta'

Deciduous Shrubs

- Flame Azalea - *Rhododendron calendulaceum*
- Fragrant Sumac - *Rhus aromatica*
- Eastern Bluestar - *Amsonia tabernaemontana*
- Arrowwood Viburnum - *Viburnum dentatum*
- Oakleaf Hydrangea - *Hydrangea quercifolia*

Ornamental Grasses

- Shenendoah Switchgrass - *Panicum virgatum* 'Shenendoah'
- Northwind Switchgrass - *Panicum virgatum* 'Northwind'
- Standing Ovation Little Bluestem - *Schizachyrium scoparium* 'Standing Ovation'

Perennials

- Butterfly Milkweed - *Asclepias tuberosa*
- Colorado Mix Yarrow - *Achillea millefolium* 'Colorado Mix'
- Dense Blazing Star - *Liatris spicata*



Flowering Dogwood - *Cornus florida*



Flame Azalea - *Rhododendron calendulaceum*



Fragrant Sumac - *Rhus aromatica*



Bald Cypress - *Taxodium distichum*



Butterfly Milkweed - *Asclepias tuberosa*



Creeping St. John's Wort - *Hypericum anagalloides*



Tulip Poplar - *Liriodendron tulipifera*



Arrowwood Viburnum - *Viburnum dentatum*



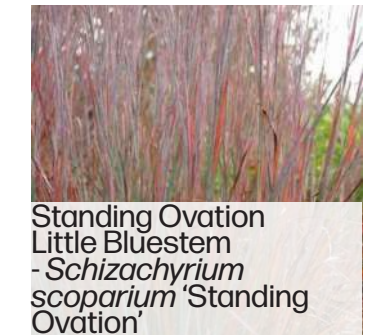
Oakleaf Hydrangea - *Hydrangea quercifolia*



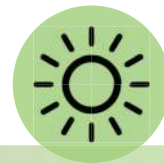
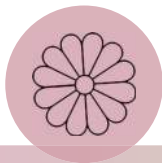
Dense Blazing Star - *Liatris spicata*



Northwind Switchgrass - *Panicum virgatum* 'Northwind'



Standing Ovation Little Bluestem - *Schizachyrium scoparium* 'Standing Ovation'



MAR - APR - MAY - JUNE - JULY - AUG - SEPT - OCT - NOV - DEC - JAN - FEB

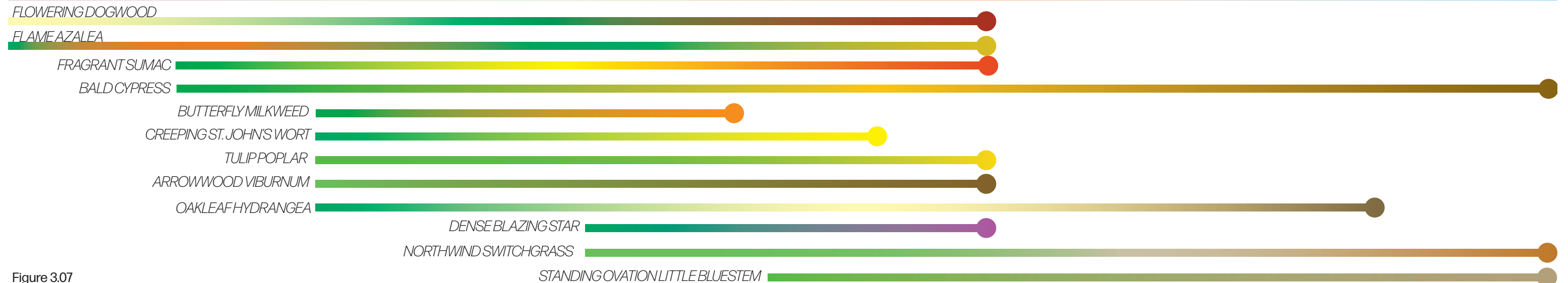


Figure 3.07



CHAPTER 4: EXAMPLE INTERCHANGE: GETWELL ROAD

EXAMPLE INTERCHANGE: GETWELL ROAD

GETWELL ROAD INTERCHANGE DESIGN PROCESS

- Step 1. Conduct a *site analysis*
- Step 2. Based upon the results of the site analysis, draft *goals & objectives*
- Step 3. Determine the *interchange classification*
- Step 4. Determine the appropriate *landscape design strategy*
- Step 5. Consult with the TDOT Design Division Engineers for guidance on *Clear Zone & Sight Distance* requirements for the site
- Step 6. Outline *area classifications* of the interchange
- Step 7. Design an appropriate *landscape & hardscape* solution for the interchange that meets the goals & objectives
- Step 8. Develop a *maintenance plan*

STEP 1: SITE ANALYSIS

Before starting the design of the Getwell Road Interchange a *site analysis was conducted*. Adjacent land-uses include commercial, industrial, and vacant land.

Other observations include how the development near the interchange has remained the same over time, the scale of the interchange, and noting the direction of vehicular travel.

Getwell Road Interchange 2004 - 2020

The Interchange at Getwell Road has seen little change over the past 16 or so years (see below). Some of the needs that should be addressed include: providing visual interest for drivers, defining the different planting areas, screening views of the nearby industrial areas, and using the landscape to create a safe and scenic interchange experience.



Figure 4.00



Figure 4.01

Scale Analysis

Similar in size to interchanges throughout the region, the Getwell Road interchange comprises a massive 19 acres for potential plantings and hardscape, the interchange encompasses an area large enough to accommodate more than the FedEx Forum and Getwell Elementary School.



Figure 4.02

Direction of Travel

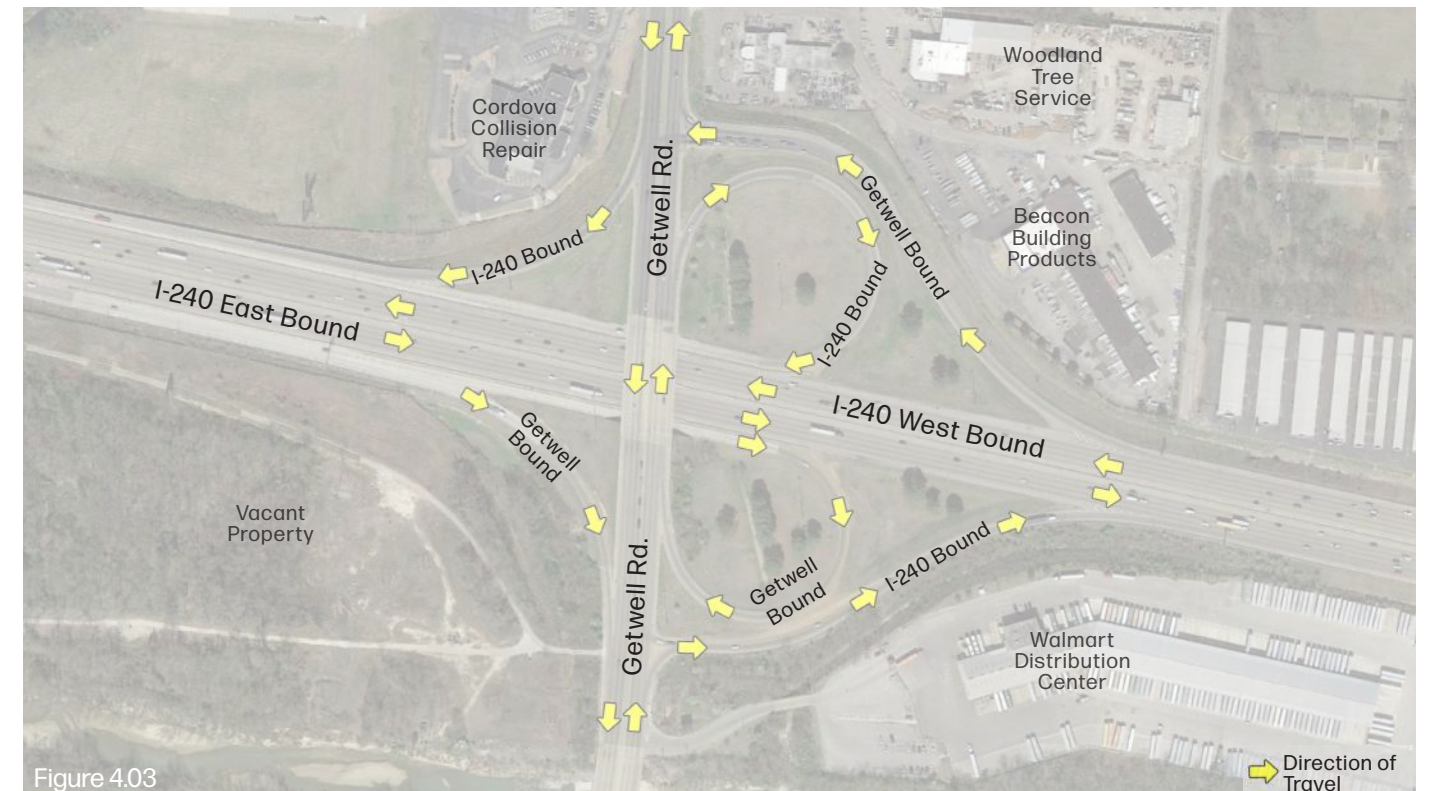


Figure 4.03

Direction of Travel

STEP 2: GOALS & OBJECTIVES

After conducting a site analysis, *goals & objectives* were created for the Getwell Road interchange.

Goals & Objectives

- **Create a sense of arrival to Memphis**
 - Create a cohesive connection with each interchange in Memphis through the use of similar plant and hardscape materials.
 - These can be the *same or similar materials* to other interchanges in the area.
- **Reduce the amount of stormwater runoff**
 - Using *deep rooted plants* and *reducing the amount of turf areas* will help mitigate and slow down the stormwater runoff.
- **Retain specimen trees when possible**
 - There are several existing specimen trees within the interchange. They are to be *surveyed and evaluated regarding their health*. If healthy enough, they are to be retained.
- **Calm motorists along the interstate**
 - This is accomplished using both *landscape & hardscape* materials. Keeping the planting design simple with swaths of color and trees in a repetitive pattern along with the use of *walls & guardrails* will help drivers stay focused on the road, while keeping them aware of their surroundings.

STEP 3: INTERCHANGE CLASSIFICATION

The designer should assess development patterns in the vicinity of the interchange and classify whether the area is *urban, suburban, or rural*.

The development near the Getwell Road interchange consists primarily of large commercial and industrial buildings wrapped by parking lots, as well as, the Memphis International Airport. *This type of development pattern is typical of a suburban setting.*

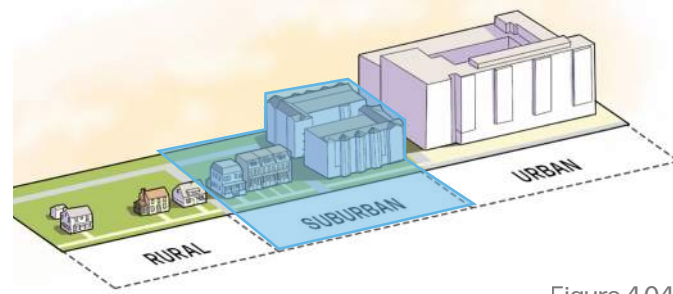


Figure 4.04

STEP 4: LANDSCAPE DESIGN STRATEGY

Since the Getwell Road interchange was defined as *suburban*, the designer should use this classification to influence the landscape and hardscape design. A *naturalistic design* approach is appropriate for this suburban setting.

Landscape Design Strategy

Having observed that the interchange is suburban, and identified that a naturalistic design is appropriate, the designer should *limit the number of plant types and species*. Keeping a simple planting palette can be accomplished by selecting species that are suitable for multiple areas within the interchange. This will allow the designer to create *large plant massings with swaths of color*.

STEP 5: CLEAR ZONE & SIGHT DISTANCE

After consulting the TDOT Design Division Engineer, the following *clear zones & sight distances* were overlaid onto the base map. Knowing the location of the clear zone and areas requiring sight distance, the designer can determine where the low growing *landscape* and the surface level *hardscape* should be proposed for driver safety and visibility.

Clear Zone

The clear zone is adjacent to all driving surfaces. The depth of the clear zone depends on the speed of travel and if the location is where the driver will need more visible area for turning or merging.

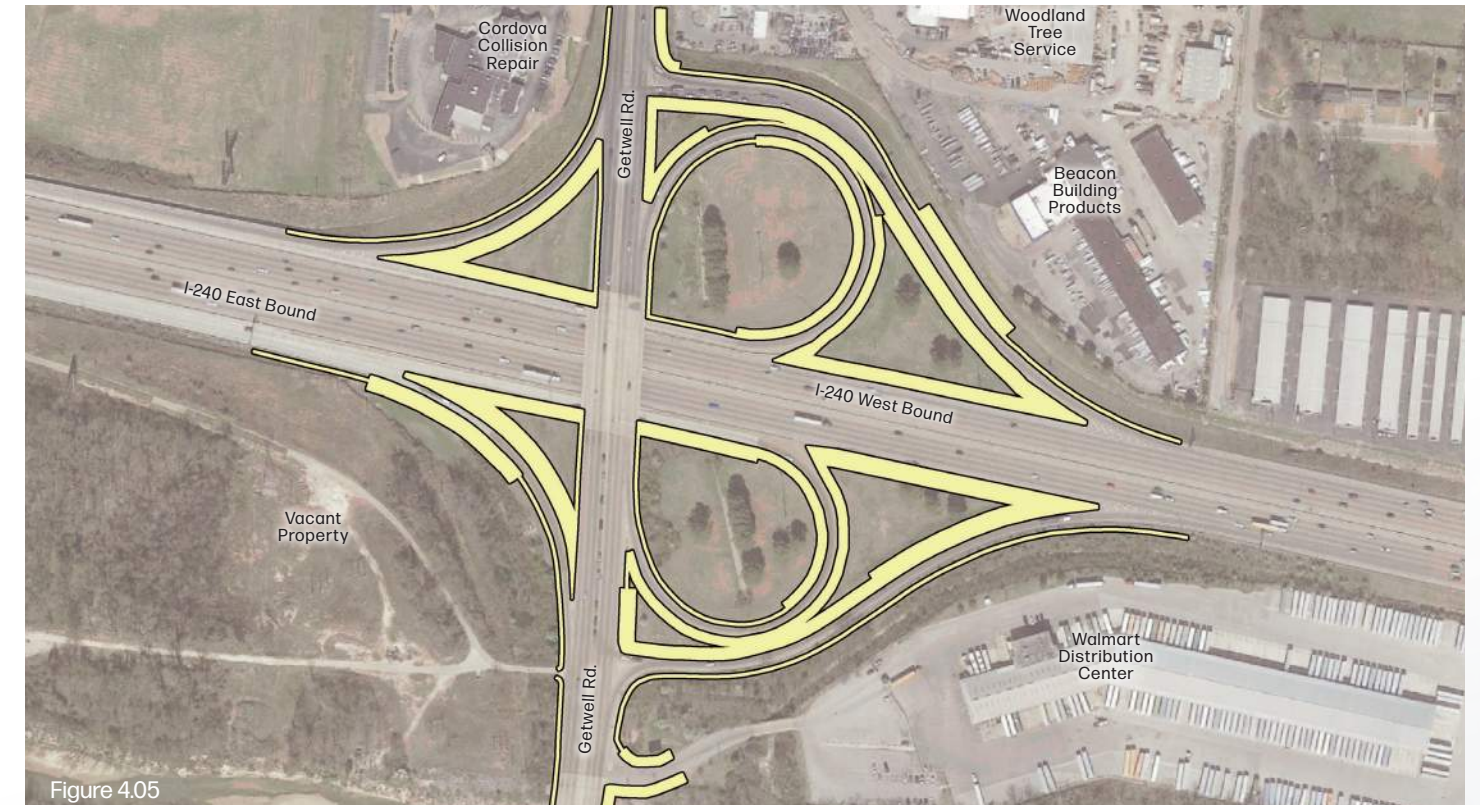


Figure 4.05

Sight Distance

The sight distance areas at this interchange are located where the driver will be merging or turning. When turning and merging, the driver needs to see where the other motorists are located to safely make the maneuver.



Figure 4.06

STEP 6: AREA CLASSIFICATION

Next, the designer should classify each of the four landscape and hardscape areas within the interchange. This includes *clear area* (which directly corresponds to the clear zone determined in Step 5), *core area*, *stabilization area*, and *edge area*.

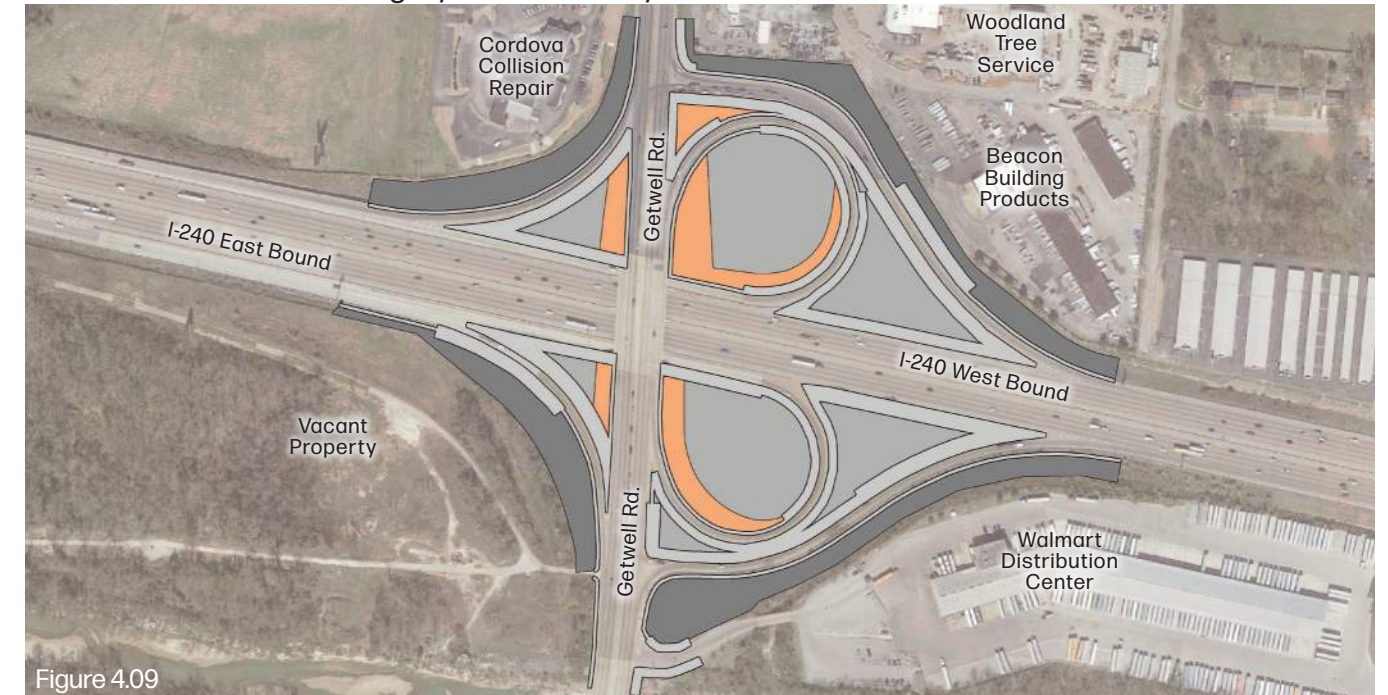
Clear Area

The clear areas vary in depth depending on their location within the interchange. The depth of the clear area is greater at an intersection or merging lane, the depth of the clear area is greater.



Stabilization Area

The stabilization area for the Getwell Road interchange is located along the Getwell Road overpass. The slope in these areas is steep, therefore erosion control and stabilization will be needed to maintain the integrity of the roadway.



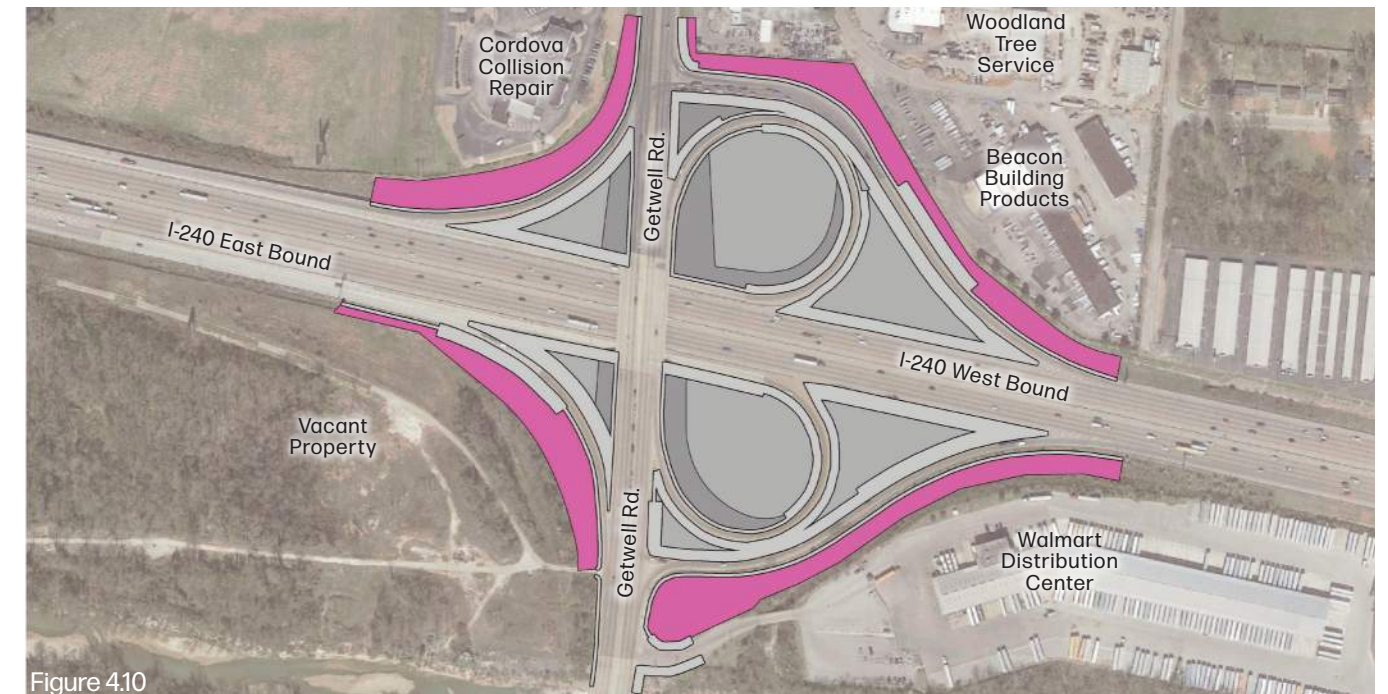
Core Area

Core areas are typically located toward the interior of the interchange. These areas may be slightly depressed below the roadway and therefore it should be anticipated that stormwater will likely drain to or through this space. Thus, plant species should be selected that are tolerable of both very wet and dry soil conditions.



Edge Area

The edge area of this interchange is adjacent to three different land uses. For the vacant property, the need for heavy screening is less than that for the Walmart Distribution Center or the three commercial businesses that may require more audible screening, as well as, visual screening.



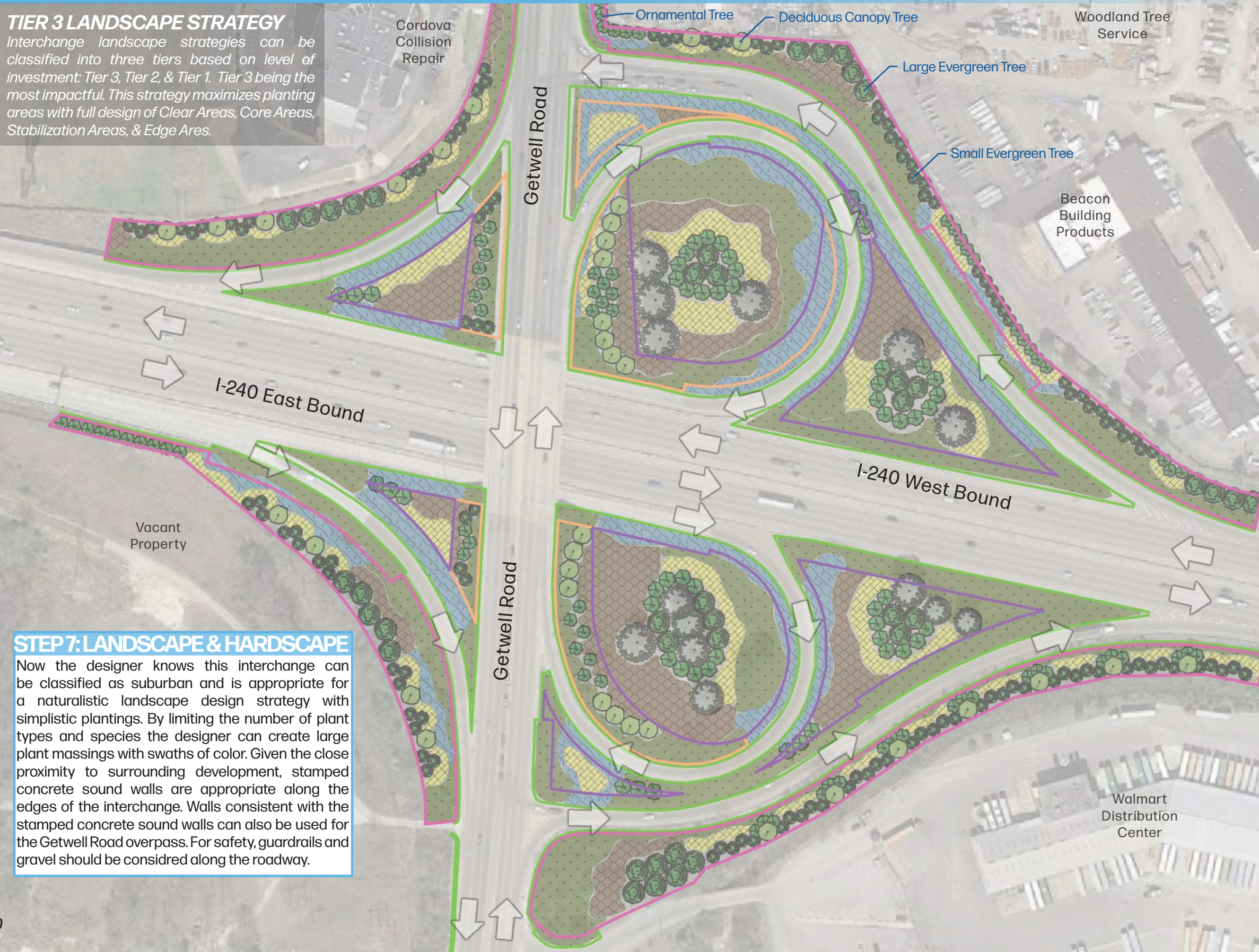
LANDSCAPE & HARDSCAPE (TIER 3)

TIER 3 LANDSCAPE STRATEGY

Interchange landscape strategies can be classified into three tiers based on level of investment: Tier 3, Tier 2, & Tier 1. Tier 3 being the most impactful. This strategy maximizes planting areas with full design of Clear Areas, Core Areas, Stabilization Areas, & Edge Ares.

STEP 7: LANDSCAPE & HARDSCAPE

Now the designer knows this interchange can be classified as suburban and is appropriate for a naturalistic landscape design strategy with simplistic plantings. By limiting the number of plant types and species the designer can create large plant massings with swaths of color. Given the close proximity to surrounding development, stamped concrete sound walls are appropriate along the edges of the interchange. Walls consistent with the stamped concrete sound walls can also be used for the Getwell Road overpass. For safety, guardrails and gravel should be considered along the roadway.



Legend Figure 4.11

Symbols

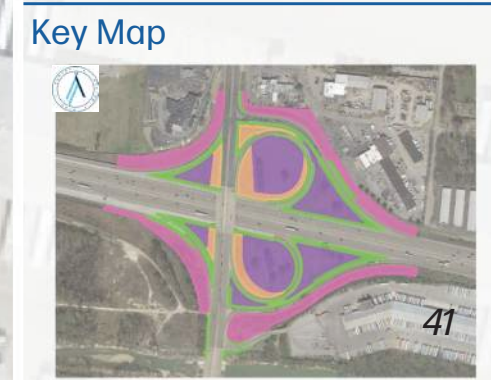
- Direction of Travel
- Existing mature trees to be evaluated for possible preservation

Planting Areas

- Clear Area
- Core Area
- Stabilization Area
- Edge Area

Hatches

- Seed Mixes or Turf / Clover
- Groundcovers
- Shrubs and Flowers
- Ornamental Grasses



LANDSCAPE & HARDSCAPE (TIER 2)

TIER 2 LANDSCAPE STRATEGY

Tier 2 reduces the amount of planting required compared to the Tier 3 Strategy. This tier implements:

- Reduced Clear Area plantings to occur only at vehicular nodes while the remaining areas stay Turf/ Seed Mix.
- Removed understory planting in Core Areas. Trees only.
- Emphasizes the plantings in the Stabilization Areas.
- Edge Areas are planted as required by local codes.

Note: Plants within Sight Distant Areas to not exceed 18" Mature Height.

Cordova Collision Repair

Woodland Tree Service

Landscape Buffer/ Screening as Needed

Beacon Building Products

Large Evergreen Tree
Ornamental Tree

I-240 East Bound

I-240 West Bound

Vacant Property

Deciduous Canopy Tree

Getwell Road

Getwell Road

Walmart Distribution Center

Legend Figure 4.12

Symbols	
	Direction of Travel
	Existing mature trees to be evaluated for possible preservation
Hatches	
	Groundcovers
	Groundcovers
	Shrubs and Flowers
	Ornamental Grasses
	Seed Mixes or Turf / Clover

LANDSCAPE & HARDSCAPE (TIER 1)

TIER 1 LANDSCAPE STRATEGY

Tier 1 Landscape Strategy is the baseline standard for interchange enhancement. Tier 1 includes:

- 100% Turf/ Seed Mix coverage.
- Ornamental Tree Groves for Core Areas.
- Canopy/ Evergreen Tree lined roads.

(Trees to be clear of Sight Distance Areas)



Legend Figure 4.13

Symbols

- Direction of Travel
- Existing mature trees to be evaluated for possible preservation

Hatches

- Groundcovers
- Groundcovers
- Shrubs and Flowers
- Ornamental Grasses
- Seed Mixes or Turf / Clover

STEP 8: MAINTENANCE SCHEDULE

Maintenance of the Getwell Road interchange should include the following practices:

- **Clear Area / Turf Grass or Clover**
 - This area receives the most frequent maintenance with *monthly mowing*. This keeps the grass short, and the motorists' line of sight clear of obstructions.
- **Clear Area / Groundcover and Flowers**
 - This area receives *seasonal pruning & weeding* to maintain plant health. Over time, dense, established plantings will discourage the emergence of undesirable species.
- **Stabilization Area / Trees, Shrubs, & Grasses**
 - This area receives *biannual pruning & weeding* to maintain plant health. Dead limbs shall be removed, and grasses shall be cut back each spring, prior to blooming. Should trees or shrubs start growing larger toward the clear area, they should be limbed up accordingly.
- **Core Area & Edge Area / Trees & Shrubs**
 - These areas primarily include evergreen species, which require less frequent maintenance. These zones shall receive *annual maintenance* to remove weeds and prune to shape.



Figure 4.14



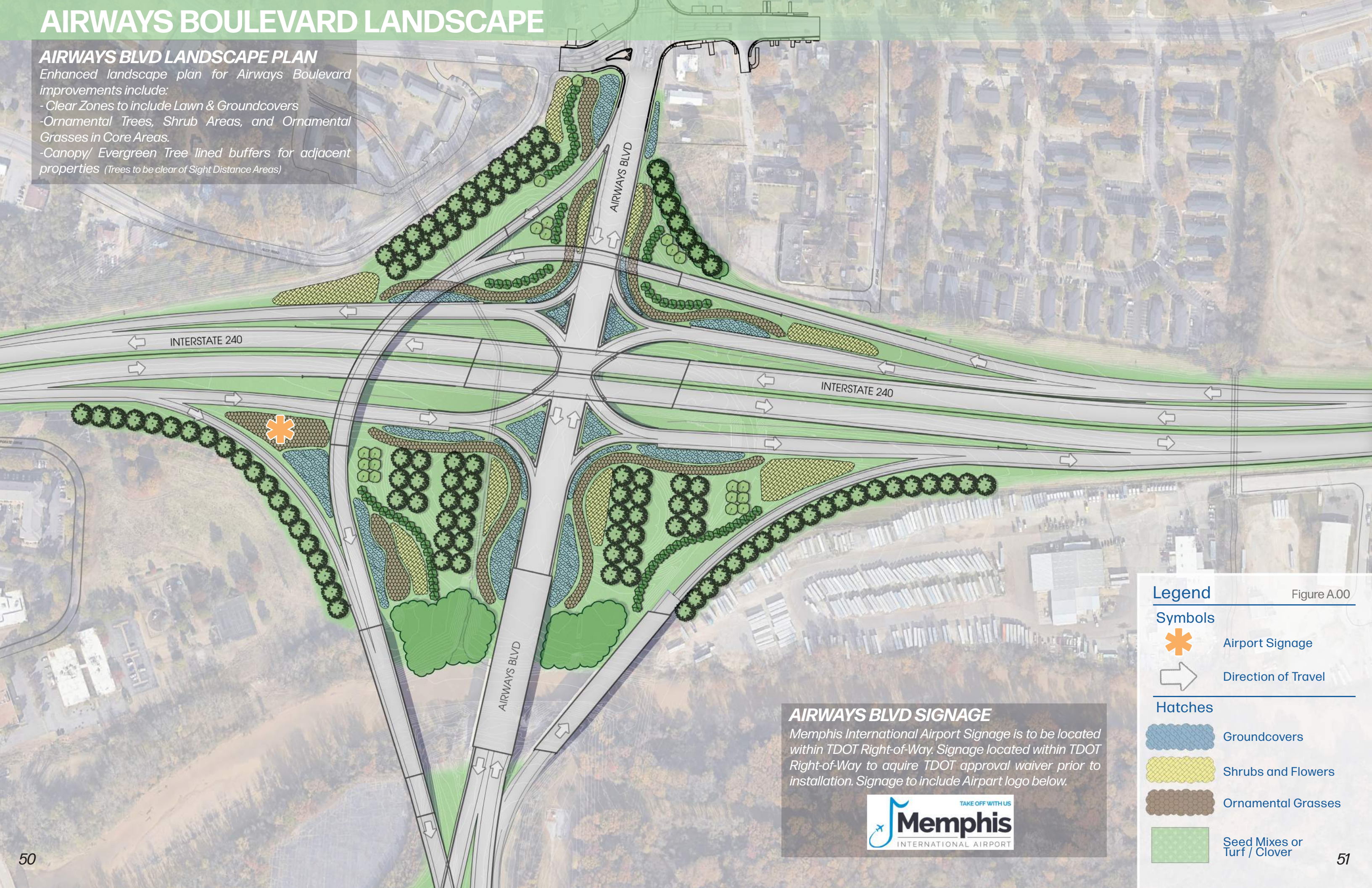
APPENDIX A

AIRWAYS BOULEVARD LANDSCAPE

AIRWAYS BLVD LANDSCAPE PLAN

Enhanced landscape plan for Airways Boulevard improvements include:



- Clear Zones to include Lawn & Groundcovers
- Ornamental Trees, Shrub Areas, and Ornamental Grasses in Core Areas.
- Canopy/ Evergreen Tree lined buffers for adjacent properties (Trees to be clear of Sight Distance Areas)



Legend

Figure A.00

Symbols

-  Airport Signage
-  Direction of Travel

Hatches

-  Groundcovers
-  Shrubs and Flowers
-  Ornamental Grasses
-  Seed Mixes or Turf / Clover

AIRWAYS BLVD SIGNAGE

Memphis International Airport Signage is to be located within TDOT Right-of-Way. Signage located within TDOT Right-of-Way to acquire TDOT approval waiver prior to installation. Signage to include Airport logo below.



AIRWAYS BOULEVARD COLOR SCHEDULE

Plant material for the Airways Boulevard interchange was approved by the Federal Aviation Administration and Tennessee Department of Transportation as acceptable due to the proximity of the Memphis International Airport. These species were selected because they typically do not attract pollinators, birds, or other animals. Additionally, these plants have lower growth habits.

List of Acceptable Plant Material for the Edge Area

Evergreen Trees

- Skyrocket Juniper - *Juniperus scopulorum*
- Sweetbay Magnolia - *Magnolia virginiana*

Deciduous Trees

- Bald Cypress - *Taxodium distichum*
- Pond Cypress - *Taxodium ascendens*
- American Sweetgum - *Liquidambar styraciflua*
- Black Gum - *Nyssa sylvatica*
- Winged Elm - *Ulmus alata* 'Woodland'
- American Elm - *Ulmus americana* 'Jefferson'
- Princeton Elm - *Ulmus americana* 'Princeton'
- American Elm - *Ulmus americana* 'Valley Forge'

Ornamental Trees

- Redbud - *Cercis canadensis*
- Muskogee Lavendar Crapemyrtle - *Lagerstroemia 'Muskogee'*

Evergreen Shrubs

- Grey Owl Juniper - *Juniperus virginiana* 'Grey Owl'

Deciduous Shrubs

- Flowering Quince - *Chaenomeles speciosa*
- Border Forsythia - *Forsythia x intermedia*
- Smooth Hydrangea - *Hydrangea arborescens*
- Panicle Hydrangea - *Hydrangea paniculata*
- Arkansas Bluestar - *Amsonia hubruchtii*

Ornamental Grasses

- Shenandoah Switchgrass - *Panicum virgatum* 'Shenandoah'
- Northwind Switchgrass - *Panicum virgatum* 'Northwind'
- Cloud 9 Switch Grass - *Panicum virgatum* 'Cloud 9'
- Indian Switch Grass - *Sorghastrum nutans* 'Sioux Blue'
- Little Bluestem - *Schizachyrium scoparium*

Perennials

- Lanceleaf Coreopsis - *Coreopsis lanceolata*
- Purple Coneflower - *Echinacea purpurea*
- Black-Eyed Susan - *Rudbeckia triloba*



Border Forsythia -
Forsythia x intermedia



Arkansas Bluestar -
Amsonia hubruchtii



Black-Eyed Susan -
Rudbeckia triloba



Redbud - *Cercis canadensis*



Muskogee Crapemyrtle -
Lagerstroemia 'Muskogee'



Flowering Quince -
Chaenomeles speciosa



Smooth Hydrangea -
Hydrangea arborescens



Panicle Hydrangea -
Hydrangea paniculata



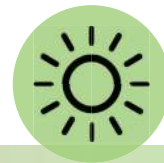
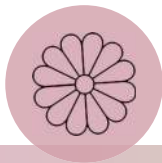
Purple Cone Flower -
Echinacea purpurea



Shenandoah Switch
Grass - *Panicum virgatum*
'Shenandoah'



Sioux Blue Indian Grass -
Sorghastrum nutans
'Sioux Blue'



MAR - APR - MAY - JUNE - JULY - AUG - SEPT - OCT - NOV - DEC - JAN - FEB

BORDER FORSYTHIA

ARKANSAS BLUESTAR

BLACK-EYED SUSAN

EASTERN REDBUD

MUSKOGEE CRAPEMYRTLE

FLOWERING QUINCE

SMOOTH HYDRANGEA

PANICLE HYDRANGEA

PURPLE CONEFLOWER

SHENANDOAH SWITCH GRASS

SIoux BLUE INDIAN GRASS

Figure A.01

POPLAR AVENUE LANDSCAPE

POPLAR AVENUE LANDSCAPE PLAN

Enhanced landscape plan for Poplar Avenue include:
- Clear Zones to include Lawn & Groundcovers
- Ornamental Trees, Shrub Areas, and Ornamental Grasses in Core Areas.
- Canopy/ Evergreen Tree lined buffers for adjacent properties (Trees to be clear of Sight Distance Areas)



Legend

Hatches

-  Groundcovers
-  Shrubs and Flowers
-  Ornamental Grasses
-  Seed Mixes or Turf / Clover

Figure A.02

PLANT SUBSTITUTION LIST

Small Trees

Amelanchier x grandiflora 'Autumn Brilliance' - Apple Serviceberry.
Amelanchier arborea - Downy Serviceberry
Amelanchier laevis - Alleghany Serviceberry
Cercis canadensis - Eastern Redbud
Cotinus obovatus - American Smoketree
Crataegus marshallii - Parsley Hawthorne
Crataegus phaenopyrum - Washington Hawthorn
Crataegus viridis 'Winter King' - Winter King Green Hawthorne
Cyrilla racemiflora - Leatherwood
Halesia diptera - Two-winged Silverbell
Hamamelis vernalis - Ozark Witchhazel
Hamamelis virginiana - Common Witchazel
Ilex x attenuata 'Fosteri' - Foster Holly
Ilex decidua - Possumhaw
Ilex decidua 'Council Fire' - Council Fire Possumhaw
Ilex decidua 'Warren's Red' - Warren's Red Possumhaw
Ilex vomitoria - Yaupon Holly
Magnolia grandiflora 'Southern Charm' - Teddy Bear Magnolia
Magnolia x loebneri 'Leonard Messel' - Leonard Messel Magnolia
Magnolia x loebneri 'Merrill' - Merrill Magnolia
Magnolia 'Galaxy' - Galaxy Magnolia
Sambucus canadensis - American Elderberry
Styrax americana - American Snowbell
Viburnum prunifolium - Blackhaw Viburnum
Viburnum rufidulum - Rusty Blackhaw

Medium Trees

Betula nigra 'BNMTF' DURA-HEAT' - Dura Heat Riverbirch
Carpinus betulus 'Fastigiata' - Fastigiated European Hornbeam
Carpinus caroliniana - American Hornbeam
Halesia Carolina - Carolina Silverbell
Ilex opaca - American Holly
Ilex opaca 'Croonenburg' - Croonenburg American Holly
Ilex opaca 'Greenleaf' - Greenleaf American Holly
Juniperus virginiana - Eastern Redcedar
Juniperus virginiana 'Taylor' - Taylor Redcedar
Magnolia grandiflora 'Bracken's Brown Beauty' - Bracken's Brown Beauty Southern Magnolia
Magnolia grandiflora 'D.D. Blanchard' - D. D. Blanchard Southern Magnolia
Magnolia virginiana - Sweetbay Magnolia
Ostrya virginiana - American Hophornbeam
Prunus serotina - Black Cherry
Quercus stellata - Post Oak
Quercus shumardii - Shumard Oak
Sassafras albidum - Sassafras

Large Trees

Acer x freemanii - Freeman's Maple
Acer saccharum 'Green Mountain' - Green Mountain Sugar Maple
Acer saccharum var. floridanum - Southern Sugar Maple
Betula nigra 'Cully' - Heritage Riverbirch
Fagus grandifolia - American Beech
Ginkgo biloba - Ginkgo
Liquidambar styraciflua 'Slender Silhouette' - Slender Silhouette Columnar Sweetgum
Liriodendron tulipifera - Tulip Poplar
Liriodendron tulipifera 'Arnold' - Arnold Tuliptree
Magnolia grandiflora - Southern Magnolia
Metasequoia glyptostroboides - Dawn Redwood
Nyssa aquatica - Water Tupelo
Platanus occidentalis - American Sycamore
Quercus alba - White Oak
Quercus bicolor - Swamp White Oak
Quercus falcata - Southern Red Oak
Quercus lyrata - Overcup Oak
Quercus michauxii - Swamp Chestnut Oak
Quercus nigra - Water Oak
Quercus pagoda - Cherrybark Oak
Quercus phellos - Willow Oak
Quercus rubra - Northern Red Oak
Quercus shumardii - Shumard Oak
Quercus texana - Nuttall Oak
Quercus virginiana - Live Oak
Taxodium distichum - Common Baldcypress
Thuja occidentalis - Eastern Arborvitae
Tilia americana 'Redmond' - Redmond Basswood
Tilia cordata 'Greenspire' - Greenspire Littleleaf Linden

Figure B.00



Image Citations

Chapter 1

Figure 1.00 Memphis Interstate System RaganSmith

Chapter 2

Figure 2.00 Classification Types RaganSmith
 Figure 2.01 Clear Zone Graphic RaganSmith
 Figure 2.02 Sight Distance Graphic RaganSmith
 Figure 2.03 Concrete Google Street View
 Figure 2.04 Stamped Concrete Google Street View
 Figure 2.05 Colored Concrete Google Street View
 Figure 2.06 Concrete Engraving Google Street View
 Figure 2.07 Brick Google Street View
 Figure 2.08 Modular Brick [TDOT Landscape Design Guidelines Ch. 4](#)
 Figure 2.09 Stone Google Street View
 Figure 2.10 Pedestrian Guardrails Google Street View
 Figure 2.11 Vehicular Guardrails Google Street View
 Figure 2.12 High Mast Lighting Google Street View
 Figure 2.13 Mast Arm Lighting Google Street View
 Figure 2.14 Multi-mount Lighting Google Street View
 Figure 2.15 Adopt a Highway [Michigan State Police Highway Clean-up](#)
 Figure 2.16 Maintenance Plan Contract RaganSmith

Chapter 3

Figure 3.00 Clear Area Locations RaganSmith
 Figure 3.01 Core Area Locations RaganSmith
 Figure 3.02 Stabilization Area Locations RaganSmith
 Figure 3.03 Edge Area Locations RaganSmith
 Figure 3.04 Clear Area Color Schedule RaganSmith
 Figure 3.05 Core Area Color Schedule RaganSmith
 Figure 3.06 Stabilization Area Color Schedule RaganSmith
 Figure 3.07 Edge Area Color Schedule RaganSmith

Chapter 4

Figure 4.00 Getwell Interchange Feb 2004 RaganSmith
 Figure 4.01 Getwell Interchange Oct 2020 RaganSmith
 Figure 4.02 Getwell Interchange Scale Analysis RaganSmith
 Figure 4.03 Getwell Direction of Travel RaganSmith
 Figure 4.04 Getwell Interchange Classification RaganSmith
 Figure 4.05 Getwell Clear Zone RaganSmith
 Figure 4.06 Getwell Sight Distance RaganSmith
 Figure 4.07 Getwell Clear Area RaganSmith
 Figure 4.08 Getwell Core Area RaganSmith
 Figure 4.09 Getwell Stabilization Area RaganSmith
 Figure 4.10 Getwell Edge Area RaganSmith
 Figure 4.11 Getwell Example Landscape Plan (Tier 3) RaganSmith
 Figure 4.12 Getwell Example Landscape Plan (Tier 2) RaganSmith
 Figure 4.13 Getwell Example Landscape Plan (Tier 1) RaganSmith
 Figure 4.14 Example Maintenance Plan RaganSmith

Appendix A

Figure A.00 Airways Blvd Landscape Plan RaganSmith
 Figure A.01 Airways Blvd Color Schedule RaganSmith
 Figure A.02 Poplar Ave Landscape Plan RaganSmith

Appendix B

Figure B.00 Plant Substitution List RaganSmith

