

# ST. ROSE PARKWAY TRAIL

## DESIGN GUIDELINES

## **Acknowledgements**

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## 1.0 EXECUTIVE SUMMARY

In an ongoing effort to provide an interconnected trail system, the City of Henderson has undertaken the development of the St. Rose Parkway Trail. The St. Rose Parkway Trail is a shared-use trail that runs the length of St. Rose Parkway from Las Vegas Boulevard on the west to the I-215 on the east.

St. Rose Parkway is the western entry corridor into the City of Henderson. The trail itself consists of a 55-foot wide trail corridor which includes a 25-foot wide landscape buffer and a 30-foot wide shared-use trail zone. The 30-foot wide shared-use trail zone is located within the Nevada Department of Transportation (NDOT) right-of-way, and includes a 12-foot wide paved trail, amenities and landscape improvements. The trail corridor is located along both sides of the St. Rose Parkway.

The project will link existing and proposed recreation facilities and trailheads, unified through landscape, monumentation, public art and built structures.

The project will provide a transportation link by creating bicycle and pedestrian access to local businesses and neighborhoods. Utilities and other infrastructure are and will be installed under the trail section. Utility access, such as manholes, will be incorporated into the trail at regular intervals. The trail alignment will also provide access for repair and maintenance vehicles. Key elements include the following:

- Gateway monument placement, visual arrival statements and art work
- Trail user amenities
- Trail lighting and other safety enhancements
- Drought tolerant landscaping

This document, The St. Rose Parkway Trail Design Guidelines (Design Manual) provides recommendations for trail alignments, an overall visual design vocabulary, trail user amenities, and appropriate landscape and intersection improvements along St. Rose Parkway in West Henderson.



## 2.0 INTRODUCTION

The City of Henderson Open Space Plan was adopted by the City Council on December 6, 2005. The Open Space Plan is organized into three major strategies for implementation: creating an "Open Space and Trails Framework"; outlining principles and policies for optimal outcomes; and identification of "Landmark Projects" to protect the many special places within the City of Henderson.

The Open Space Plan recognizes three categories of community space: open space, common areas and parks. According to the Open Space Plan, these areas are to be set aside for the use and benefit of the residents of a particular subdivision or development. These areas vary widely in character, from sites with developed facilities to sites that retain a more natural character.

*'Our vision is to create an interconnected system of protected desert environments throughout the built environment with parks, off-street trails, and open spaces for recreation and education, and compatible cultural programs, to enhance our community's unique image and sense of place. Henderson will have one of the most connected, safe trail systems in the Las Vegas Valley for both recreation and alternative transportation.'*

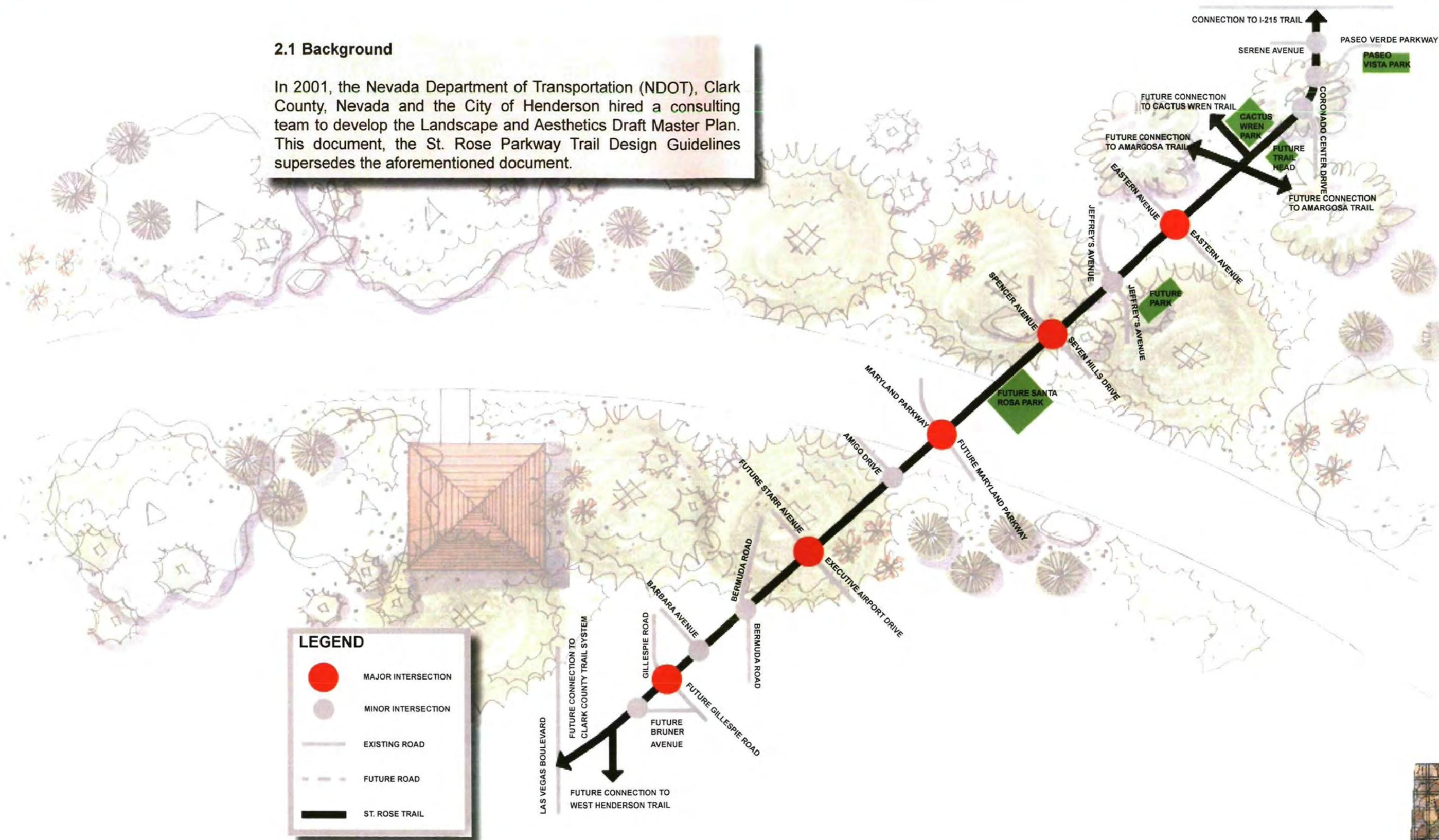
-The City of Henderson Open Space Plan

Development of the St. Rose Parkway Trail meets the vision of the City of Henderson Open Space Plan by providing much anticipated connectivity for existing and planned facilities, including the West Henderson Trail, Clark County Regional Trails System, Cactus Wren Park, Amargosa Trail, and numerous other planned parks and facilities.



## 2.1 Background

In 2001, the Nevada Department of Transportation (NDOT), Clark County, Nevada and the City of Henderson hired a consulting team to develop the Landscape and Aesthetics Draft Master Plan. This document, the St. Rose Parkway Trail Design Guidelines supersedes the aforementioned document.



### 3.0 GENERAL ADMINISTRATION

The City of Henderson Parks and Recreation Department is responsible for general administration and maintenance of the St. Rose Parkway Trail. In the event site constraints or existing conditions limit the administration of these guidelines, design flexibility may be granted by the Parks and Recreation Director. The assistance and judgment of the City's professional staff and its advisory board shall be solicited for input in early project stages to increase the speed and effectiveness of proposal review and approval.

A developer or property owner that does not agree with the Parks and Recreation Director's recommendation on a Trail and Landscape Improvement Project Application shall have the ability to file an appeal. Deviations from this manual beyond staff's approval shall be appealed to the Planning Commission and/or City Council for final approval. The appeal shall be processed through the standard Community Development process.

#### 3.1 Trail Plan Review and Approval

Applicable entitlement applications and this Design Manual govern the trail beautification. All trail corridor improvement plans must be designed and stamped by a Landscape Architect registered in the State of Nevada. Trail corridor plans shall be submitted to the City of Henderson Development Services Center (DSC) for review and approval. Trail corridor plans must be approved prior to civil improvement plans being accepted by the DSC. Upon approval of the civil improvement plans and completion of the Bond and Fee form, the City of Henderson will grant a conditional acceptance. This conditional acceptance is required by the Nevada Department of Transportation to issue encroachment permits.

The Trail and Landscape Improvement Projects Application is shown in **Figure 3 of Appendix B**. This application includes a checklist of requirements.

The most current issue of the Bond and Fee form is available online at:  
[www.cityofhenderson.com/works/pdf/Forms/Bond-Fee-pdf.pdf](http://www.cityofhenderson.com/works/pdf/Forms/Bond-Fee-pdf.pdf)



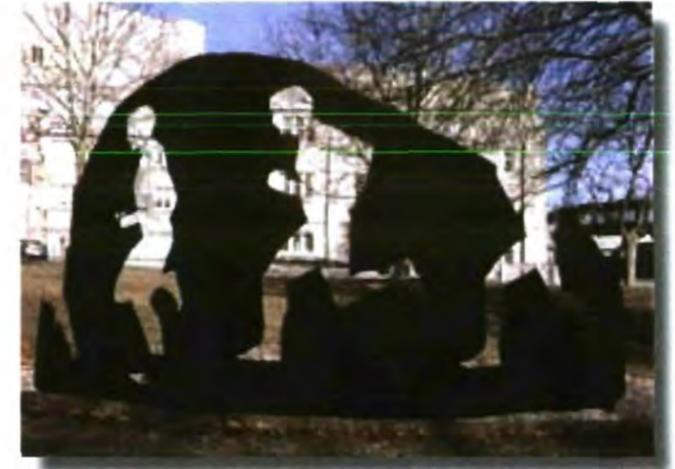
#### 4.0 GENERAL DESIGN GUIDELINES

Design of St. Rose Parkway Trail Landscape Plans shall reflect the following conceptual recommendations. This Design Manual includes a public 30-foot wide trail zone and a private 20-foot wide landscape buffer with the development of trail and pedestrian amenities along the St. Rose Parkway frontage. In context to the 20-foot wide landscape buffer, these Design Guidelines shall provide guidance on the selection of plant species. The 20-foot wide landscape buffer shall comply with the City of Henderson Development Code screening standards.

#### 4.1 Theming

The St. Rose Parkway Trail is a prominent entry corridor into the City of Henderson. As such, it offers an excellent opportunity to establish a familiar design theme for local public spaces. Design elements and materials within the St. Rose Parkway Corridor will be rustic in appearance using elements such as stone, concrete and oxidized iron. Structural shapes are to be geometric and bold, some of which may be based upon gabion weir design. Decorative abstractions relating to the desert environment such as plant forms, indigenous creatures, or the sweeping nature of a wash dotted with stones will be displayed on vertical surfaces.

The character of St. Rose Parkway is further emphasized by the use of native plant materials and plant material proven to thrive in the desert environment. Sustainable landscape design philosophies are highly encouraged.



Opportunities to place public art will be maximized. Art work will be of cutting edge materials with contemporary subject matter or form. There may be a whimsical flavor about the art work; they may be oversized so that they are easily seen from vehicles as they pass by. Paint on art work will be earthy and rich jewel-tone colors that compliment, or are in keeping with NDOT approved base hue and accent hues.





## 4.2 Trail Design Approach

- A. All parcel development or redevelopment will be required to incorporate landscaping into the design. The landscape improvements will satisfy the requirements of the **City of Henderson Development Code** while integrating compatibly into the project landscape improvements.
- B. St. Rose Parkway improvements design criteria shall be satisfied within a 50-foot wide landscape area, which includes public and private properties. A public 30-foot wide trail zone is located within the NDOT right-of-way and a private 20-foot wide landscape buffer is located immediately adjacent to the trail zone at the property frontage. Lighting, a 12-foot wide paved path, landscaping, irrigation and other amenities are required within the 30-foot wide trail zone. Appropriate treatments may include, but are not limited to, public art, random informal clusters of trees, shrubs and groundcovers that contain varieties selected from the approved plant list contained in **Appendix A**.
- C. The seam between the private parcel and the St. Rose Parkway Trail Corridor landscaping should utilize compatible plant materials and hardscape elements. This will allow for a smooth transition within the landscape and enhance the overall character of the project. The visual and aesthetic character, as well as the maintenance of the 30-foot wide shared-use trail zone will be the responsibility of the City of Henderson. Maintenance of the 20' wide landscape buffer shall be the responsibility of the developer. The Parks and Recreation Department will review the proposed improvements within the trail corridor and the Community Development Department will review the proposed improvements within private property areas in context to the existing and adjacent developments and make recommendations for plan adjustments.

## 5.0 TRAIL LANDSCAPING AND AMENITIES

St. Rose Parkway Trail Corridor design elements may include sound walls, signage, pedestrian amenities and bicycle facilities. Individual drives and entries will periodically cross the trail to provide access to the commercial, public and private parcels that line St. Rose Parkway. All landscape development occurring along St. Rose Parkway will be performed by each individual parcel owner in partnership with the City of Henderson in accordance with these landscape guidelines.

### 5.1 Design Considerations

The following design considerations shall be regarded when selecting materials and planning planting palettes and schemes. Refer to **Appendix A** for the approved plant list for approved plants and **City of Henderson Landscape Design Standards** for installation details.

Refer to the **Arizona Nurserymen's Standard** at <http://www.anza.org> for acceptable minimum caliper sizes of plant materials.



- A. Trees have rooting characteristics which may cause trail upheaval. Approved root barriers shall be installed for trees located within 10 feet of a utility or adjacent to asphalt trail.
- B. Tree form & size shall permit a minimum trimmed height of 12 feet to the lowest branch within the designated landscape area.
- C. Tree and shrub placement shall comply with the City of Henderson Development Code site visibility zone standards to avoid creating blind spots and/or hiding areas. Plant material and associated foliage shall not block trail lighting.
- D. Shrub and ground cover plant materials shall be native or adapted to the City of Henderson area, drought tolerant, require minimal pruning and maintenance and be low growing (under 3 feet at mature height). Location and placement of these plant materials shall not promote growth over or onto the trail surface. Accent plantings may be over 3 feet in height if planted so as to not inhibit the trail's site visibility distance or promote growth onto the trail. Agaves, cacti, yuccas, accent natives and desert plant materials with spines may be used, but shall be planted a minimum of 10 feet away from the path. Refer to the **City of Henderson Development Code** and the **Crime Prevention through Environmental Design (CPTED)** documents for additional information.

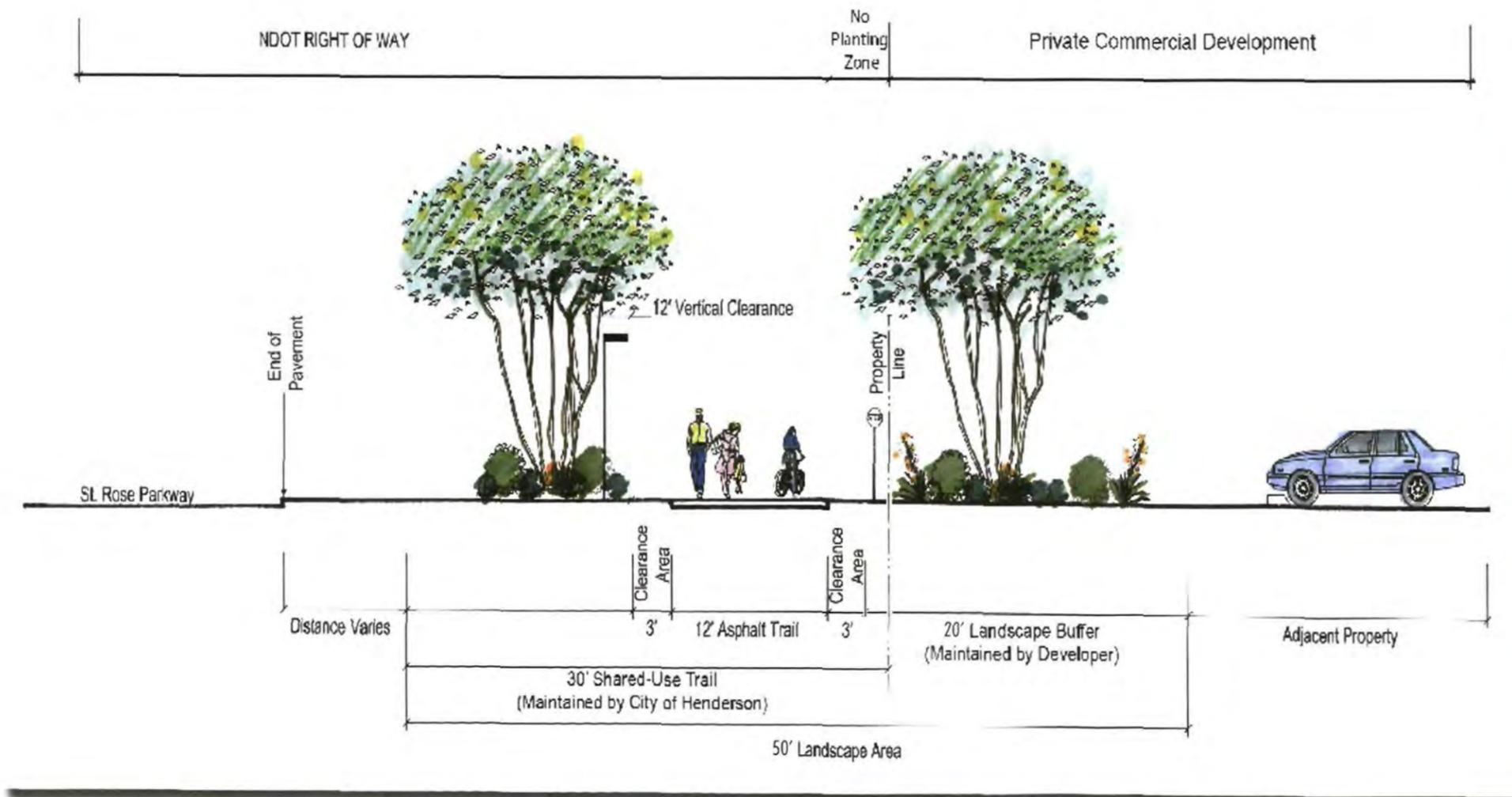


### 5.1.1 Trail Width and Clearance

The minimum paved width for the trail shall be 12 feet, plus a 3-foot clear zone along either side of the trail. In extenuating circumstances, due to current infrastructure development, topographic and/or other constraints, the City of Henderson Parks and Recreation Director may consider paths down to 8 feet wide for short distances. Lateral obstructions such as boulders, fences, signage, light poles, mailboxes, trees, utility poles, walls and guardrails etc. may not be placed within the 3-foot clear zone.

The 3-foot wide clear zone shall slope away from the trail at a maximum 6:1 slope, with a maximum of 3:1 slope beyond the clear zone. See Below

The vertical clearance to overhangs and obstructions shall be a minimum of 12 feet above the trail to accommodate the passage of maintenance vehicles.



Pavement shall maintain 2% cross slope as appropriate



## 5.2 Intersection Treatments

Intersections along St. Rose Parkway will receive enhanced landscape treatments and amenities so as to provide a visual 'arrival' statement. Same species trees and shrubs placed in dense, grid-style layouts or geometric patterns will define the intersections and set them apart from the surrounding trails and cross-streets.

Each quadrant of an intersection shall, at the discretion of the City of Henderson Parks and Recreation Department, include each of the following enhancements:

- Collapsible Bollards (3)
- Shade Structure
- Bench and trash/ash receptacle (on hardened surface)
- Person and Pet Drinking Fountain(s)
- Pet Waste Station
- Paved Trail
- Landscape planting and irrigation per plan.
- Public Art Work

Quadrants within each intersection may have distinct differences, but the use of similar materials, colors and shapes within each quadrant will reflect the overall design theme of St. Rose Parkway Trail Corridor. A standard intersection quadrant measures 55'x55'.



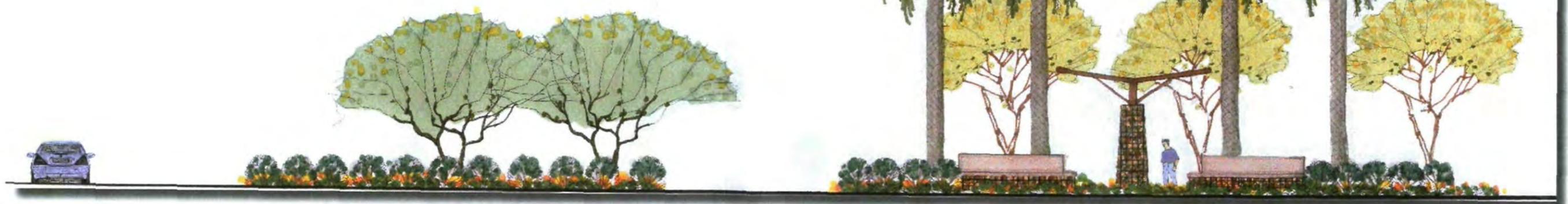
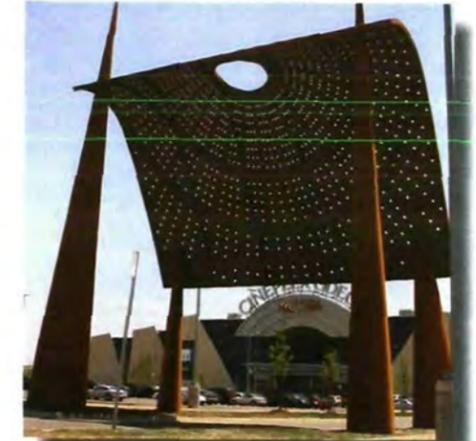
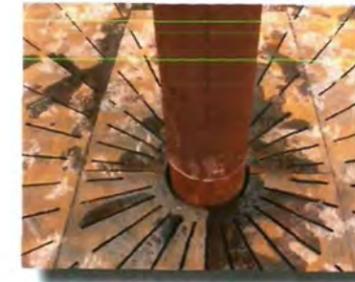
### 5.2.1 Major Intersections

The major intersection landscape treatment includes the highest level of landscape treatment within the corridor. Defining characteristics of major intersections include palm trees to add an interesting vertical element. The areas denoted as major vehicular intersections are used to buffer the surrounding area from high speed traffic as well as to accentuate the landscape concept.

The major intersections have been identified as: Gillespie Road, Executive Airport Drive/future Starr Avenue, Maryland Parkway/future Maryland Parkway, Seven Hills Drive /Spencer Avenue, and Eastern Avenue.

In addition to the intersection enhancement of section 5.2:

- 4 - 18' minimum BTH palms
- 12 - 24" box trees
- 12 - 15 gal. shrubs
- 14 - 5 gal. shrubs/groundcover



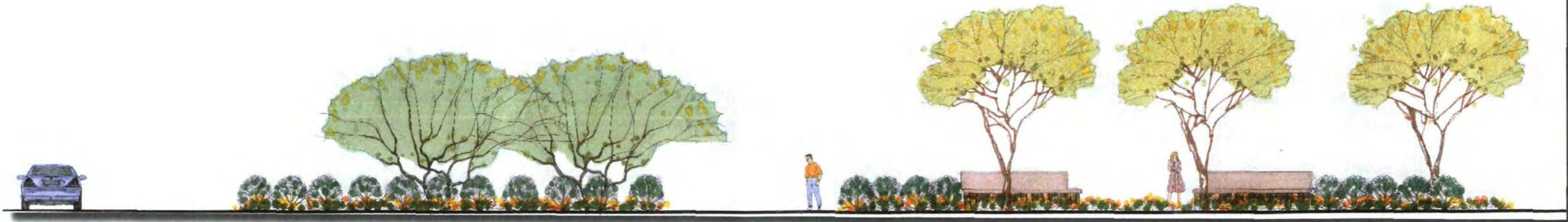
### 5.2.2 Minor Intersections

Minor intersection landscape treatments have a lower level of landscaping than the major intersections along St. Rose Parkway. There are typically no shade structures or palm trees at the minor intersections, but the dense grid of trees will provide shade to the formal bench sitting areas. As with the major intersections, these areas will help to buffer the trail users and surrounding areas from high speed traffic.

The minor intersections have been identified as: Future Bruner Avenue, Barbara Avenue, Bermuda Road, Amigo Drive, Jeffreys Avenue, Coronado Center Drive, Paseo Verde and Serene Road.

In addition to the intersection enhancement of section 5.2 a typical minor intersection will include:

- 12 - 24" box trees in bosque layout
- 12 - 15 gal. shrubs
- 14 - 5 gal. shrubs/groundcover





### 5.3 Trail Treatments

Through the use of similar materials, colors and plants, the trail along St. Rose Parkway will provide connection between the intersections as well as the continuity of the overall design theme. Plant layout will be naturalistic in form with no less than three shrubs grouped together at any location. Drainage areas, designed to carry surface and storm water flows, shall be incorporated into the landscape to adequately transport runoff. Proper placement of boulders and crushed gravel will prevent erosion and simulate a natural wash character. Boulders shall be placed per City of Henderson specifications, and shall be Mojave Gold in color, with a minimum diameter of 2 feet.

All landscaped or otherwise disturbed areas are to receive an application of pre-emergent weed barrier, top and bottom, and a minimum 2" layer of rock mulch, Mojave Gold in color. Rock sizes to vary depending upon slope conditions, wash areas, etc. All applications of rock mulch shall be feathered in seamlessly to one another to create a naturalistic transition between different sizes of material. Refer to the **City of Henderson Landscape Design Standards** for installation details.

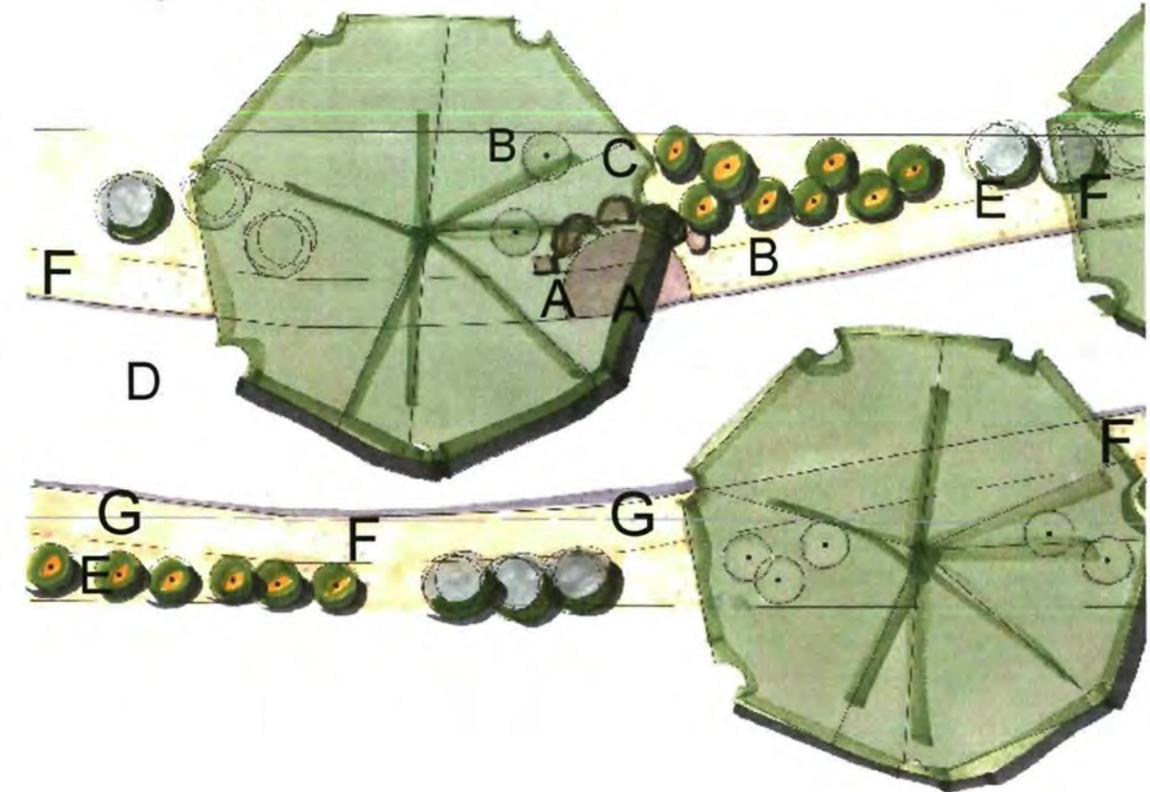


#### 5.3.1 Trail Oasis

To meet the rest and shade needs of trail users along the St. Rose Parkway Trail, comfort nodes or trail oases shall be installed at 200' on-center maximum intervals, or a minimum of one trail oasis per developer. Plant materials will be installed more densely than the typical trail landscape.

A typical trail oasis is approximately a semi-circular shape, 60 feet in diameter, with landscape and amenities to include each of the following, at the discretion of the City of Henderson Parks and Recreation Department:

- Three 24"-box trees
- Six 5-gallon shrubs
- Six 1-gallon shrubs
- Three 3' - 4' diameter Seat Boulders or other approved seating area
- Dog Waste Station
- Trash/Ash Receptacle (on hardened surface)
- Paved Trail



#### TRAIL OASIS LEGEND

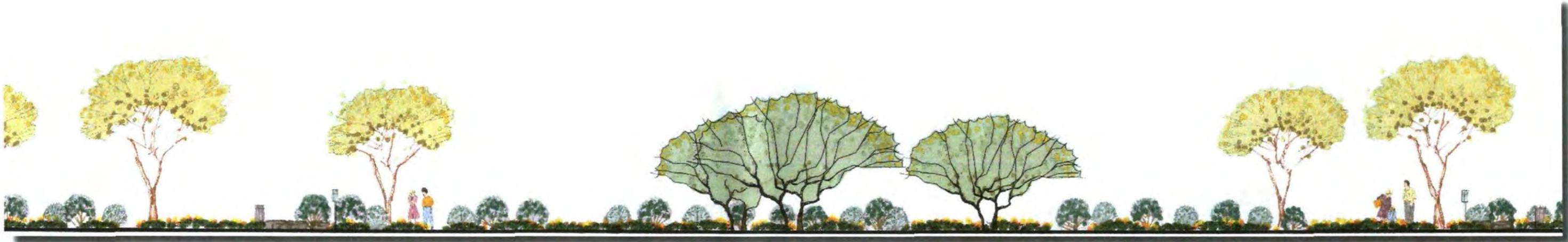
- A - Dog Waste Station
- B - Trash and Ash Receptacle on hardened surface
- C - (3) 3'-4' Seat Boulders on hardened surface
- D - Paved Trail
- E - Landscape Planting and Irrigation per Design Manual
- F - Clear zone - No Planting Zone
- G - Property Line



### 5.3.2 Typical Landscape Treatment

The typical landscape treatment shall be applied within the NDOT public right-of-way in the shared-use trail zone. Planting minimums for the typical landscape treatment shall consist of each of the following per 1,000 square foot area (approximately 85 linear feet of trail):

- Two 24"-box or larger tree
- Two 15-gallon or larger tree
- Four 5-gallon or larger shrub
- Eight 1-gallon groundcover/vine/accent plant



Refer to the *Arizona Nurserymen's Standard* at <http://www.anza.org> for acceptable minimum caliper sizes of plant materials.



#### 5.4 Parking Lot Screening

The 25-foot landscape buffer should be designed to screen parked vehicles from St. Rose Parkway while allowing interior visibility for commercial signage. This shall be accomplished with a combination of properly designed and placed plant material, boulders and berming. The intent is to reduce the visual impact of the parking lot from St. Rose Parkway.

#### 5.5 Barriers and Gates

Trails constructed on slopes along drainage ditches where the fill is steeper than a 3:1 ratio, within 5 feet of the trail shall be protected by railings, fences and/or barriers.

If an overpass, underpass or pedestrian bridge is required to provide continuity of travel on the trail, the width of the approach of the shared-use trail to any such structure shall include a minimum 1-foot clear zone on both sides and the 12-foot high vertical clear zone.

Railings, fences and/or barriers on both sides of a bridge shall be a minimum of 4.5 feet (54 inches) high. Smooth rub rails shall be attached to the barriers at the handlebar height of 3.5 feet (42 inches). On all bridge decks, special care shall be taken to ensure that bicycle safe expansion joints are used.

#### 5.6 Landscape Irrigation Specifications

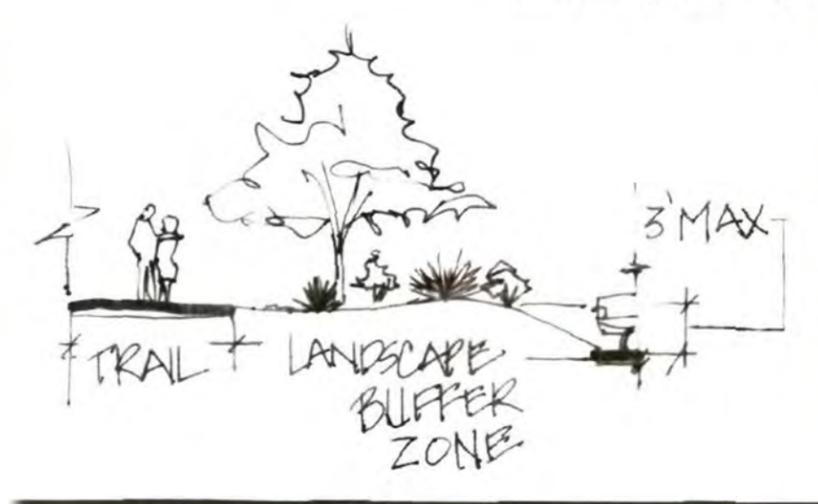
Irrigation within the 30-foot wide shared-use trail zone shall be installed to tie into existing City of Henderson water. In the event that City water is not available at the time of development, irrigation shall be installed in such a way as to allow the City to tie into the lines at a time the City is able. Refer to the **City of Henderson Landscape Design Standards** for irrigation equipment specifications and installation details. Water shall be provided and paid for by the developer until the time that the City of Henderson can take over responsibility of maintenance.

#### 5.7 Construction Details

City of Henderson construction details are available in AutoCAD format online at:

<http://www.cityofhenderson.com/buildsafe/php/Standard%20Designs.php>

These details shall be applicable to all landscape construction within the right-of-way.



## 5.8 Artworks

Artwork installations shall reflect the unique desert environment and surrounding landscapes of the City of Henderson. Themes for such installations must look to the future, be of cutting edge design, made of local native materials and be durable for the urban desert environment. Such materials include, but are not limited to, colored and textured concrete, masonry, structural steel, sheet metal, enamel on metal, ironwork and Cor-ten steel. All colors shall be selected from the NDOT approved Base Hue and Accent Hue colors by Dunn-Edwards (**color palettes shown on this page**). Any and all artwork shall be submitted to the City of Henderson for approval prior to installation.

*'The city's parks and recreation facilities will include opportunities for display of public art...'*

- City of Henderson Comprehensive Plan



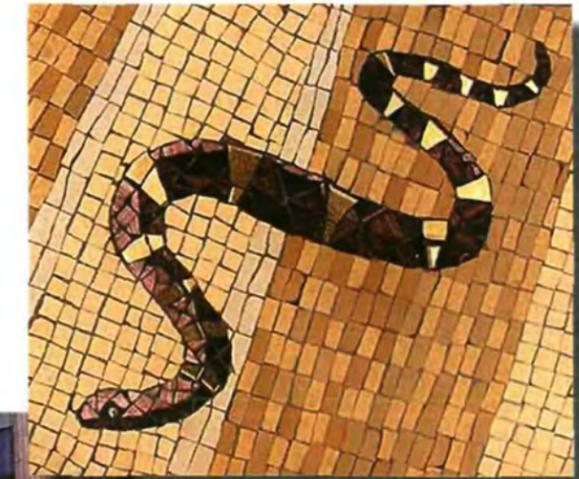
-  Antique Garnet #6027
-  Brick Fence #6089
-  Amazing Amethyst #6013
-  Plum Wine #5978
-  Bosa Nova Blue #5914
-  Woodland Walk #5537

Any two accent colors may be selected from the palette above. All Landscape Design Segments use those accent colors.



Dynamic Desert Metropolis #6130

BASE HUE



ACCENT HUES



## 5.9 Lighting

All trails are to be lit. Fixed-source lighting along the trail will serve to reduce conflict while allowing users to see the trail direction, surface condition and oncoming obstacles. Lighting within the 30-foot wide shared-use trail zone shall be installed so that it ties into existing City of Henderson power. In the event that City power is not available at the time of development, lighting shall be installed in such a way as to allow the City to tie into the power at a time the City is able.

All lighting shall be installed within the 30-foot shared-use trail zone, near the trail, but outside of the 3-foot clear zone on side closest to NDOT roadway (as shown on page 8). The maintained horizontal illumination levels shall be 1.0 foot-candle (11 lux) at intersections and 0.5 foot-candle (5 lux) on trail applications. Where potential security issues exist, higher illumination may be required.

Light standards and poles shall meet the required horizontal and vertical clearances or a minimum of 14-foot mounting height with a pole designed for 100 M.P.H. wind loads per City of Henderson Standards. Poles shall have a matching base plate to cover anchor bolts. The luminaire shall be a HPS Shoe Box Fixture (or equivalent) with a back shield to eliminate back lighting, a poly-carbonate/Lexan lens, and finished to match the pole. See **City of Henderson Landscape Design Standards** for installation details.

Pole foundations or caissons shall be structurally appropriate for pole sizes and anticipated wind loads, and shall be installed and grounded per City of Henderson Standards. The light standard is to be in the Nevada Department of Transportation (NDOT) right-of-way and shall conform to appropriate NDOT standards such as break-away base.

Additional lighting requirements include:

1. Pull box: Minimum of No. 5 pull box with traffic-rated, composite cover and within 24" of foundation. Splice and fuses in pull box shall be water-tight. No splices in pole except for connection in luminaire.
2. Circuit: 240 volts with P.E. Control and relay for entire circuit. All poles to be fused in a pull box adjacent to the pole.
3. Photo cell with time clock override for operation.
4. City of Henderson Standards, AASHTO (American Association of State Highway and Transportation Officials), NEC (National Electrical Code) and Street Light Standards shall be followed.





R9-7



R5-3



R9-6

### 5.10 Bicycle Parking Standards

Bicycle parking shall meet the following standards:

- A. Bicycle parking shall be required within the public right-of-way at the time of site development for property with St. Rose Parkway frontage of 200' or greater. The site developer shall provide a minimum of four short-term bicycle parking spaces. Short-term bicycle parking shall consist of permanently installed metal bicycle racks. Final approval of bicycle racks shall be granted by the City of Henderson Parks and Recreation Director. In the event short-term parking spaces are provided or integrally designed with the development, this requirement shall not apply.
- B. Bicycle parking shall be visible and conveniently located for cyclists.
- C. Bicycle parking shall offer security in the form of a stationary rack to which the bicycle can be locked.
- D. Bicycle parking spaces shall not obstruct walkways or the trail.
- E. Bicycle parking for multiple uses or buildings may be clustered in one or several locations if provided within the development. Bicycle parking locations within the trail corridor shall be approved by the City of Henderson Parks and Recreation Director.
- F. For buildings with multiple entrances, short-term bicycle parking spaces shall be distributed proportionately at the discretion of the City of Henderson.
- G. Directional signage to the bicycle parking shall be provided if the parking is not directly visible and obvious from an entrance or public right-of-way.



D4-3



D11-1



R3-17



R3-17a



R3-17b



RL-090

### 6.0 TRAIL SIGNAGE

Signs shall be placed along the trail, outside of the 3-foot clear zone, as required for pedestrian and bicyclist safety and information. At the onset of a trail segment it may become necessary to mount signs back to back in order to alert both motorist and trail users of conditions.

Traffic control signage and markings shall be installed in accordance with the Manual on Uniform Traffic Control Devices (MUTCD). All signs shall be silk screened or graffiti proof, with class 6 reflectivity. Lettering on trail signage shall be a minimum of 4" high.

#### 6.1 Sign Placement at Driveways

In order to minimize conflict between users of the shared-use trail system and vehicular traffic entering and exiting private commercial drives, a series of recommended signs shall be installed at the ingress and egress of the intersections of the trail with private driveways. Included are MUTCD standard signs: W11-1, Bike Crossing (Conventional trail size); W11A-2, Pedestrian Crossing; and R1-2, Yield (Conventional trail size). Additional signs (Installed at the discretion of the City of Henderson) include: R9-7, Keep Left/Right; R9-6, Yield to Peds; R9-5, Use Ped Signal; R5-3, No Motor Vehicles; R3-17, Bike Lane; R13-17a, Ahead; R3-17b, Ends; D11-1, Bike Route; RL-090 Bicycle Trail, Bicycle Graphic; and D4-3, Parking. **See examples of signage shown this page.**

Bicycles and other multi-modal transport vehicles shall be directed by installed traffic control signage to yield at driveways and stop at all major and minor intersections.

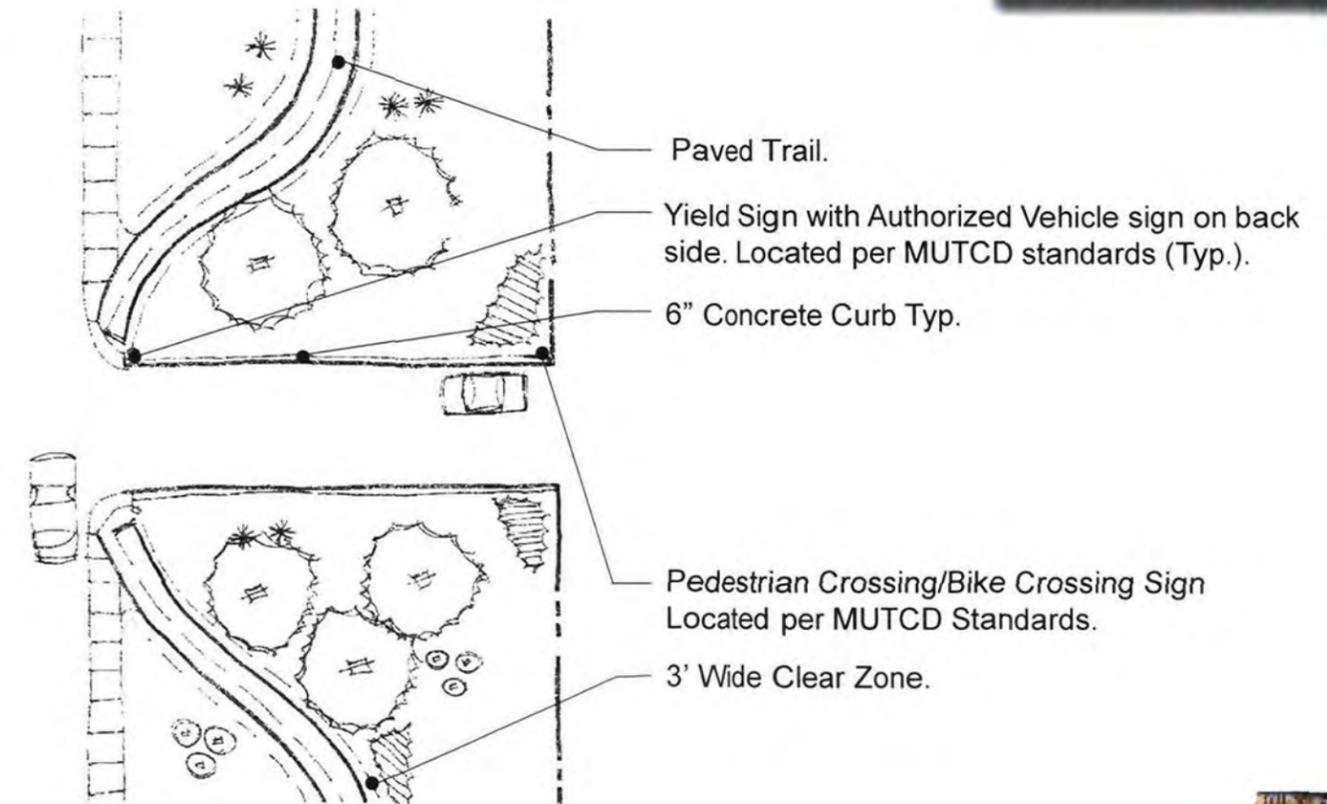
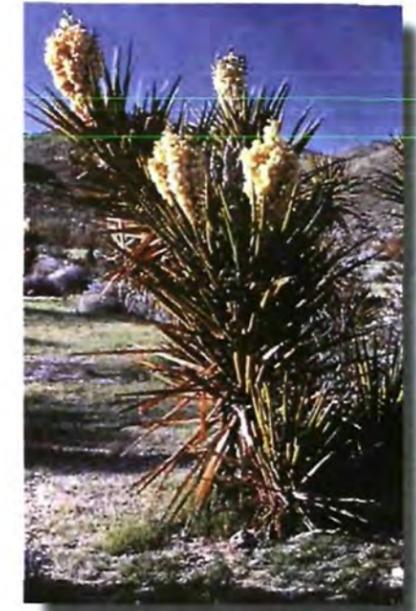


## 7.0 TRAIL TECHNICAL STANDARDS

Within this section are the technical standards and references to be used in the design and layout of the trail, intersections, alignment, etc. Any deviation from these standards is at the discretion of the City of Henderson.

### 7.1 Trail Intersections

Trail intersections and approaches shall be on relatively flat grades. (**Refer to section 7.5: Grade Changes**). Stopping sight distances at intersections shall be checked and adequate warning shall be given to permit trail users time to stop before reaching the intersection, especially on downgrades. Where a trail intersects another trail, a minimum radius of 5 feet shall be provided at all corners of the intersection. Where ramps are used at commercial driveway crossings, the ramp shall be the same width as the adjacent trail. Each driveway crossing shall have 6" curb on either side for the length of the driveway with the exception of the 12-foot wide paved trail and 3-foot wide clearance zones. **See right.** Trail shall connect to the back of the sidewalk ramp at all intersections. Side walk ramp to be per **Clark County Standard Drawings, Case II**



### 7.1.1 Site Visibility Distance

Adequate site visibility distance shall be provided at intersections to maintain trail user safety. At trail intersections with streets, private driveways and other trails, all abutting fences and other objects capable of interfering with the user's line of sight shall not exceed 27 inches in height for a minimum 250 feet from the intersecting right-of-way. Site visibility zones at roadway crossings shall be governed by Clark County Standards. Site visibility zones at commercial driveway crossings shall be governed by the **City of Henderson Development Code**.

### 7.2 Motor Vehicle Trail Restrictions

The trail will require forms of physical barriers at roadway intersections to prevent unauthorized vehicles from entering the trail. A lockable folding bollard and two removable posts or bollards shall be placed at roadway intersection entries to allow access by authorized vehicles. Bollards shall be arranged in linear fashion with one lockable folding bollard (located at center of the two adjoining bollards) and two stationary bollards placed at outside edges of the entrance of the trail to allow two-way trail user travel. Bollards shall be placed so as to maintain a 5-foot distance between posts. The bollards shall be centered at the entrance of the trail and shall receive an application of diagonally striped reflective tape on front and back of the vertical surfaces. Folding bollards are available from TrafficGuard, Model # HDHB, or approved equal. For removable vehicle barrier post detail See **City of Henderson Design Standards**.

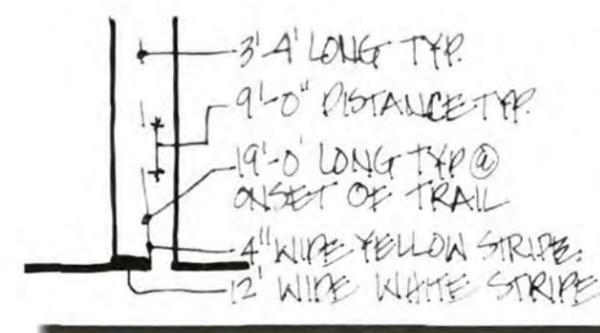
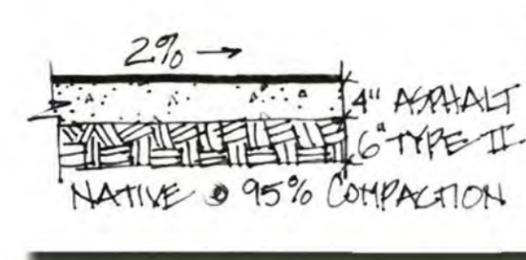


### 7.3 Pavement Structure

The minimum acceptable pavement structure shall be four (4) inches of asphalt over six (6) inches Type II aggregate base (**See below**), or as directed by a soils report, with a 2% cross-slope on the asphalt to allow surface water to flow into adjacent drainage areas. The path sub-grade shall be placed over a soil surface stripped free of any organic material and compacted to a 95% dry density.

### 7.4 Striping

Trails are designed to be used by pedestrians, strollers, wheelchairs, bicycles, and other multi-modal vehicles. In order to avoid collision or conflict between trail users traveling at different speeds, there shall be a striping system installed upon the trail. The trail shall be bisected by a dashed yellow center line. All yellow striping shall be 4" wide (**See below**). Stop Bars shall be white, and shall be 12" wide. **Regional Transportation Commission of Southern Nevada (RTC)** approved paint striping products shall be used.



## 7.5 Grade Changes

Trails that function as sidewalks shall meet the same requirements as sidewalks. Where the trail crosses highways or streets, the crossing also shall meet the same requirements as street crossings, including the provision of detectable warnings.

The general nature of the St. Rose Parkway Trail is to create a usable pathway that is to be installed within the boundaries of a pre-existing right-of-way where grade changes may present design challenges. **ADA (Americans with Disabilities Act)** design criteria shall be met in all instances. In the event of an unforeseen challenge, the City of Henderson Parks and Recreation Director shall be the deciding authority on how to precede with design compliance issues.



Steep grades on the trail shall be avoided. Negotiating a steep grade requires considerable effort on the part of a trail user in a wheelchair or scooter. Grades steeper than 5% are undesirable. In areas of steep terrain, a meander in the trail alignments shall be incorporated in order to obtain reasonable grades for steep slopes. In no case should the approach grade of an intersection of the trail to a sidewalk or street crosswalk exceed 5% for the last 50 feet.

It is essential that the lengths of steep trail sections are minimized and are free of other access barriers. When designing maximum grade segments, the following recommendations shall be used (from USDOT – Shared-use Path Design, chapter 14, pg. 14-10):

- 8.3% for a maximum of 200 feet
- 10% for a maximum of 30 feet
- 12.5% for a maximum of 10 feet

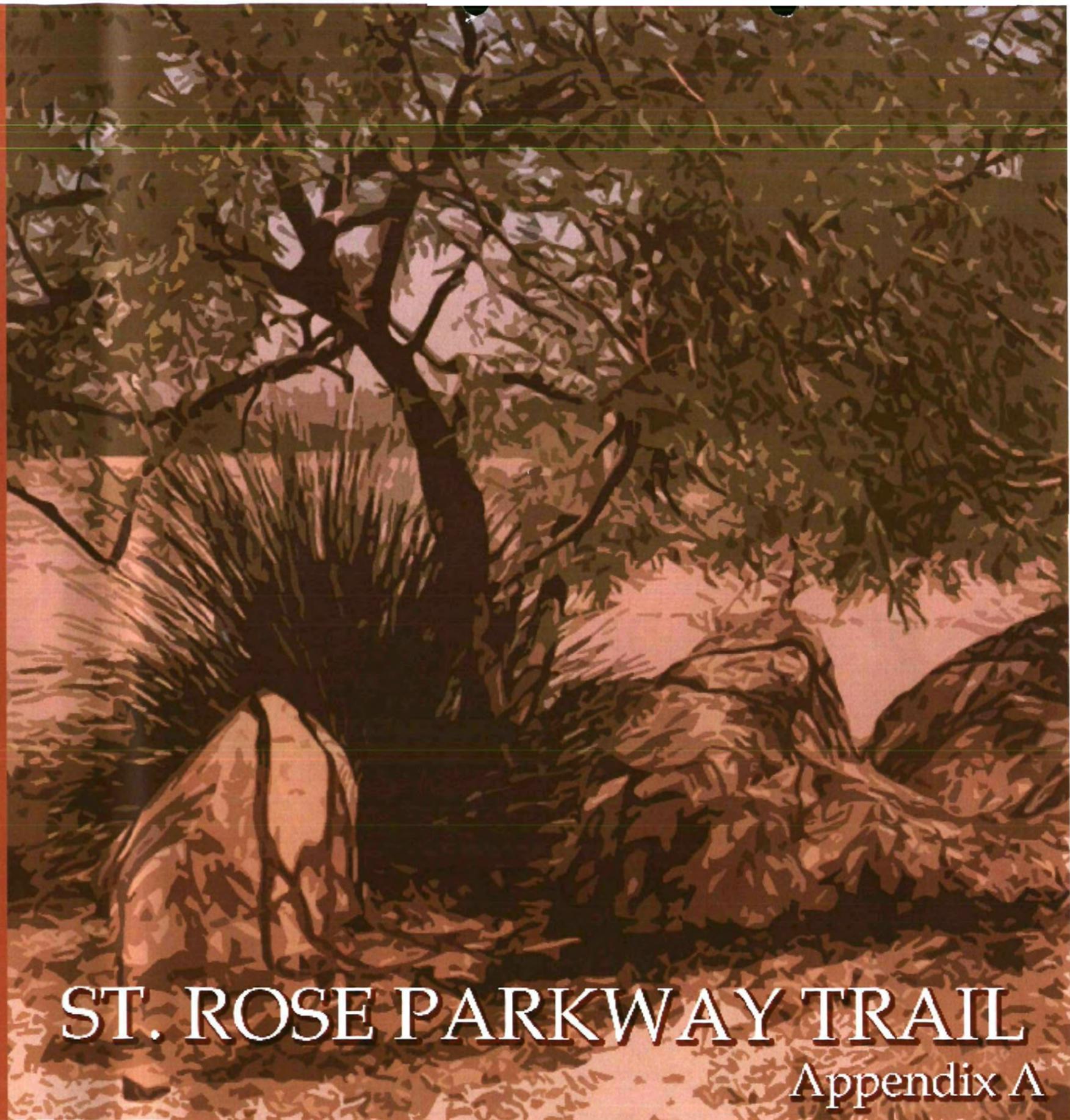
Near the top and bottom of the maximum grade segments, the grade should gradually transition to less than 5%. Rest intervals shall be provided within 25 feet of the top and bottom of a maximum grade segment. A well designed rest interval shall have the following design characteristics:

- Grades not to exceed 5%
- Cross slopes on paved surfaces shall not exceed 2%, and cross slopes on non-paved surfaces shall not exceed 5%.
- Width equal to or greater than the width of the trail segment leading to and from the rest area.
- Minimum length of 60 inches.
- Minimal change of grade and cross slope on the segment connecting the rest area with the main trail.

## 7.6 Horizontal Alignment

All horizontal curves of paved sections of trails shall have a minimum 75-foot curve radius, with a meander located every 200 linear feet. Straight sections of trail longer than 200 linear feet shall be avoided, but may be approved on a case by case basis by the City of Henderson. The minimum clearance to an obstruction that should be provided along a horizontal curve is a function of the stopping sight distance and radius of the curve and shall be a minimum of 3 feet wide, or as directed by AASHTO. The super-elevation rate (i.e., a raised elevation of one side of the trail) may vary from a minimum of 2% (to provide for adequate drainage) to a maximum up to 3% (which shall be considered beyond the maneuvering capabilities of the physically challenged). The paved trail section shall be held as close as possible to the property line, while allowing for the minimum 3' clear zone maximum rate of meander. No plantings shall be placed between the trail and the private property line.





# ST. ROSE PARKWAY TRAIL

Appendix A



## FIGURE 1: APPROVED PLANT MATERIAL LIST

Refer to *Arizona Nurserymen's Standards*, <http://www.anza.org> for minimum tree height and caliper criteria.

- \* May only be used at designated intersection treatments
- \*\* May only be used for screening
- \*\*\* Multi-trunk
- # Native Plants

### Trees

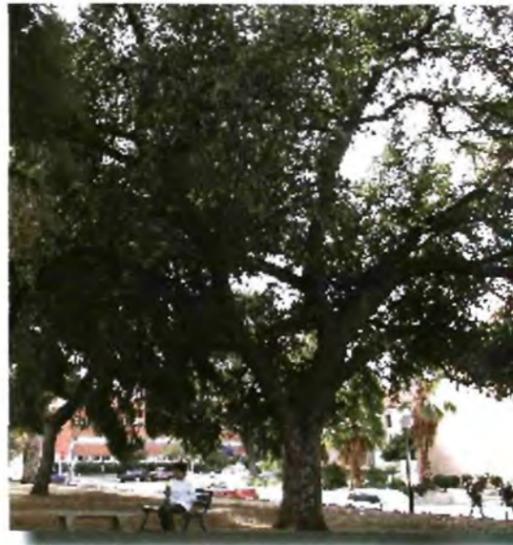
#### Botanical Name

Acacia aneura  
 Acacia constricta  
 Acacia craspedocarpa  
 Acacia greggii#  
 Acacia shaffneri  
 Acacia smallii  
 Acacia stenophylla  
 Cercidium floridum\*\*\*  
 Cercidium microphyllum  
 Cercis occidentalis#  
 Cercocarpus ledifolius  
 Chaemerops humilis\*  
 Chilopsis linearis#  
 Chitalpa tashkentensis  
 Cordia boissieri  
 Cupressus arizonica  
 Fraxinus greggii  
 Leucaena retusa  
 Parkinsonia aculeate\*\*\*  
 Parkinsonia x 'Desert Museum'\*\*\*  
 Phoenix dactylifera\*  
 Pinus eldarica\*\*  
 Pinus halepensis\*\*  
 Pistacia atlantica  
 Pithecellobium flexicaule  
 Prosopis chilensis 'Thornless' \*\*\*  
 Prosopis glandulosa 'Maverick' 'Thornless'  
 Quercus buckleyi

#### Common Name

Mulga Tree  
 White Thorn Acacia  
 Leather Leaf Acacia  
 Cats-claw Acacia  
 Twisted Acacia  
 Sweet Acacia  
 Shoestring Acacia  
 Blue Palo Verde  
 Foothills Palo Verde  
 Western Redbud  
 Mountain Mahogany  
 Mediterranean Fan Palm  
 Desert Willow  
 Chitalpa  
 Texas Olive  
 Arizona Cypress  
 Little Leaf Ash  
 Golden Lead Ball Tree  
 Mexican Palo Verde  
 Desert Museum Palo Verde  
 Date Palm  
 Mondell Pine  
 Aleppo Pine  
 Mountain Atlas Pistache  
 Texas Ebony  
 Chilean Mesquite  
 Maverick Honey Mesquite  
 Texas Red Oak





Quercus emoryi  
 Quercus fusiformis  
 Quercus muhlenbergii  
 Sophora secundiflora  
 Vitex agnus-castus

Emory Oak  
 Escarpment Live Oak  
 Chinquapin Oak  
 Texas Mountain Laurel  
 Chaste Tree

### Shrubs/Accents

#### Botanical Name

Achnatherum hymenoides#  
 Agave Americana  
 Agave harvardiana  
 Agave parryii  
 Agave scabra  
 Agave utahensis#  
 Ambrosia dumosa  
 Aniscanthus thurberi  
 Aniscanthus quadrifidus  
 Artemisia sp.  
 Atriplex sp.#  
 Baccharis sp.  
 Baileya multiradiata#  
 Buddleia marrubifolia  
 Caesalpinia gilliesii  
 Caesalpinia Mexicana  
 Caesalpinia pulcherrima  
 Calliandra californica  
 Calliandra eriophylla  
 Cassia artemisioides  
 Cassia nemophylla  
 Cassia phyllodenia  
 Cassia wislizenii  
 Celtis reticulata  
 Cercocarpus montanus  
 Chrysothamnus nauseosus#  
 Cistus purpureus  
 Convolvulus cneorum  
 Cordia parvifolia  
 Dalea sp.

#### Common Name

Indian Rice Grass  
 Century Plant  
 Harvard Agave  
 Parry's Agave  
 Rough-leaved Agave  
 Mojave Agave  
 White Bursage  
 Desert Honeysuckle  
 Mexican Flame  
 Sage species/varieties  
 Salt Bush species/varieties  
 Coyote Bush species/varieties  
 Desert Marigold  
 Woolly Butterfly Bush  
 Yellow Bird of Paradise  
 Mexican Bird of Paradise  
 Red Bird of Paradise  
 Baja Fairy Duster  
 Fairy Duster  
 Feathery Cassia  
 Desert Cassia  
 Silver Leaf Cassia  
 Shrubby Senna  
 Netleaf Hackberry  
 Alderleaf Mountain Mahogany  
 Rabbit Bush  
 Purple Rock Rose  
 Bush Morning Glory  
 Little-Leaf Cordia  
 Dalea species/varieties





Dasyliirion acrotriche  
 Dasyliirion longissimum  
 Dasyliirion wheeleri  
 Echinocactus grusonii  
 Echinocereus engelmannii#  
 Encelia farinosa#  
 Encelia frutescens#  
 Ericameria larcifolia#  
 Ephedra sp.#  
 Eriogonum sp.  
 Euphobia rigida  
 Fallugia paradoxa#  
 Ferocactus acanthodes#  
 Ferocactus wislizenii  
 Fouquieria splendens  
 Garrya fremontii#  
 Gutierrezia sarothrae  
 Hesperaloe funifera  
 Hesperaloe parviflora  
 Justicia californica  
 Justicia spicigera  
 Larrea tridentata#  
 Leucophyllum sp.  
 Muhlenbergia rigens  
 Nolina bigelovii  
 Nolina microcarpa  
 Opuntia acanthocarpa#  
 Opuntia basilaris#  
 Opuntia echinocarpa#  
 Opuntia phaeacantha#  
 Opuntia erinaceae#  
 Pennisetum setaceum 'Rubrum'  
 Penstemon sp.#  
 Perovskia atriplicifolia  
 Purshia Mexicana#  
 Quercus turbinella#  
 Rhamnus californica#  
 Rhus lanceolata  
 Rhus ovata  
 Rhus tilobata#  
 Rhus virens

Green Desert Spoon  
 Toothless Desert Spoon  
 Desert Spoon/Sotol  
 Golden Barrel Cactus  
 Strawberry Hedgehog Cactus  
 Brittle Bush  
 Green Brittle Bush  
 Turpentine Bush  
 Mormon Tea species/varieties  
 Buckwheat species/varieties  
 Gopher Plant  
 Apache Plume  
 Compass Barrel Cactus  
 Fishhook Cactus  
 Ocotillo  
 Silktassel  
 Matchweed  
 Giant Hesperaloe  
 Red Yucca  
 Chuparosa  
 Mexican Honeysuckle  
 Creosote Bush  
 Texas Ranger species/varieties  
 Deer Grass  
 Bigelow's Nolina  
 Beargrass  
 Buckhorn Cholla  
 Beavertail Cactus  
 Silver Cholla  
 Mojave Prickly Pear  
 Old Man Cactus  
 Red Fountain Grass  
 Penstemon species/varieties  
 Russian Sage  
 Cliff Rose  
 Scrub Oak  
 Coffeberry  
 Red Flame Sumac  
 Sugar Bush  
 Squaw Bush  
 Evergreen Sumac





Plant materials selected for this list are deliberately drought tolerant and well suited for xeric landscapes that embrace the desert climate of Henderson and the Las Vegas Valley. These plant materials range from minimal (very low) to low-moderate requirements for supplemental irrigation. Once established, these plant materials can also survive short seasonal periods of no irrigation if watering restrictions warrant such actions.

Rock Mulch: Mojave Gold, 3/8" minus, no fines, shall be installed to an overall depth of no less than 3". Mojave Gold, 1/2" minus, no fines, may be used as an alternative and shall be installed to an overall depth of no less than 2". Mojave Gold, 3"-6" cobble at slope conditions.

- Salvia chamaedryoides
- Salvia clevelandii
- Salvia dorrii
- Salvia greggii 'Sierra Linda'
- Salvia mohavensis#
- Santolina chameacyparissus
- Santolina virens
- Stipa speciosa#
- Sphaeralcea ambigua#
- Tagetes lemmonii
- Tecoma sp.
- Teucrium chamaedrys
- Vauquelinia californica
- Viguieria stenoloba
- Yucca aliofolia
- Yucca baccata#
- Yucca brevifolia#
- Yucca elata
- Yucca gloriosa
- Yucca recurvifolia
- Yucca schidigera#
- Yucca whipplei
- Zauschneria californica

- Mexican Blue Sage
- Cleveland Sage
- Desert Sage
- Autumn Sage
- Mojave Sage
- Lavender Cotton
- Green Santolina
- Desert Needlegrass
- Globemallow
- Desert Marigold
- Yellow Bells species/varieties
- Germander
- Arizona Rosewood
- Skeleton-leaf Goldeneye
- Spanish Bayonet
- Banana Yucca
- Joshua Tree
- Soap Tree Yucca
- Spanish Dagger
- Curveleaf Yucca
- Mojave Yucca
- Our Lord's Candle
- Hummingbird Flower

### Groundcovers/Vines

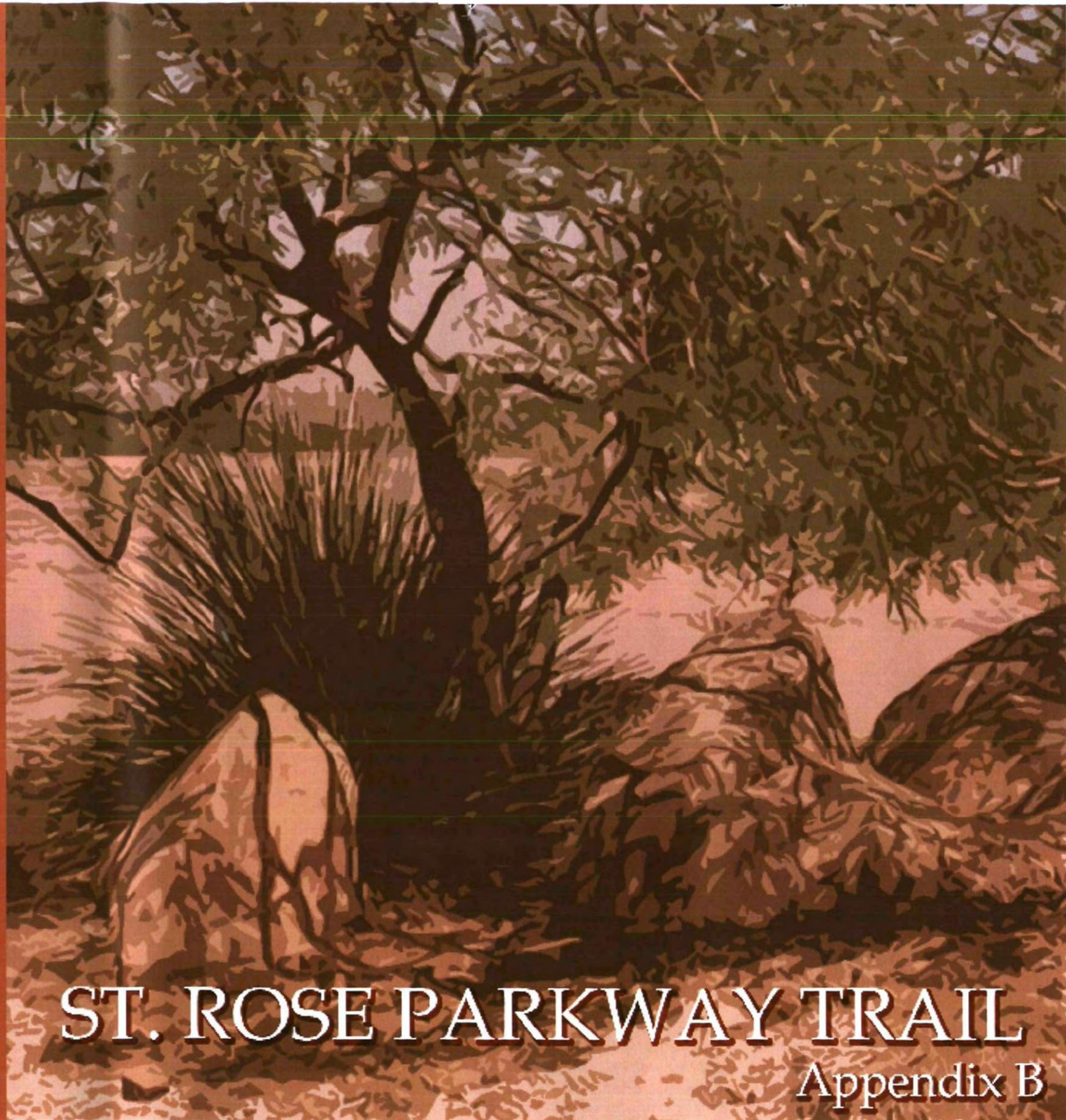
#### Botanical Name

- Acacia redolens "Desert Carpet"
- Asclepias tuberosa
- Berlandia lyrata
- Lantana sp.
- Melampodium leucanthum
- Macfadyena unguis-cati
- Oenothera caespitosa
- Rosemarinus officinalis 'Arp'
- Rosemarinus officinalis 'Huntington Carpet'
- Rudbeckia hirta
- Verbena gooddingii
- Verbena rigida

#### Common Name

- Creeping Acacia
- Butterflyweed
- Chocolate Flower
- Lantana species/varieties
- Blackfoot Daisy
- Cat Claw Vine
- White Evening Primrose
- Arp Rosemary
- Huntington Carpet Rosemary
- Black-eyed Susan
- Goodding's Verbena
- Sand Verbena





# ST. ROSE PARKWAY TRAIL

Appendix B

FIGURE 1: PROJECT SUBMITTAL PROCESS FLOW CHART

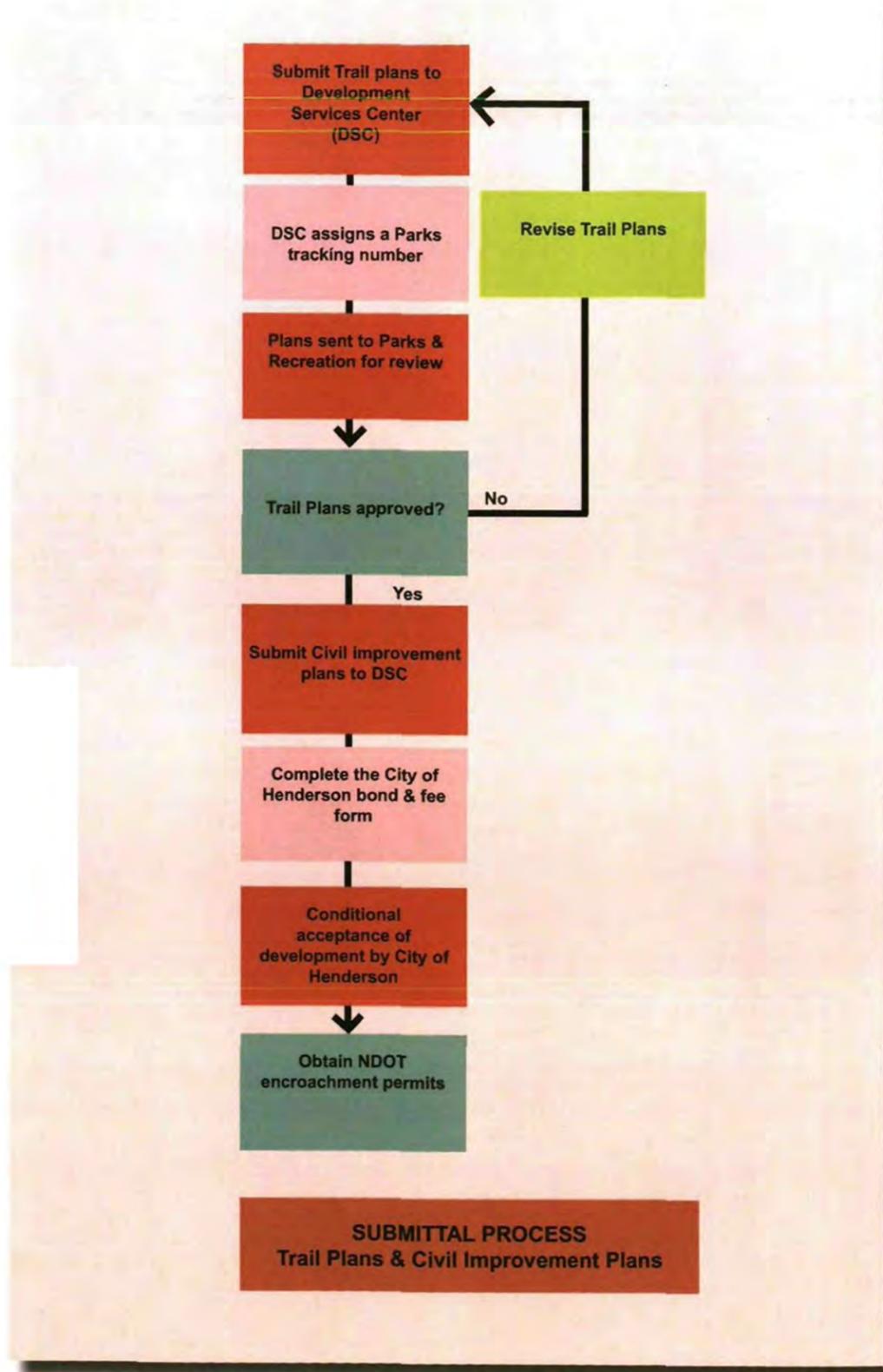


FIGURE 2: CITY OF HENDERSON PROJECT CHECKLIST



The City of Henderson

Trail & Landscape Improvement Project Application

- ✦ Multi-Use / Shared Path
- ✦ Rural Recreational Trail
- ✦ Landscape Improvements/ Highway Beautification
- ✦ Lake Mead Parkway
- ✦ Boulder Highway
- ✦ St. Rose Parkway

Parks and Recreation Department Park Planning

P.O. Box 95050  
Henderson, NV 89009-5050

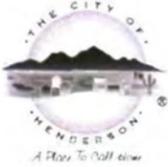
Phone: 702-267-4090  
Fax: 702-267-4001  
Website: [www.cityofhenderson.com](http://www.cityofhenderson.com)

Checklist

- Original Signed Application
- Copy of Conditions of Approval
- Three full size (24" x 36") and three 1/2 size complete plan sets
- Site Plan**
  - Name of project
  - Total Acreage
  - Vicinity map, north arrow, scale
  - Street access to site, Street Names, Intersections, Centerline, and Ultimate Right-of-way Dimensions (including medians)
  - Design & Construction Specifications
- Justification Letter**
  - Name of Project
  - Explanation of the Application
- Provide Landscape Plans**
  - Specific Plant Palette w/ Sizes/ Quantities
  - Square feet of Landscape & Site Triangles
- Provide Irrigation Plans**
  - All Equipment and Connections (Power/Water/Phones)
- Plant Quantities & Calculations**
  - Insuring conformance to COH Landscape District Boulder Highway/Lake Mead Parkway/ St. Rose Parkway or Trail Standards
  - Plans will not receive Final Approval until signed off by Easement Holders (COH, Property Mgt., NDOT, Power/Water)
  - Bonds to be submitted at Plan Review Submission
- ✦ **References to:**
  - Boulder Highway Beautification
  - Lake Mead Drive Landscape Improvements
  - St. Rose Parkway Trail Improvements
  - COH Landscape and Trail Standards
  - COH Plant List
  - Master Bicycle & Pedestrian Trail Plan
  - COH Development Code
  - Clark County Standards for PW Improvements
  - AASHTO Bicycle Standards

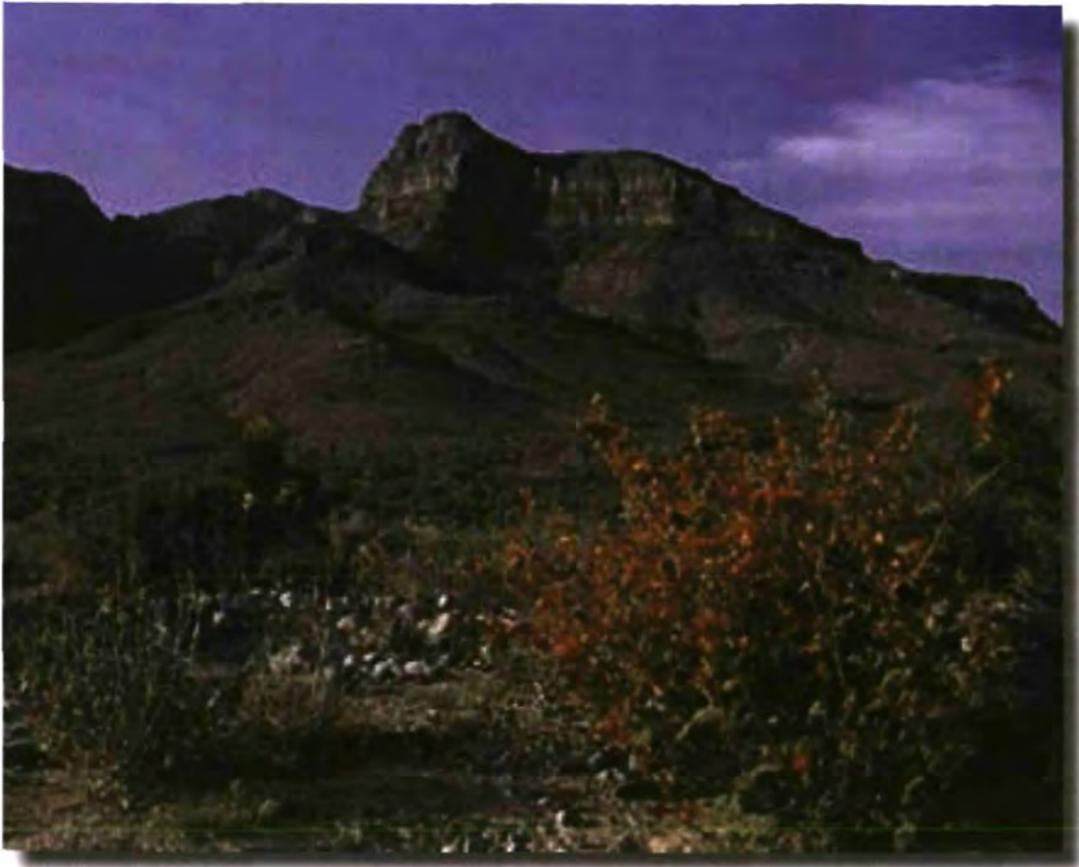
Please see City of Henderson website for most current Trail and Landscape Improvement Application form





### The City of Henderson

#### Trail & Landscape Project Application Form



**Project Name** \_\_\_\_\_

**Project Location** \_\_\_\_\_

**Assessor's Parcel # (s)** \_\_\_\_\_

**Intent of Request** \_\_\_\_\_

\_\_\_\_\_

**Related Applications** \_\_\_\_\_

*Check One:*     Multi Use Trail     Rural / Recreational Trail

Landscape Improvement Project

*Circle Appropriate:*    ♦ Lake Mead Parkway    ♦ Boulder Highway    ♦ St. Rose Parkway

♦ Other: \_\_\_\_\_

**Owner Name** \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Phone ( ) \_\_\_\_\_

**Applicant Name** \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Phone ( ) \_\_\_\_\_

**Contact Person** \_\_\_\_\_ Company \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_

Zip Code \_\_\_\_\_ Phone ( ) \_\_\_\_\_

Alternate Phone ( ) \_\_\_\_\_ Fax \_\_\_\_\_

Email (Optional) \_\_\_\_\_

The person listed above may be contacted to answer questions regarding this application to provide additional information necessary, and upon approval, receive a copy of plan approvals.

\_\_\_\_\_  
Applicant Signature

Please see City of Henderson website for most current Trail and Landscape Improvement Application form



**Intersections along St. Rose Parkway**

Three options are available for trail amenities for intersections along St. Rose Parkway. Developers may choose from the options to add along with the required intersection enhancement requirements. The photos below depict examples of shade structures, drinking fountains, and public art.

**Option A:**

- Shade structure
- Benches
- Trash receptacle(s)
- Pet waste station
- Paved trail (striped)
- Landscape and irrigation



Shade Structure



Public Art

**Option B:**

- Drinking fountain\*
- Benches
- Trash receptacle(s)
- Pet waste station
- Paved trail (striped)
- Landscape and irrigation



Public Art



Drinking Fountain



Public Art

**Option C:**

- Public Art
- Benches
- Trash receptacle(s)
- Pet waste station
- Paved trail (striped)
- Landscape and irrigation

\*Drinking fountain water supply would come from development and developer would ensure all clearances are met for potable/reclaimed water lines.

