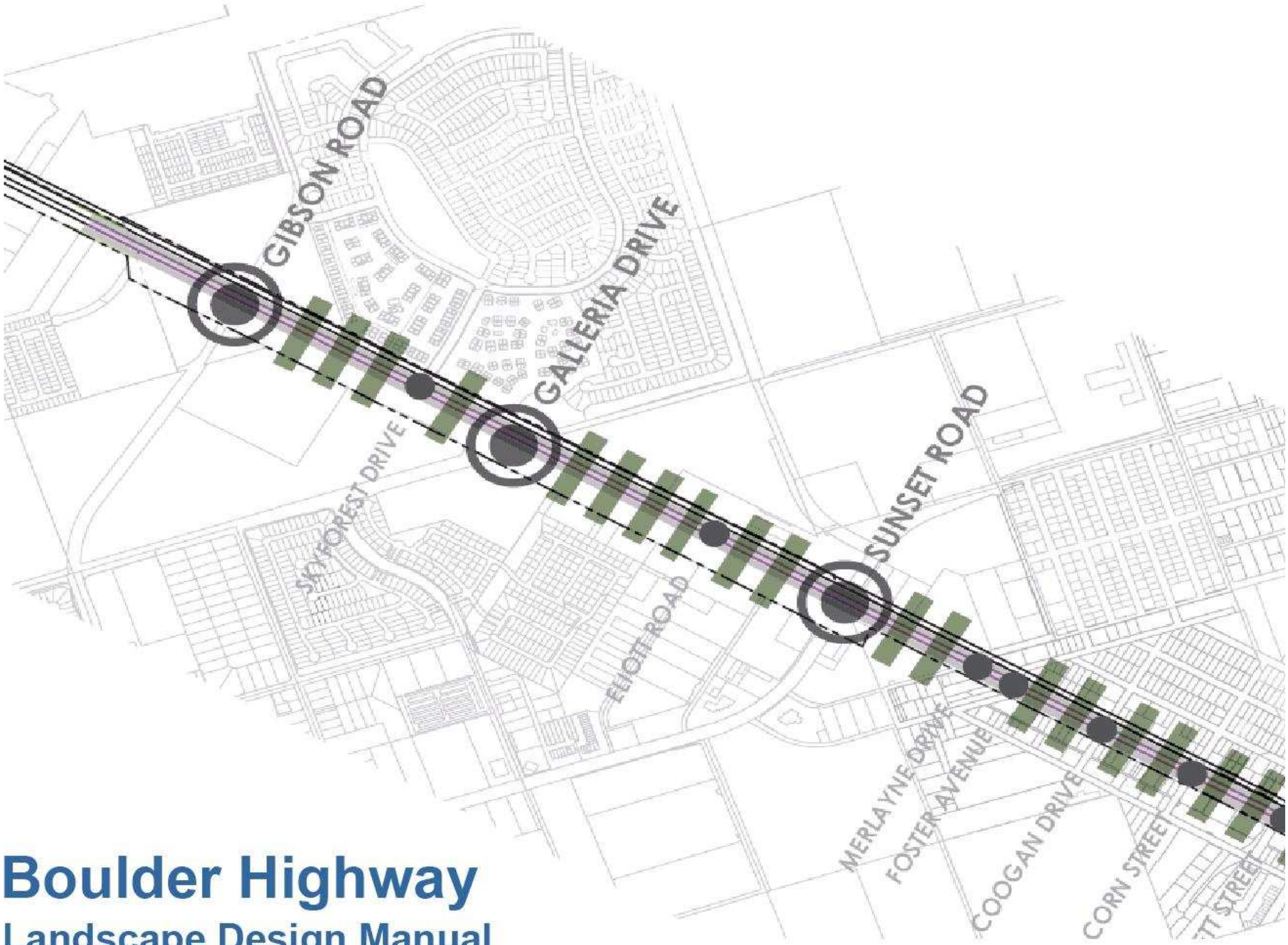

Boulder Highway

Landscape Design Manual

Adopted June 2009

1. Introduction

The *Boulder Highway Landscape Design Manual* ('the Design Manual') is intended to enhance the image of the Boulder Highway Corridor right-of-way and that of intersecting streets as established in the Boulder Highway Corridor Investment Strategy. This Design Manual builds on the concepts originally established by the Boulder Highway Improvement Project Design Manual (1992) and the Boulder Highway Beautification Millennium Edition Design Manual (1999), and is intended to replace and supersede these manuals.

This chapter establishes the applicability and intent of the Design Manual, provides a general history of enhancement efforts along the Boulder Highway Corridor, and provides an overview of subsequent chapters. This chapter serves as the basis for Chapter 4, which contains specific design standards and guidelines for future improvements. The Introduction is presented in three sections: *General Provisions, History, and Organization of the Document.*

1.1 General Provisions

1.1.1 APPLICABILITY

The standards and guidelines contained in this Design Manual shall be applicable to all property located within the Boulder Highway Corridor right-of-way and all public facilities in easements on private property.

1.1.2 GENERAL INTENT

The general intent of this Design Manual is to:

- Protect and build upon the substantial public investments made in the beautification of Boulder Highway during the past 15 years;
- Implement the vision, goals, and principles established by the Boulder Highway Corridor Investment Strategy;
- Establish minimum design standards for the preservation and improvement of right-of-way enhancements along the Boulder Highway Corridor by public and/or private parties;
- Create a continuity of design that respects the history of the community and important transportation function of Boulder Highway, while achieving the City's vision for the revitalization of the Boulder Highway Corridor;

- Convey clear and concise information for those intending new development, redevelopment or revitalization including the City's requirements and expectations of what constitutes appropriate and attractive improvements for the Boulder Highway right-of-way; and
- Establish the basic steps necessary to achieve approvals and permits for enhancements along the Boulder Highway Corridor.

1.1.3 ADMINISTRATION GENERAL

The City's Parks and Recreation Department ('Parks') is responsible for the general administration and maintenance of the Boulder Highway Beautification; however, the specific review of an individual project may involve multiple state and local agencies, as discussed in Chapter 3 of this Design Manual.

1.1.4 DESIGN STANDARD FLEXIBILITY

Minor Deviations or Alternative Designs

The City recognizes that circumstances and conditions may occasionally require minor adjustments from the design standards of this manual. A request for any alternative design or timeframe must be consistent with the goals and objectives of this manual and shall be submitted in the manner and form as required by the Parks and Recreation Department. The Director of Parks and Recreation, in consultation with other affected departments, will issue an administrative determination, which may be appealed to the Planning Commission and City Council for final approval. The appeal shall be processed through the standard Community Development Appeal of Decision process. All entitlement and civil documents must be revised to reflect the final determination if it is different from what was originally approved.

Before making such a request, applicants are encouraged to meet with City staff to understand the requirements, steps, costs, and time frame for such a request. Applicants are also encouraged to discuss their concept to receive feedback from staff on the probable merits of their request for flexibility in the standards.

1.1.5 COMPLIANCE AND PERMITS REQUIRED

No work may commence until a PROJECT has:

- Followed all applicable development procedures and obtained necessary approvals; and
- Been issued all required permits and authorizations, as noted in Chapter 3 of this Design Manual.

In general, an encroachment permit, multi-use agreement, or commercial lease from The Nevada Department of Transportation (NDOT) is granted after submittal and approval of the required plans, studies, information and signed agreements and also after the City has completed and approved a PROJECT's civil improvement plans, landscape plans, irrigation plans, site plans and required studies, bonds, fees, and agreements (see Chapter 3).

If exempt from Design Review, a PROJECT must still obtain the other necessary development approvals and building permits from the City of Henderson in conjunction with proof of NDOT's approval.

1.2 HISTORY

The ongoing transformation of Boulder Highway, which this Design Manual seeks to build upon, has a long history. Initiated in the early 1980's, a persistent vision has been maintained for Boulder Highway, highlighting the ongoing dedication of the City of Henderson and community leaders to achieve their vision. The beautification of Boulder Highway is a legacy of vision and commitment to making ongoing improvements to prepare for the future and leave the City a better place for generations in the future.

1.2.1 VISIONARY LEADERSHIP

Early in the 1980's, the Chamber of Commerce and the City foresaw both the opportunities and risk associated with the future freeway that would connect Las Vegas to Arizona and Interstate 40. This future freeway, I-515 or US-95, would ultimately replace Boulder Highway as the major highway. The risk was to existing businesses and investments that drew from this highly trafficked corridor of 1.5 million visitors per year.

Shortly thereafter, the Chamber and City envisioned that with a concerted effort, the risk to Boulder Highway and the surrounding community could be an opportunity. The City could have the best of both worlds: a new major freeway and its related benefits as well as a vibrant and rejuvenated economic vitality.

Small changes in design and specific improvements for Boulder Highway have occurred since the vision was first established; however, the objective of corridor revitalization and enhancement remains unchanged. In 2006, spurred by Regional Transportation Commission plans to implement rapid transit along Boulder Highway, the City once again revisited discussions regarding the corridor and commenced a process to develop a comprehensive Investment Strategy for the corridor to guide future public and private investment.

1.2.2 SIGNIFICANT MILESTONES

Numerous milestones have been achieved over the course of nearly 30 years that the Boulder Highway Beautification Project has been underway. The number of events and persons deserving credit is enormous. The chronology below is highly abbreviated but signifies some of the most significant milestones.

TABLE 1: BOULDER HIGHWAY BEAUTIFICATION PROJECT MILESTONES	YEAR
Henderson Chamber of Commerce initiates the Beautification Project	1983
City Council forms official partnership with Chamber of Commerce	1984
A Conceptual Master Plan for the Boulder Highway Corridor Redevelopment Study is funded by a Federal EDA Technical Assistance Grant and completed	1985
City secures Federal funding commitments	1987
Henderson voters approve a $3 million bond issue for Boulder Highway project	1987
City Council appoints a Citizens Steering Committee by Resolution No. 1270	1988
Design & development efforts commence	1988
Improvement Project Design Manual effort starts	1993
Sign ordinance to control billboards approved	1991
$7.4 Million Boulder Highway Beautification begins	1992
Regional Transportation Commission (RTC) identifies Boulder Highway as priority corridor for transit improvements	2002
Voters pass an initiative to help fund transit improvements within the Valley	2004
RTC completes a transportation study of the corridor that evaluates transportation improvement alternatives, including rapid transit along Boulder Highway	2004
City adopts its updated Comprehensive Plan	2006
City initiates a planning process to develop an investment strategy for the Boulder Highway Corridor—a plan that will guide its transformation and revitalization	2006
Investment Strategy and mixed-use zoning for the Boulder Highway Corridor completed	2008
Updated Landscape Design Manual for the Boulder Highway Corridor completed	2009
Rapid transit service expected to open along Boulder Highway Corridor	2011

1.3 ORGANIZATION OF THE DOCUMENT

The Design Manual contains three chapters and two appendices in addition to this Introduction. They include:

Chapter 2: Vision, Goals and Objectives includes the overall development intent envisioned for Boulder Highway, as contained in the Boulder Highway Corridor Investment Strategy. This chapter sets forth the guiding principles that serve as the foundation for the design standards and guidelines contained in Chapter 4.

Chapter 3: Development Procedures includes the general steps a proposed project must take to obtain the City and State approvals and permits to commence construction. The Design Manual is not intended to contain a fixed formula to address all possible conditions and circumstances affecting a particular project. This chapter will help staff and applicants identify potential issues and assist projects in achieving the standards and guidelines contained in this Design Manual.

Chapter 4: Landscape Standards & Guidelines includes landscape design standards and guidelines for primary intersections, secondary intersections, the Linear Park, gateways, parkway streets, medians, rapid transit stations, public art, lighting, and trail signage. Standards and guidelines are intended to simplify the identification of appropriate plants and arrangements as well as irrigation materials and methods. The design standards and guidelines represent the City's anticipated methods to achieve the vision, goals, and objectives contained in the Boulder Highway Corridor Investment Strategy.

Appendix A includes Landscape Specifications, Trail Technical Standards, and Definitions.

Appendix B contains a comprehensive list of approved planting materials for different portions of the Boulder Highway Corridor, as defined by this Design Manual.

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2. Vision, Goals, & Objectives

This chapter of the Design Manual summarizes the vision established by the Boulder Highway Corridor Investment Strategy ("the Investment Strategy"), emphasizing those aspects that are focused within the Boulder Highway right-of-way. It is these items which provide the underlying and guiding principles for the specific design standards and guidelines contained in Chapter 4 of this Design Manual.

2.1. The Boulder Highway Beautification Vision

The City has, since the inception of the Boulder Highway Improvement Project in 1983, worked towards the implementation of its vision of Boulder Highway as an attractive, thriving, functional and vital corridor serving a diverse array of businesses, adjoining neighborhoods, and the community-at-large. Although the factors influencing the implementation of the vision and the specific aspects of the corridor vision have evolved and expanded with the development of the Investment Strategy, the City's initial objective of enhancing the appearance of the corridor remains constant. The vision statement and guiding principles established by the Investment Strategy are summarized below. Chapter 3 of the Investment Strategy also contains a list of supporting actions the City intends to take to accomplish each principle.

2.1.1 VISION

The Boulder Highway Corridor is a civic, entertainment, residential, employment, and transportation spine of the city that represents its past, present, and future in a seamlessly integrated and active environment. Quality building design, active civic spaces, a continuous green parkway, and coordinated transportation systems combine to offer a high-quality experience that distinguishes the City of Henderson within the region. While the corridor is coordinated to offer a unified sense of place, distinct areas offer very different experiences – downtown living, shopping, entertainment, and civic facilities and events; stable neighborhoods; destination commercial mixed-use nodes; and business and employment areas.

2.1.2 GUIDING PRINCIPLES

The overarching themes for the corridor – connect, reinvest, transform – are supported by the following five guiding principles:

#1: The City Will Promote the Revitalization and Transformation of the Boulder Highway Corridor

The revitalization of the Boulder Highway Corridor will occur incrementally over time. The city will promote this revitalization using a range of tools, strategies, and public/private partnerships.

#2: The Boulder Highway Corridor Will Serve as a Major Multi-Modal Transportation Corridor within our City and Region

The importance of the Boulder Highway Corridor extends far beyond just the City of Henderson. Ultimately, it will serve as one "leg" of a much larger regional system allowing the city to remain independent while providing its residents with easy access to other activity and employment centers throughout the valley.

#3: The City and RTC Will Establish a Distinctive "Look and Feel" for the Boulder Highway Corridor that is Unique to Henderson

Because the Boulder Highway Corridor extends far beyond the City of Henderson, it will be important to establish a distinctive image for the Henderson portion of the corridor that distinguishes it from its neighboring communities.

#4: Mixed-Use Activity Centers Will Be Established at Key Nodes

The Boulder Highway Corridor covers a very large area and existing land use patterns in most areas are fairly low density. At identified key opportunity nodes, future development will need to occur at significantly higher densities and be concentrated within walking distance of transit stations.

#5: The Boulder Highway Corridor Will Be Integrated with the Surrounding Community

In order to reach its full potential, the Boulder Highway Corridor must be well-connected to the surrounding community and the region and must offer residents, employees, and visitors a variety of transportation options (auto/pedestrian/bicycle/transit).

2.1.3 BOULDER HIGHWAY CORRIDOR GOALS

In addition to the vision and guiding principles summarized in this chapter, the Investment Strategy establishes a series of goals and principles in three framework areas: Green Framework, Land Use Framework, and Multi-Modal Framework. Goals related to the "Green Framework" are listed

below. A detailed discussion of each can be found in Chapter 4 of the Boulder Highway Corridor Investment Strategy. Goals for the Land Use and Multi-Modal Framework can be found in Chapters 5 and 6 of the Investment Strategy, respectively.

Green Framework Goals

- GF1—Establish the corridor as a true linear park.
- GF2—Establish a hierarchy of landscape enhancements along the corridor.
- GF3—Integrate the desert environment into the corridor.
- GF4—Continue to expand trail and pathway linkages to the corridor to provide recreational opportunities for area residents.
- GF5—Identify future park sites to serve corridor residents.
- GF6—Establish clear gateways to the corridor.

Principles—Landscaping and the Public Realm

- Principle LP1: Use a consistent palette of drought-resistant plants.
- Principle LP2: Limit curb cuts along the Linear Park.
- Principle LP3: Concentrate formal landscaping and shade at and around transit stations and primary intersections.
- Principle LP4: Establish a "looser," more informal landscape character for linear park areas and secondary intersections.
- Principle LP5: Define entryways into the city with distinctive gateway features.
- Principle LP6: Reinforce the character of corridor landscape elements in adjacent development.
- Principle LP7: Incorporate public art in appropriate locations

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3. Development Procedures

This chapter establishes a process by which public or private property within the Boulder Highway right-of-way may be developed. This chapter's intent is to assist interested parties in easily identifying the necessary steps to obtain plan approval and permit approvals. Due to the complex and changing approval process, this chapter is not a detailed handbook covering every possible situation. This chapter provides an overview the major governmental entities involved in the review and permitting process, the timing and nature of the different steps, and the areas subject to the Design Manual's authority. The Development Procedures Guide is presented in section 3.2.

3.1 Boulder Highway Jurisdiction

3.1.1 JOINT REGULATORY AUTHORITY

The Boulder Highway and its right-of-way are under the joint jurisdiction of the City of Henderson and the Nevada Department of Transportation (NDOT). NDOT regulates the transportation related aspects of Boulder Highway for the traveling public's safety and convenience. This includes paved surfaces, curb cuts, medians, lighting, traffic signals, turn lanes, bus stops, storm drainage, and signage.

The City of Henderson's responsibilities are both overlapping and separate from NDOT's. The City's interest and responsibilities include transportation but also encompass: land use, redevelopment, economic development, public safety (police, fire, emergency response, building permits, and emergency management), landscape enhancements, parks, and neighborhood preservation.

The Design Manual procedures and requirements apply to the actual right-of-way area and include: paved surfaces, medians, drainage channels, and excess/unbuilt right-of-way.

3.1.2 IMPROVEMENT ZONES

Land within the Boulder Highway Corridor falls into two different categories based on use: The Roadway Zone and the Pedestrian-Oriented Zone (See Figures 3-9). In areas of the corridor where a larger right-of-way exists, a Flex Zone also applies. These Improvement Zones also correspond to the regulatory requirements and procedures of this Design Manual. Each category is described below.

The boundary for the ***Roadway Zone*** spans 178 feet and incorporates the existing Boulder Highway traffic lanes, streetlights, and landscaped median as well as the Road Expansion Area. The width provided in the Road Expansion Area is included to accommodate possible future dedicated turning lanes, bus turnouts, or an additional travel lane while still providing a 5-foot bike lane and a curb at the edge of the roadway. The Road Expansion Area varies in width and composition depending on the improvements necessary for efficient vehicular circulation.

The ***Pedestrian-Oriented Zone*** extends from the edge of the Road Expansion Area to the boundary between the right of way and private property. It incorporates all of the pedestrian circulation areas including the Linear Park, parkway streets, sidewalks with street trees, and the buffers protecting them from the Roadway Zone. Standards and guidelines for this zone are outlined in Chapter 4. Each landowner shall be responsible for developing this area consistently with the property line directly adjacent to the Boulder Highway right-of-way. The City of Henderson shall assume responsibility for maintenance of transportation and utility infrastructure components upon acceptance of the public infrastructure improvements, which coincides with the beginning of the contractor's warranty period. The City of Henderson shall assume maintenance of the trail corridor and other landscape elements within the right-of-way upon substantial completion. (Where reclaimed water facilities are available, the developer will be required to use reclaimed water for landscape within the right-of-way). In areas where the reclaimed waterline is unavailable, the property owner must provide a separate LS water meter and comply with all applicable City of Henderson standards. All irrigation systems within the right-of-way must be installed with purple pipe.

The Nevada Department of Transportation has authority over the Roadway and Pedestrian-Oriented Zones by virtue of its grant for transportation purposes. This includes the entire length and width of Boulder Highway within Henderson, which in some instances is up to 500' wide. It includes the median, paved highway, shoulder, parkway, frontage roads, and vacant adjoining land area. Required studies and review may vary by location and type of improvement proposed. A checklist of requirements and applicable agencies by type of improvement for each zone is provided in Section 3.2.

The ***Flex Zone*** represents the remaining right-of-way area outside of the Roadway Zone and Linear Park. This zone's area varies widely because the width of the Boulder Highway right-of-way also varies widely. There may be areas where this zone does not occur at all, and in other areas the width of the zone would exceed 100'. This zone may accommodate future development, sidewalks, and parkway streets that are consistent with the Boulder Highway Corridor Investment Strategy. Property owners may petition to have land within the Flex Zone transferred from Nevada Department of Transportation or City of Henderson ownership to private ownership in order for private development to occur. Figures 3 through 9 illustrate potential Flex Zone configurations in different locations in the corridor.

3.2 BOULDER HIGHWAY DEVELOPMENT PROCEDURES GUIDE

3.2.1 DEVELOPMENT PROCEDURES GUIDE - PURPOSE AND INTENT

The intent of this Design Manual is to go beyond just establishing goals, standards and guidelines. The Development Procedures Guide that follows is intended to serve as a tool to guide applicants through the permitting and approval process in an efficient and timely manner.

3.2.2 DEVELOPMENT PROCEDURES GUIDE - ORGANIZATION AND CONTENT

The Guide is divided into three related parts:

- Permitting Checklists
- Typical Steps
- Landscaping: Frequently Asked Questions

Permitting checklists are provided for the Pedestrian-Oriented Zone and the Roadway Zone in tables 2 and 3, respectively. The checklists are intended to help identify the unique aspects of the permitting process depending on a proposed project's type and location.

The next section, Typical Steps, helps direct applicants through the major steps in the process. The final section, Landscaping: Frequently Asked Questions, provides answers to commonly asked questions related to improvements within the Boulder Highway right-of-way.

TABLE 2: PERMITTING CHECKLIST							
Pedestrian-Oriented Zone							
Proposed Project Activities	**City of Henderson Reviewing Agencies**					**NDOT Reviewing Agencies**	
	Building Department	**Community Development Department**	**Public Works Plan & Report Approval**	**Public Works Permit & Agreement Types**	**Parks Department Plan Approval**	**Plan & Report Approvals**	**Permit & Agency Types**
Traffic Impact Studies			X			X	
Traffic Control Plans			X			X	X
Drainage Studies			X			X	
Landscape Construction Documents		X			X	X	X
Civil Engineering Improvement Plans		X	X		X		
ROW Occupancy/Encroachment Permit				X		X	
Multi-Use Agreement							X
ROW Purchase Agreement				X			
Refunding Agreements				X			
LID Agreements				X			
Improvement Agreement & Performance Bonds				X			
Building Plans	X	X					
Site Plans & Elevations		X					
Zoning/Land Use		X					

Notes:

A copy of the approval letter for the Drainage Study must be submitted to the Parks and Recreation Department.

Any projects seeking Redevelopment assistance must be approved by the Redevelopment Agency.

Some proposed project activities require approval by multiple departments from both NDOT and the City of Henderson. These proposed project activities shall not be considered approved for construction until ALL relevant reviewing agencies approve the plans.

TABLE 3: PERMITTING CHECKLIST							
Roadway Zone							
Proposed Project Activities	**City of Henderson Reviewing Agencies**					**NDOT Reviewing Agencies**	
	Building Department	**Community Development Department**	**Public Works Plan & Report Approval**	**Public Works Permit & Agreement Types**	**Parks Department Plan Approval**	**Plan & Report Approvals**	**Permit & Agency Types**
Traffic Impact Studies			X			X	
Traffic Control Plans			X			X	X
Drainage Studies			X			X	
Landscape Construction Documents		X			X	X	
Civil Engineering Improvement Plans		X	X		X	X	
ROW Occupancy/Encroachment Permit				X			X
Multi-Use Agreement							X
ROW Purchase Agreement				X			
Refunding Agreements				X			
LID Agreements				X			
Improvement Agreement & Performance Bonds				X			
Building Plans	X	X					
Site Plans & Elevations		X					
Zoning/Land Use		X					

Notes:

A copy of the approval letter for the Drainage Study must be submitted to the Parks and Recreation Department.

New business must also obtain a business license through the Finance Department.

Any projects seeking Redevelopment assistance must be approved by the Redevelopment Agency.

Some proposed project activities require approval by multiple departments from both NDOT and the City of Henderson. These proposed project activities shall not be considered approved for construction until ALL relevant reviewing agencies approve the plans.

3.2.4 THE DEVELOPMENT GUIDE—TYPICAL STEPS

Tables 4 and 5, below, contain a list of typical steps in the process as a general guide for applicants:

TABLE 4: INFORMAL COURTESY CONTACTS & REVIEW CHECKLIST
Step 1. Preparation
Prior to Informal Visits to Departments (have this checklist in hand): Assessors parcel map or equivalent location maps Building and site address Clear explanation of intended business use Simple sketch of the proposed project area and desired improvements Identify the Improvement Zone(s) the desired improvements fall within Site photographs to show existing conditions
Step 2: Planning and Zoning Issues, Rules, & Procedures
Contact the Community Development Department. Is the proposed use within a Redevelopment Area? Is the proposed use permissible at the desired location? If yes, proceed to Step 3. What actions by the Community Development Department are needed for Planning & Zoning Approval?
Step 3: Permitting Issues, Rules & Procedures
Contact the Parks & Recreation Department Is the proposed project exempt from any Corridor or Roadway Landscaping requirements? Is the proposed project required to make Corridor Path/Landscaping improvements? Is the proposed project required to make Median Landscaping improvements? Is the proposed project abutting an existing Corridor Path/Landscaped area? Clarify any questions about how the Design Manual affects the project. Indicate any desired and justified exceptions from Design Manual. Are there any concerns or suggestions staff can offer?

TABLE 4: INFORMAL COURTESY CONTACTS & REVIEW CHECKLIST
Contact the Public Works Department Traffic Division
Is the proposed project required to provide a Traffic Study?
Steps required for City to sign the NDOT Encroachment Permit and/or Lease/License application?
Is the proposed project required to obtain a Barricade Permit?
Are there any concerns or suggestions staff can offer?
Contact the Public Works Department New Development Division
Is the proposed project required to provide a Hydrology Study?
Are there any concerns or suggestions staff can offer?
Contact the Public Works Department Survey/ROW Division
Does the City or NDOT control the right-of-way/property?
Who is the underlying fee owner for the portion of right-of-way in front of my property?
Are there any concerns or suggestions staff can offer?
Contact the Department of Utility Services
Is the project's landscaping serviceable by Re-Use Water?
Are domestic and fire pressure water levels adequate?
Is the proposed project required to provide a hydraulic analysis?
Are there any concerns or suggestions staff can offer?
Contact the Fire Department
Are fire hydrants required along the corridor?
Contact the Nevada Department of Transportation
Does the project require an Encroachment/Revocable Permit?
Does the project require a Lease/License agreement?

TABLE 5: FORMAL PLAN SUBMISSION & REVIEW CHECKLIST
Step 1. Preparation
PRIOR TO FORMAL SUBMISSION OF PLANS:
Complete all applications and forms and notarize as required.
Review all plans and studies for completeness.
Bring a check or other form of payment for application processing fee.

TABLE 5: FORMAL PLAN SUBMISSION & REVIEW CHECKLIST
Step 2: Formal Submission of Plans and Reports to Community Development - Entitlements
AGENCIES AND DEPARTMENT FOR FORMAL SUBMISSION OF PLANS: **Henderson Community Development Department** Application with all related documents including site plan and landscape plan
Step 3: Formal Submission of Plans to Parks and Recreation
AGENCIES AND DEPARTMENT FOR FORMAL SUBMISSION OF PLANS: **Henderson Parks and Recreation Department** Landscape Construction Documents and Plans
Step 4: Formal Submission of Plans and Reports to the Development Services Center
AGENCIES AND DEPARTMENT FOR FORMAL SUBMISSION OF PLANS: **Henderson Community Development Department** Civil Improvement Plans Site Plan and Landscape Construction Documents Building Plans **Henderson Public Works—Traffic Division** Civil Improvement Plans Traffic Study or Addendums Barricade Permits **Henderson Public Works-- New Development** Civil Improvement Plans Hydrology/Drainage Study Permit Applications for Revocable/Encroachment Permits Bond Estimate and Plan Fees (later in process) **Henderson Public Works—Survey/ROW** Documents showing the alignment and location of proposed easements within the right-of-way **Henderson Parks and Recreation Department** Site Plan Civil Improvement Plans Drainage Study Approval Letter

TABLE 5: FORMAL PLAN SUBMISSION & REVIEW CHECKLIST
Henderson Department of Utility Services
Civil Improvement Plans
Hydraulic Analysis
Municipal Utility Easements
Henderson Fire Department
Civil Improvement Plans
Building and Fire Safety Department
Building Plans
Clark County—Regional Flood Control
City approved Hydrology Study (Concurrence of Regional Facilities)
Nevada Department of Transportation—Permit Office
Request for Temporary Occupancy Permit
Civil Improvement Plans
Drainage Study
Site Plan, Landscape & Irrigation Plan
Nevada Department of Transportation—Right-of-Way Office
Request for Multi-Use/Lease License
Site Plan, Landscape & Irrigation Plan
Hydrology Study
Traffic Study

3.2.5 OTHER ENTITIES / AGENCIES THAT MAY BE INVOLVED IN BOULDER HIGHWAY PUBLIC OR PRIVATE IMPROVEMENT PROJECTS

Regional Public

- Regional Transportation Commission (RTC)

City Boards

- Planning Commission
- Commemorative Beautification Commission
- Parks and Recreation Board
- Redevelopment Advisory Commission

Utilities and Easements

Includes, but not limited to:

- Western Area Power Administration (WAPA)
- Southern Nevada Water Authority (SNWA)
- Basic Management Incorporated (BMI/Landwell)
- NV Energy
- Southwest Gas
- Cox Communications of Nevada
- Embarq

3.2.6 THE DEVELOPMENT GUIDE—LANDSCAPING: FREQUENTLY ASKED QUESTIONS

Can the landscape improvements be done at a later time?

No.

Can my project propose an alternative to the Design Manual?

A request for any alternative design or timeframe requires careful consideration to avoid undermining the goals and objectives for Boulder Highway's Beautification. The Parks and Recreation Director will, in consultation with other affected departments, consider requests for adjustments and issue an administrative determination. The specific procedures are explained in greater depth in Section 1.1.2.

Can I remove existing Boulder Highway Beautification?

(Removal and Replacement of Existing Landscaping)
Yes, existing materials may be temporarily or permanently removed with approval of the Parks and Recreation Director or designee.

A request for any temporary or permanent removal and/or replacement must be submitted in the manner and form as required by the Parks and Recreation Department. A bond is required for temporary removal, using the following procedures:

- The amount of funds to secure a temporary removal are based on the average cost per square foot, as determined by the Parks and Recreation Department, and the total area affected by the temporary removal.
- Temporary removals must be bonded and/or a cash-in-lieu deposit provided subject to procedures administered by the Public Works Department.
- Requests may be submitted to the Parks and Recreation Department and are appealable to the Planning Commission and City Council.

4. Landscape Standards and Guidelines

As discussed in Chapter 1, landscape guidelines were first established for the corridor in 1992 to enhance the image of the Boulder Highway right-of-way and that of intersecting roadways. A hierarchy of landscape treatments was established based upon the vehicular function of Boulder Highway, which includes primary intersections, secondary intersections and corridor linkages. Parcel frontage guidelines were also established to ensure a smooth landscape transition from the public right-of-way to private parcels. The second manual, dated 2002, built upon the language contained in the previous manual, and incorporated landscape regulations for gateways.

This Design Manual generally follows the structure of the prior two manuals in that a hierarchy of landscape treatments has been maintained and expanded upon. The introduction of bus rapid transit stations at major intersections along the existing Boulder Highway Corridor will change how Boulder Highway is developed and used for generations to come. One of the key concepts established by the Boulder Highway Corridor Investment Strategy is the need to create a pedestrian-friendly and human scale environment along the Boulder Highway Corridor. The overall concept is to transform the existing corridor into a multimodal, linear park system—or "Green Framework" for the corridor. As this vision is realized, Boulder Highway will become an attractive and inviting environment that encourages alternative forms of transportation, including walking and bicycling, as a means of accessing all of the corridor amenities such as rapid transit stations and local bus routes.

4.1 PURPOSE

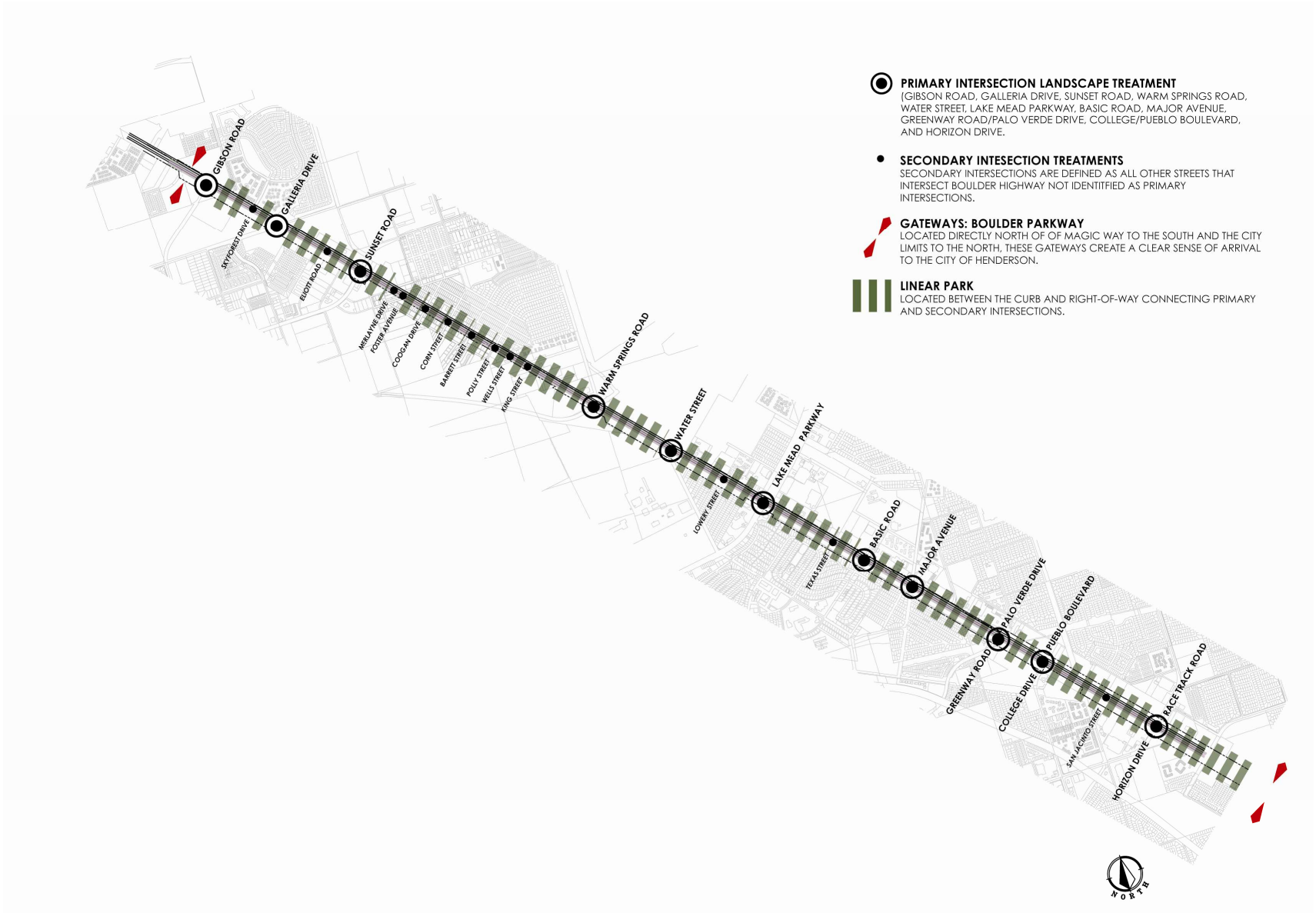
The purpose of these landscape standards and guidelines is to provide a direction that will help achieve the multi-modal linear park concept and ensure a consistency and quality of landscape design for each of the components throughout the Boulder Highway Corridor. The hierarchy of improvements addressed by this Design Manual includes:

- Corridor Gateways;
- Neighborhood Gateways;
- Linear Park;
- Parkway Streets;
- Mid-block Areas;
- Primary Intersections;
- Secondary Intersections; and

- Bus Rapid Transit (BRT) Stations.

These are depicted in Figure 1 on the following page. Planting diagrams contained in this chapter are conceptual in nature, exact requirements will be determined through the entitlement process. Plant materials and spacing may vary based on each site's location and characteristics, subject to approval by the Parks and Recreation Director. Standards and guidelines for Public Art, Lighting, and Trail Signage are also provided.

Figure 1—Boulder Highway Corridor Landscape Zones



4.2 LANDSCAPE CONCEPT

Establishing Boulder Highway as a multi-modal linear park is the defining feature that will transform how the corridor is experienced and utilized by future generations. Over time, the City of Henderson and NDOT should explore the feasibility of eliminating highway shoulders and establishing a curb and gutter edge to the moving lanes. This would be a major step in transforming Boulder Highway into a parkway. As such, the graphics, standards and guidelines contained in this Design Manual reflect the ultimate goal of establishing a parkway. The following pages offer design standards and guidelines for distinct portions of the Boulder Highway Corridor. Each of these areas is addressed separately for simplicity; however, the designs are integrated to ensure a cohesive appearance throughout the corridor.

The Boulder Highway right-of-way varies significantly throughout the corridor. The diagrams below illustrate typical cross-sections throughout the corridor and the relationship of desired improvements to each other and to adjacent development. Sections labeled on Figure 2 correspond to Figures 3 through 7 on the following pages.

Figure 2—Corridor Section Diagram

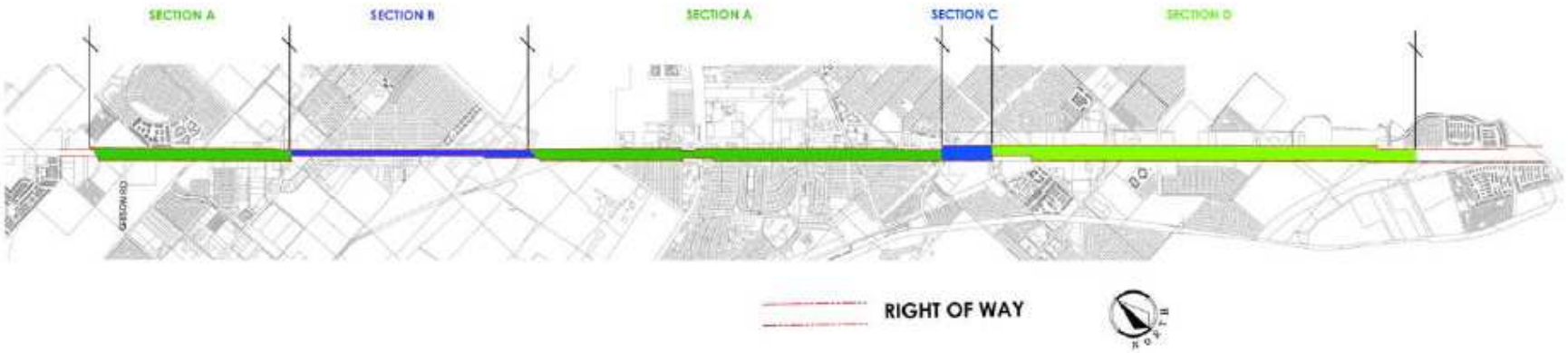


Figure 3—Section A: Corridor Area (400' wide)

North City Limits to Sunset
Warm Springs to Greenway
(Looking South)

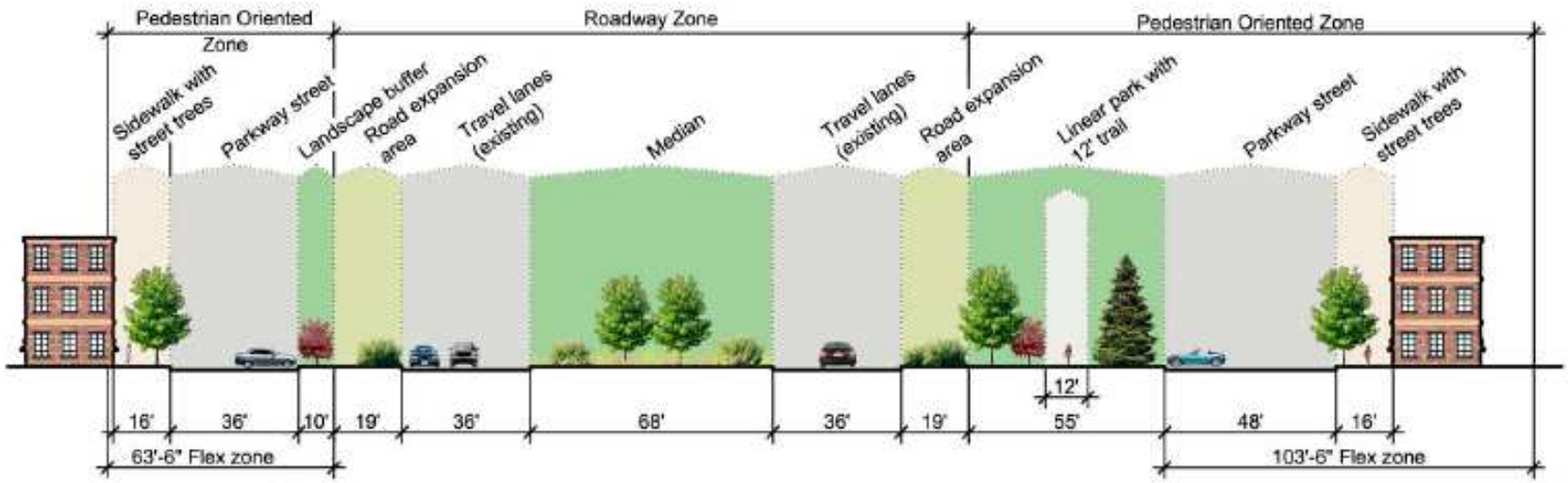


Figure 4—Section A: Intersections (400' wide)

North City Limits to Sunset and approximately Warm Springs to Greenway (Looking South)

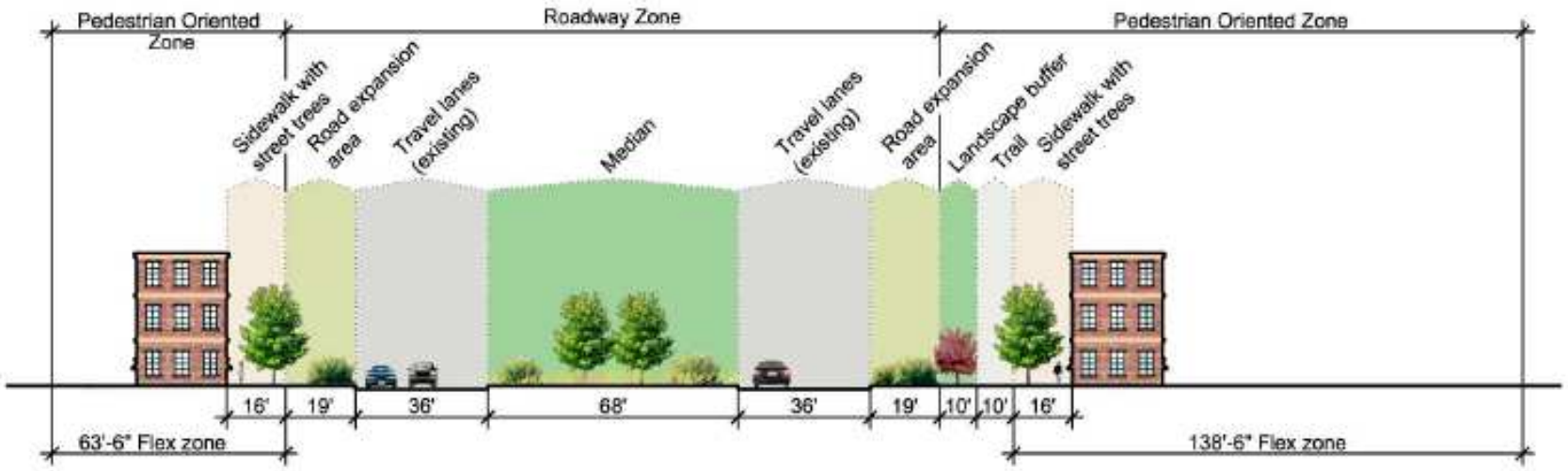


Figure 5—Section B: Corridor Area & Intersections (200' wide)

Sunset to approximately Warm Springs (Looking South)

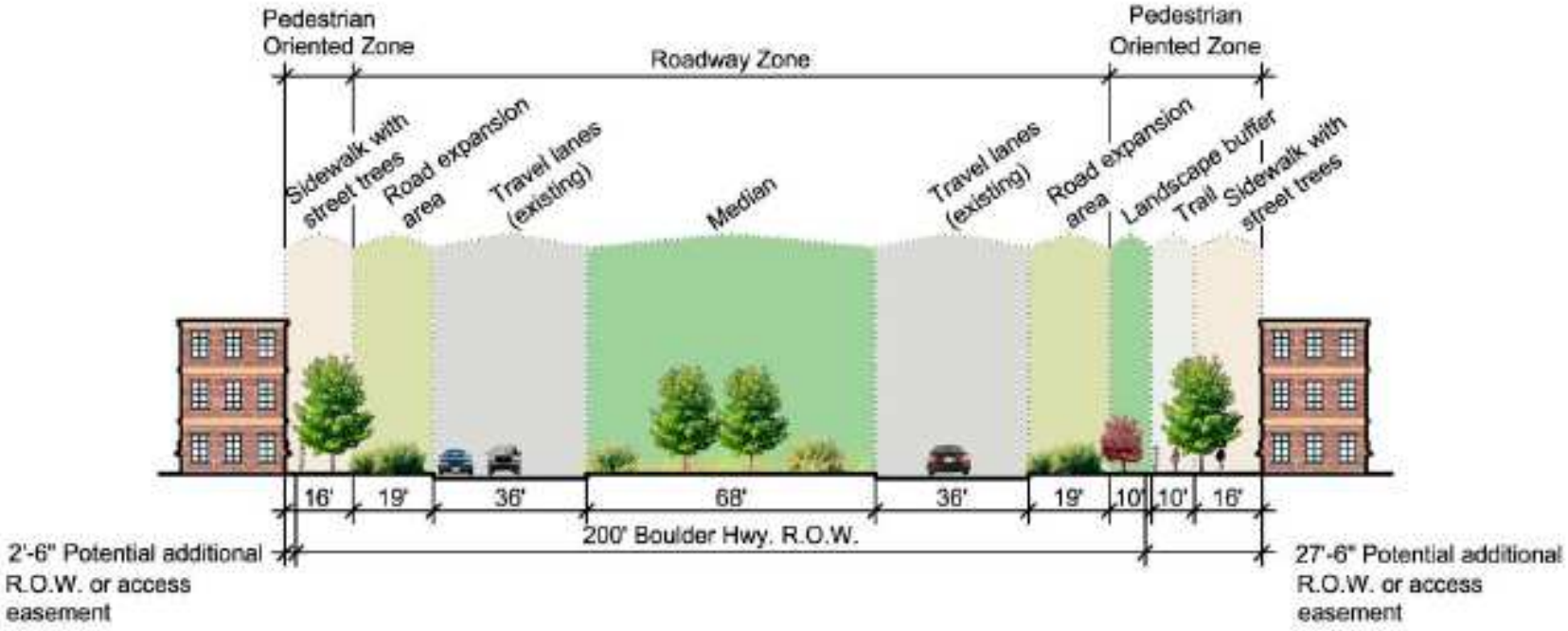


Figure 6—Section C: Corridor Area (490' wide)

Greenway to Pueblo (Looking South)

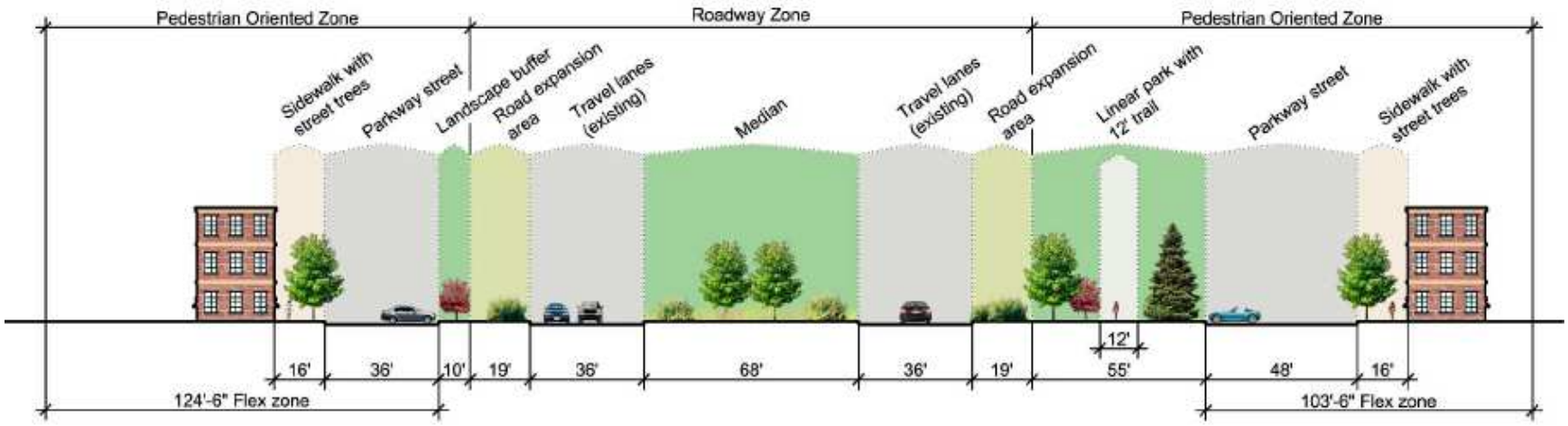


Figure 7—Section C: Intersections (490’ wide)

Greenway to Pueblo (Looking South)

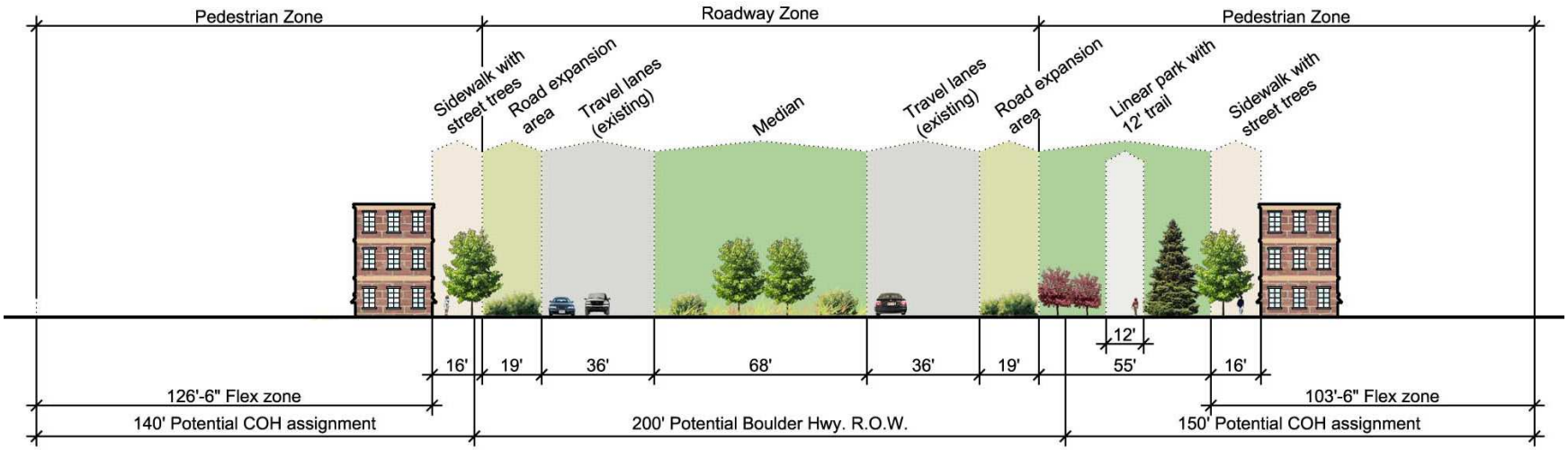


Figure 8—Section D: Corridor Area (490' wide)

Pueblo to Equestrian (Looking South)

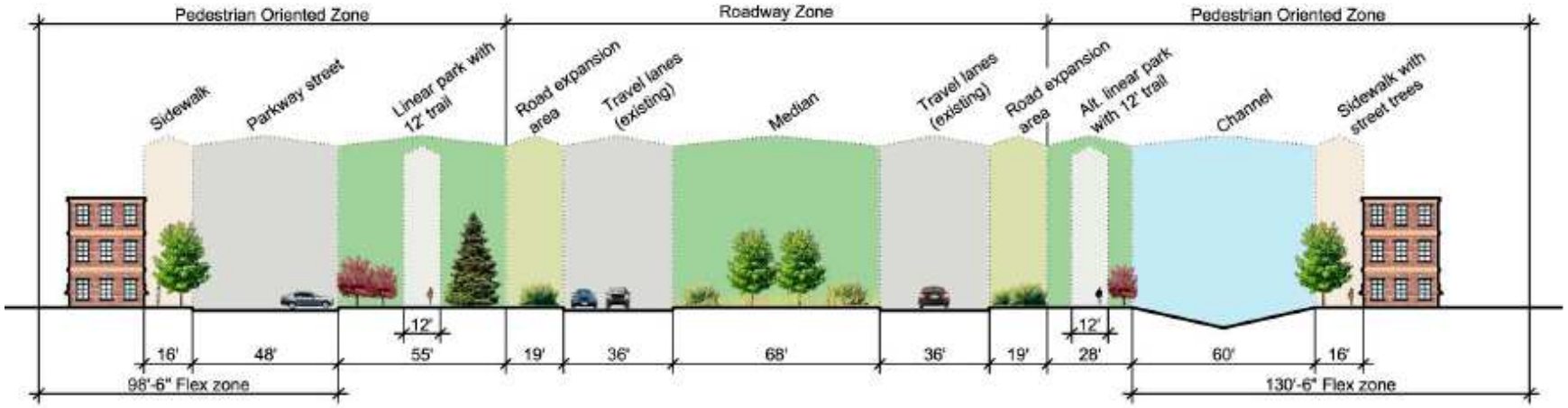
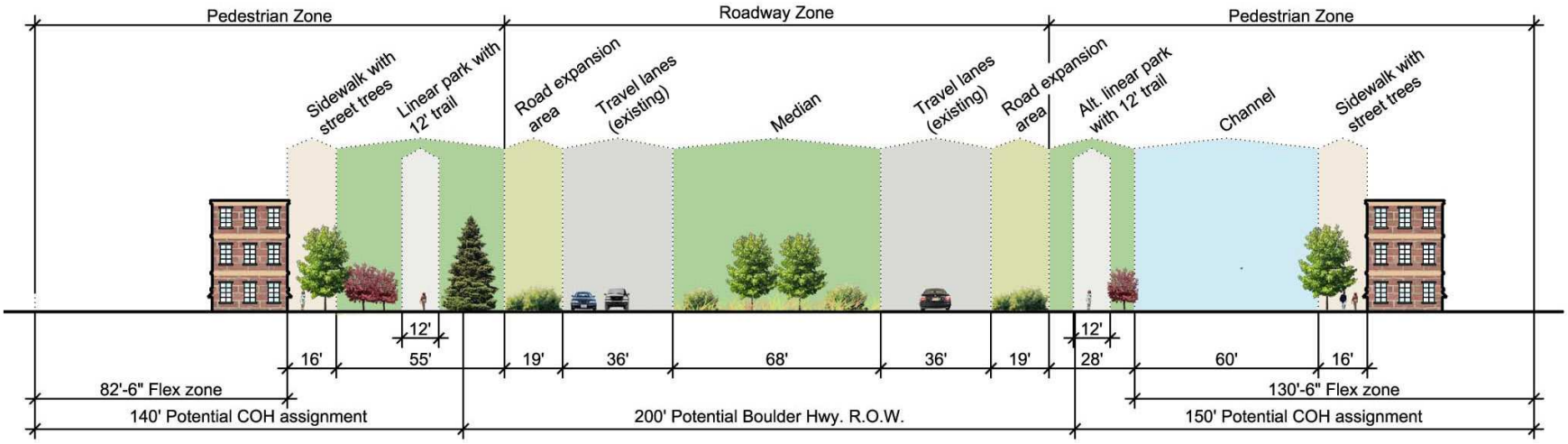


Figure 9—Section D: Intersections (490’ wide)

Pueblo to Equestrian (Looking South)



4.3 CORRIDOR GATEWAYS: BOULDER HIGHWAY CORRIDOR

Serving as the main entry to the City of Henderson at the north and south, the gateways are an important element in creating an identity for the Boulder Highway Corridor and City of Henderson. The landscaping should compliment the gateway design proposed in the Investment Strategy. The concept is to create a sense of arrival to a special place when entering into Henderson. This can be achieved by dramatically changing the spatial character of the right-of-way from one side of the gateway feature to the other. The proposed design entails a handsomely designed entry wall featuring the city's name, (see Figures 10 and 11). Low groundcover acts as a subtle transition from the ground plane to the wall. Once proceeding to the interior, (Henderson side of the wall), the traveler is first introduced to the concept of Boulder Highway as a linear park.

4.3.1 LOCATION

4.3.1.1 Northern Gateway: Directly south of the northern city limits.

4.3.1.2 Southern Gateway: Directly north of Magic Way.

4.3.2 INTENT

4.3.2.1 To establish a sense of arrival and identity for the City of Henderson.

4.3.2.2 To clearly distinguish the Boulder Highway Corridor from adjoining development and open space.

4.3.2.3 To establish connectivity between major gateways, various neighborhoods and varying land uses with a thematic corridor identity of landscaping, median treatments, bike/hike trails, and decorative gateway elements.

4.3.3 STANDARDS

4.3.3.1 Tree species and all other plant materials shall be selected from the Corridor Gateway column of the Plant List in Appendix B. Alternative species must be similar in size, shape, and water conservation qualities and shall be subject to approval by the Parks and Recreation Department.

4.3.3.2 Trees shall be densely planted at the interior (Henderson side) of the gateway feature (See Figure 10).

4.3.3.3 Trees shall be spaced in a manner, twenty to thirty foot on center depending upon species, so as to grow into a continuous canopy.

4.3.3.4 No trees shall be planted within two hundred feet of the exterior face of the gateway feature.

4.3.3.5 Refer to City of Henderson Parks and Recreation Department Landscape Standards Design Guidelines Manual for irrigation and landscape planting standards.

4.3.3.6 These standards may be modified, subject to approval by the Parks and Recreation Director, where insufficient space or other physical limitations make full compliance with the applicable standards impossible.

4.3.4 GUIDELINES

4.3.4.1 Low lying groundcover consisting of flowering vines or shrubs may be utilized at the exterior of the gateway feature as a transitional element from the ground plane.

4.3.4.2 Densely planted evergreens should be utilized as a visual and noise buffer between residential uses (existing and new) and the Linear Park.

Figure 10: Corridor Gateway Concept

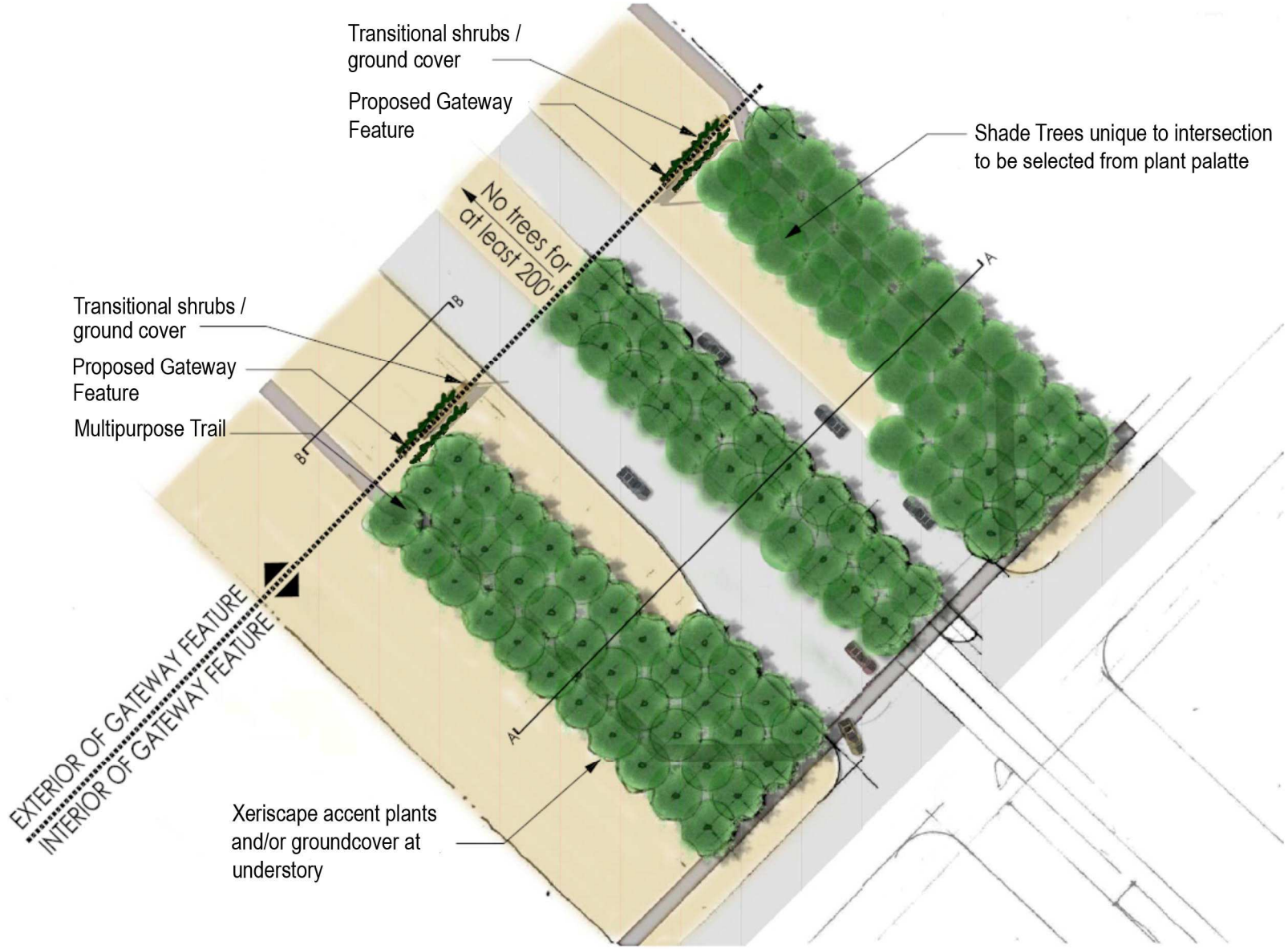
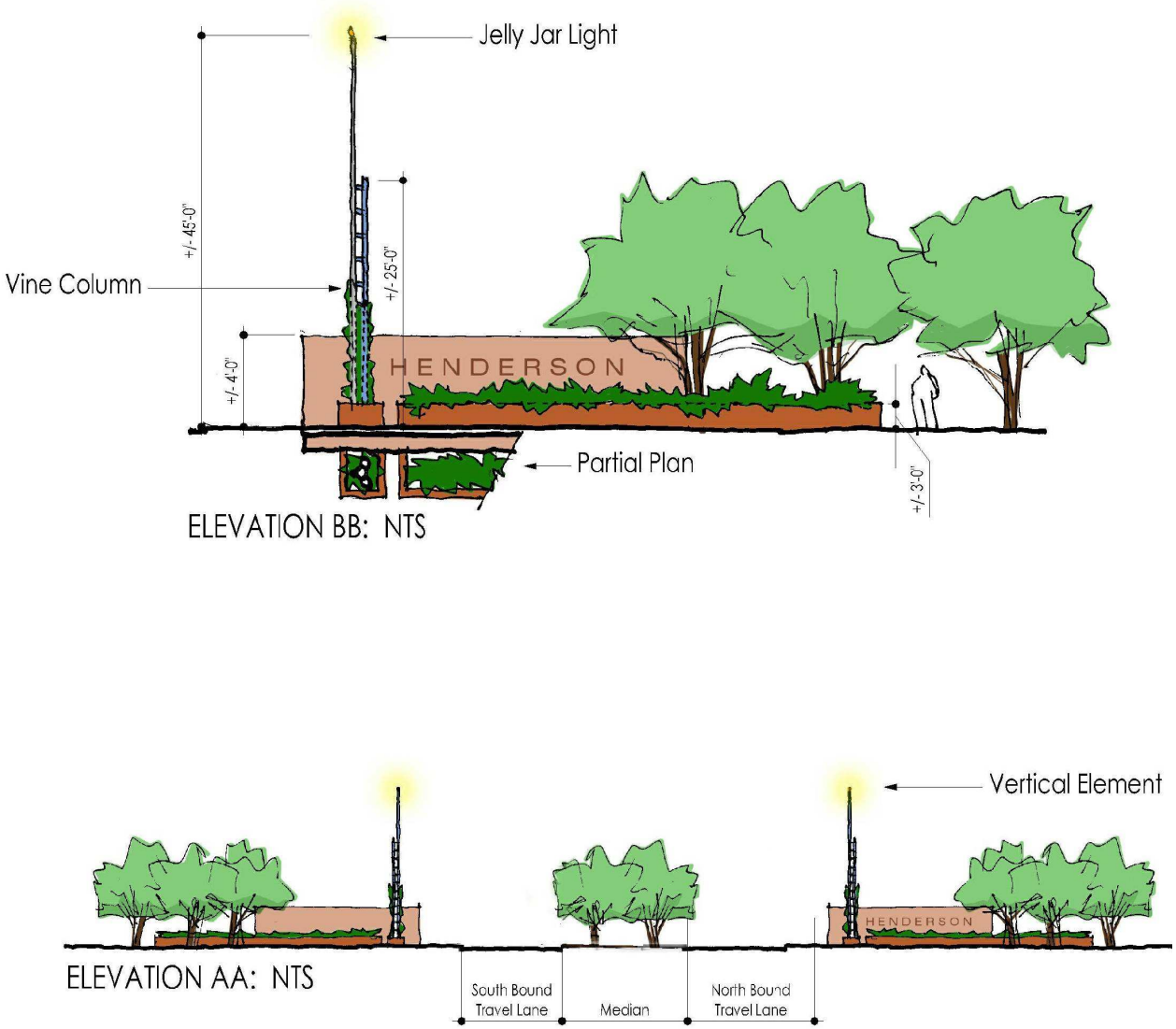


Figure 11—Corridor Gateway: Conceptual Elevations



4.4 NEIGHBORHOOD GATEWAY AT LINEAR PARK

These gateways denote where existing or future regional bicycle trails and neighborhood connections link to the Linear Park. Two types of these gateways have been identified, those with parkway streets and those without parkway streets. Figure 12 is a conceptual diagram depicting these gateway connections.

4.4.1 LOCATIONS

4.4.1.1 Pedestrian connections to surrounding neighborhoods.

4.4.1.2 Existing and proposed bicycle path connections.

4.4.1.3 Local street connections to parkway streets.

4.4.2 INTENT

4.4.2.1 To denote trail/neighborhood connections along the Linear Park.

4.4.2.2 To create a clear sense of arrival to the Linear Park.

4.4.3 STANDARDS

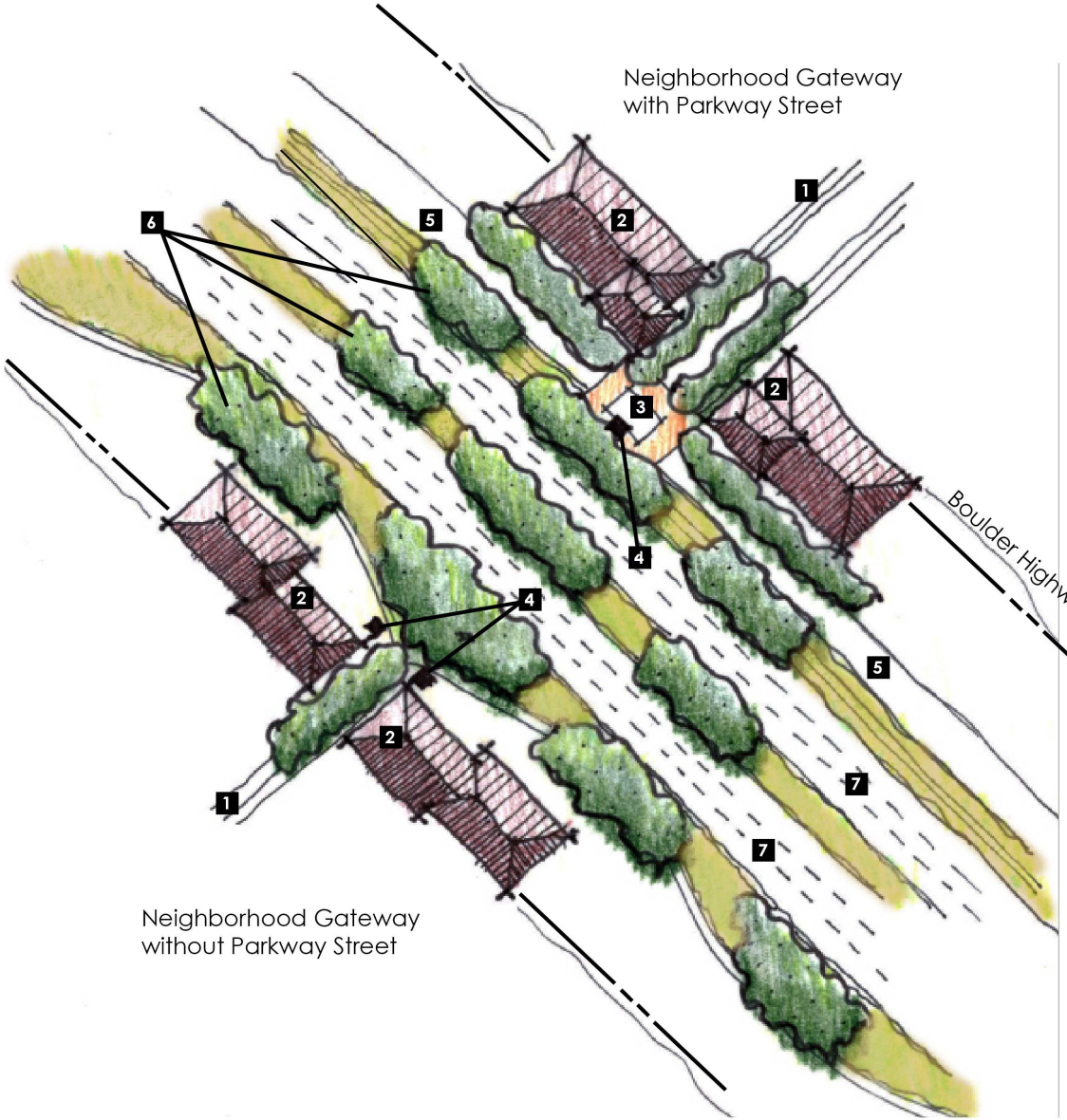
4.4.3.1 Consistent signage and solid objects including, but not limited to, pillars, arches or public art as approved by the Parks and Recreation Department shall be utilized as gateway features denoting connections.

4.4.3.2 Paths from neighborhood and regional trail system shall connect to Linear Park path. Paving material for all path connections shall be the same as that used in the Linear Park.

4.4.3.3 If provided, walls or fences shall emphasize the connection, and not block the connection in any way. Breaks in the wall should be at least as wide as the connecting path width.

4.4.3.4 Landscaping shall provide a visual buffer to vehicular portion of highway, directly across from Neighborhood Gateway.

Figure 12—Neighborhood Gateway Concept



1. Neighborhood bike/ pedestrian connection.
2. Buildings emphasize gateways
3. Enhanced intersection
4. Public art
5. Parkway street
6. Landscaping buffers views of highway
7. Vehicular moving lanes

Note: This diagram represents the concept of a more compact building pattern at neighborhood gateways. Actual building locations will vary based on potential right-of-way relinquishment approval from NDOT and/or the City of Henderson.

4.4.3.5 Landscaping along neighborhood connection paths shall be similar to that of the Linear Park to create a pleasing connection. Plant materials shall be selected from the Linear Park: Park Area column of the Plant List provided in Appendix B.

4.4.3.6 Refer to City of Henderson Parks and Recreation Department Landscape Standards and Design Guidelines for trail signage and landscape planting standards.

4.4.3.7 These standards may be modified, subject to approval by the Parks and Recreation Director, where insufficient space or other physical limitations make full compliance with the applicable standards impossible.

4.4.4 GUIDELINES

4.4.4.1 Building form should help emphasize entry into the Linear Park at parkway street/neighborhood street connections.

4.4.4.2 Densely planted evergreens should be utilized as a visual and noise buffer between residential uses (existing and new) and the Linear Park.

4.5 LINEAR PARK

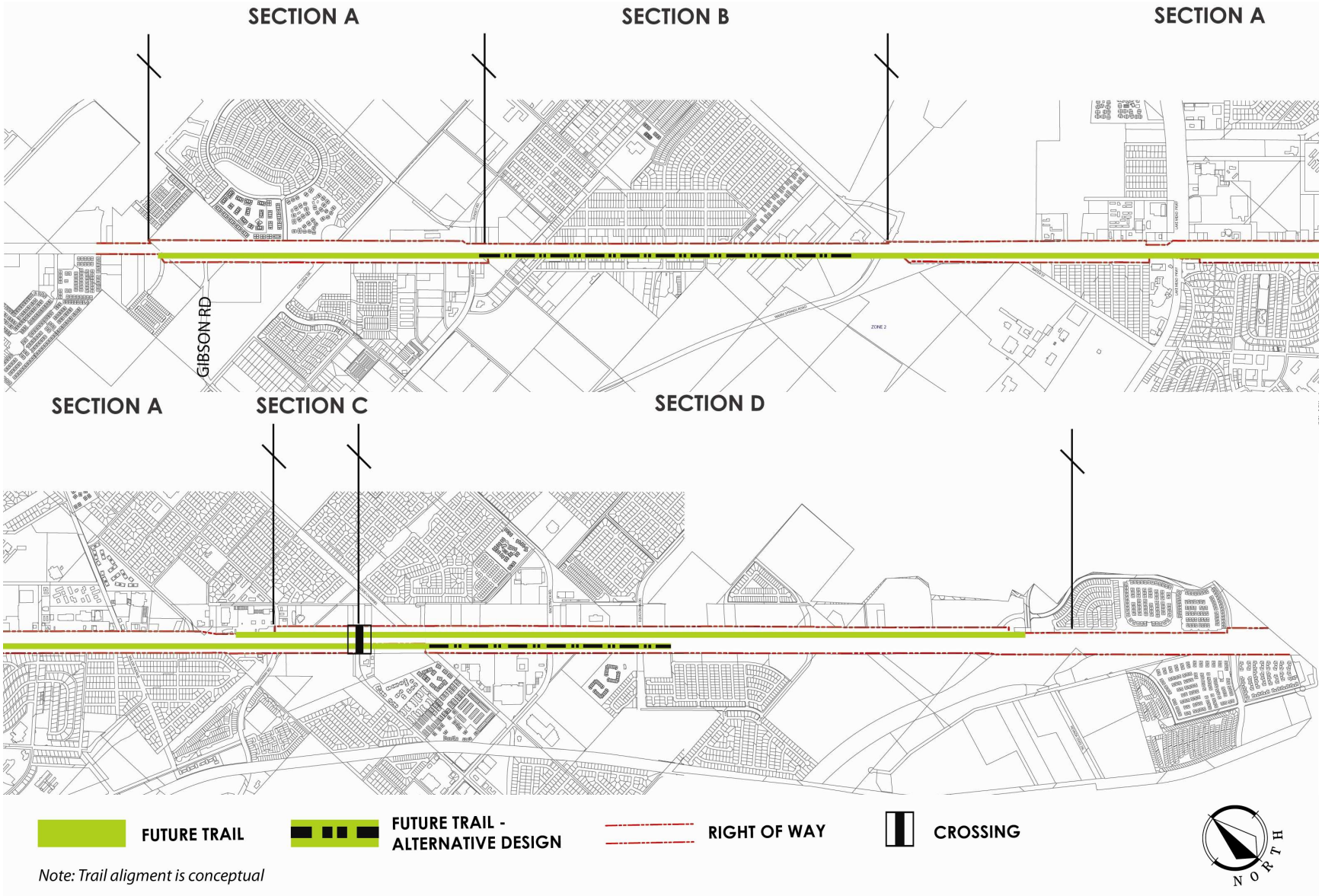
The Linear Park becomes the unifying feature linking intersections and will transform Boulder Highway into a distinctive destination and a true multimodal corridor. In order to transform the corridor into a linear park, a naturalistic landscape pattern is recommended between primary and secondary intersections. The deliberate clustering of shade trees throughout the Linear Park will create an alternating pattern of shade and sun, generating a more habitable environment for people, thus encouraging alternative modes of transportation including walking and biking. This technique will also create a unified pattern throughout the corridor. This is another defining feature that will give the Boulder Highway Corridor a sense of place.

As shown on Figure 13 below, the Linear Park extends along the southwest side of Boulder Highway at the north city limits, extending south to a crossing location at Pueblo/College. From this point, the trail is located along the northeast side of Boulder Highway for the remainder of the corridor.

The planting standards for the Linear Park have been divided into two categories: the Trail Trees and the Park Area. The Trail Trees refer to the tree plantings clustered along the multi-use trail. The Park Area standards apply to the remaining area of the Linear Park and provide additional cooling and beautification through a mixture of trees and accent plants.

Drainage washes, designed to carry surface and storm water flows, are incorporated into the landscape to adequately transport the runoff from the southwest to the northeast. Boulders, riprap and river rock will prevent erosion and simulate a natural wash character. The drainage ways should have the capacity to retain water from the street and be in keeping with the stated character of the area. Concrete headers are designed to blend into the landscape ground plane. They should also delineate and separate the transition and spot turf areas from the granite ground cover areas.

Figure 13—Conceptual Trail Alignment



4.5.1 INTENT

4.5.1.1 To establish a uniform sense of place throughout the Boulder Highway Corridor.

4.5.1.2 To create a park environment connecting Primary and Secondary Intersections.

4.5.1.3 To encourage alternate modes of transportation along corridor.

4.5.1.4 To create a pedestrian habitable zone.

4.5.1.5 To provide links between neighborhoods, Bus Rapid Transit (BRT) stations, local bus stops, activity centers and a variety of other land uses.

4.5.2 STANDARDS: GENERAL

4.5.2.1 Existing vegetation (except turf) shall be preserved wherever possible and xeriscape landscape treatments shall be utilized for new vegetation.

4.5.2.2 Turf must be removed and replaced with an approved ground plane treatment. Areas that are of sufficient size and located a safe distance away from the roadway may be preserved if combined with the amenities required in a Trail Oasis and approved by the Parks and Recreation Department.

4.5.2.3 Within 25 feet on either side of a driveway crossing, a clear visibility zone between 32 inches and 9 feet above grade must be maintained to allow vehicles to see trail users as they approach the crossing.

4.5.2.4 No obstructions are permitted within 3 feet of the pavement edge of the trail.

4.5.2.5 Colors for ground plane treatments and other non-vegetative elements shall be consistent with the neutral tones contained in the established Nevada Department of Transportation palette for the Dynamic Desert Metropolis Landscape Design Segment as defined in the I-15 Landscape and Aesthetics Corridor Plan.

4.5.2.6 Ground plane treatments shall be installed as follows:

4.5.2.6.1 The color of ground plane treatment throughout the Linear Park must be the same on both sides of the trail unless decorative accents are provided, subject to approval by the Parks and Recreation Department.

4.5.2.6.2 Area located from edge of roadway to 3 feet from the pavement edge of the trail: 4”-6” crushed rock (D-50)

4.5.2.6.3 Area located within 3 feet of pavement edge of trail and remaining area of Linear Park: Decomposed granite

4.5.2.6.4 Alternative ground plane treatments may be required to prevent erosion in areas identified through the review of the Drainage Plan. Specific requirements will be determined by the Public Works – New Development Department.

4.5.2.7 Trail construction and maintenance requirements:

4.5.2.7.1 The trail and accompanying signage and markings must be installed per Section 4.13 and Section A2 of Appendix A and comply with all of the Regional Transportation Commission's applicable regulations for shared use paths.

4.5.2.7.2 The areas within 3 feet of the pavement edge of the trail must be covered with decomposed granite and remain free of all obstructions.

4.5.2.7.3 Trail crossings over driveways must be marked with a distinct paving treatment that is shown on the project site plan.

4.5.2.7.4 Bollards, lighting, and other features may be required by the Parks and Recreation Department.

4.5.2.7.5 Root barriers, designed and installed per Parks and Recreation Department standards, shall be required in all areas where trees are planted within 10 feet of the pavement edge.

4.5.2.8 One Trail Oasis must be provided per 750 linear feet along the Linear Park and shall contain amenities to include the following, or alternative elements at the discretion of the City of Henderson Parks and Recreation Department:

- Three 3'-4' seat diameter Seat Boulders
- Dog Waste Station
- Trash/Ash Receptacle (on hardened surface)
- Paved connection from main trail

4.5.2.9 Reinforced structural curbs that are 6" x 8" shall be required along the boundary between the potable and reuse water irrigation systems.

4.5.2.10 Irrigation valves must be installed between the trail and property line.

4.5.2.11 Areas where the width of the Linear Park is less than 45 feet are subject to all standards within this Chapter except the tree planting requirements of Sections 4.5.4.2 and 4.5.4.3. The requirements for accent plants in Section 4.5.4.4 shall be proportional to the reduction in width from the typical 55 feet.

4.5.2.12 Refer to City of Henderson Parks and Recreation Department Landscape Standards and Design Guidelines for trail signage, irrigation, and landscape planting standards.

4.5.2.13 These standards may be modified, subject to approval by the Parks and Recreation Director, where insufficient space or other physical limitations make full compliance with the applicable standards impossible.

4.5.3 STANDARDS: TRAIL TREES

4.5.3.1 A balanced palette that includes a variety of medium and large trees shall be utilized, as selected from the Linear Park: Trail Trees column of the Plant List contained in Appendix B.

4.5.3.2 Evergreen tree species shall be used on the west side of the trail, and the east side may include either evergreen or deciduous species.

4.5.3.3 Deliberate clusters of 5-7 shade trees shall be planted on each side of the trail and spaced according to the spacing requirements listed with each species in the Plant List contained in Appendix B. Gaps between tree clusters shall be no more than 75 linear feet (See Figure 14).

4.5.3.4 Each cluster must contain a row of the same species on each side of the trail. i.e. 5-7 Mondell Pines on the west side and 5-7 Heritage Oaks on the east side. Both species must be different from the adjacent clusters to the north and south.

4.5.3.5 Trees shall be planted between 5 and 10 feet from the edge of the trail pavement.

4.5.4 STANDARDS: PARK AREA

4.5.4.1 A balanced palette that includes a variety of tree and accent plant species shall be utilized, as selected from the Linear Park: Park Area column of the Plant List contained in Appendix B.

4.5.4.2 The following trees must be provided per 100 linear feet of Linear Park:

4.5.4.2.1 One large tree and one medium tree; or

4.5.4.2.2 One large tree and two small trees.

4.5.4.3 Trees may be clustered or placed individually to allow visibility of onsite business signage.

4.5.4.4 The following accent plants must be provided per 100 linear feet:

4.5.4.4.1 12 five-gallon accent plants

4.5.4.4.2 5 one-gallon accent plants

4.5.4.5 A minimum of five different accent plant species, two of which must be chosen from the Accent Plants: Cactus or Accent Plants: Yucca & Agave sections of the Plant List contained in Appendix B, shall be provided per 100 linear feet.

4.5.4.6 Accent plants may be clustered or planted individually to allow for visibility of onsite business signage.

4.5.5 GUIDELINES

4.5.5.1 Understory plantings and other treatments provided between the trail and highway traffic should be used to help discourage pedestrian crossings in mid-block areas.

4.5.5.2 Strong contrasts in texture and colors should be utilized to provide interest and variety to the bicyclist and pedestrian experience.

4.5.5.3 Neighborhood connections to the multipurpose trail in the Linear Park should be landscaped in the same manner as the Linear Park: Park Area to create a cohesive transition.

4.5.5.4 Small areas of functional turf may be incorporated into the Linear Park design for active uses and gathering areas subject to approval by the Parks and Recreation Department.

4.5.5.5 Densely planted evergreens should be utilized as a visual and noise buffer between residential uses (existing and new) and the Linear Park.

Figure 14—Linear Park and Median Concept

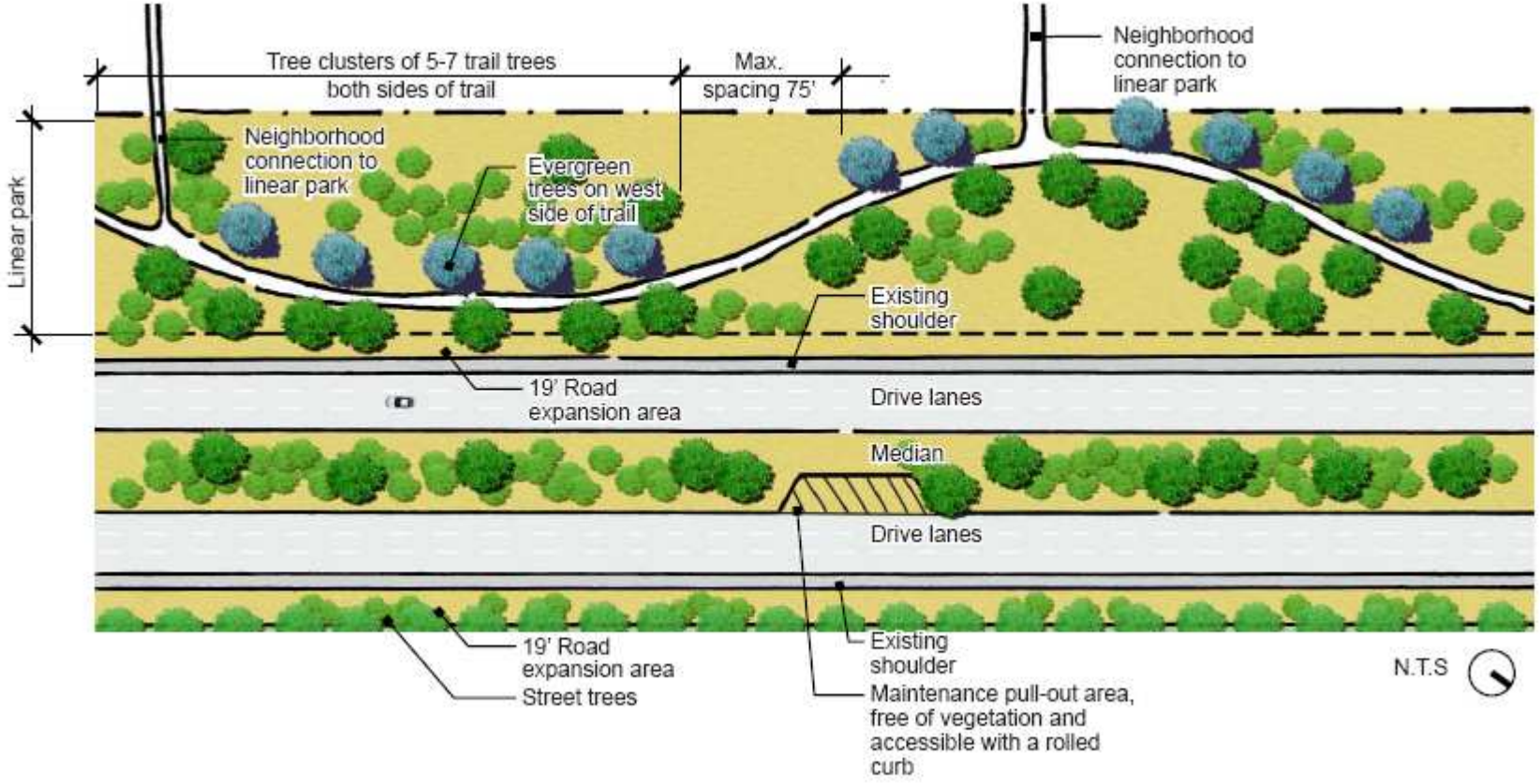


Figure 15—Linear Park at Narrowest R.O.W.

4.6 PARKWAY STREETS

Parkway streets are local streets that parallel Boulder Highway and allow buildings to front the corridor by providing front door access to local traffic while maintaining through traffic on the main travel lanes of Boulder Highway. The concept of parkway streets and potential locations within the corridor is described in greater detail in Chapter 6 of the Boulder Highway Corridor Investment Strategy. See Figure 16 for an illustrative concept of a Parkway Street. The actual location of parkway streets will vary based on the availability of right-of-way along Boulder Highway, existing development patterns, access constraints, and a variety of other site considerations. Because the precise location of parkway streets within the corridor has yet to be determined, landscaping for parkway streets is addressed in two locations: within this Design Manual and within the Corridor Mixed Use (MC) Zoning District. If a parkway street will be located within the right-of-way of Boulder Highway, the standards and guidelines contained in this manual shall be applied. If a parkway street is located outside of the Boulder Highway right-of-way, the Streetscape Design and Character Standards required by the Corridor Mixed Use (MC) Zoning District shall be applied.

4.6.1 INTENT

4.6.1.1 To create a pedestrian friendly street environment along development fronting parkway streets and the Boulder Highway Corridor.

4.6.1.2 To encourage buildings to orient toward Boulder Highway. (See Figure 16.)

4.6.1.3 To encourage the active front entrance of a building to be oriented towards parkway streets and Boulder Highway.

4.6.1.4 To differentiate parkway street environments from the Linear Park when they are adjacent.

4.6.1.5 To provide shade along parkway streets within the corridor.

4.6.2 STANDARDS

4.6.2.1 The parkway street shall be separated from the main travel lanes with a landscape area subject to the requirements of Section 4.5 Linear Park or Section 4.7.4 Landscape Buffers in Mid-Block Areas, whichever is more applicable.

4.6.2.2 Landscaping and other non-vegetative elements must comply with all site visibility standards at driveways and pedestrian crossings and clearance specifications for adjacent on-street parking areas.

4.6.2.3 Colors for ground plane treatments and other non-vegetative elements shall be consistent with the neutral tones contained in the established Nevada Department of Transportation palette for the Dynamic Desert Metropolis Landscape Design Segment as defined in the I-15 Landscape and Aesthetics Corridor Plan.

4.6.3 GUIDELINES

4.6.3.1 Parkway Streets should be configured to prevent conflicts between pedestrians, bicyclists, and vehicles. Special paving treatments, striping, and signage should be used to create a more pedestrian-friendly zone in these areas.

Figure 16—Parkway Street Concept: Axonometric

Figure 17--Parkway Street Concept

4.7 MID-BLOCK AREAS

The median and roadside landscape treatments throughout the corridor will be one of the primary beautification and unifying elements. The standards for the Primary Intersections, Secondary Intersections, and remaining Mid-Block Areas are distinctly different to provide visual cues to help orient pedestrians and motorists.

4.7.1 INTENT

4.7.1.1 To maintain a consistent beautifying element along the corridor.

4.7.1.2 Use the medians to offer visual break in the significant width of Boulder Highway.

4.7.1.3 To reduce the heat island effect by providing additional shade where possible.

4.7.1.4 To provide interest and variety in landscape treatments.

4.7.2 STANDARDS: GENERAL

4.7.2.1 Existing vegetation (except turf) shall be preserved wherever possible and xeriscape landscape treatments shall be utilized for new vegetation. Turf must be removed and replaced with an approved ground plane treatment.

4.7.2.2 No plants shall be placed within 5 feet of the edge of the roadway.

4.7.2.3 Colors for ground plane treatments and other non-vegetative elements shall be consistent with the neutral tones contained in the established Nevada Department of Transportation palette for the Dynamic Desert Metropolis Landscape Design Segment as defined in the I-15 Landscape and Aesthetics Corridor Plan.

4.7.2.4 Reinforced structural curbs that are 6” x 8” shall be required along the boundary between the potable and reuse water irrigation systems

4.7.2.5 Refer to City of Henderson Parks and Recreation Department Landscape Standards and Design Guidelines for irrigation and landscape planting standards.

4.7.2.6 These standards may be modified, subject to approval by the Parks and Recreation Director, where insufficient space or other physical limitations make full compliance with the applicable standards impossible.

4.7.3 STANDARDS: LANDSCAPED MEDIAN

4.7.3.1 These standards shall apply along the entire corridor except as modified by the following Sections of this manual: Section 4.8, Primary Intersections and 4.9, Secondary Intersections.

4.7.3.2 A balanced palette that includes a variety of tree and accent plant species shall be utilized, as selected from the Median: Mid-block column of the Plant List contained in Appendix B.

4.7.3.3 The following amount of trees shall be provided per 100 linear feet and may be planted individually or in clusters (clusters must maintain recommended spacing for each species as defined in the Plant List in Appendix B):

- 4.7.3.3.1 Four large trees;
- 4.7.3.3.2 One large tree and 3 medium trees;
- 4.7.3.3.3 One large tree and 4 small trees; or
- 4.7.3.3.4 A comparable combination approved by the Parks and Recreation Director.

4.7.3.4 A minimum of two different tree species shall be used per 100 linear feet. Only one of the two species may be the same as the adjacent 100-foot section to the north and south.

4.7.3.5 Accent plants shall be planted a minimum of 5 feet and trees shall be planted a minimum of 15 feet from the edge of the median.

4.7.3.6 The following accent plants shall be provided per 100 linear feet:

- 4.7.3.6.1 Ten 5-gallon accent plants
- 4.7.3.6.2 Five 1-gallon accent plants

4.7.3.7 A minimum of four different accent plant species, two of which must be chosen from the Accent Plants: Cactus or Accent Plants: Yucca & Agave sections of the Plant List contained in Appendix B, shall be provided per 100 linear feet.

4.7.3.8 Accent Plants shall be grouped based on similar water usage and care needs and the clusters shall be planted in a staggered triangular pattern to provide visual interest.

4.7.3.9 Ground plane treatments shall be installed as follows:

- 4.7.3.9.1 3/8” minus rock mulch with decorative accents up to 4”-6” or alternative as approved by the Parks and Recreation Department.
- 4.7.3.9.2 Alternative ground plane treatments may be required to prevent erosion in areas identified through the review of the Drainage Plan. Specific requirements will be determined by the Public Works – New Development Department.

4.7.3.10 At least one pull-out area for maintenance vehicles shall be provided for each median island. The pull-out must be of sufficient size and grade to allow the vehicle to be parked completely outside of the adjacent roadway. The ground surface must be free from obstructions and constructed with an approved ground plane treatment to accommodate a typical maintenance vehicle. Where a curb exists, a rolled curb must be provided at the ingress and egress points of the pull-out area. Design and placement shall be subject to Parks and Recreation Department approval.

4.7.4 STANDARDS: LANDSCAPE BUFFER

4.7.4.1 Landscape Buffers shall be utilized to provide protection and separation from the travel lanes for the parkway streets and pedestrian areas unless the Linear Park provides the separation. Width may vary depending on specific conditions at each location.

4.7.4.2 A balanced palette that includes a single or very small variety of shade tree species shall be utilized, as selected from the Landscape Buffer column of the Plant List contained in Appendix B. A wider variety of accent plant species should be used to provide visual interest.

4.7.4.3 Trees shall be required to be spaced 25 feet on center and planted a minimum of 5 feet from the edge of the buffer facing the travel lanes.

4.7.4.4 Three 5-gallon accent plants shall be required per 250 square feet and may be planted individually or grouped to provide visibility of business signage.

4.7.4.5 If adjacent to a trail, no obstructions shall be placed within 3 feet of the edge of the trail.

4.7.4.6 Ground plane treatments for areas that are not hardscaped must consist of decomposed granite that is installed flush with the adjacent sidewalk or trail.

4.7.4.7 Hardscaped areas may be integrated into the Landscape Buffer to provide space for street furniture and pedestrian amenities. Pavers or other treatments must be permeable and approved by the Parks and Recreation Department.

4.7.4.8 Structured soils are required under all Landscape Buffers as approved by the Parks and Recreation Department.

4.7.4.9 Root barriers, designed and installed per Parks and Recreation Department standards, shall be required in all areas where trees are planted within 10 feet of a pavement edge.

4.7.5 STANDARDS: ROAD EXPANSION AREA

4.7.5.1 These standards shall apply along the entire corridor except as modified by the following Sections of this manual: Section 4.8 Primary Intersections, and 4.9 Secondary Intersections.

4.7.5.2 A balanced palette that includes a variety of small or medium trees and accent plant species shall be utilized, as selected from the Road Expansion Area column of the Plant List contained in Appendix B.

4.7.5.3 Two trees shall be required per 100 linear feet, or fraction thereof, and may be planted individually or in clusters (clusters must maintain recommended spacing for each species as defined in the Plant List in Appendix B).

4.7.5.4 A minimum of two different tree species shall be used per 100 linear feet. Only one of the two species may be the same as the adjacent 100-foot section to the north and south.

4.7.5.5 No trees shall be placed within 15 feet of the edge of the roadway.

4.7.5.6 The following accent plants must be provided per 100 linear feet:

- 4.7.5.6.1 Six 5-gallon accent plants
- 4.7.5.6.2 Eight 1-gallon accent plants

4.7.5.7 A minimum of four different accent plant species, two of which must be chosen from the Accent Plants: Cactus or Accent Plants: Yucca & Agave sections of the Plant List contained in Appendix B, shall be provided per 100 linear feet.

4.7.5.8 Accent plants may be clustered or planted individually to allow for visibility of onsite business signage.

4.7.5.9 Ground plane treatments shall be installed as follows:

- 4.7.5.9.1. 4”-6” crushed rock (D-50) or alternative as approved by the Parks and Recreation Director.
- 4.7.5.9.2. Alternative ground plane treatments may be required to prevent erosion in areas identified through the review of the Drainage Plan. Specific requirements will be determined by the Public Works – New Development Department.

4.7.5.10 Irrigation lines must be installed perpendicular to the roadway.

4.7.6 STANDARDS: SIDEWALK WITH STREET TREES

4.7.6.1 A palette that includes a single or very small variety of shade tree species shall be utilized, as selected from the Sidewalk with Street Trees column of the Plant List contained in Appendix B.

4.7.6.2 Larger caliper trees, 3” minimum, shall be utilized for initial planting in order to offer immediate shade and reduce vandalism.

4.7.6.3 Trees shall be required to be spaced 25 feet on center and minimum 3 feet from the curb.

4.7.6.4 If adjacent to a trail, no obstructions shall be placed within 3 feet of the edge of the trail.

4.7.6.5 Trees shall be placed in a minimum 6-foot by 6-foot planting area covered in decomposed granite that is flush with the adjacent pavement.

4.7.6.6 The areas between the tree planters shall be covered with pavers or an alternative permeable walking surface as approved by the Parks and Recreation Department.

4.7.6.7 No street trees may be placed where the crosswalk intersects with the sidewalk in order to allow sufficient space for pedestrian circulation.

4.7.6.8 Structured soils are required under all Sidewalks with Street Trees as approved by the Parks and Recreation Department.

4.7.6.9 Root barriers, designed and installed per Parks and Recreation Department standards, shall be required in all areas where trees are planted within 10 feet of a pavement edge.

4.7.7 GUIDELINES

4.7.7.1 Drainage swales should be utilized where conveying water is necessary.

4.7.7.2 Check stop dams and other drainage features, where required, should be integrated with the surrounding landscape.

4.7.7.3 Linear gaps, perpendicular to Boulder Highway, should be provided to allow for visibility of business signage and passage of wind-blown debris.

4.8 PRIMARY INTERSECTIONS

Primary intersection landscape zones include all land extending approximately three hundred fifty feet (350') in either direction, measured from the edge of pavement of the intersecting street. The corridor landscape design will abruptly change (at approximately 350' from the intersection) from the informal Linear Park and Mid-block Median planting design and palette to formal rows of tall distinctive trees in the median and smaller scale street trees at intersection corners. Coupled with the land use pattern, this landscape design will provide a visual distinction from other areas and scale the corridor down from a highway environment to a more pedestrian friendly environment at the intersections.

Primary intersection landscape treatments will have the most formal landscape treatments of any location in the corridor. More compact land use patterns are proposed for these intersections and several will include Bus Rapid Transit (BRT) stops. This means that primary intersections will have an increase in both pedestrian and automobile activity. It is therefore vital that these intersections be reinforced as a safe and pleasant environment for pedestrians. Landscape treatments at these intersections shall focus primarily on creating a safe, pedestrian habitable environment by offering ample shade and establishing a significant buffer zone between pedestrian uses and Boulder Highway. Figure 18 is a conceptual design for primary intersections.

4.8.1 LIST OF INTERSECTIONS

4.8.1.1 Primary Intersections shall include: Gibson Road/Broadbent Boulevard, Galleria Drive, Sunset Road, Warm Springs Road, Water Street, Lake Mead Parkway, Basic Road, Major Avenue, Greenway Road/Palo Verde Drive, College Drive/Pueblo Boulevard, and Horizon Drive/Racetrack Road. (See Figure 1.)

4.8.2 INTENT

4.8.2.1 To provide shade, safety and protection from the environment for pedestrian users.

4.8.2.2 To establish a pedestrian scale, comfortable environment at the intersection.

4.8.2.3 To denote primary intersections as special places within the corridor.

4.8.2.4 To establish consistent, identifying characteristics at all primary intersections.

4.8.3 STANDARDS: GENERAL

4.8.3.1 Colors for ground plane treatments and other non-vegetative elements shall be consistent with the neutral tones contained in the established Nevada Department of Transportation palette for the Dynamic Desert Metropolis Landscape Design Segment as defined in the I-15 Landscape and Aesthetics Corridor Plan.

4.8.3.2 Reinforced structural curbs that are 6” x 8” shall be required along the boundary between the potable and reuse water irrigation systems.

4.8.3.3 Existing vegetation (except turf) shall be preserved wherever possible and xeriscape landscape treatments shall be utilized for new vegetation. Turf must be removed and replaced with an approved ground plane treatment.

4.8.3.4 Refer to City of Henderson Parks and Recreation Department Landscape Standards and Design Guidelines for irrigation and landscape planting standards.

4.8.3.5 These standards may be modified, subject to approval by the Parks and Recreation Director, where insufficient space or other physical limitations make full compliance with the applicable standards impossible.

4.8.4 STANDARDS: LANDSCAPED MEDIAN

4.8.4.1 Cathedral Oaks, or alternative approved by the Parks and Recreation Department, shall be planted 30 feet on center in a formal row (or two rows where sufficient width is available) for a distance of 200 linear feet. Shoestring Acacias, or alternative as approved by the Parks and Recreation Department, shall be planted 30 feet on center for an additional 150 linear feet. Alternative species must possess similar size, shape, and water use qualities.

4.8.4.2 Trees shall be planted as close to intersection as allowed by other applicable codes defining sight line distances.

4.8.4.3 Accent plants shall be placed a minimum of 5 feet and trees shall be placed a minimum of 15 feet from the edge of the median.

4.8.4.4 No accent plants shall be required within the 200 feet under the Cathedral Oaks to provide maximum visibility for vehicles and pedestrians at these major intersections.

4.8.4.5 Accent plants shall be required within the 150 feet under the Shoestring Acacias and shall be selected from the Median: Primary Intersection column of the Plant List contained in Appendix B. The following accent plants shall be provided per 100 linear feet:

4.8.4.5.1. Ten 5-gallon accent plants

4.8.4.5.2. Five 1-gallon accent plants

4.8.4.6 A minimum of four different accent plant species, two of which must be chosen from the Accent Plants: Cactus or Accent Plants: Yucca & Agave sections of the Plant List contained in Appendix B, shall be provided per 100 linear feet.

4.8.4.7 Accent plants shall be grouped based on similar water usage and care needs and the clusters, one of which must be chosen from the Cactus section of the Plant List, shall be planted in a staggered triangular pattern to provide visual interest.

4.8.4.8 Ground plane treatments shall be installed as follows:

4.8.4.8.1. 3/8" minus rock mulch with decorative accents up to 4"-6" or alternative as approved by the Parks and Recreation Department.

4.8.4.8.2. Alternative ground plane treatments may be required to prevent erosion in areas identified through the review of the Drainage Plan. Specific requirements will be determined by the Public Works – New Development Department.

4.8.4.8.3. The area from the beginning of the median to within 10 feet of the first Cathedral Oak shall be fully or partially hardscaped to provide an area for pedestrians waiting to cross Boulder Highway. Pavers, stamped concrete, or similar decorative treatment shall be used as approved by the Public Works and Parks and Recreation Departments.

4.8.5 STANDARDS: ROAD EXPANSION AREA

4.8.5.1 A balanced palette that includes a variety of small or medium trees and accent plant species shall be utilized, as selected from the Road Expansion Area column of the Plant List contained in Appendix B.

4.8.5.2 Two trees shall be required per 100 linear feet, or fraction thereof, and may be planted individually or in clusters (clusters must maintain recommended spacing for each species as defined in the Plant List in Appendix B).

4.8.5.3 A minimum of two different tree species shall be used per 100 linear feet. Only one of the two species may be the same as the adjacent 100-foot section to the north and south.

4.8.5.4 No trees shall be placed within 15 feet of the edge of the roadway.

4.8.5.5 The following accent plants must be provided per 100 linear feet:

4.8.5.5.1 Six 5-gallon accent plants

4.8.5.5.2 Eight 1-gallon accent plants

4.8.5.6 A minimum of four different accent plant species, two of which must be chosen from the Accent Plants: Cactus or Accent Plants: Yucca & Agave sections of the Plant List contained in Appendix B, shall be provided per 100 linear feet.

4.8.5.7 Accent plants may be clustered or planted individually to allow for visibility of onsite business signage.

4.8.5.8 Ground plane treatments shall be installed as follows:

4.8.5.7.1 4”-6” crushed rock (D-50) or alternative as approved by the Parks and Recreation Department.

4.8.5.7.2 Alternative ground plane treatments may be required to prevent erosion in areas identified through the review of the Drainage Plan. Specific requirements will be determined by the Public Works – New Development Department.

4.8.5.7.3 Hardscaped areas may be integrated into the Road Expansion Area to provide space for street furniture and pedestrian amenities. Pavers or other treatments must be permeable and approved by the Parks and Recreation Department.

4.8.5.7.4 The Road Expansion Area must be completely hardscaped within 25 feet of the intersection, or to the outer edge of the crosswalk, whichever is greater, to allow sufficient space for pedestrian circulation.

4.8.6 STANDARDS: LANDSCAPE BUFFER

4.8.6.1 A balanced palette that includes a single or very small variety of shade tree species shall be utilized, as selected from the Landscape Buffer column of the Plant List contained in Appendix B. A wider variety of accent plant species should be used to provide visual interest.

4.8.6.2 Trees shall be required to be spaced 25 feet on center and planted a minimum of 5 feet from the edge of the buffer facing the travel lanes.

4.8.6.3 Three 5-gallon accent plants shall be required per 250 square feet and may be planted individually or grouped to provide visibility of business signage.

4.8.6.4 If adjacent to a trail, no obstructions shall be placed within 3 feet of the edge of the trail.

4.8.6.5 Ground plane treatments for areas that are not hardscaped must consist of decomposed granite that is installed flush with the adjacent sidewalk or trail.

4.8.6.6 Hardscaped areas may be integrated into the Landscape Buffer to provide space for street furniture and pedestrian amenities. Pavers or other treatments must be permeable and approved by the Parks and Recreation Department.

4.8.6.7 The Landscape Buffer must be completely hardscaped within 25 feet of the intersection, or to the outer edge of the crosswalk, whichever is greater, to allow sufficient space for pedestrian circulation.

4.8.6.8 Structured soils are required under all Landscape Buffers as approved by the Parks and Recreation Department.

4.8.6.9 Root barriers, designed and installed per Parks and Recreation Department standards, shall be required in all areas where trees are planted within 10 feet of a pavement edge.

4.8.7 STANDARDS: SIDEWALK WITH STREET TREES

4.8.7.1 A palette that includes a single or very small variety of shade tree species shall be utilized, as selected from the Sidewalk with Street Trees column of the Plant List contained in Appendix B.

4.8.7.2 Larger caliper trees, 3" minimum, shall be utilized for initial planting in order to offer immediate shade and reduce vandalism.

4.8.7.3 Trees shall be required to be spaced 25 feet on center and minimum 3 feet from the curb.

4.8.7.4 If adjacent to a trail, no obstructions shall be placed within 3 feet of the edge of the trail.

4.8.7.5 Trees shall be placed in a minimum 6-foot by 6-foot planting area covered in decomposed granite that is flush with the adjacent pavement.

4.8.7.6 The areas between the tree planters shall be covered with pavers or an alternative permeable walking surface as approved by the Parks and Recreation Department.

4.8.7.7 No street trees may be placed where the crosswalk intersects with the sidewalk in order to allow sufficient space for pedestrian circulation.

4.8.7.8 Structured soils are required under all Sidewalks with Street Trees as approved by the Parks and Recreation Department.

4.8.7.9 Root barriers, designed and installed per Parks and Recreation Department standards, shall be required in all areas where trees are planted within 10 feet of a pavement edge.

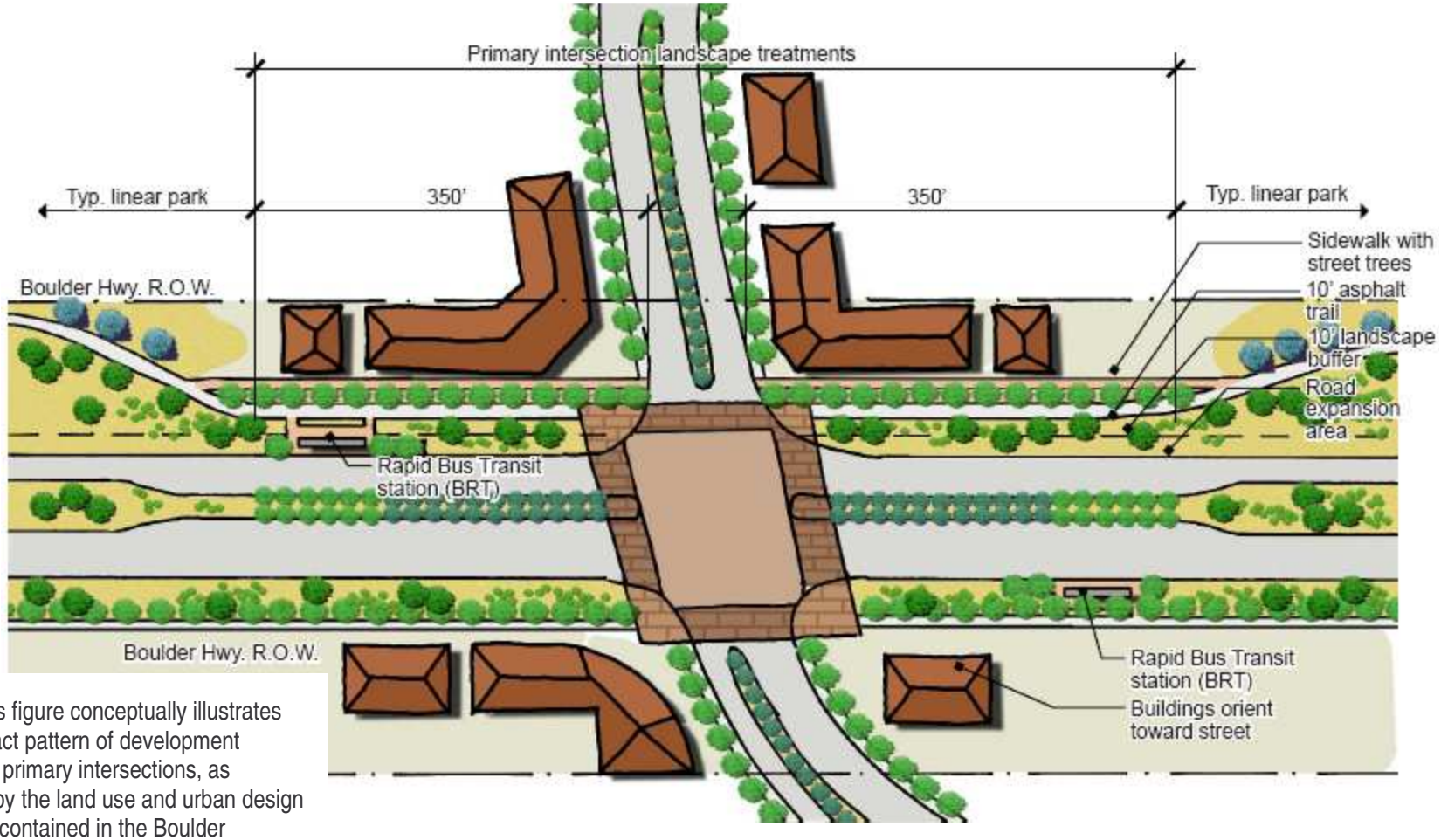
4.8.8 GUIDELINES

4.8.8.1 In addition to required landscaping, each quadrant of an intersection should, at the discretion of the City of Henderson Parks and Recreation Department, incorporate enhancements such as:

- Bench and Trash/Ash receptacles (on hardened surface)
- Public Art Work;
- Outdoor Gathering Area;
- Additional Landscaping in Pots or Box Planters;
- Person and Pet Drinking Fountain(s); and/or
- Pet Waste Station.

4.8.8.2 Quadrants within each intersection may vary, but the use of similar materials, colors and shapes within each quadrant will reflect the general design concepts described by this Design Manual.

Figure 18—Primary Intersection Concept



Note: This figure conceptually illustrates the compact pattern of development desired at primary intersections, as specified by the land use and urban design principles contained in the Boulder Highway Corridor Investment Strategy. Actual building locations will vary by location based on the potential for right-of-way relinquishment beyond the space necessary for public use.

4.9 SECONDARY INTERSECTIONS

Secondary Intersection landscape zones include all land along Boulder Highway extending one hundred and fifty linear feet (150') in either direction, measured from the edge of pavement of the intersecting street. Figure 17 depicts a conceptual design for Secondary Intersections.

Secondary Intersections are defined as all other streets that intersect Boulder Highway not identified as Primary Intersections. These intersections will play a major role in creating a multimodal parkway. They provide local connections to the Linear Park from surrounding neighborhoods, allow access to future parkway streets and many contain local bus stops. However, it is imperative that these intersections also contain landscape treatments that create a pedestrian-friendly and human-scaled environment. Similar planting schemes will be utilized to maintain a cohesive "look" throughout the corridor for all Secondary Intersections. Secondary Intersections vary from Primary Intersections in that their horizontal scale is much smaller and planting palette less extensive. Secondary Intersections are a visual break in the Linear Park system with formal rows of trees leading the user into the intersection from only one hundred feet.

4.9.1 INTENT

4.9.1.1 To provide shade, safety and protection from the environment for pedestrian users.

4.9.1.2 To establish a pedestrian scale and comfortable environment at Secondary Intersections.

4.9.1.3 To denote Secondary Intersections as special places within the corridor.

4.9.1.4 To establish cohesive, identifying characteristics at all Secondary Intersections.

4.9.2 STANDARDS: GENERAL

4.9.2.1 Colors for ground plane treatments and other non-vegetative elements shall be consistent with the neutral tones contained in the established Nevada Department of Transportation palette for the Dynamic Desert Metropolis Landscape Design Segment as defined in the I-15 Landscape and Aesthetics Corridor Plan.

4.9.2.2 Reinforced structural curbs that are 6" x 8" shall be required along the boundary between the potable and reuse water irrigation systems

4.9.2.3 Existing vegetation (except turf) shall be preserved wherever possible and xeriscape landscape treatments shall be utilized for new vegetation. Turf must be removed and replaced with an approved ground plane treatment.

4.9.2.4 Refer to City of Henderson Parks and Recreation Department Landscape Standards and Design Guidelines for irrigation and landscape planting standards.

4.9.2.5 These standards may be modified, subject to approval by the Parks and Recreation Director, where insufficient space or other physical limitations make full compliance with the applicable standards impossible.

4.9.3 STANDARDS: LANDSCAPED MEDIAN

4.9.3.1 For Secondary Intersections without a median opening, refer to Section 4.7.3 Standards: Landscaped Median for Mid-Block Areas.

4.9.3.2 A balanced palette that includes a single or small variety of tree species and a wider variety of accent plant species shall be utilized, as selected from the Median: Secondary Intersections column of the Plant List contained in Appendix B.

4.9.3.3 Trees shall be planted as close to intersection as allowed by other applicable codes defining sight line distances.

4.9.3.4 Trees shall be placed in a formal row (or two rows where sufficient width is available) according to the spacing requirement for each species as defined in the Plant List contained in Appendix B for a distance of 150 linear feet.

4.9.3.5 Accent plants shall be planted a minimum of 5 feet and trees shall be planted a minimum of 15 feet from the edge of the median.

4.9.3.6 The following accent plants shall be provided per 100 linear feet:

4.9.3.6.1. Ten 5-gallon accent plants

4.9.3.6.2. Five 1-gallon accent plants

4.9.3.7 A minimum of four different accent plant species, two of which must be chosen from the Accent Plants: Cactus or Accent Plants: Yucca & Agave sections of the Plant List contained in Appendix B, shall be provided per 100 linear feet.

4.9.3.8 Accent plants shall be grouped based on similar water usage and care needs and the clusters, one of which must be chosen from the Cactus section of the Plant List, shall be planted in a staggered triangular pattern to provide visual interest.

4.9.3.9 Ground plane treatments shall be installed as follows:

4.9.3.9.1. 3/8” minus rock mulch with decorative accents up to 4”-6” or alternative as approved by the Parks and Recreation Department.

4.9.3.9.2. Alternative ground plane treatments may be required to prevent erosion in areas identified through the review of the Drainage Plan. Specific requirements will be determined by the Public Works – New Development Department.

4.9.3.9.3. The area from the beginning of the median to within 10 feet of the first required tree shall be fully or partially hardscaped to provide an area for pedestrians waiting to cross Boulder Highway. Pavers, stamped concrete, or similar decorative treatment may be used as approved by the Public Works and Parks and Recreation Departments.

4.9.4 STANDARDS: ROAD EXPANSION AREA

4.9.4.1 A balanced palette that includes a variety of small or medium trees and accent plant species shall be utilized, as selected from the Road Expansion Area column of the Plant List contained in Appendix B.

4.9.4.2 Two trees shall be required per 100 linear feet, or fraction thereof, and may be planted individually or in clusters (clusters must maintain recommended spacing for each species as defined in the Plant List in Appendix B).

4.9.4.3 A minimum of two different tree species shall be used per 100 linear feet. Only one of the two species may be the same as the adjacent 100-foot section to the north and south.

4.9.4.4 No trees shall be placed within 15 feet of the edge of the roadway.

4.9.4.5 The following accent plants must be provided per 100 linear feet:

4.9.5.5.1 Six 5-gallon accent plants

4.9.5.5.2 Eight 1-gallon accent plants

4.9.4.6 A minimum of four different accent plant species, two of which must be chosen from the Accent Plants: Cactus or Accent Plants: Yucca & Agave sections of the Plant List contained in Appendix B, shall be provided per 100 linear feet.

4.9.4.7 Accent plants may be clustered or planted individually to allow for visibility of onsite business signage.

4.9.4.8 Ground plane treatments shall be installed as follows:

4.9.4.8.1. 4”-6” crushed rock (D-50) or alternative as approved by the Parks and Recreation Department.

4.9.4.8.2. Alternative ground plane treatments may be required to prevent erosion in areas identified through the review of the Drainage Plan. Specific requirements will be determined by the Public Works – New Development Department.

4.9.4.8.3. Hardscaped areas may be integrated into the Road Expansion Area to provide space for street furniture and pedestrian amenities. Pavers or other treatments must be permeable and approved by the Parks and Recreation Department.

4.9.4.8.4. The Road Expansion Area must be completely hardscaped within 25 feet of the intersection, or to the outer edge of the crosswalk, whichever is greater, to allow sufficient space for pedestrian circulation.

4.9.5 STANDARDS: LINEAR PARK

4.9.5.1 The standards for the Linear Park as required by Section 4.5 of this manual shall apply except as modified below.

4.9.5.2 Within 40 feet on either side of the intersection, the vegetation must be trimmed to maintain a clear visibility zone between 32 inches and 9 feet above grade to allow vehicles to see trail users as they approach the crosswalk.

4.9.5.3 A paved connection must be provided between the trail and the crosswalks for Boulder Highway and the cross street.

4.9.6 STANDARDS: LANDSCAPE BUFFER

4.9.6.1 A balanced palette that includes a single or very small variety of shade tree species shall be utilized, as selected from the Landscape Buffer column of the Plant List contained in Appendix B. A wider variety of accent plant species should be used to provide visual interest.

4.9.6.2 Trees shall be required to be spaced 25 feet on center and planted a minimum of 5 feet from the edge of the buffer facing the travel lanes.

4.9.6.3 Three 5-gallon accent plants shall be required per 250 square feet and may be planted individually or grouped to provide visibility of business signage.

4.9.6.4 If adjacent to a trail, no obstructions shall be placed within 3 feet of the edge of the trail.

4.9.6.5 Ground plane treatments for areas that are not hardscaped must consist of decomposed granite that is installed flush with the adjacent sidewalk or trail.

4.9.6.6 Hardscaped areas may be integrated into the Landscape Buffer to provide space for street furniture and pedestrian amenities. Pavers or other treatments must be permeable and approved by the Parks and Recreation Department.

4.9.6.7 The Landscape Buffer must be completely hardscaped within 25 feet of the intersection, or to the outer edge of the crosswalk, whichever is greater, to allow sufficient space for pedestrian circulation.

4.9.6.8 Structured soils are required under all Landscape Buffers as approved by the Parks and Recreation Department.

4.9.6.9 Root barriers, designed and installed per Parks and Recreation Department standards, shall be required in all areas where trees are planted within 10 feet of a pavement edge.

4.9.7 STANDARDS: SIDEWALK WITH STREET TREES

4.9.7.1 A palette that includes a single or very small variety of shade tree species shall be utilized, as selected from the Sidewalk with Street Trees column of the Plant List contained in Appendix B.

4.9.7.2 Larger caliper trees, 3" minimum, shall be utilized for initial planting in order to offer immediate shade and reduce vandalism.

4.9.7.3 Trees shall be required to be spaced 25 feet on center and minimum 3 feet from the curb.

4.9.7.4 If adjacent to a trail, no obstructions shall be placed within 3 feet of the edge of the trail.

4.9.7.5 Trees shall be placed in a minimum 6-foot by 6-foot planting area covered in decomposed granite that is flush with the adjacent pavement.

4.9.7.6 The areas between the tree planters shall be covered with pavers or an alternative permeable walking surface as approved by the Parks and Recreation Department.

4.9.7.7 No street trees may be placed where the crosswalk intersects with the sidewalk in order to allow sufficient space for pedestrian circulation.

4.9.7.8 Structured soils are required under all Sidewalks with Street Trees as approved by the Parks and Recreation Department.

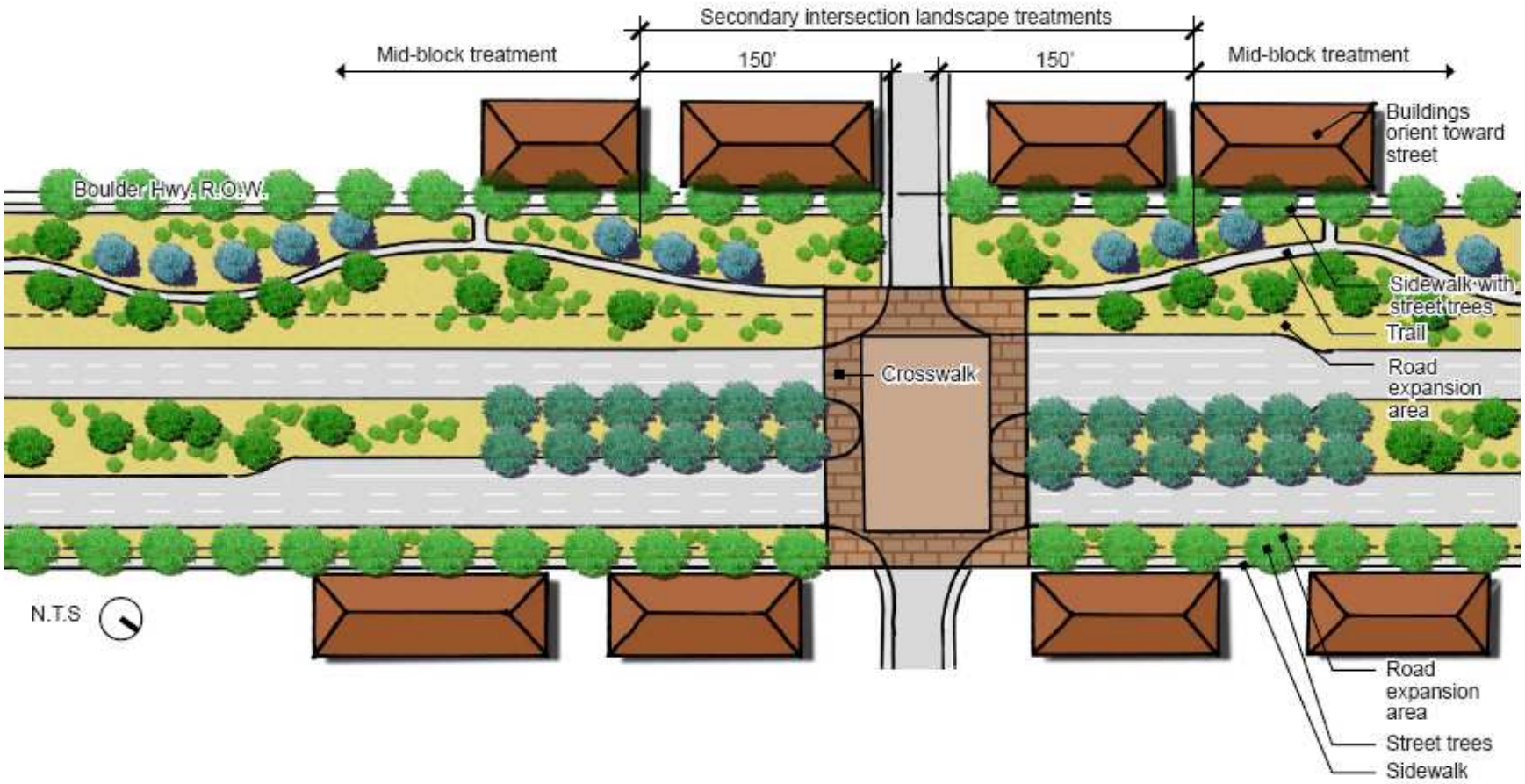
4.9.7.9 Root barriers, designed and installed per Parks and Recreation Department standards, shall be required in all areas where trees are planted within 10 feet of a pavement edge.

4.9.8 GUIDELINES

4.9.8.1 Median should contain complimentary landscape treatments as the treatment between the right-of-way and curb to maintain uniformity.

4.9.8.2 Densely planted evergreens should be utilized as a visual and noise buffer between residential uses (existing and new) and the Linear Park.

Figure 19—Secondary Intersection Concept



4.10 BUS RAPID TRANSIT (BRT) STATION

4.10.1 INTENT

4.10.1.1 To provide shade, safety and protection from the environment for pedestrian users.

4.10.1.2 To establish a pedestrian scale and comfortable environment at the intersection.

4.10.1.3 To create a cohesive feel and identifying characteristics at all stations within the City of Henderson.

4.10.2 STANDARDS

4.10.2.1 A consistent plant palette shall be utilized at all BRT stations. Plant materials shall be selected from the Station Planters column of the Plant List contained in Appendix B.

4.10.2.2 A paved connection must be provided from the BRT station to the trail within the Linear Park and/or the nearest sidewalk, whichever is applicable.

4.10.2.3 Three concrete tree planters shall be constructed at each station and designed to the following specifications:

- 4.10.2.3.1 Minimum planter size of 10 feet by 10 feet.
- 4.10.2.3.2 Seat wall height between 18 inches and 24 inches.
- 4.10.2.3.3 Depth for planter seat wall between 6 and 8 inches.
- 4.10.2.3.4 Skatestoppers must be installed on the outside edge of planters every 12-16 inches to prevent damage from skateboards.
- 4.10.2.3.5 Alternative dimensions may be approved by the Public Works Department when available space does not permit compliance with these standards or other applicable regulations pertaining to visibility and safety.

4.10.2.4 An area with a minimum 6-foot width must be hardscaped around each of the planters and a paved connection must be provided to the BRT station. Both elements must remain clear of obstructions to allow access.

4.10.2.5 Structured soils are required under all tree planters as approved by the Parks and Recreation Department.

4.10.2.6 Exact placement of the planters shall be determined by the Public Works Department.

4.10.2.7 Tree species shall be selected from the Station Planters column of the Plant List contained in Appendix B.

4.10.2.8 Larger caliper trees, 3" minimum, shall be utilized for initial planting in order to offer immediate shade and reduce vandalism.

4.10.2.9 The ground surface inside the planter shall be covered with decomposed granite and must be between 6-12 inches from the top of the seat walls.

4.10.2.10 Star Jasmine (*Jasminum multiflorum)* shall be used for the 'living screen wall' along the rear wall of the BRT station in order to provide shade and foliage through multiple growing seasons.

4.10.2.11 BRT platforms shall contain pedestrian scale paving including, but not limited to more densely scored concrete, stamped concrete, stone pavers, etc.

4.10.2.12 Reinforced structural curbs that are 6" x 8" shall be required along the boundary between the potable and reuse water irrigation systems

4.10.2.13 Colors for ground plane treatments and other non-vegetative elements shall be consistent with the neutral tones contained in the established Nevada Department of Transportation palette for the Dynamic Desert Metropolis Landscape Design Segment as defined in the I-15 Landscape and Aesthetics Corridor Plan.

4.10.2.14 Root barriers, designed and installed per Parks and Recreation Department standards, shall be required in all areas where trees are planted within 10 feet of a pavement edge.

4.10.3 GUIDELINES

4.10.3.1 Additional elements to enhance pedestrian comfort and visual appeal of the area, such as seating, drinking fountains, and public artwork, are encouraged subject to approval by the Public Works and Parks and Recreation Departments.

Figure 20—Rapid Transit Station Concept

4.11 PUBLIC ART

4.11.1 INTENT

4.11.1.1 To encourage the incorporation of public art within the Boulder Highway corridor.

4.11.2 STANDARDS

4.11.2.1 Artwork installations shall reflect the unique desert environment and surrounding landscapes of the City of Henderson.

4.11.2.2 Any and all artwork within City of Henderson right-of-way shall be submitted to the City of Henderson through a Revocable Permit Application for approval by the Public Works Director in consultation with the Parks and Recreation Director prior to installation.

4.11.2.3 Any and all artwork within the NDOT right-of-way shall be submitted to the NDOT Permit Office through a Multi-Use Agreement Application. The application must include the City of Henderson Parks and Recreation Department as a signatory prior to submittal to NDOT.

4.11.3 GUIDELINES

4.11.3.1 Colors within the artwork should complement the established Nevada Department of Transportation palette for the Dynamic Desert Metropolis Landscape Design Segment as defined in the I-15 Landscape and Aesthetics Corridor Plan.

4.11.3.2 Themes for artwork installations should look into 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.

4.12 LIGHTING

4.12.1 INTENT

4.12.1.1 To provide pedestrian-scale walkways and define materials for use on walkways, bikeways, and other hard, non-roadway surfaces within the right-of-way.

4.12.2 STANDARDS

4.12.2.1 All trails shall 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.

4.12.2.2 Lighting within the Linear Park 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 the time the City is able.

4.12.2.3 All lighting shall be installed within the Linear Park, near the trail, but outside of the 3-foot clear zone. 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.

4.12.2.4 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.

4.12.2.5 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 NDOT right-of-way and shall conform to appropriate NDOT standards, such as break-away base.

4.12.2.6 Additional lighting requirements include:

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.

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.

Photo cell with time clock override for operation.

City of Henderson Standards, AASHTO (American Association of State Highway and Transportation Officials), NEC (National Electrical Code) and Street Light Standards shall be followed.

4.13 TRAIL SIGNAGE

4.13.1 INTENT

4.13.1.1 To orient and provide visual cues for trail users and motorists.

4.13.2 STANDARDS

4.13.2.1 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.

4.13.2.2 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 inches (4") high.

4.13.2.3 In order to minimize conflict between users of the shared-use trail system and vehicular traffic entering and exiting private drives, a series of 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 to Peds.

4.13.2.4 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.

4.13.2.5 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.

Appendix A

A1 LANDSCAPE SPECIFICATIONS

- City of Henderson Parks and Recreation Department Landscape Design Standards and Guidelines Manual shall be referenced for specific details.
- All trails shall be designed and lit per Section 4.12 and the Rim Trail lighting standards as established in the City of Henderson Parks and Recreation Department Landscape Design Standards and Guidelines Manual.

A2 TRAIL TECHNICAL STANDARDS

This section contains technical standards and references to be used in the design and layout of trails, intersections, and alignment along the Boulder Highway Corridor. Any deviation from these standards is at the discretion of the City of Henderson.

TRAIL INTERSECTIONS

- Trail intersections and approaches shall be on relatively flat grades.
- 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 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 a 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, which shall be flush with the trail surface.

SITE VISIBILITY DISTANCE

- Adequate site visibility distance shall be provided at intersections to maintain trail user safety.
- 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.

- Additional site visibility requirements shall apply as stated in the following sections of this manual: Section 4.5 Linear Park, Section 4.8 Primary Intersections, and Section 4.9 Secondary Intersections.

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 triangular fashion with one lockable folding bollard (located front and center of the two adjoining bollards) and two stationary bollards placed in the center of the entrance of the trail to allow two-way 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 details, see City of Henderson Design Standards.

PAVEMENT STRUCTURE

- The minimum acceptable pavement structure shall be four (4) inches of asphalt over six (6) inches Type II aggregate base 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.

STRIPING

- Trails are designed to be used by pedestrians, strollers, wheelchairs, bicycles, and other non-motorized 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.
- Stop bars shall be white, and shall be 12” wide. Regional Transportation Commission of Southern Nevada (RTC) approved paint striping products shall be used.

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.
- ADA (Americans with Disabilities Act) design criteria shall be met in all instances. In the event of an unforeseen challenge, the City of Henderson Public Works Director shall be the deciding authority on how to proceed 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% of the last 50 feet.
- It is essential that 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:
    - 8.3% for a maximum of 200 feet;
    - 10% for a maximum of 30 feet; and
    - 12.5% for a maximum of 10 feet.
- Near the top and bottom of 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 do not 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; and
    - Minimal change of grade and cross slope on the segment connecting the rest area with the main trail.

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.

A3 DEFINITIONS

BOULDER HIGHWAY RIGHT-OF-WAY

Includes Roadway Zone and Pedestrian-Oriented Zone as defined in this Design Manual. Right-of-way width varies along the length of the corridor.

BRT

Bus Rapid Transit

FLEX ZONE

The ***Flex Zone*** represents the remaining right-of-way area outside of the Roadway Zone and Linear Park. This zone's area varies widely because the width of the Boulder Highway right-of-way also varies widely. There may be areas where this zone does not occur at all, and in other areas the width of the zone would exceed 100'. This zone may accommodate future development, sidewalks, and parkway streets that are consistent with the Boulder Highway Corridor Investment Strategy. Property owners may petition to have land within the Flex Zone transferred from Nevada Department of Transportation or City of Henderson ownership to private ownership in order for private development to occur. Figures 3 through 9 illustrate potential Flex Zone configurations in different locations in the corridor.

GATEWAY

Design features that announce the arrival or departure from a place. Boulder Highway will contain automobile-oriented gateways as well as pedestrian-oriented gateways.

GUIDELINE

Design guidelines reinforce the objectives defined by the intent statements. Guidelines use the term "should" to denote that they are considered relevant to achieving the stated intent, but are not used to reject a proposal.

HIGHWAY

Refers to only that portion of the Boulder Highway Corridor intended for long distance vehicular travel along the northbound travel way, bus lanes and southbound travel way. This does not include 'Parkway Streets"

INTENT STATEMENT

Intent statements are provided to define goals which the standards and guidelines have been created to achieve. They are to be used where further interpretation of a standard or guideline's objective is necessary.

LANDSCAPE BUFFER

Formal row of street trees and accent plants used to buffer adjacent trails, sidewalks, parkway streets, and other features from the vehicle travel and turning lanes. Landscape buffers should also be provided in corridor locations where sufficient width is not available for the Linear Park..

LINEAR PARK

Continuous landscaped area and trail within the Boulder Highway right-of-way. The typical width is 55 feet, but may be narrower at Primary Intersections and in areas where right-of-way is limited. See Section 4.5 for standards and guidelines.

MEDIAN

Area defined between the north bound and southbound travel lanes of Boulder Highway.

PARKWAY STREET

A local street paralleling Boulder Highway that allows buildings to front the corridor by providing front door access to local traffic while maintaining through traffic on the main travel lanes of Boulder Highway.

PEDESTRIAN-ORIENTED ZONE

The ***Pedestrian-Oriented Zone*** extends from the outer edge of the Road Expansion Area to the boundary between the right-of-way and private property. It incorporates all of the pedestrian circulation areas including the Linear Park, parkway streets, sidewalks with street trees, and the buffers protecting pedestrians from the Roadway Zone. Standards and guidelines for this zone are outlined in Chapter 4.

PEDESTRIAN HABITABLE ZONE

Outdoor areas designed in a manner and scale that is comfortable and safe for pedestrians.

PROJECT

PROJECT, as used in this Design Manual, refers to the construction, alteration, addition, or reconstruction of any structure, as well as the site on which it sits and all related supporting infrastructure and landscaping that constitutes a development by public or private party(s).

ROAD EXPANSION AREA

Area reserved to accommodate possible dedicated turning lanes, bus turnouts, or an additional travel lane in the future while still providing a 5-foot bike lane and a curb on each side at the edge of the roadway. The Roadway Expansion Area varies in width and composition depending on the improvements necessary for efficient vehicular circulation.

SKATESTOPPERS
Small metal devices attached to walls, railings, and other improvements to deter damage from skateboards.

STANDARD
Design standards provide specific direction based on the stated intent. Standards use the term “shall” to indicate that compliance is required. Standards may be adjusted if it can be demonstrated that an acceptable alternative meets one or more of the following conditions:

- An alternative better achieves the stated intent
- A particular circumstance may impede a standard from achieving an intent
- Unique site factors make the standard impractical or cost prohibitive.

UNDERSTORY
An underlying layer of vegetation; specifically: the vegetative layer of accent plants between the tree canopy and the ground plane treatment.

XERISCAPE
Landscaping that is designed specifically for areas that are susceptible to drought or for properties where water conservation is practiced. Xeriscape landscaping policy allows you to use the plants you want, but insists on common-sense measures that will help conserve water, such as grouping plants with similar water requirements together.

Appendix B: Plant List

Appendix B contains a comprehensive list of approved planting materials for all aspects of Boulder Highway Corridor. Recommended plant materials vary by location and are referenced accordingly: Median (Primary Intersections, Secondary Intersections, and Mid-Block), Linear Park (Trail Trees and Park Area), Street Trees, Landscape Buffer, Station Planters, Road Expansion Area, and Corridor Gateway.

Common Name	*Botanical Name*	Median			Linear Park		Other					Attributes				Leaf Type	Water Use		
		Primary Intersections	Secondary Intersections	Mid-block	Trail Trees	Park Area	Street Trees	Landscape Buffer	Station Planters	Road Expansion Area	Corridor Gateway	Size	Height (in feet)	Required Spacing (in feet)	Thorns?	Deciduous, Evergreen, or Semi-Evergreen	low	medium	high
TREES																			
Acacia, Cat's Claw	*Acacia greggii*			X		X				X		S	15	20	T	D	☺		
Acacia, Mulga	*Acacia aneura*			X		X				X		S	18	18		E	☺		
Acacia, Sweet	*Acacia farnesiana (=A. smallii)*			X		X				X		S	25	25	T	E	☺		
Acacia, Twisted	*Acacia schaffneri*			X		X				X		S	20	20	T	D	☺		
Acacia, White Thorn	*Acacia constricta*			X		X				X		S	10	15	T	D	☺		
Chaste Tree (Monk's Pepper Tree)	*Vitex agnus-castus*			X		X				X		S	25	25		D		😐	
Desert Willow	*Chilopsis linearis*			X		X				X		S	25	30		D		😐	
Elderberry, Mexican	*Sambucus nigra ssp. cerulea*			X		X				X		S	10-20	25		SE	☺	😐	
Kidneywood	*Eysenhardtia orthocarpa*			X		X				X		S	18	25		SE	☺		
Laurel, Bay	*Laurus nobilis*			X		X				X		S	12-25	12		E		😐	
Mesquite, Honey	*Prosopis torreyana*			X		X				X		S	25	30	T	D	☺		
Mesquite, Native	*Prosopis juliflora*			X		X				X		S	25	30	T	D	☺		
Mesquite, Screwbean	*Prosopis pubescens*			X		X				X		S	15	20	T	D	☺		
Palo Verde, Foothill	*Parkinsonia microphylla*			X		X				X		S	10-20	15	T	D	☺		
Redbud, Eastern	*Cercis canadensis*			X		X				X		S	25	25		D		😐	

Common Name	*Botanical Name*	Median			Linear Park		Other					Attributes				Leaf Type	Water Use		
		Primary Intersections	Secondary Intersections	Mid-block	Trail Trees	Park Area	Street Trees	Landscape Buffer	Station Planters	Road Expansion Area	Corridor Gateway	Size	Height (in feet)	Required Spacing (in feet)	Thorns?	Deciduous, Evergreen, or Semi-Evergreen	low	medium	high
TREES																			
Redbud, Western	*Cercis occidentalis*			X		X				X		S	25	25		D	☺	😐	
Strawberry Tree	*Arbutus unedo*			X		X				X		S	8-30	10		E		😐	
Desert Hackberry	*Celtis occidentalis*			X		X						S	15-20	15		E	☺		
Western Hackberry	*Celtis reticulata*			X		X				X		S	15-20	15		D	☺		
Texas Mountain Laurel	*Sophora secundiflora*			X		X				X		S	15	15		E	☺	😐	
Xylosma	*Xylosma congestum*			X		X				X		S	10-15	10		E	☺	😐	
Acacia, Shoestring	*Acacia stenophylla*	X		X	X	X					X	M	40	30		E	☺		
Ash, Raywood	*Fraxinus angustifolia*			X	X	X	X	X				M	25-35	25		D		😐	☹
Chinese Flame-tree	*Koelreuteria bipinnata*		X	X	X	X	X	X	X			M	20-35	25		D	☺		
Chitalpa	*Chitalpa X tashkentensis*			X	X	X				X		M	20-30	20		D	☺	😐	
Ghost Gum	*Eucalyptus papuana*			X	X	X						M	20-30	20		E	☹	😐	
Coolibah Tree	*Eucalyptus microtheca*			X	X	X						M	30-40	30		E	☹	😐	
Goldenrain Tree	*Koelreuteria paniculata*		X	X	X	X	X	X	X			M	20-35	25		D		😐	
Japanese Pagoda Tree	*Sophora japonica*			X	X	X	X	X	X			M	30-50	30		D		😐	
Locust, Honey (thornless)	*Gleditsia triacanthos inermis*			X	X	X	X	X	X			M	35	30		D		😐	
Mesquite, Argentine	*Prosopis alba*			X	X	X				X		M	30	30	T	SE	☺	😐	
Mesquite, Chilean	*Prosopis chilensis*			X	X	X				X		M	30	30	T	SE	☺	😐	
Mimosa Tree	*Albizzia julibrissin*			X	X	X	X	X				M	30-40	30		D		😐	
Oak, Chinquapin	*Quercus muhlenbergii*			X	X	X						M	30	30		D	☺	😐	
Oak, Pin	*Quercus palustris*			X	X	X						M	50-70	25		D		😐	
Oak, Texas Red	*Quercus texana (=buckleyi)*			X	X	X						M	25-30	25		D	☺	😐	
Olive, European fruitless	*Olea europaea (swan hill or wilsonii)*		X	X	X	X	X	X				M	30	30		E	☺	😐	
Palo Verde, Blue	*Parkinsonia florida*			X	X	X				X		M	30	30		SE	☺		
Sumac, African	*Rhus lancea*			X	X	X	X	X				M	20-30	20		E	☺	😐	
Texas Ebony	*Ebanopsis ebano (=Pithecellobium)*			X	X	X						M	15-40	15		SE	☺		
Texas Olive	*Cordia boissieri*			X	X	X						M	25-30	25		SE	☺		

Common Name	*Botanical Name*	Median			Linear Park		Other					Attributes				Leaf Type	Water Use		
		Primary Intersections	Secondary Intersections	Mid-block	Trail Trees	Park Area	Street Trees	Landscape Buffer	Station Planters	Road Expansion Area	Corridor Gateway	Size	Height (in feet)	Required Spacing (in feet)	Thorns?	Deciduous, Evergreen, or Semi-Evergreen	low	medium	high
TREES																			
Yew Pine	*Podocarpus macrophyllus*			X	X	X						M	15-40	15		E	☺	😐	
Ash, Arizona	*Fraxinus velutina*			X	X		X	X	X			L	30-60	30		D		😐	
Ash, Fan-Tex	*Fraxinus velutina 'Rio Grande'*			X	X		X	X	X			L	50	30		D		😐	☹
Ash, Modesto	*Fraxinus velutina 'Glabra'*			X	X		X	X	X			L	50	30		D		😐	☹
Ash, Shamel	*Fraxinus uhdei*			X	X		X	X	X			L	40-60	30		D			
Elm, Chinese (Lacebark Elm)	*Ulmus parvifolia*			X	X		X	X	X			L	40-60	30		SE		😐	
Locust, Black	*Robinia pseudoacacia*			X	X							L	40	30		D		😐	
Locust, Black 'Purple Robe'	*Robinia x ambigua 'Purple Robe'*			X	X							L	40	30		D		😐	
Oak,Cathedral	*Quercus virginiana 'SDLN'*	X			X						X	L	40-60	30		E		😐	
Oak, Cork	*Quercus suber*		X	X	X							L	30-60	30		SE	☺	😐	
Oak, Escarpment	*Quercus fusiformis*		X	X	X		X	X	X			L	50	30		E	☺	😐	
Oak, Heritage	*Quercus Macdanielli 'Clemons'*		X	X	X		X	X	X			L	60-80	30		D		😐	
Oak, Holly	*Quercus ilex*		X	X	X		X	X	X			L	30-60	30		E		😐	
Oak, Live	*Quercus virginiana*			X	X		X	X	X			L	40-50	30		E		😐	☹
Oak, Shumard Red	*Quercus shumardii*			X	X		X	X	X			L	40-50	30		D		😐	
Oak, Valley	*Quercus lobata*			X	X		X	X	X			L	40-50	30		D		😐	☹
Pine, Aleppo	*Pinus halepensis*			X	X							L	30-60	20		E	☺	😐	
Pine, Mondel (Afgan Pine)	*Pinus eldarica*			X	X							L	30-60	20		E	☺	😐	
Pine, Stone	*Pinus pinea*			X	X							L	40-80	30		E		😐	
Pistache, Chinese	*Pistacia chinensis*			X	X		X	X	X			L	50	30		D	☺	😐	
Pistache, Chinese 'Red Push'	*Pistacia chinensis 'Red Push'*			X	X		X	X	X			L	25-40	25		D	☺	😐	
Zelkova, Japanese (Sawleaf)	*Zelkova serrata*			X	X		X	X	X			L	40-60	30		D		😐	☹

Common Name	*Botanical Name*	Median			Linear Park		Other				
		Primary Intersections	Secondary Intersections	Mid-block	Trail Trees	Park Area	Street Trees	Landscape Buffer	Station Planters	Road Expansion Area	Corridor Gateway
ACCENT PLANTS: CACTUS											
Common Pincushion Cactus	*Coryphantha vivipara*	X	X	X		X		X		X	X
Beehive Cactus	*Coryphantha vivipara 'var. bisbeena'*	X	X	X		X		X		X	X
San Pedro Cactus	*Echinopsis pachanoi*	X	X	X		X		X		X	X
Golden Barrel Cactus	*Echinocactus grusnii*	X	X	X		X		X		X	X
Compass Barrel	*Ferocactus acanthodes*	X	X	X		X		X		X	X
Fishhook Barrel	*Ferocactus wislizenii*	X	X	X		X		X		X	X
Fishhook Cactus	*Mammillaria tetrancistra*	X	X	X		X		X		X	X
Pencil Cholla	*Opuntia arbuscula*	X	X	X		X		X		X	X
Beavertail Cactus	*Opuntia basilaris*	X	X	X		X		X		X	X
Teddy Bear Cholla	*Opuntia bigelovii*	X	X	X		X		X		X	X
Pancake Prickly Pear	*Opuntia chlorotica*	X	X	X		X		X		X	X
Silver Cholla	*Opuntia echinocarpa*	X	X	X		X		X		X	X
Strawberry Hedgehog	*Opuntia echinocarpa*	X	X	X		X		X		X	X
Old Man Prickly Pear	*Opuntia erinacea 'erinaceae'*	X	X	X		X		X		X	X
Indian Fig Cactus	*Opuntia ficus-indica*	X	X	X		X		X		X	X
Staghorn Cholla	*Opuntia fulgida 'versicolor'*	X	X	X		X		X		X	X
Cow's Tongue/Angel's Wing	*Opuntia linguiformis*	X	X	X		X		X		X	X
Bristly Prickly Pear	*Optuntia engelmannii acicularis*	X	X	X		X		X		X	X
Mojave Prickly Pear	*Opuntia phaeacantha*	X	X	X		X		X		X	X
Diamond Cholla	*Opuntia ramosissima*	X	X	X		X		X		X	X
Orange Tuna Cactus	*Opuntia riviereana*	X	X	X		X		X		X	X
Black Spine Prickly Pear	*Opuntia violacea 'macrocentra'*	X	X	X		X		X		X	X
Purple Pancake	*Opuntia violacea 'santa rita'*	X	X	X		X		X		X	X
Ocotillo	*Fouquiera spendens*	X	X	X		X		X		X	X
Old Man of the Andes	*Oreocereus celsianus*	X	X	X		X		X		X	X

Common Name	*Botanical Name*	Median			Linear Park		Other				
		Primary Intersections	Secondary Intersections	Mid-block	Trail Trees	Park Area	Street Trees	Landscape Buffer	Station Planters	Road Expansion Area	Corridor Gateway
ACCENT PLANTS: GROUNDCOVER											
Sierra Sundrop	*Calylophus hartwegii*	X	X	X		X		X		X	X
Snow-in-Summer	*Cerastium tomentosum*	X	X	X		X		X		X	X
Rock Cotoneaster	*Cotoneaster horizontalis*	X	X	X		X		X		X	X
Sierra Gold Dalea	*Dalea capitata*	X	X	X		X		X		X	X
Prostrate Indigo Bush	*Dalea greggii*			X		X		X		X	X
Boothill Eupatorium	*Eupatorium greggii 'Boothill'*	X	X	X		X		X		X	X
Spurge (Gopher Plant)	*Euphorbia rigida*	X	X	X		X		X		X	X
Creeping Fig	*Ficus pumila*	X	X	X		X		X		X	X
Gazania	*Gazania rigens*	X	X	X		X		X		X	X
Primrose Jasmine	*Jasminum mesnyi*	X	X	X		X		X		X	X
Lantana	*Lantana sp.*	X	X	X		X		X		X	X
Four O'clock	*Mirabilis multiflora*	X	X	X		X		X		X	X
Pyracantha or Firethorn	*Pyracantha fortuneana 'Santa Cruz'*	X	X	X		X		X		X	X
Prostrate Rosemary	*Rosmarinus officinalis 'prostratus'*	X	X	X		X		X		X	X
Stonecrop	*Sedum album (brevifolium)*	X	X	X		X		X		X	X
ACCENT PLANTS: ORNAMENTAL GRASSES											
Purple Threeawn	*Aristida purpurea*			X		X		X		X	X
Blue Grama Grass	*Bouteloua gracilis*			X		X		X		X	X
Blue Fescue	*Festuca ovina 'Glauca'*			X		X		X		X	X
Variegated Maiden Grass	*Miscanthus sinensis 'Variegata'*			X		X		X		X	X
Regal Mist	*Muhlenbergia capillaris 'Regal Mist'*			X		X		X		X	X
Bull Grass	*Muhlenbergia emersleyi 'El Toro'*			X		X		X		X	X
Autumn Glow	*Muhlenbergia linheimeri 'Autumn Glow'*			X		X		X		X	X
Deer Grass	*Muhlenbergia rigens*			X		X		X		X	X
Nashville	*Muhlenbergia rigida 'Nashville'*			X		X		X		X	X
Bigelow's Nolina	*Nolina bigelovii*			X		X		X		X	X
Treebear Grass	*Nolina matapensis*			X		X		X		X	X
Bear Grass	*Nolina microcarpa*			X		X		X		X	X

Common Name	*Botanical Name*	Median			Linear Park		Other				
		Primary Intersections	Secondary Intersections	Mid-block	Trail Trees	Park Area	Street Trees	Landscape Buffer	Station Planters	Road Expansion Area	Corridor Gateway
ACCENT PLANTS: SHRUBS											
Glossy Abelia	*Abelia x grandiflora*					X		X		X	X
Desert Carpet Acacia	*Acacia redolens 'Desert Carpet'*	X	X	X		X		X		X	X
Berlandier Acacia	*Acacia berlandieri*			X		X		X		X	X
Blackbrush Acacia	*Acacia rigidula*			X		X		X		X	X
Mexican Flame	*Anisacanthus quadrifidus-wrightii 'Mexican Flame'*			X		X		X		X	X
Four-Wing Saltbush	*Atriplex canescens*	X	X	X		X		X		X	X
Centennial Broom / Coyote Bush	*Baccharis sp. 'Centennial'*			X		X		X		X	X
Crimson Pygmy Barberry	*Berberis thunbergii 'Atropurpurea'*	X	X	X		X		X		X	X
Butterfly Bush	*Buddleia davidii*			X		X		X		X	X
Butterfly Bush (Wooly)	*Buddleia marrubifolia*			X		X		X		X	X
Japanese Boxwood	*Buxus microphylla 'Japonica'*			X		X		X		X	X
Yellow Bird of Paradise	*Caesalpinia gilliesii*			X		X		X		X	X
Baja Fairy Duster	*Calliandra californica*	X	X	X		X		X		X	X
Pink Fairy Duster	*Calliandra eriophylla*	X	X	X		X		X		X	X
Damianta	*Chrysactinia mexicana*	X	X	X		X		X		X	X
Texas Olive	*Cordia boissierri*			X		X		X		X	X
Little Leaf Cordia	*Cordia parvifolia*			X		X		X		X	X
Pyrenees Cotoneaster	*Cotoneaster congestus*	X	X	X		X		X		X	X
Red Clusterberry	*Cotoneaster lacteus*			X		X		X		X	X
Willowleaf Cotoneaster	*Cotoneaster salisifolius*			X		X		X		X	X
CotoneasterAutumn fire	*Cotoneaster s. 'Autumn fire'*	X	X								
Cliff Rose	*Cowania stansburiana*			X		X		X		X	X
Silver Dalea	*Dalea bicolor 'argyraea'*			X		X		X		X	X
Black Dalea	*Dalea frutescens*			X		X		X		X	X
Purple Hopseed Bush	*Dodonaea viscosa*			X		X		X		X	X
Silverberry	*Elaeagnus pungens*			X		X		X		X	X
Ebbing's Silverberry	*Elaeagnus x ebbingei*			X		X		X		X	X
Brittlebush	*Encelia farinosa*	X	X	X		X		X		X	X

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ACCENT PLANTS: SHRUBS, cont.											
Mormon Tea	*Ephedra viridis*			X		X		X		X	X
Goldenbush	*Ericameria cuneata*			X		X		X		X	X
Turpentine Bush	*Ericameria laricifolia*	X	X	X		X		X		X	X
Winter Creeper	*Euonymus fortunei*			X		X		X		X	X
Evergreen Euonymus	*Euonymus japonica*			X		X		X		X	X
Gold Spot Euonymus	*Euonymus japonica 'Aureo-Variegata'*			X		X		X		X	X
Box-leaf Euonymus	*Euonymus japonica 'Microphylla'*	X	X	X		X		X		X	X
Silver King Euonymus	*Euonymus japonica 'Silver King'*			X		X		X		X	X
Apache Plume	*Fallugia paradoxa*			X		X		X		X	X
Dyer's Greenweed	*Genista tinctoria*			X		X		X		X	X
Snakeweed	*Gutierrezia sarothrae*	X	X	X		X		X		X	X
Dwarf Yaupon Holly	*Ilex vomitoria 'Nana'*	X	X	X		X		X		X	X
Creosote Bush	*Larrea tridentata (divaricata)*			X		X		X		X	X
Texas Ranger / Texas Sage	*Leucophyllum sp.*			X		X		X		X	X
Heavenly Bamboo	*Nandina domestica*			X		X		X		X	X
Redtip Photinia	*Photinia fraseri*			X		X		X		X	X
Mock Orange	*Pittosporum tobira*			X		X		X		X	X
Dwarf Mock Orange	*Pittosporum tobira 'Wheeler Dwarf'*	X	X	X		X		X		X	X
Dwarf Pomegranate	*Punica granatum 'Nana'*	X	X	X		X		X		X	X
Pyracantha / Firethorn	*Pyracantha sp.*	X	X	X		X		X		X	X
Sugar Bush	*Rhus ovata*			X		X		X		X	X
Squaw Bush (Skunk Bush)	*Rhus trilobata*	X	X	X		X		X		X	X
Evergreen Sumac	*Rhus virens*			X		X		X		X	X
Lady Bank's Rose	*Rosa banksiae*			X		X		X		X	X
Rosemary	*Rosmarinus prostratus*	X	X	X		X		X		X	X
Sage / Salvia	*Salvia sp.*			X		X		X		X	X
Green Santolina	*Santolina virens*	X	X	X		X		X		X	X
Mexican Buckeye	*Sapindaceace ungnadia*			X		X		X		X	X

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ACCENT PLANTS: SHRUBS, cont.											
Jojoba	*Simmondsia chinensis*			X		X		X		X	X
Arizona Mescal Bean	*Sophora arizonica*			X		X		X		X	X
Texas Mountain Laurel	*Sophora secundiflora*			X		X		X		X	X
Cape Honeysuckle	*Tecomaria capensis*			X		X		X		X	X
Germander	*Teucrium chamaedrys*	X	X	X		X		X		X	X
Arizona Rosewood	*Vauquelinia californica*			X		X		X		X	X
Narrowleaf Rosewood	*Vauquelinia corymbosa 'var. heterodon'*			X		X		X		X	X
Xylosma	*Xylosma congestum*			X		X		X		X	X
Hummingbird Flower	*Zauschneria californica*			X		X		X		X	X
Devil's River	*Zexmenia hispida*	X	X	X		X		X		X	X
ACCENT PLANTS: YUCCA & AGAVE											
Century Plant / American Agave	*Agave americana*	X	X	X		X		X		X	X
Murphey's Agave	*Agave murpheyi*	X	X	X		X		X		X	X
Agave ocahui	*Agave ocahui*	X	X	X		X		X		X	X
Artichoke Agave	*Agave parryi 'Truncata'*	X	X	X		X		X		X	X
Parry's Agave	*Agave parryi-huachucensis*	X	X	X		X		X		X	X
Twin-Flowered Agave	*Agave geminiflora*	X	X	X		X		X		X	X
Weber Agave	*Agave weberi*	X	X	X		X		X		X	X
Agave schidigera	*Agave 'Durango Delight' ™*	X	X	X		X		X		X	X
Cow's Horn Agave	*Agave bovicornuta*	X	X	X		X		X		X	X
Green Desert Spoon	*Dasylirion acrotriche*	X	X	X		X		X		X	X
Desert Spoon	*Dasylirion wheeleri*	X	X	X		X		X		X	X
Ocotillo	*Fouqueiria splendens*	X	X	X		X		X		X	X
Giant Sword Flower	*Hesperaloe funifera*	X	X	X		X		X		X	X
Red Yucca	*Hesperaloe parvifolia*	X	X	X		X		X		X	X

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ACCENT PLANTS: YUCCA & AGAVE, cont.											
Yellow Yucca	*Hesperaloe parvifolia 'Yellow'*	X	X	X		X		X		X	X
Spanish Bayonet	*Yucca aloifolia*	X	X	X		X		X		X	X
Banana Yucca	*Yucca baccata*	X	X	X		X		X		X	X
Joshua Tree	*Yucca brevifolia*	X	X	X		X		X		X	X
Soaptree Yucca	*Yucca elata*	X	X	X		X		X		X	X
Adam's Needle	*Yucca filamentosa*	X	X	X		X		X		X	X
Soapweed	*Yucca glauca*	X	X	X		X		X		X	X
Blue Yucca	*Yucca rigida*	X	X	X		X		X		X	X
Mojave Yucca	*Yucca schidigera*	X	X	X		X		X		X	X
Mountian Yucca	*Yucca schottii*	X	X	X		X		X		X	X
Thompson's Yucca	*Yucca thompsoniana*	X	X	X		X		X		X	X
Our Lord's Candle	*Yucca whipplei*	X	X	X		X		X		X	X

NOTE: Vegetation must comply with the Arizona Nursery Association (ANA) industry standards and shall be inspected prior to installation. Parks and Recreation reserves the right to require replacement of damaged or inadequate plant materials.