

Cost Analysis and Implementation

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SECTION ONE: Cost Analysis

To understand the cost implications of the improvements proposed by this Corridor Plan, estimates on a cost per square foot (sf) and per acre (ac) basis have been prepared. At the planning budget level, these estimates can be applied to the Landscape Design Segments to produce an overall maximum cost for the right-of-way sections through undeveloped areas, communities, and individual interchange improvements. These estimates will inform NDOT in the decision-making process, and help influence budget allocations for the landscape and aesthetics highway improvements. Estimates within the Tahoe Basin may exceed these costs.

APPLICATION OF DESIGN GUIDELINES

The Design Guidelines included in this report describe the elements that compose a typical right-of-way section and interchange along elevated highways and bypasses. They also describe a base level of landscape and aesthetic quality that is used to predict costs. The intent of this section is to develop a definition of what is considered a “standard” treatment. As described in the Design Guidelines, within the Lake of the Sky Landscape Design Segment, an accentuated treatment level should be considered the “standard” treatment. Upon adoption of the Corridor Plan, NDOT should initiate internal reviews to determine implementation strategies. These reviews will include cost evaluation, priorities, scheduling, and visual preference evaluations to test each standard proposed by this section.

Funding for the landscape and aesthetics portion of a project should not be used to cover the ordinary construction costs. The landscape and aesthetics budget is available for softscape and hardscape treatments that exceed the ordinary construction costs.

The following summary describes components contained within an NDOT standard project that are not generally considered landscape and aesthetic costs:

Roadside Service Facilities

- Service area program as defined in the Design Synthesis report inclusive of program elements.

Non-motorized Transportation Systems

- Maintain existing sidewalk dimension of intersecting road across bridge overpass.
- Maintain existing bike lane dimension of intersecting road across bridge overpass.
- New bicycle paths and walkways that are part of an approved transportation plan.
- Six foot concrete sidewalk (community transition zones).
- Ten foot concrete sidewalk (community interface zones).
- Painted zebra pattern pedestrian crossing with pedestrian crossing sign.

Anti-graffiti Control and Removal

- Application of a long-term, non-sacrificial anti-graffiti treatment coating to all appropriate structures.

Bridge Structure

- Steel and concrete I-girders or steel and concrete box girder.
- Cast-in-place concrete with variable vertical ribbed design.
- Two color paint palette—base color with one accent color.

- Concrete barrier rail with acrylic stain base color application or steel rail with painted finish.
- Bridge/road name identification embossment.
- Pedestrian access across and under bridges used at interchanges and over topographic features.

Retaining Walls

- Cast-in-place or pre-cast concrete with fractured fin or similar pattern.
- Acrylic stain base color application.

Noise Walls

- Cast-in-place or pre-cast concrete with fractured fin or similar pattern.
- Acrylic stain base color application.
- Variation in sound wall geometry, material, color, texture, and pattern to eliminate monotonous, linear stretches of wall.

Concrete Barrier

- Cast-in-place concrete barrier.
- Acrylic stain base color application.

Guard Rail

- Galvanized steel thrie-beam guard rail.

Medians

- Revegetated median outside of community zones.
- Revegetated raised 6 inch median with curb within community zones.

Fencing

- Chain link fencing with color application—vinyl clad or painted finish with steel post supports where required (community zones).

How to Read Landscape and Aesthetics (L&A) Costs:

1) Determine the cost of the NDOT standard treatment for softscape and hardscape.

Softscape

(Native revegetation) – \$1.20 - \$1.40/sf

Hardscape (Standard) – \$115 - \$120/sf

2) Determine the cost of the selected treatment type.

Softscape (Regionally adapted treatment type):
\$2.40 - \$2.90/sf

Hardscape (Focal treatment type):
\$180 - \$195/sf

3) Subtract the standard treatment cost for the cost of the selected treatment type.

Softscape:

\$2.40 (Regionally adapted treatment cost)

-\$1.20 (Standard treatment cost)

= \$1.20 (Landscape and aesthetics cost)

Hardscape:

\$180 (Focal treatment cost)

-\$115 (Standard treatment cost)

= \$65 (Landscape and aesthetics cost)

The portion of cost allocated as a landscape and aesthetics cost is the additional cost.



- Multi-strand wire fencing with painted steel post supports at right-of-way limits (rural areas).
- Fencing required to control access, grading, and drainage.

Grading

- Steepest desired slope of 3H:1V.
- Rounded slopes that blend into existing grade.
- See *Project Design Development Manual* (PDDM) 2.2.4.2 side slopes.

Rock Cuts

- Rock cuts that appear natural in form and blend with existing landforms.
- Staining of rock cut to provide weathered finish.
- Rock fall protection structures, if necessary.

Drainage

- Basic channel conveyance, culverts, and drainage structures.
- Erosion resistant channels.
- Water quality basins.
- Man-made or constructed wetlands fulfilling mitigation requirements.

Erosion Control

- Provision of temporary erosion control during construction.
- Permanent erosion control.
- Temporary and permanent erosion control best management practices.

Native Revegetation for All Disturbed Portions of Highway Construction

- Salvage and storage of topsoil (6 inch horizon minimum) with native plant fragments.
- Re-spreading of stockpiled topsoil and native plant fragments to minimum 6 inch depth (amend topsoil when necessary).

- Application of native plant revegetation seed mix in combination with scattered rock mulch.
- Supplemental irrigation to establish plantings when necessary (two year minimum by maintenance contract).
- Provide invasive and noxious weed control (two year minimum by maintenance contract).

Construction and Maintenance Management Practices

- Implementation of dust control practices.
- Construction fencing to preserve sensitive areas.
- Maintenance period to ensure establishment of native revegetation.
- Development of a native revegetation general maintenance program.

Project Components Required for Compliance

- All practices must be in compliance with applicable Federal and State regulations.

Roadway Lighting

- Thirty foot high pole with galvanized finish, concrete foundation, and high pressure sodium luminaire (rural areas).
- Thirty foot high pole with powder-coat finish, concrete foundation with acrylic powder-coated base color application, and high pressure sodium luminaire with shoe-box fixture (community zones).

Wildlife Crossing

- Under or overpass structures to allow maintenance of natural migration and animal travel patterns.
- Cast-in-place concrete bridges with textured finish and two-color paint palette.
- Wire mesh fencing with painted steel post supports.

PROCESS

Costs (in 2006 dollars) for individual hardscape and softscape treatments, such as pedestrian crosswalks, curb extensions, raised planters, concrete form liner imprints, retaining walls, and landscape irrigation, were gathered from several sources, including NDOT, local engineering and landscape architecture firms, contractors, and product manufacturers. This information was analyzed and compiled into a database that could be applied to several prototypical examples of landscape and aesthetic treatment levels. The softscape and hardscape costs presented here represent the capital costs of construction and do not include extended maintenance costs. The treatments correlate to those presented in the NDOT *Landscape and Aesthetics Master Plan*. A separate report prepared by UNLV, entitled *Maintenance Cost Study for Corridor Planning*, examines long-term maintenance costs such as graffiti removal, pruning, and irrigation.

Prototypical designs for each of the five softscape types and four hardscape treatments were created for sections of highway rights-of-way outside of communities, in developing commercial areas, and in downtown areas. Within communities, designs were created for two-lane, three-lane, and four-lane roadway conditions. The project area was then incorporated into the estimate to create the per square foot and per acre cost analysis.

Overall cost estimates for each level of treatment were developed from these and compared to the costs from actual projects for verification. A similar process was applied to these areas to create a per square foot and per acre cost for each hardscape and softscape type.

COST ESTIMATES

Cost information presented here is provided for the purpose of long-range planning and budgeting. It is not intended to substitute for a project-level detailed cost projection.

Softscape Treatments

Using the process described above, planning level construction cost estimates for the different softscape treatments were determined in 2006 dollars. They are as follows:

Softscape Type Cost Estimate (sf and acre)

Ground Treatment / Native Revegetation:

- \$1.20 - \$1.40/sf
- \$52,500 - \$61,950/acre
- L & A Cost \$0.00/sf
- L & A Cost \$0.00/acre

enhanced native:

- \$1.50 - \$1.70/sf
- \$64,500 - \$74,000/acre
- L & A Cost \$0.30 - \$0.50/sf
- L & A Cost \$12,000 - \$21,500/acre

Regionally Adapted:

- \$2.40 - \$2.90/sf
- \$105,000 - \$126,000/acre
- L & A Cost \$1.20 - \$1.70/sf
- L & A Cost \$52,500 - \$73,500/acre

Regional Ornamental:

- \$3.70 - \$6.50/sf
- \$160,000 - \$280,000/acre
- L & A Cost \$2.50 - \$5.30/sf
- L & A Cost \$107,500 - \$227,500/acre

The cost for ground treatment/native revegetation is covered under the general construction costs as part of the NDOT standard. The data shown for the different treatment levels represents a total cost. The landscape and aesthetics cost is the portion of the total cost that is above the NDOT standard.

For example, a regionally adapted softscape costs about \$1.20 more per square foot than the standard ground treatment / native revegetation level of treatment, for a total cost of \$2.40 per sf ($\$1.20 + \$1.20 = \2.40). The additional \$1.20 per sf is funded through the landscape and aesthetics 3% for new construction, or community partnerships because it is above and beyond the NDOT standard. The regional ornamental treatment exhibits the widest range of costs due to the highly customized nature of this type.

Structures and Hardscape Treatments

Within communities, the construction of curbs, sidewalks, and medians compose the majority of hardscape costs. Along elevated highways and bypasses, bridges and sound walls are the main hardscape cost components. For the purposes of cost estimation, the right-of-way conditions established for softscape costs were also used to determine hardscape costs. In addition, a 12,000 square foot (60 foot x 200 foot) bridge was assumed for elevated highways and bypasses. The estimate for the various hardscape levels is:

Hardscape Type Cost Estimate (sf and total)

- Standard:*
- \$115 - \$120/sf
- \$1,386,000 - \$1,500,000 total
- L & A Cost \$0.00/sf
- L & A Cost \$0.00 total

Accentuated:

- \$132 - \$142/sf
- \$1,575,000 - \$1,700,000 total
- L & A Cost \$17 - \$27/sf
- L & A Cost \$189,000 - \$200,000/total

Focal:

- \$180 - \$195/sf
- \$2,145,000 - \$2,335,000 total
- L & A Cost \$65 - \$80/sf
- L & A Cost \$759,000 - \$949,000 total

Landmark:

- \$225 - \$270/sf
- \$2,646,000 - \$3,150,000 total
- L & A Cost \$110 - \$155/sf
- L & A Cost \$1,260,000 - \$1,764,000 total

The cost for the standard treatment would be covered by the general capital construction budget.

The treatment levels are represented as a total cost and the landscape and aesthetics cost represents the portion to be covered by the Landscape and Aesthetics 3% for new construction or com-

munity partnerships. The landmark level shows the widest range of cost because of the custom nature of many elements such as complex concrete form liners, custom railings, and transportation art that are included in this treatment.

To place the estimates in the context of a highway corridor, an estimate was calculated for a one mile section of road. Typical sections of highway right-of-way for rural and community applications were developed. Two lane (50 foot ROW), three-lane (76 foot ROW), and four lane (102 foot ROW) examples for both suburban and downtown applications were used to determine this value (Figures 17 - 48, pages 4.4 - 4.11). The approximate softscape and hardscape costs to develop one mile of corridor right-of-way at each treatment level were estimated.

STRUCTURES AND HARDSCAPE TYPES AND TREATMENTS

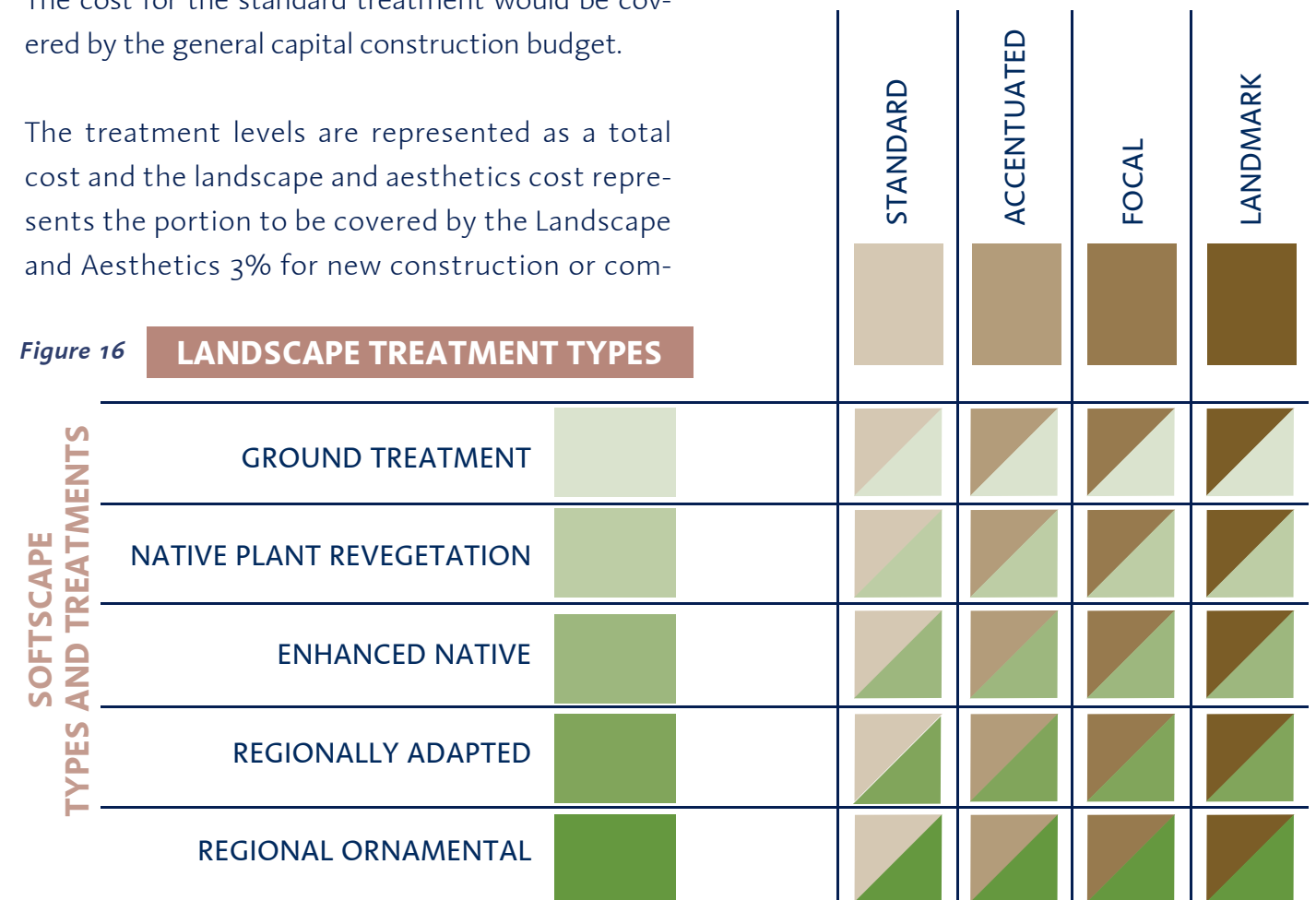
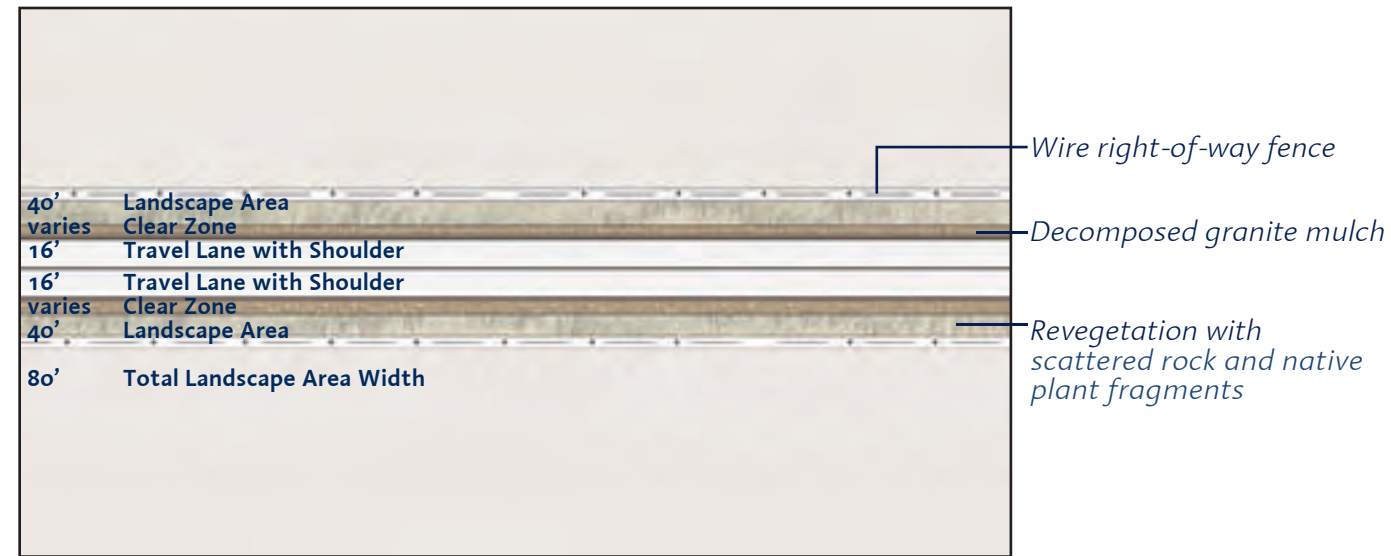


Figure 16 LANDSCAPE TREATMENT TYPES

FIGURE 17 - RURAL HIGHWAY

Softscape Types - **Ground Treatment/Native Revegetation**
Structures and Hardscape Type - **Standard**

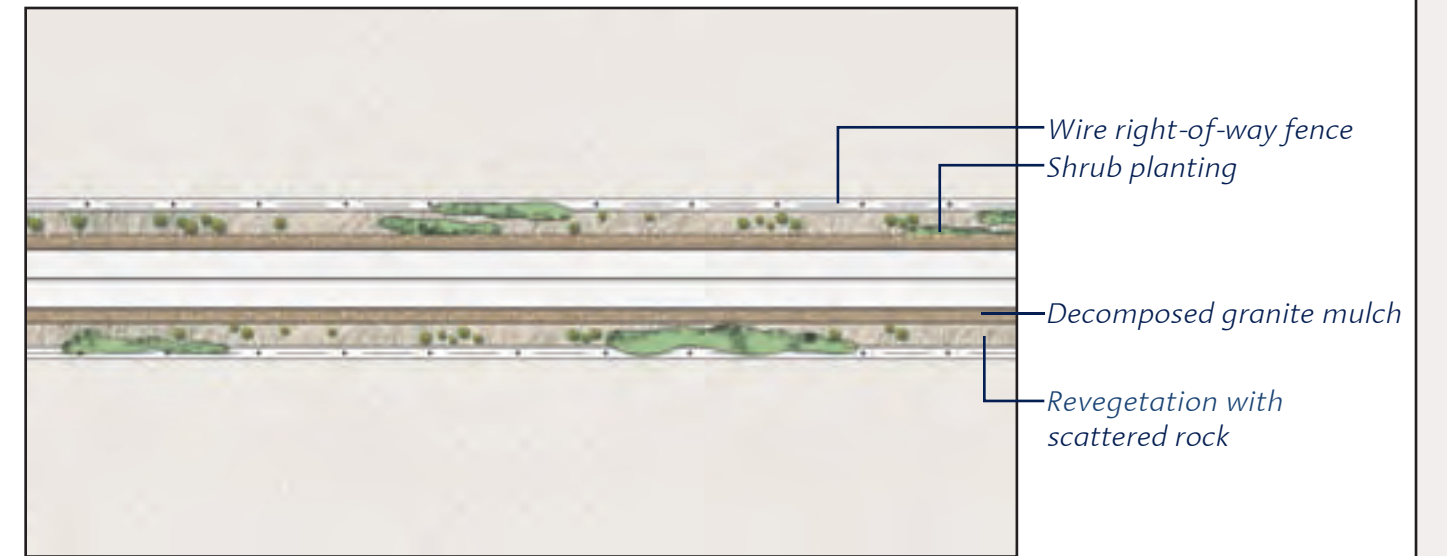


Total Cost: \$35,000 - \$42,000/acre of ROW area

L&A Cost: \$0/acre

FIGURE 18 - RURAL HIGHWAY

Softscape Types - **Enhanced Native**
Structures and Hardscape Type - **Accentuated**

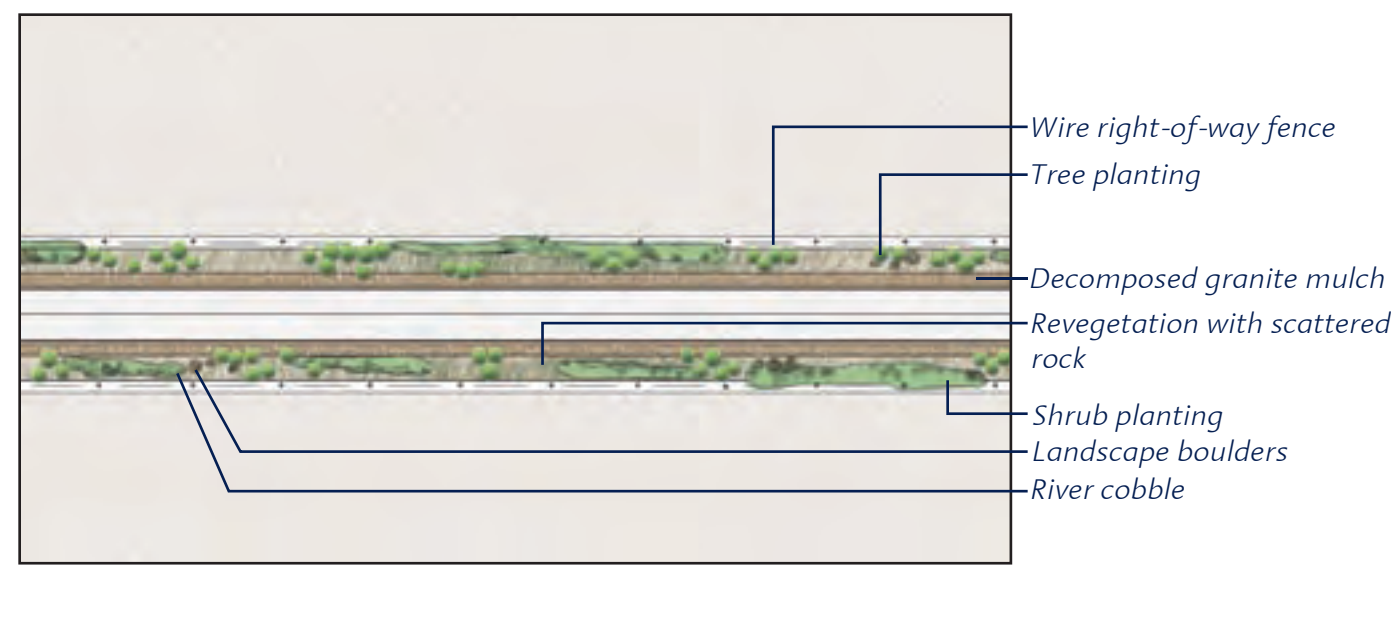


Total Cost: \$43,000 - \$50,000/acre of ROW area

L&A Cost: \$8,000 - \$14,000/acre

FIGURE 19 - RURAL HIGHWAY

Softscape Types - **Regionally Adapted**
Structures and Hardscape Type - **Focal**

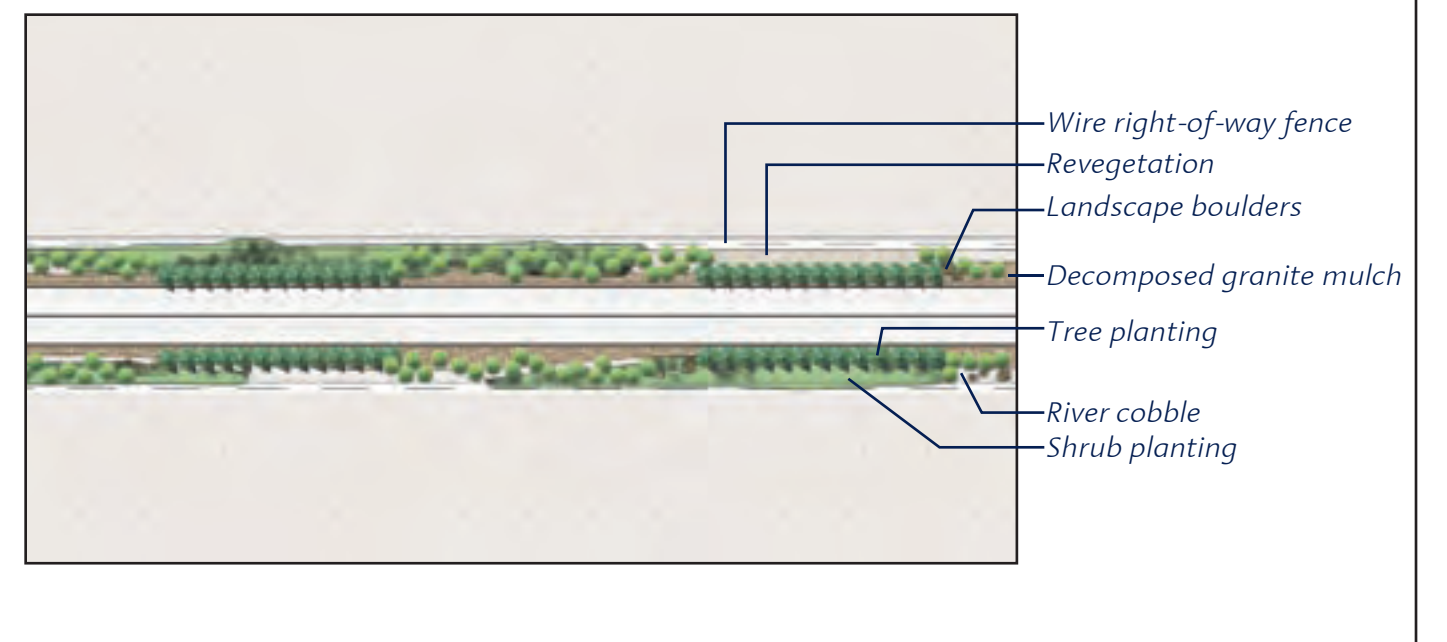


Total Cost: \$69,000 - \$85,000/acre of ROW area

L&A Cost: \$34,000 - \$50,000/acre

FIGURE 20 - RURAL HIGHWAY

Softscape Types - **Regional Ornamental**
Structures and Hardscape Type - **Landmark**



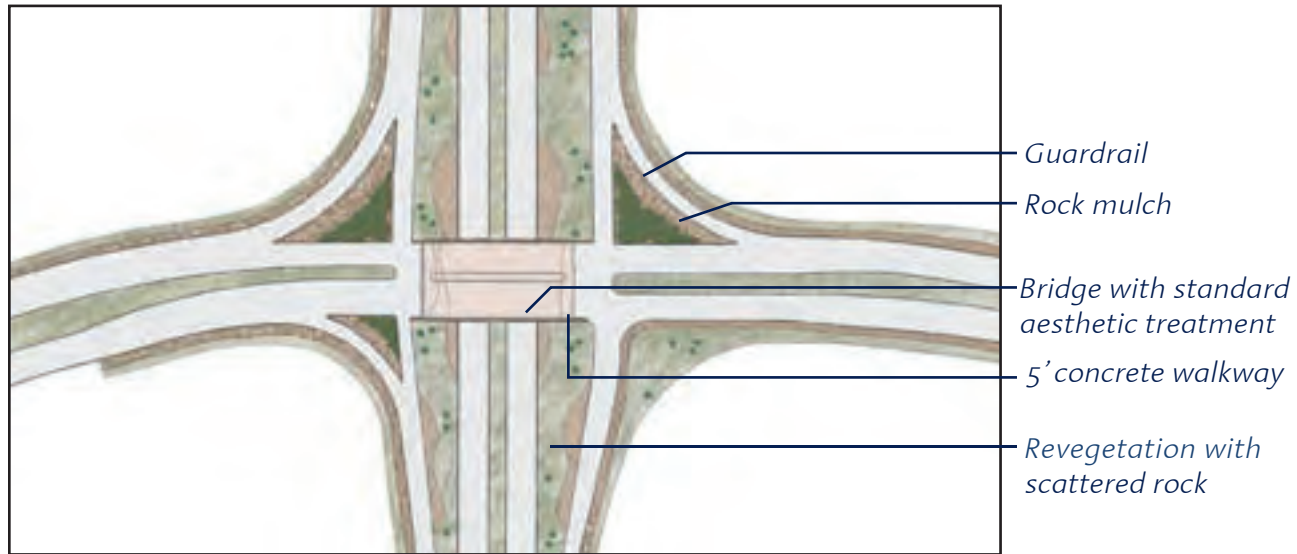
Total Cost: \$107,000 - \$185,000/acre of ROW area

L&A Cost: \$72,000 - \$150,000/acre

FIGURE 21 - FREEWAY OR ELEVATED HIGHWAY INTERCHANGES

Softscape Types - **Ground Treatment/Native Revegetation**

Structures and Hardscape Type - **Standard**



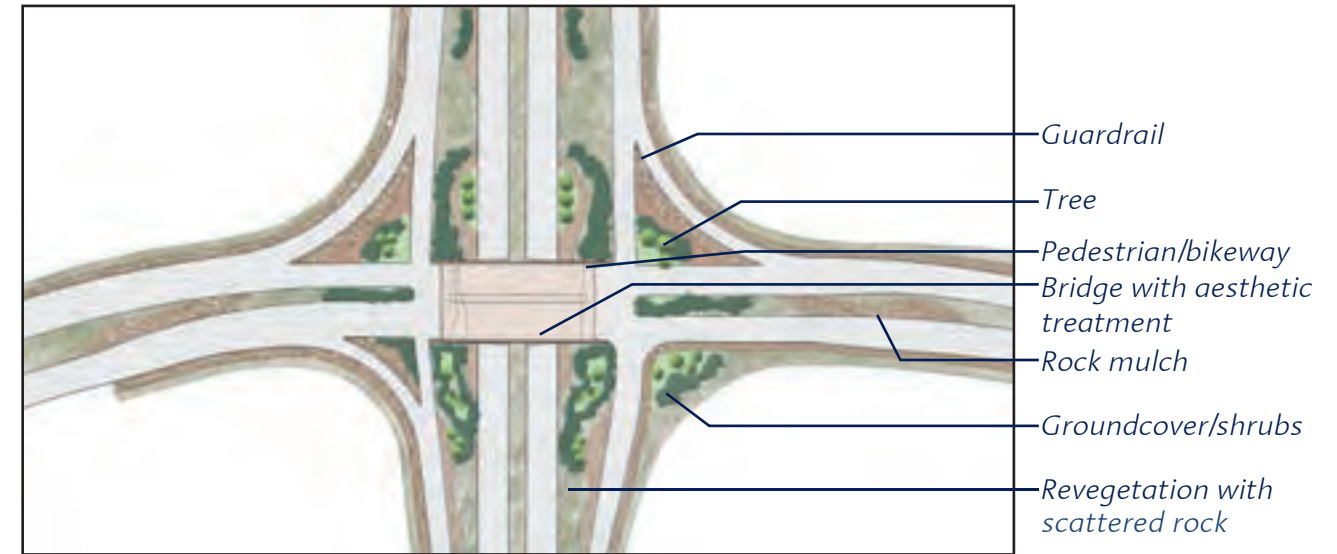
Total Cost: \$1,785,000 (infield landscape and bridge deck)

L&A Cost: \$0.00/acre

FIGURE 22 - FREEWAY OR ELEVATED HIGHWAY INTERCHANGES

Softscape Types - **Enhanced Native**

Structures and Hardscape Type - **Accentuated**



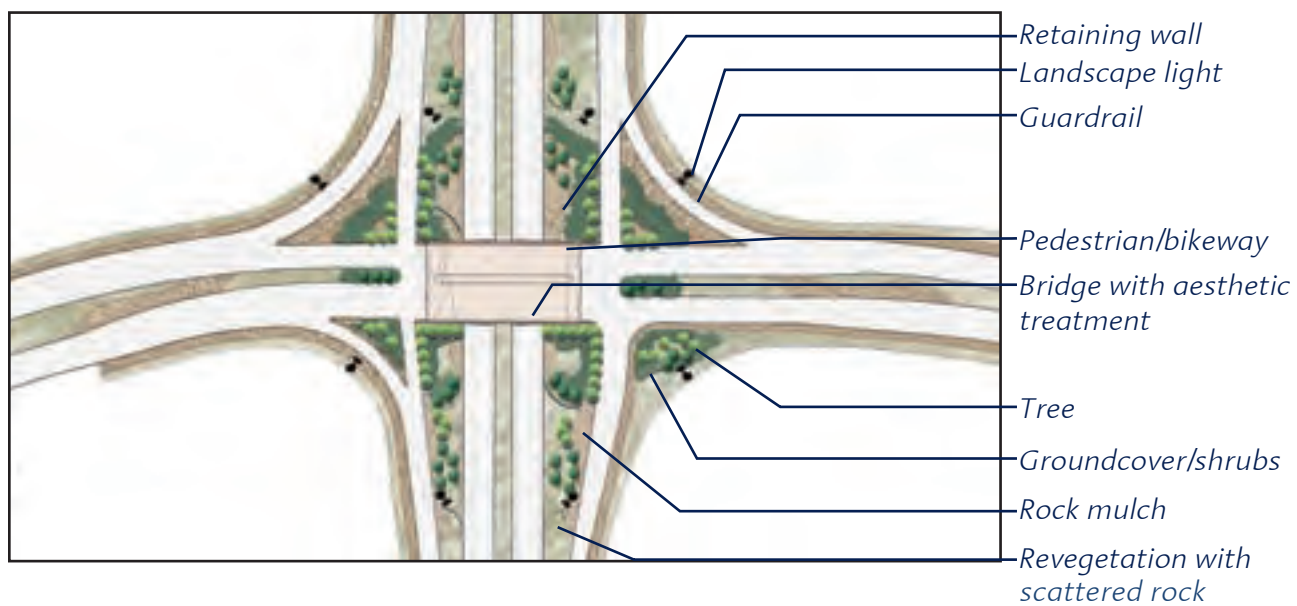
Total Cost: \$2,100,000 (infield landscape and bridge deck)

L&A Cost: \$315,000/acre

FIGURE 23 - FREEWAY OR ELEVATED HIGHWAY INTERCHANGES

Softscape Types - **Regionally Adapted**

Structures and Hardscape Type - **Focal**



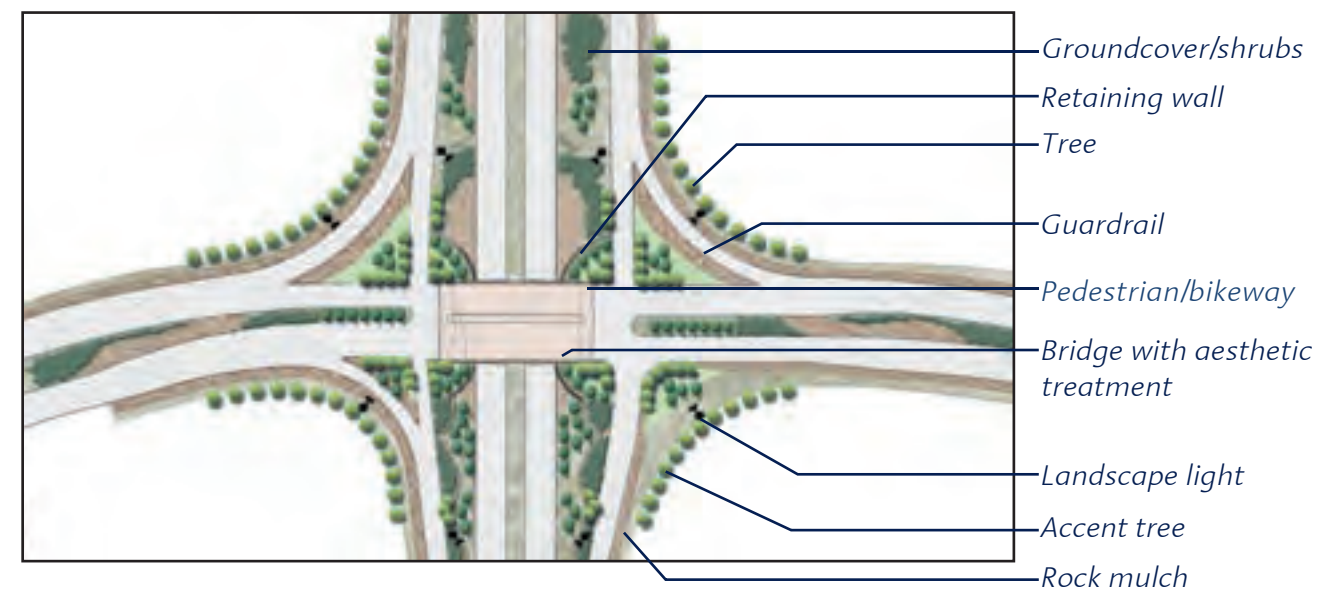
Total Cost: \$2,890,000 (infield landscape and bridge deck)

L&A Cost: \$1,105,000/acre

FIGURE 24 - FREEWAY OR ELEVATED HIGHWAY INTERCHANGES

Softscape Types - **Regional Ornamental**

Structures and Hardscape Type - **Landmark**

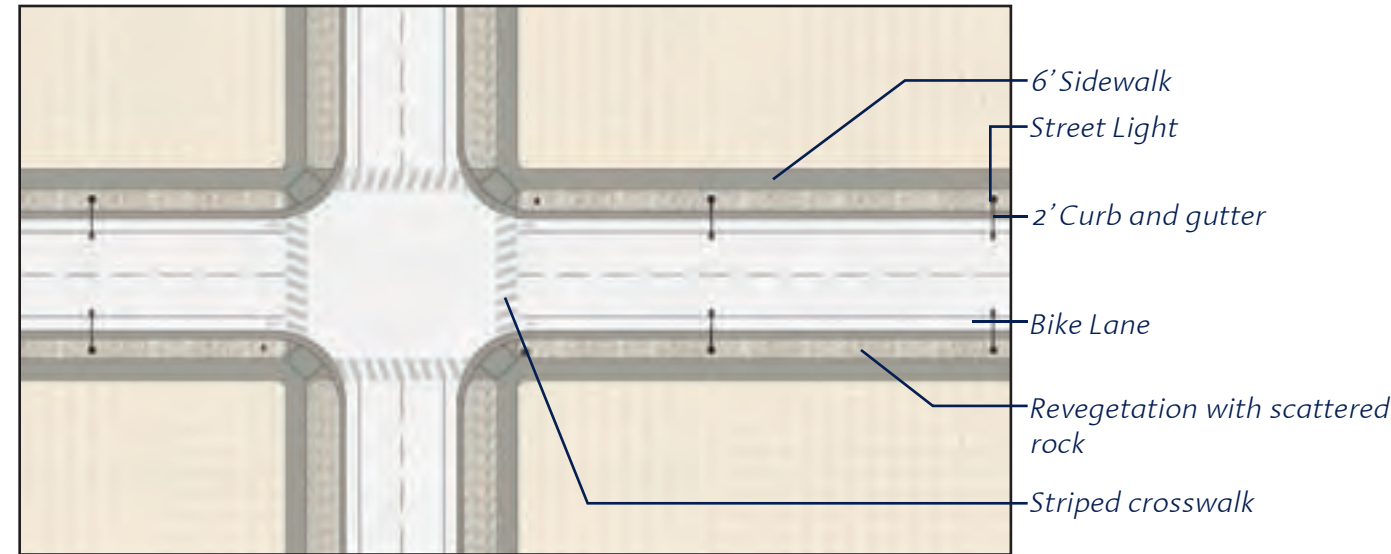


Total Cost: \$4,200,000 (infield landscape and bridge deck)

L&A Cost: \$2,415,000/acre

FIGURE 25 - TWO LANE SUBURBAN HIGHWAY

Softscape Types - **Ground Treatment/Native Revegetation**
Structures and Hardscape Type - **Standard**

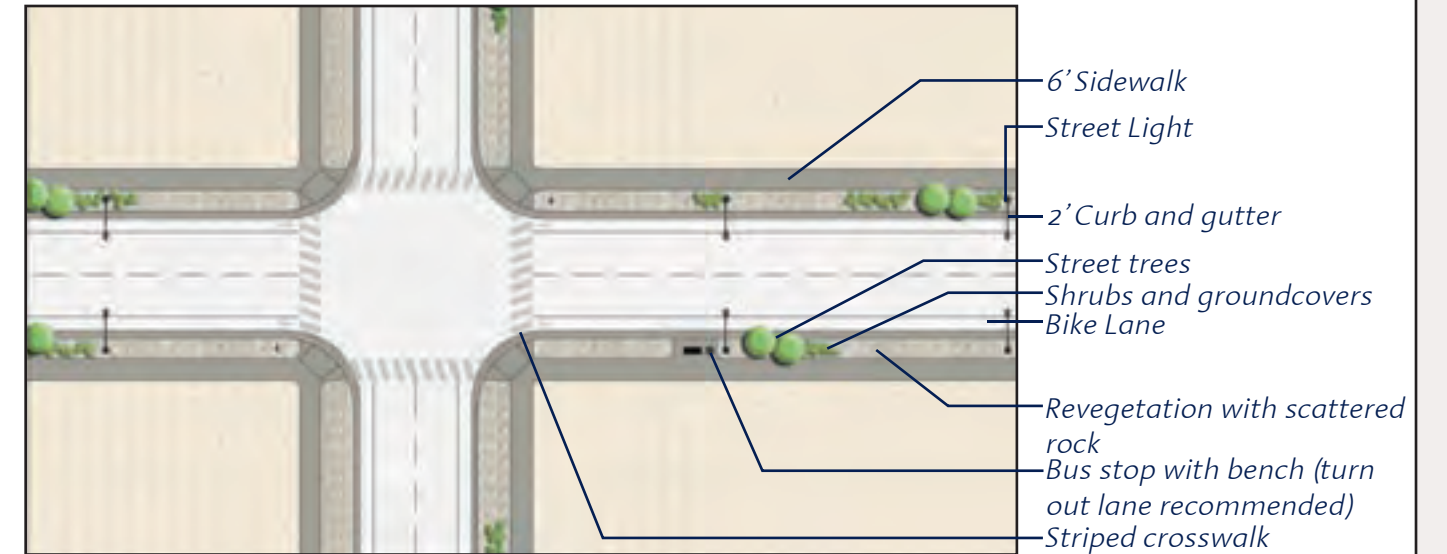


Total Cost: \$1,627,000 - \$1,908,000/mile of ROW

L&A Cost: \$0.00 per mile

FIGURE 26 - TWO LANE SUBURBAN HIGHWAY

Softscape Types - **Enhanced Native**
Structures and Hardscape Type - **Accentuated**

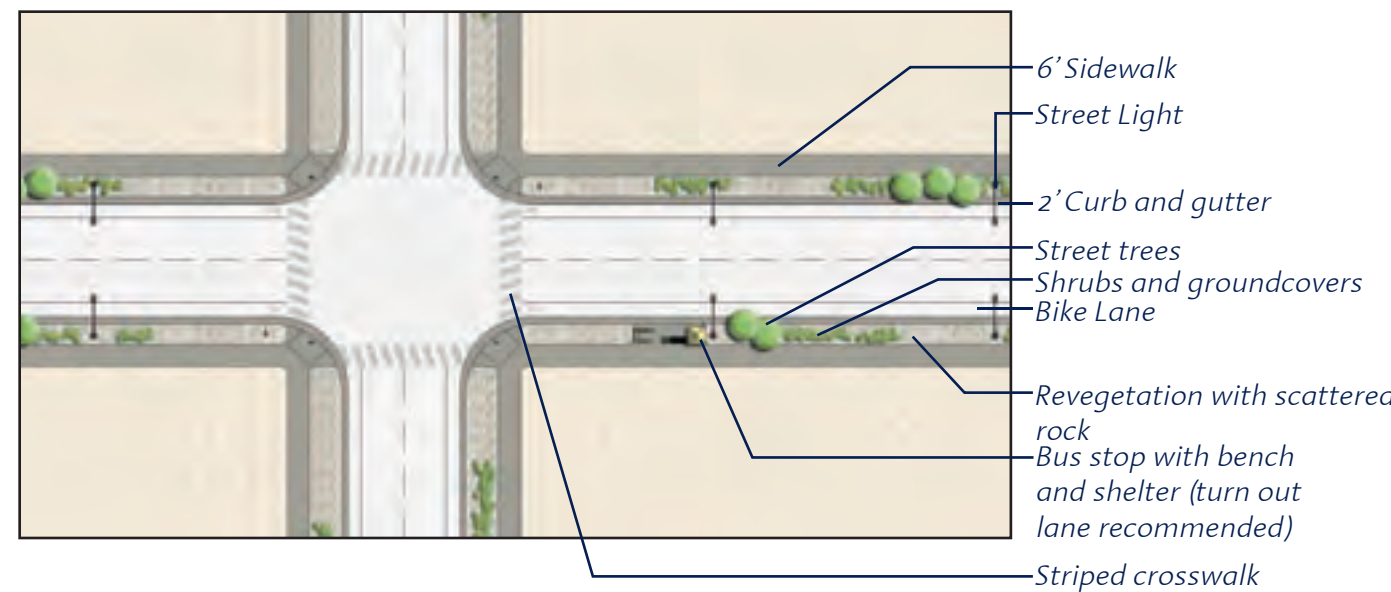


Total Cost: \$1,696,000 - \$2,025,000/mile of ROW

L&A Cost: \$69,000 - \$117,000/mile

FIGURE 27 - TWO LANE SUBURBAN HIGHWAY

Softscape Types - **Regionally Adapted**
Structures and Hardscape Type - **Focal**

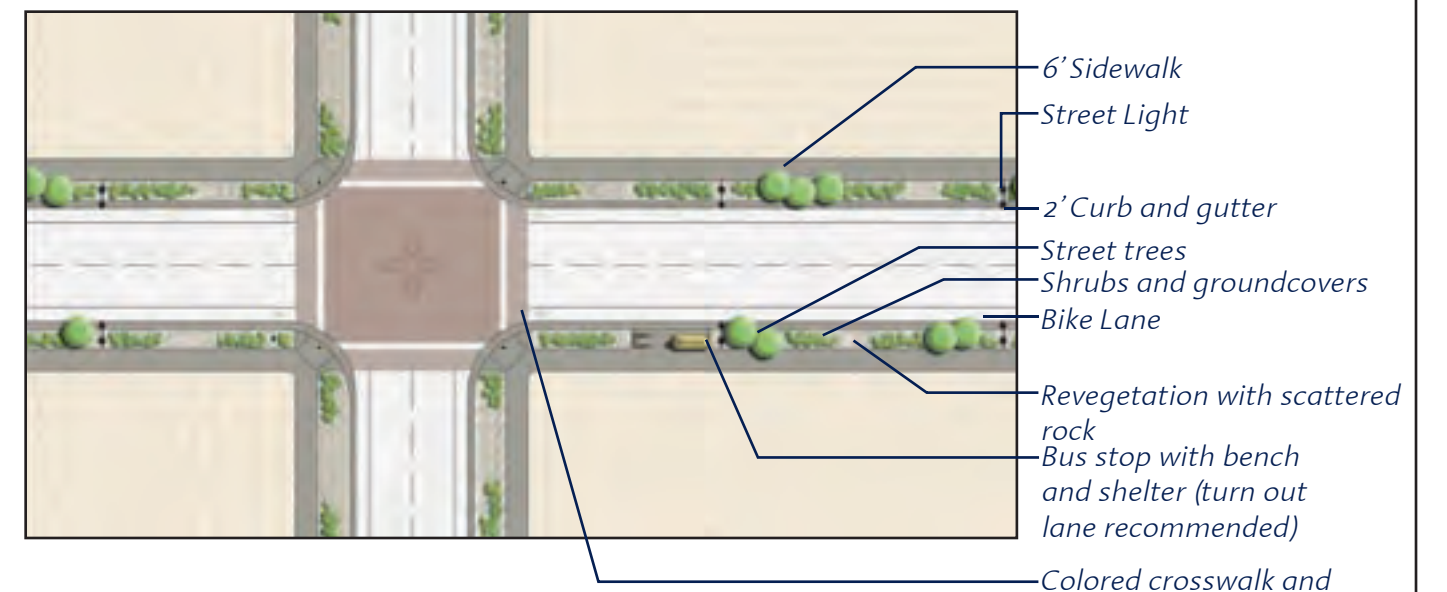


Total Cost: \$2,128,000 - \$2,509,000/mile of ROW

L&A Cost: \$501,000 - \$601,000 per mile

FIGURE 28 - TWO LANE SUBURBAN HIGHWAY

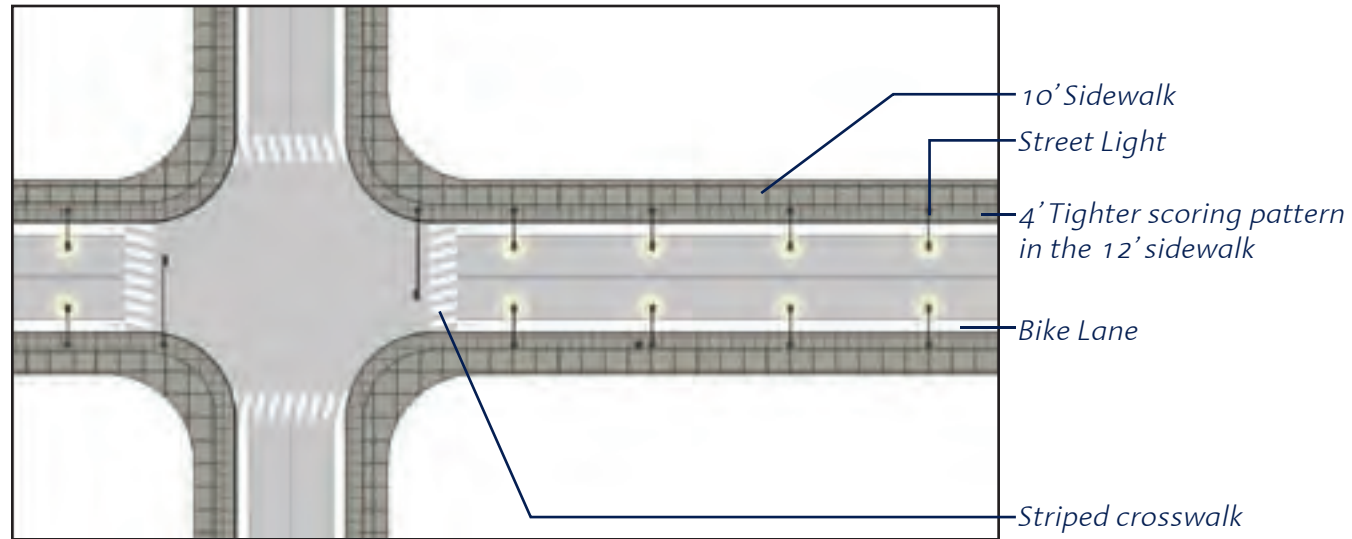
Softscape Types - **Regional Ornamental**
Structures and Hardscape Type - **Landmark**



Total Cost: \$2,846,000 - \$4,336,000/mile of ROW

L&A Cost: \$1,219,000 - \$2,428,000/mile

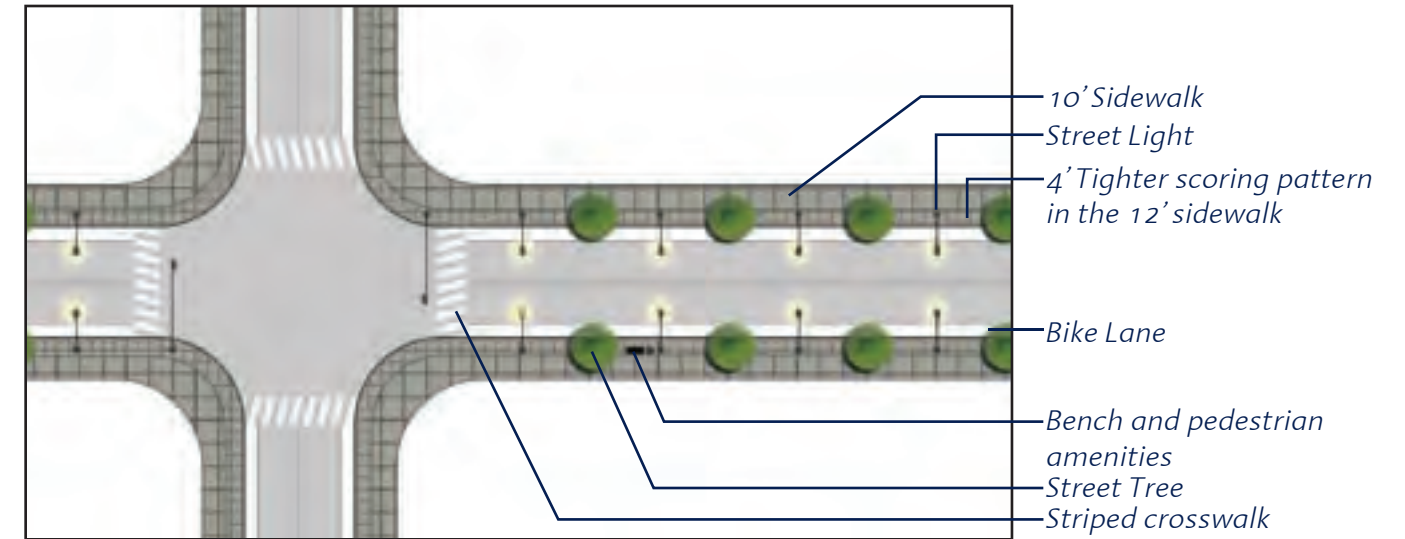
FIGURE 29 - TWO LANE DOWNTOWN HIGHWAY
 Softscape Types - **Ground Treatment/Native Revegetation**
 Structures and Hardscape Type - **Standard**



Total Cost: \$3,148,000 - \$3,644,000/mile of ROW

L&A Cost: \$0.00/mile

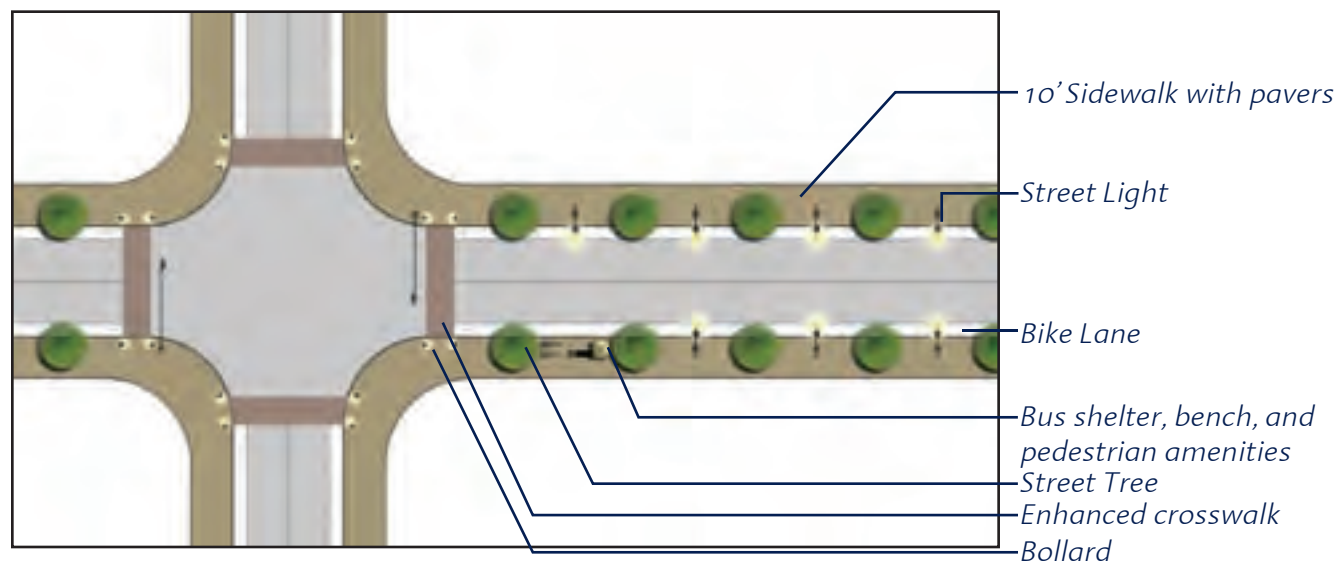
FIGURE 30 - TWO LANE DOWNTOWN HIGHWAY
 Softscape Types - **Enhanced Native**
 Structures and Hardscape Type - **Accentuated**



Total Cost: \$3,419,000 - \$3,973,000/mile of ROW

L&A Cost: \$271,000 - \$329,000/mile

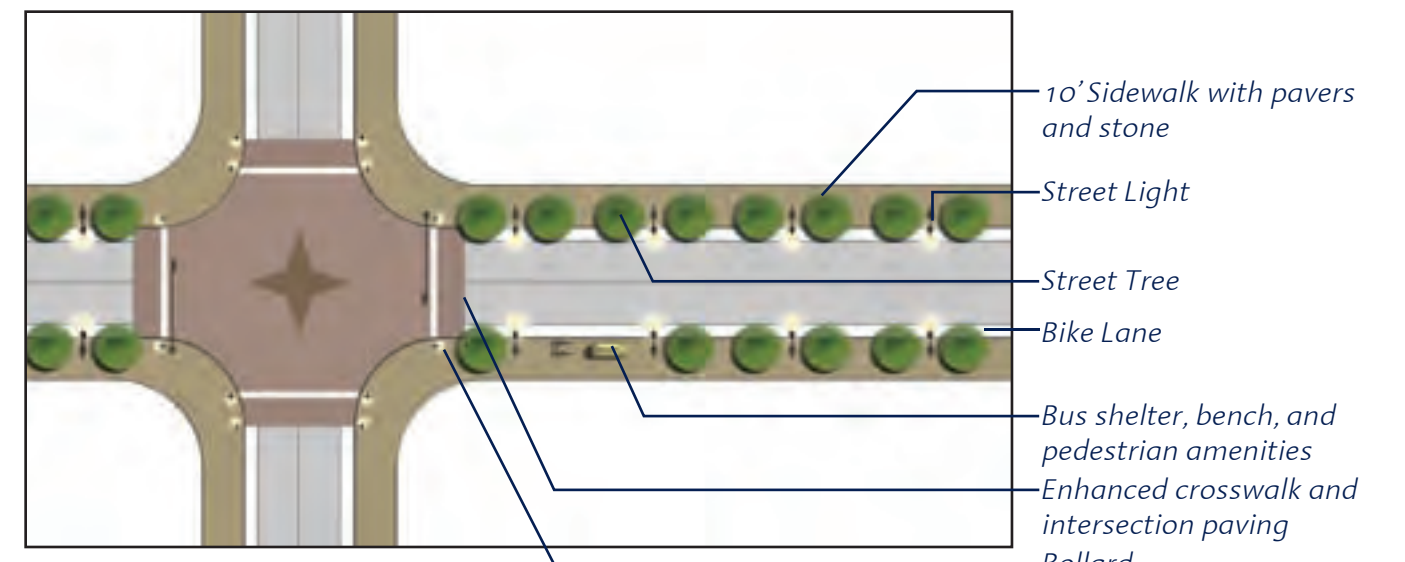
FIGURE 31 - TWO LANE DOWNTOWN HIGHWAY
 Softscape Types - **Regionally Adapted**
 Structures and Hardscape Type - **Focal**



Total Cost: \$4,218,000 - \$5,609,000/mile of ROW

L&A Cost: \$1,070,000 - \$1,965,000/mile

FIGURE 32 - TWO LANE DOWNTOWN HIGHWAY
 Softscape Types - **Regional Ornamental**
 Structures and Hardscape Type - **Landmark**

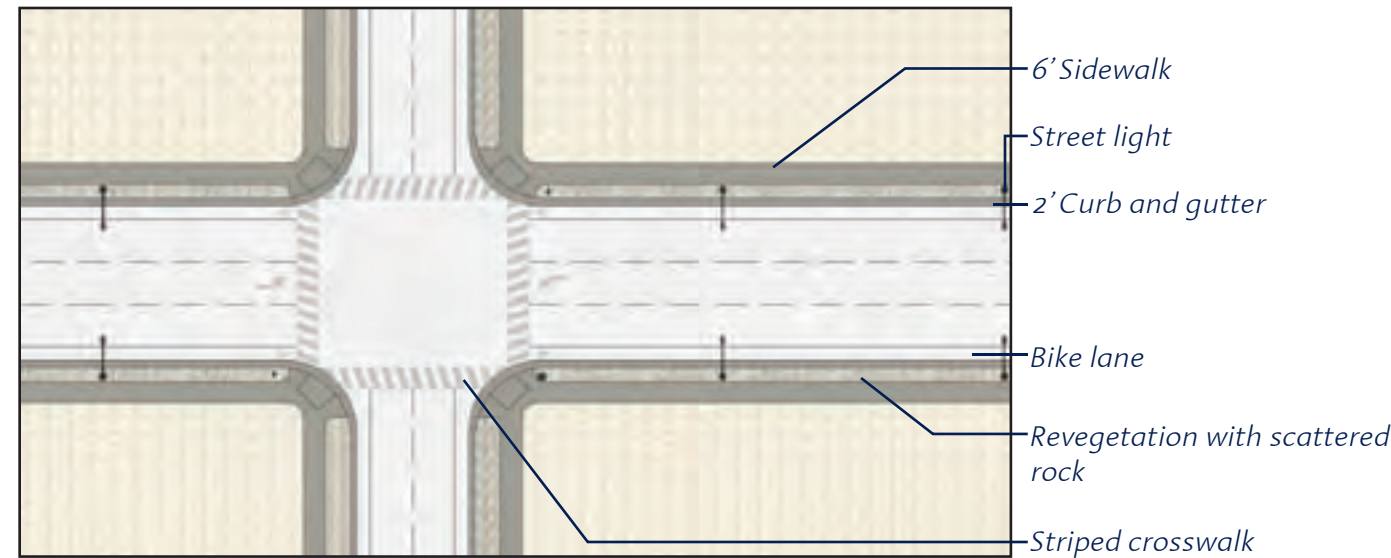


Total Cost: \$5,579,000 - \$8,089,000/mile of ROW

L&A Cost: \$2,431,000 - \$4,445,000/mile

FIGURE 33 - THREE LANE SUBURBAN HIGHWAY

Softscape Types - **Ground Treatment/Native Revegetation**
Structures and Hardscape Type - **Standard**

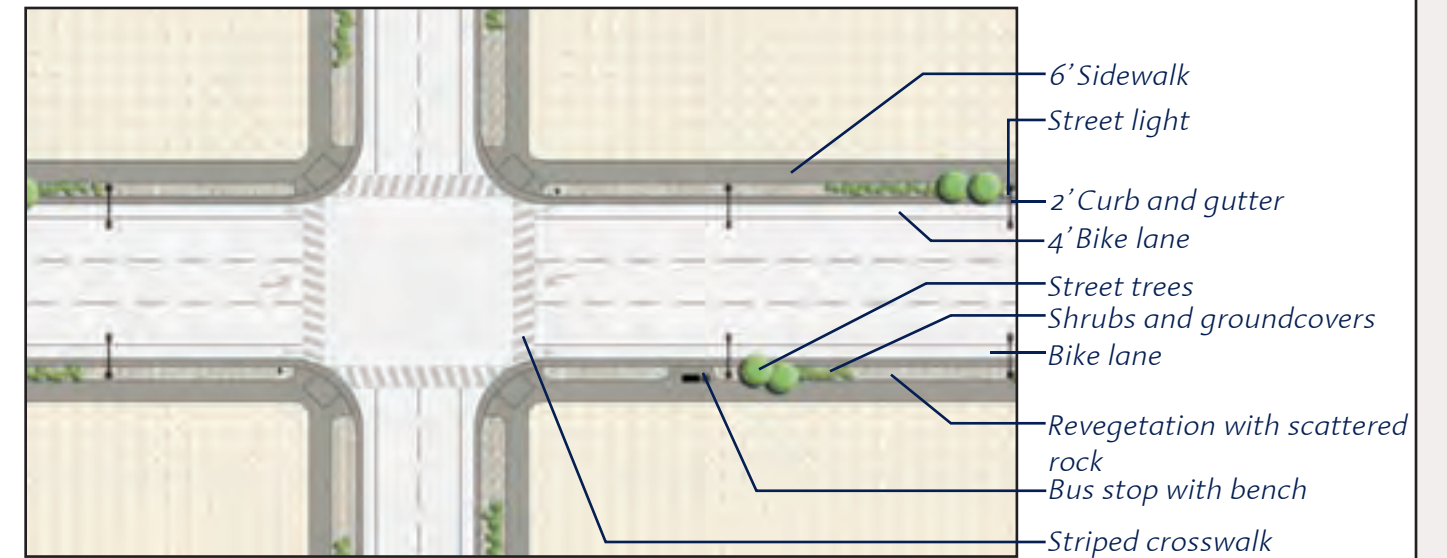


Total Cost: \$1,647,000 - \$1,934,000/mile of ROW

L&A Cost: \$0.00/mile

FIGURE 34 - THREE LANE SUBURBAN HIGHWAY

Softscape Types - **Enhanced Native**
Structures and Hardscape Type - **Accentuated**

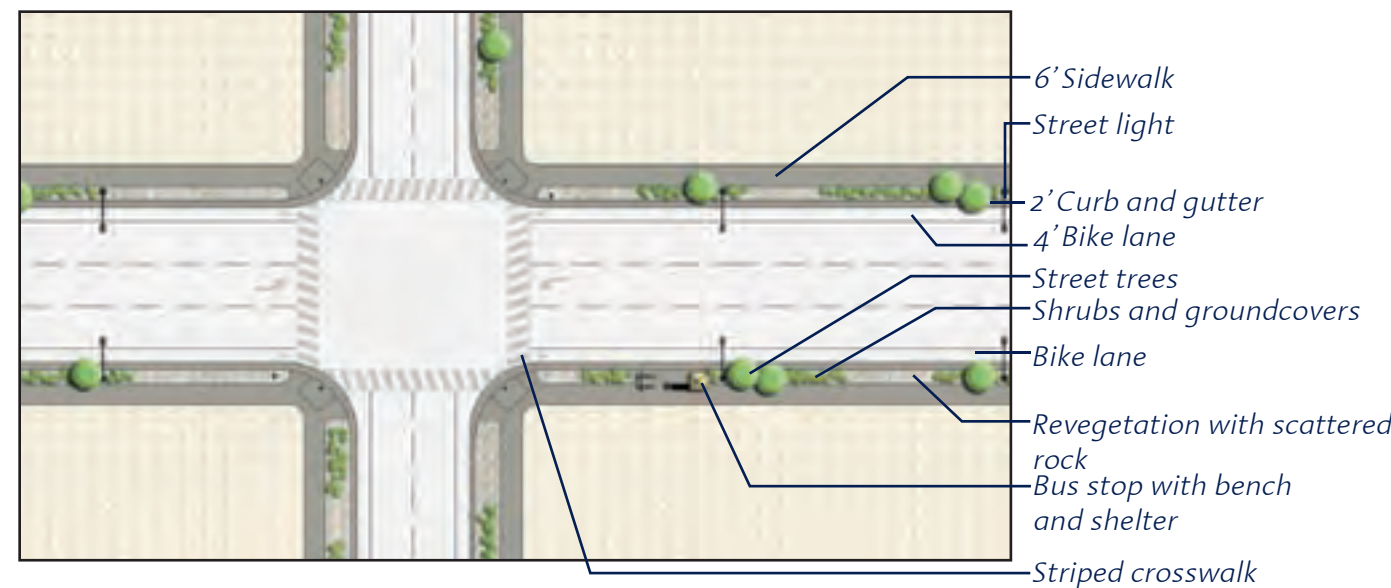


Total Cost: \$1,706,000 - \$2,033,000/mile of ROW

L&A Cost: \$59,000 - \$99,000/mile

FIGURE 35 - THREE LANE SUBURBAN HIGHWAY

Softscape Types - **Regionally Adapted**
Structures and Hardscape Type - **Focal**

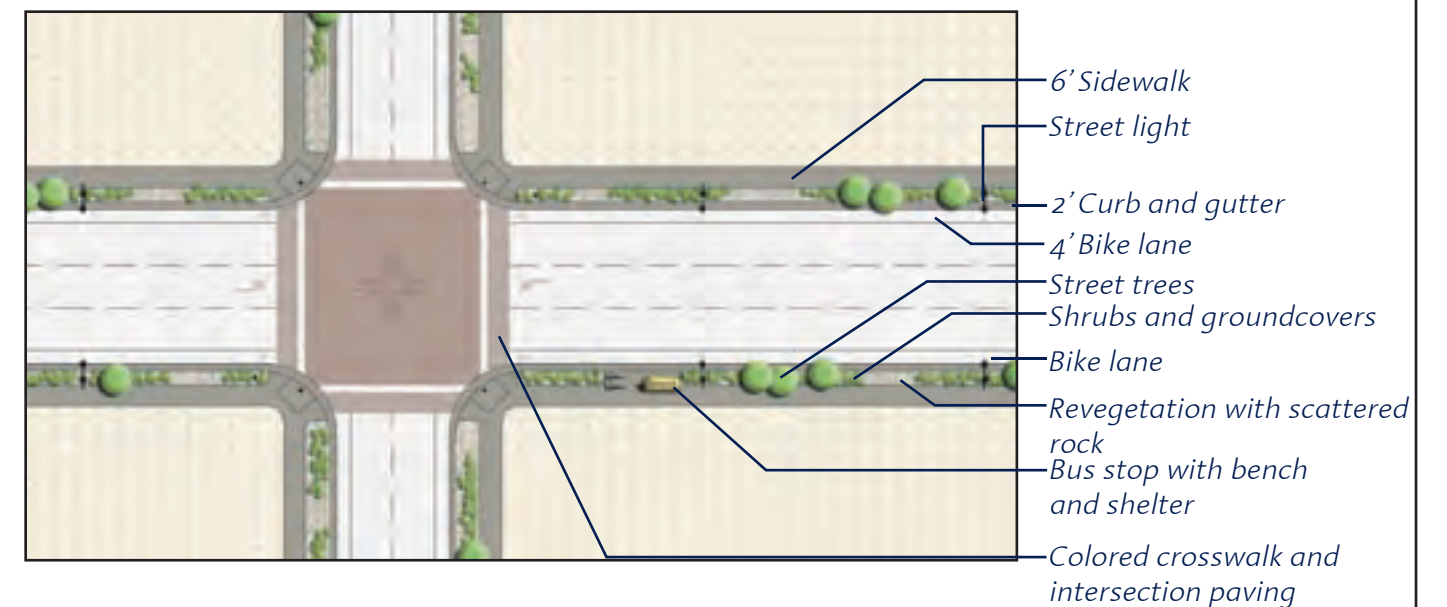


Total Cost: \$2,150,000 - \$2,535,000/mile of ROW

L&A Cost: \$503,000 - \$601,000/mile

FIGURE 36 - THREE LANE SUBURBAN HIGHWAY

Softscape Types - **Regional Ornamental**
Structures and Hardscape Type - **Landmark**

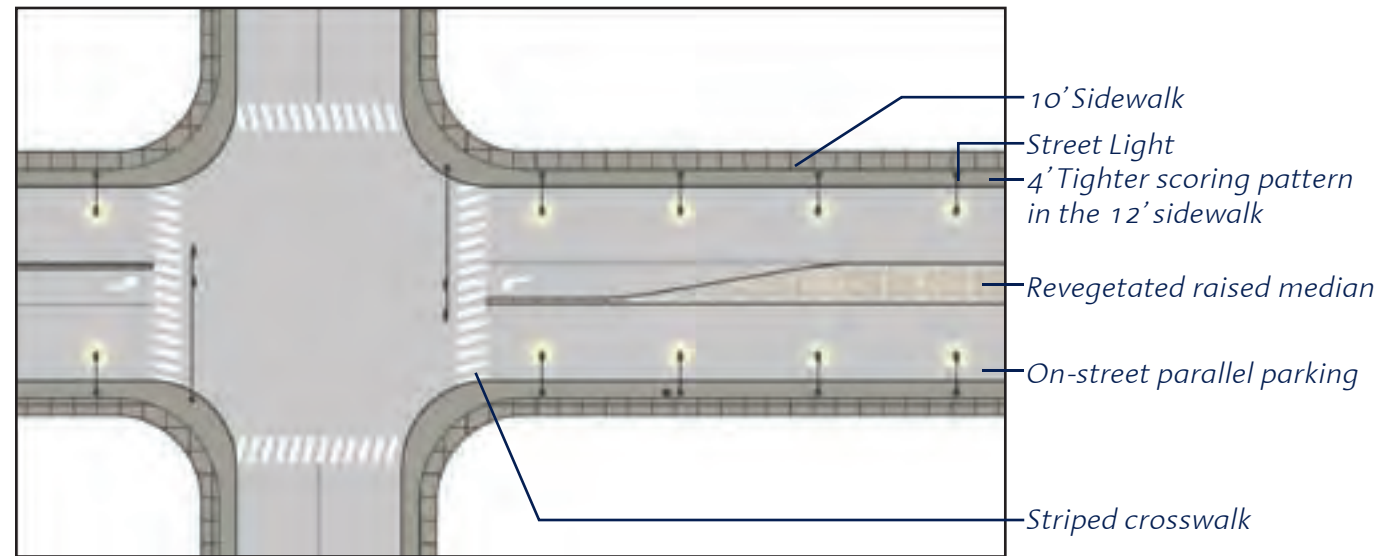


Total Cost: \$2,982,000 - \$4,550,000/mile of ROW

L&A Cost: \$1,335,000 - \$2,616,000/mile

FIGURE 37 - THREE LANE DOWNTOWN HIGHWAY

Softscape Types - **Ground Treatment/Native Revegetation**
Structures and Hardscape Type - **Standard**

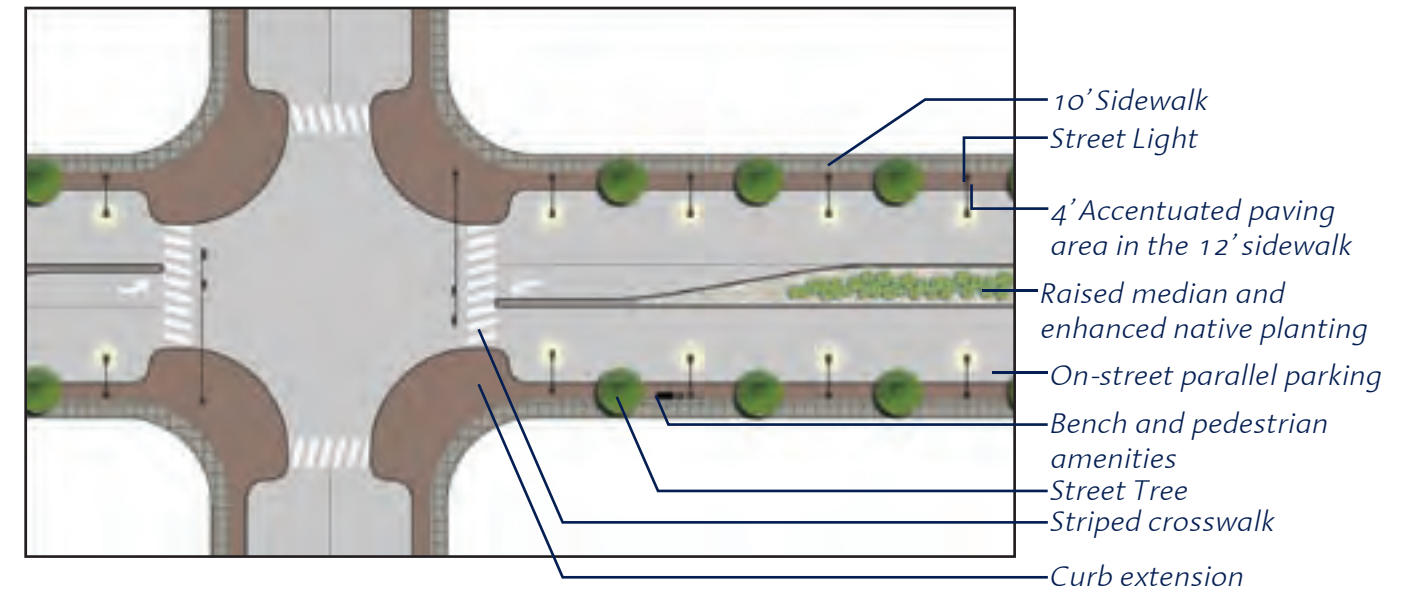


Total Cost: \$3,101,000 - \$3,594,000/mile of ROW

L&A Cost: \$0.00/mile

FIGURE 38 - THREE LANE DOWNTOWN HIGHWAY

Softscape Types - **Enhanced Native**
Structures and Hardscape Type - **Accentuated**

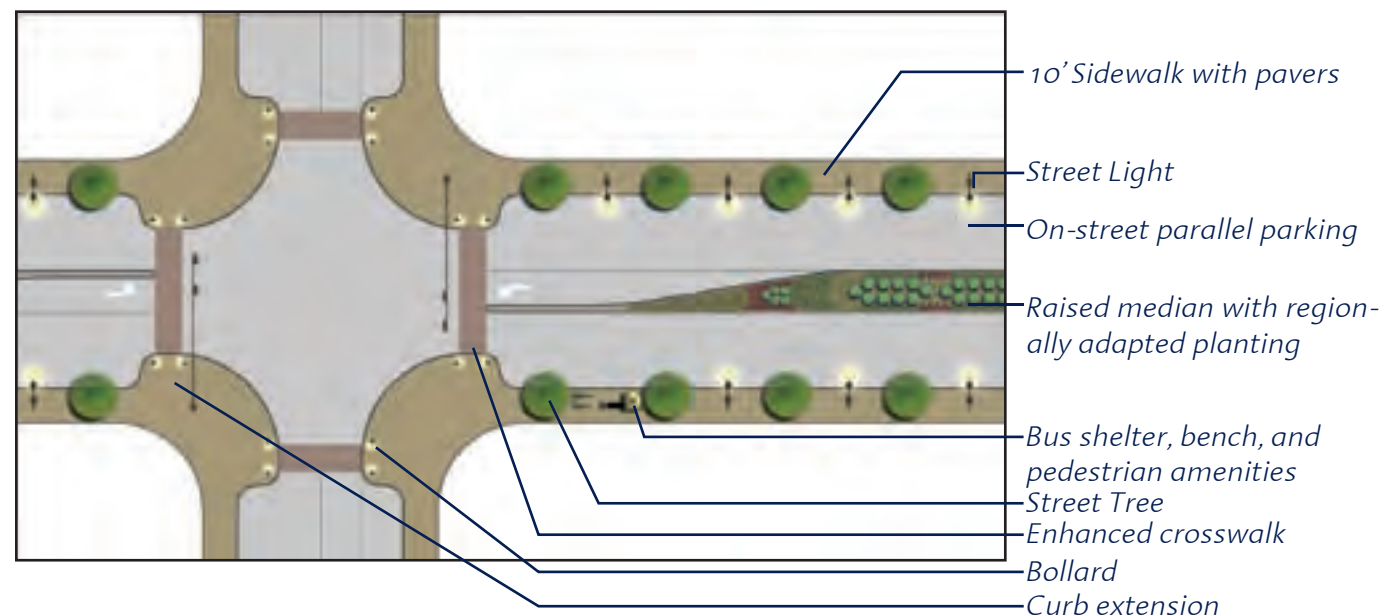


Total Cost: \$4,385,000 - \$4,990,000/mile of ROW

L&A Cost: \$1,284,000 - \$1,396,000/mile

FIGURE 39 - THREE LANE DOWNTOWN HIGHWAY

Softscape Types - **Regionally Adapted**
Structures and Hardscape Type - **Focal**

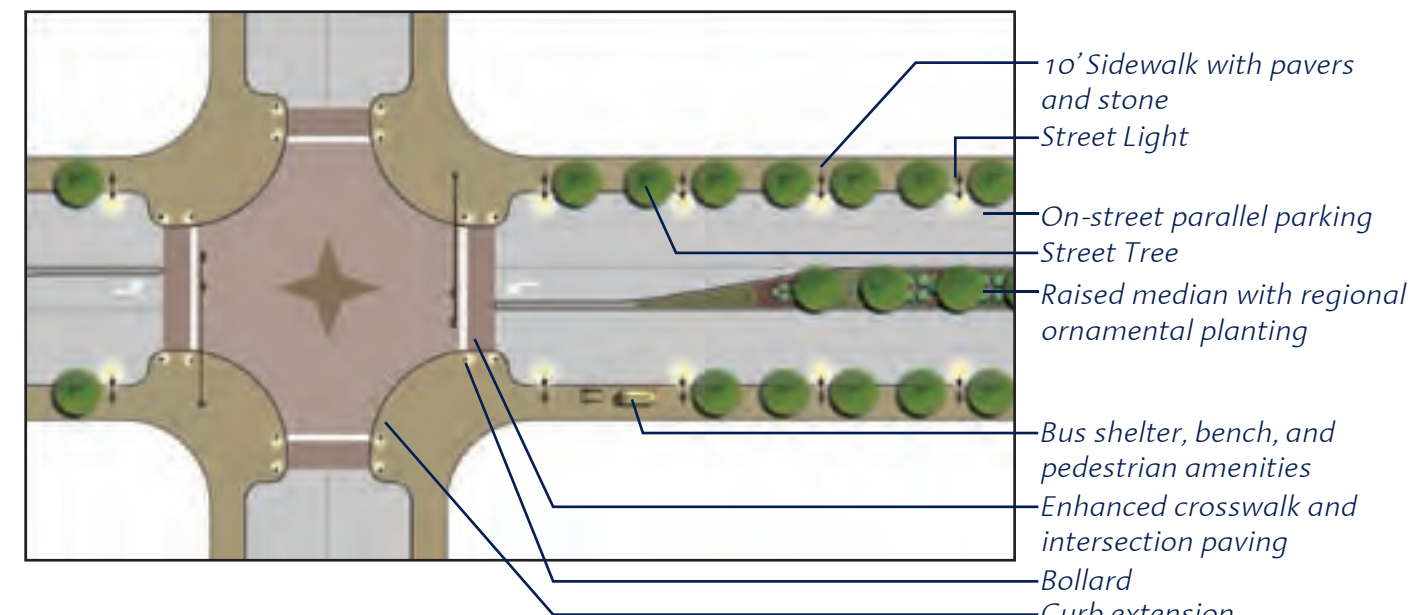


Total Cost: \$4,779,000 - \$6,624,000/mile of ROW

L&A Cost: \$1,678,000 - \$3,030,000/mile

FIGURE 40 - THREE LANE DOWNTOWN HIGHWAY

Softscape Types - **Regional Ornamental**
Structures and Hardscape Type - **Landmark**

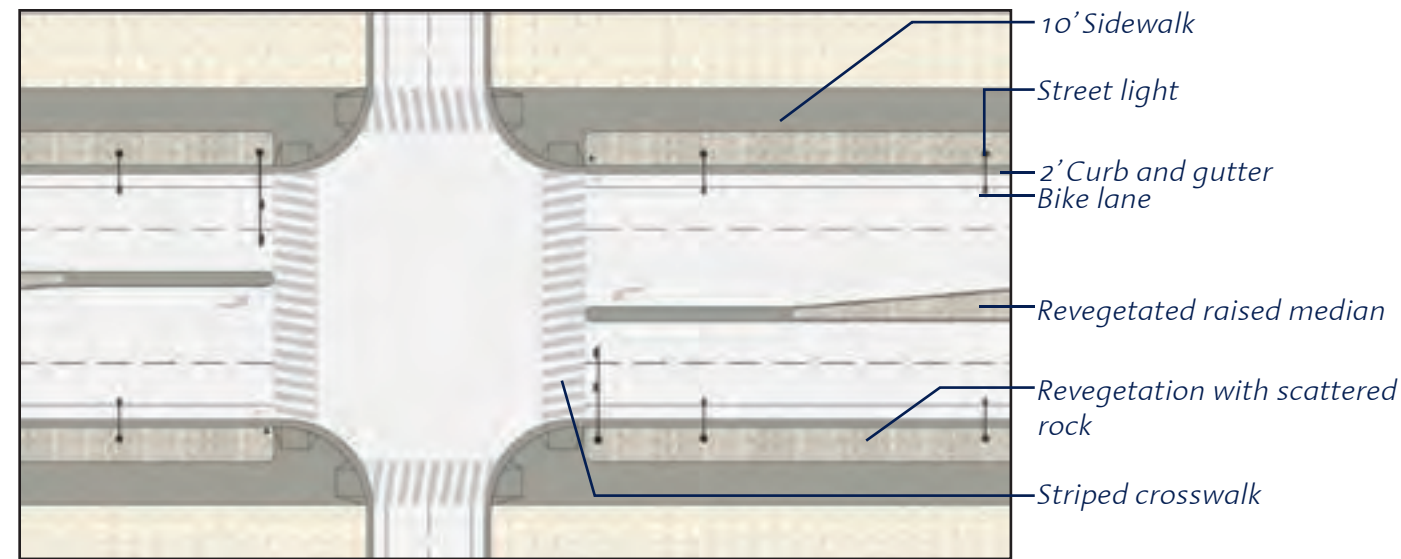


Total Cost: \$5,926,000 - \$7,411,000/mile of ROW

L&A Cost: \$2,825,000 - \$3,817,000/mile

FIGURE 41 - FOUR LANE SUBURBAN HIGHWAY

Softscape Types - **Ground Treatment/Native Revegetation**
Structures and Hardscape Type - **Standard**

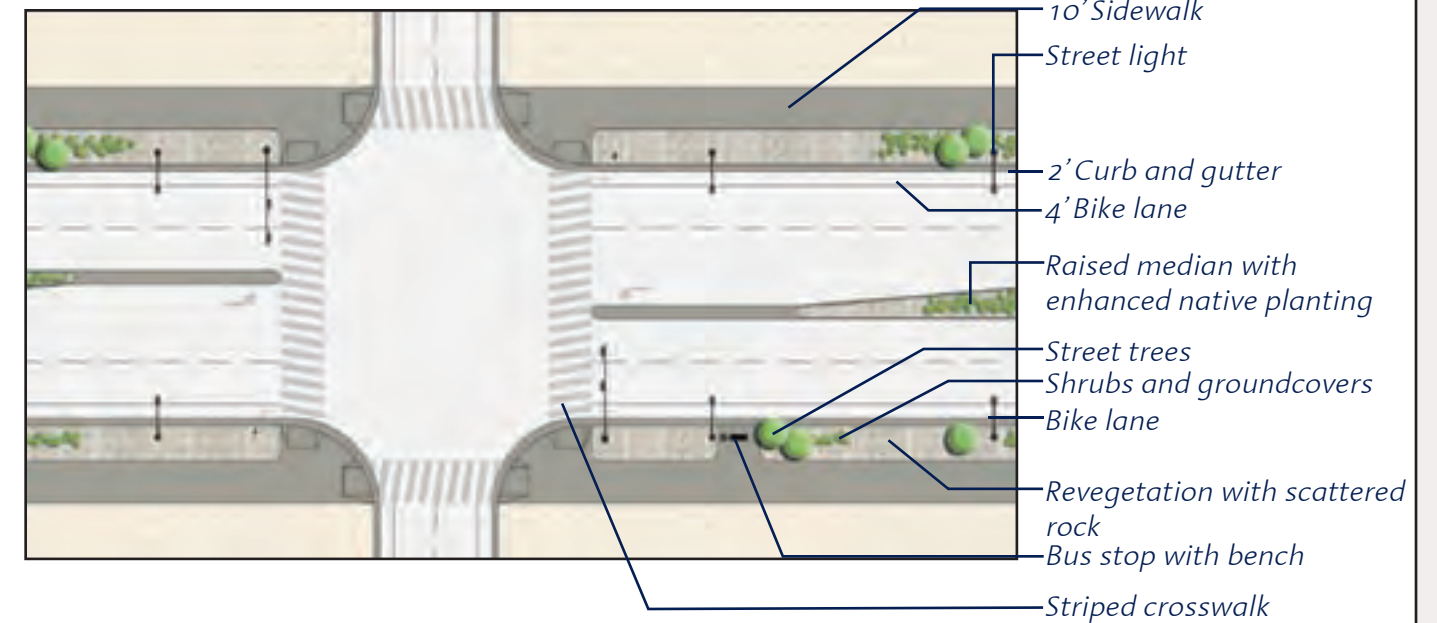


Total Cost: \$2,479,000 - \$2,916,000/mile of ROW

L&A Cost: \$0.00/mile

FIGURE 42 - FOUR LANE SUBURBAN HIGHWAY

Softscape Types - **Enhanced Native**
Structures and Hardscape Type - **Accentuated**

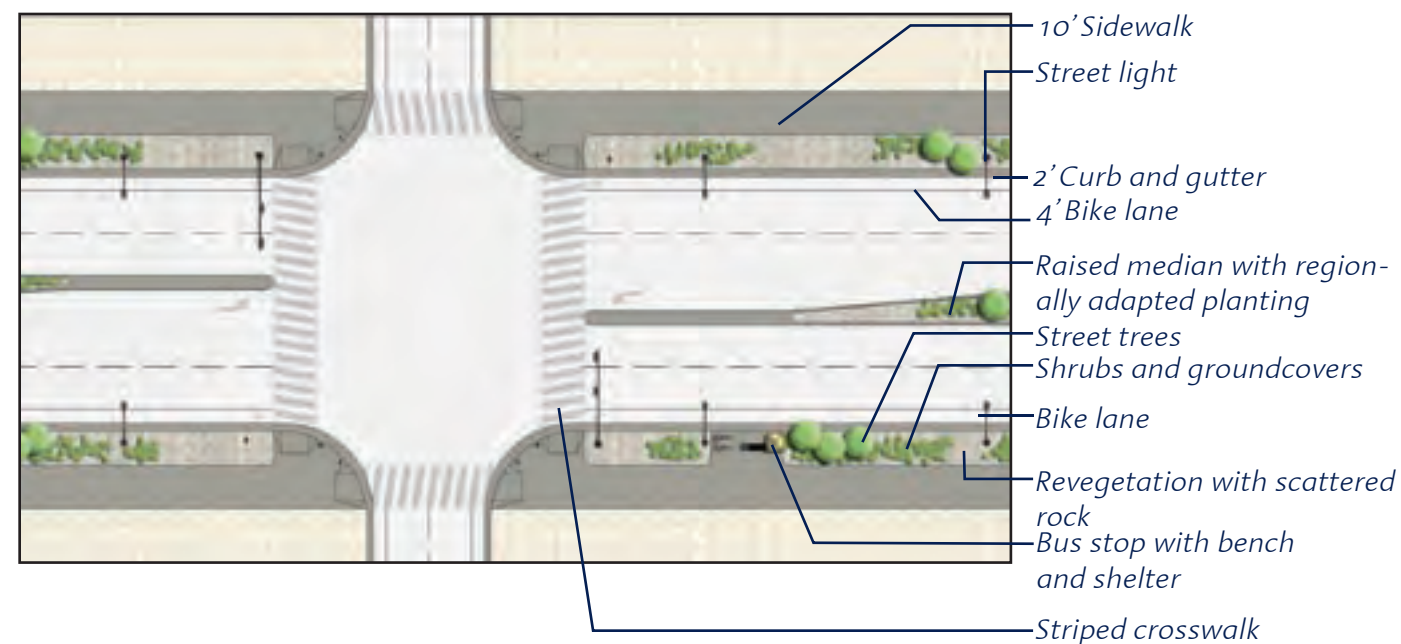


Total Cost: \$2,621,000 - \$3,113,000/mile of ROW

L&A Cost: \$142,000 - \$197,000/mile

FIGURE 43 - FOUR LANE SUBURBAN HIGHWAY

Softscape Types - **Regionally Adapted**
Structures and Hardscape Type - **Focal**

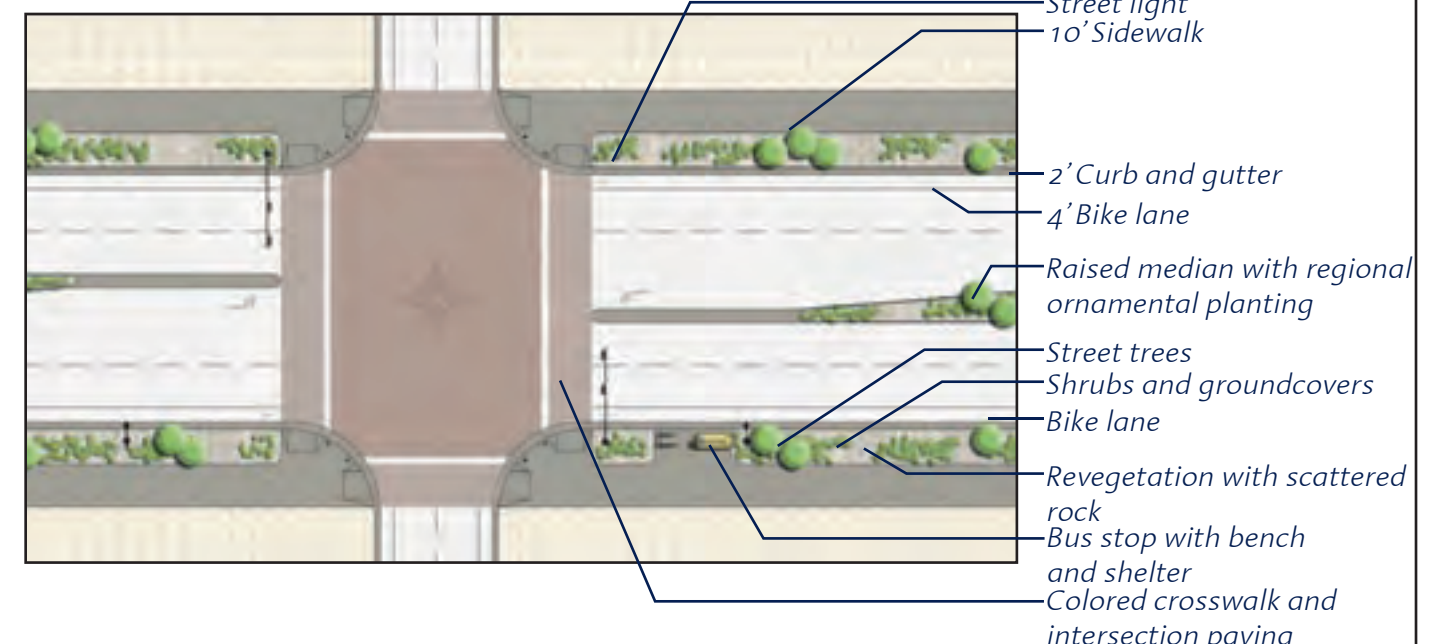


Total Cost: \$3,465,000 - \$4,038,000/mile of ROW

L&A Cost: \$986,000 - \$1,122,000/mile

FIGURE 44 - FOUR LANE SUBURBAN HIGHWAY

Softscape Types - **Regional Ornamental**
Structures and Hardscape Type - **Landmark**

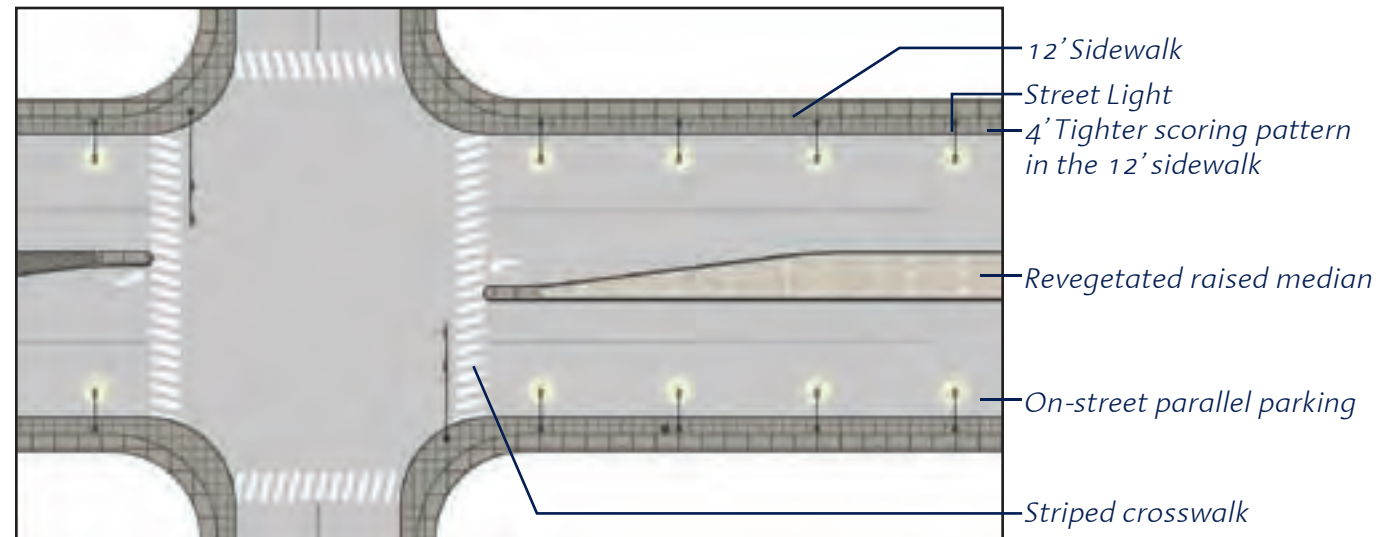


Total Cost: \$4,619,000 - \$7,165,000/mile of ROW

L&A Cost: \$2,140,000 - \$4,249,000/mile

FIGURE 45 - FOUR LANE DOWNTOWN HIGHWAY

Softscape Types - **Ground Treatment/Native Revegetation**
Structures and Hardscape Type - **Standard**

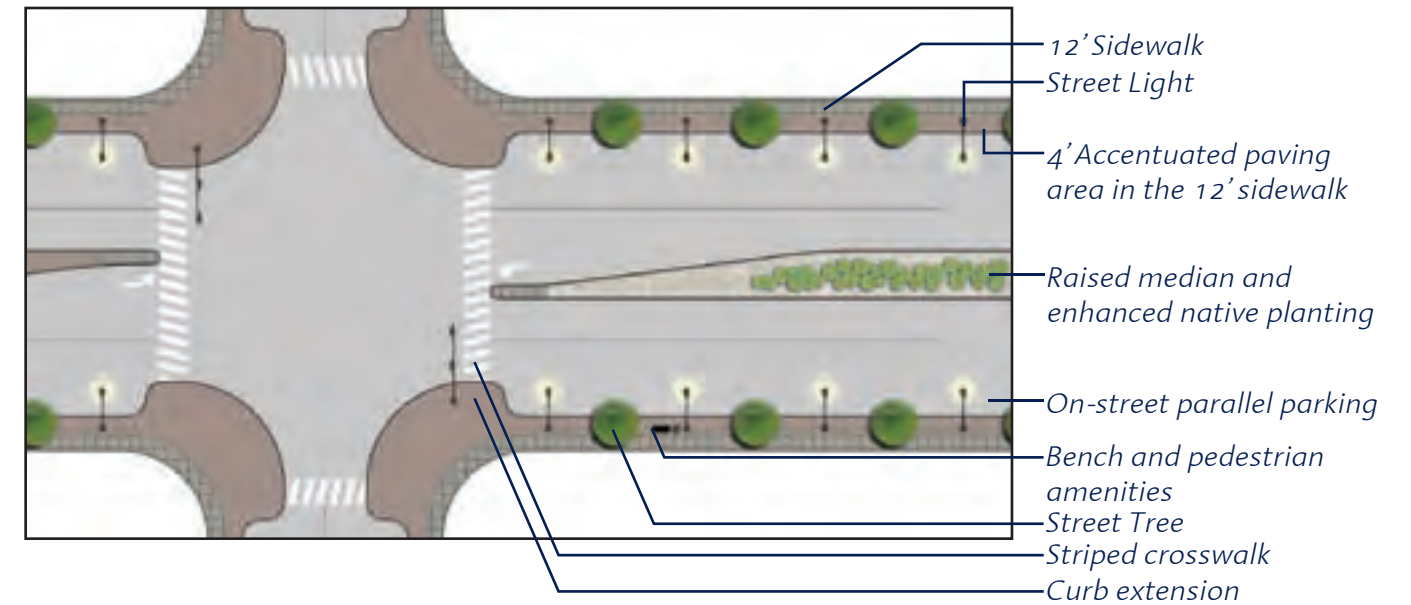


Total Cost: \$3,172,000 - \$3,681,000/mile of ROW

L&A Cost: \$0.00/mile

FIGURE 46 - FOUR LANE DOWNTOWN HIGHWAY

Softscape Types - **Enhanced Native**
Structures and Hardscape Type - **Accentuated**

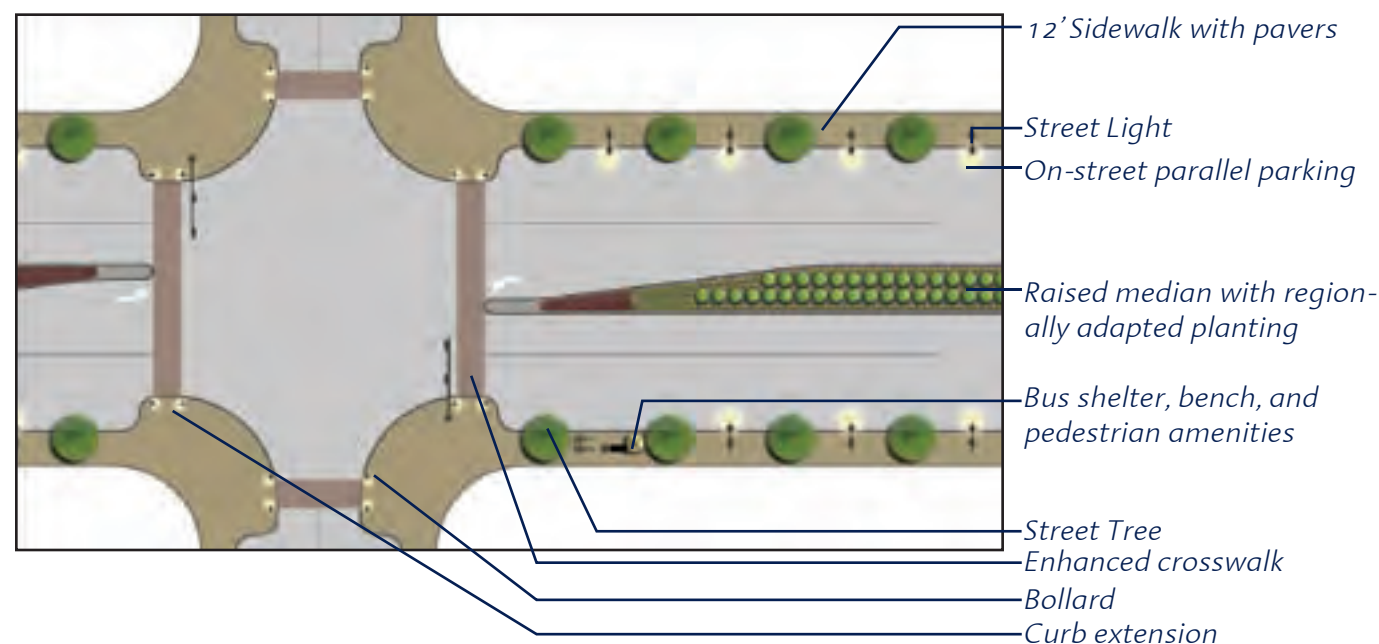


Total Cost: \$4,495,000 - \$5,124,000/mile of ROW

L&A Cost: \$1,323,000 - \$1,443,000/mile

FIGURE 47 - FOUR LANE DOWNTOWN HIGHWAY

Softscape Types - **Regionally Adapted**
Structures and Hardscape Type - **Focal**

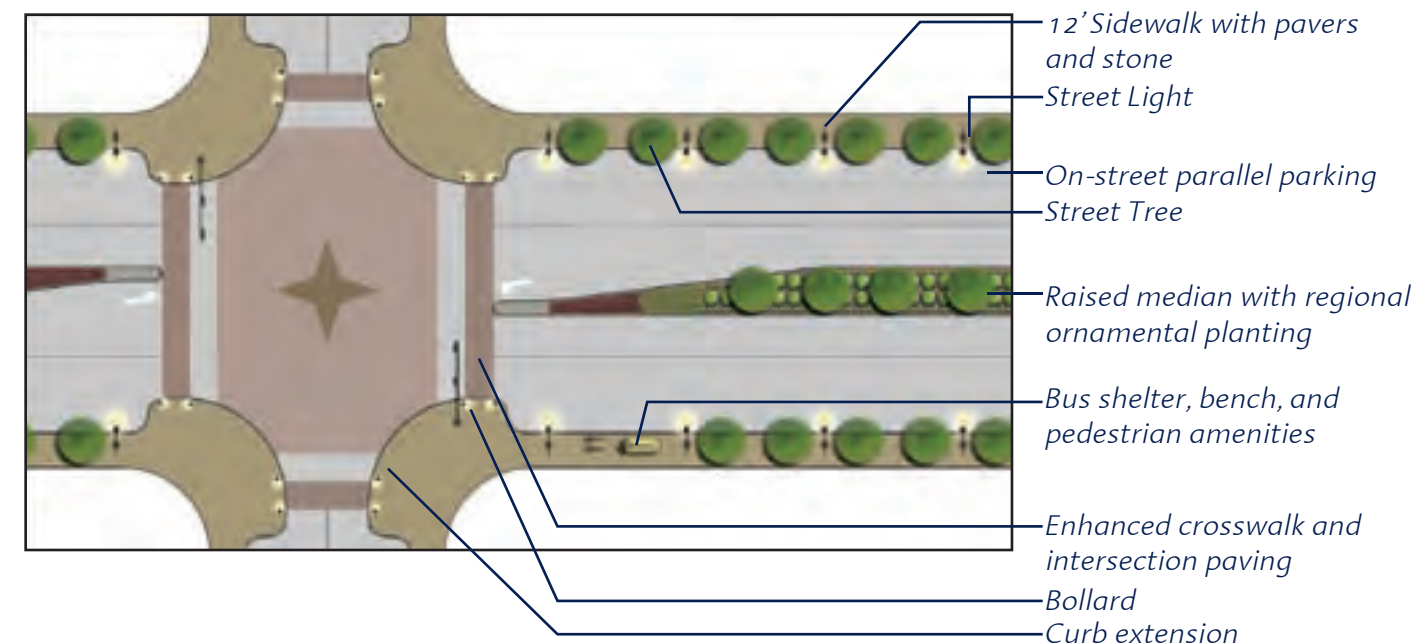


Total Cost: \$5,022,000 - \$6,873,000/mile of ROW

L&A Cost: \$1,850,000 - \$3,192,000/mile

FIGURE 48 - FOUR LANE DOWNTOWN HIGHWAY

Softscape Types - **Regional Ornamental**
Structures and Hardscape Type - **Landmark**

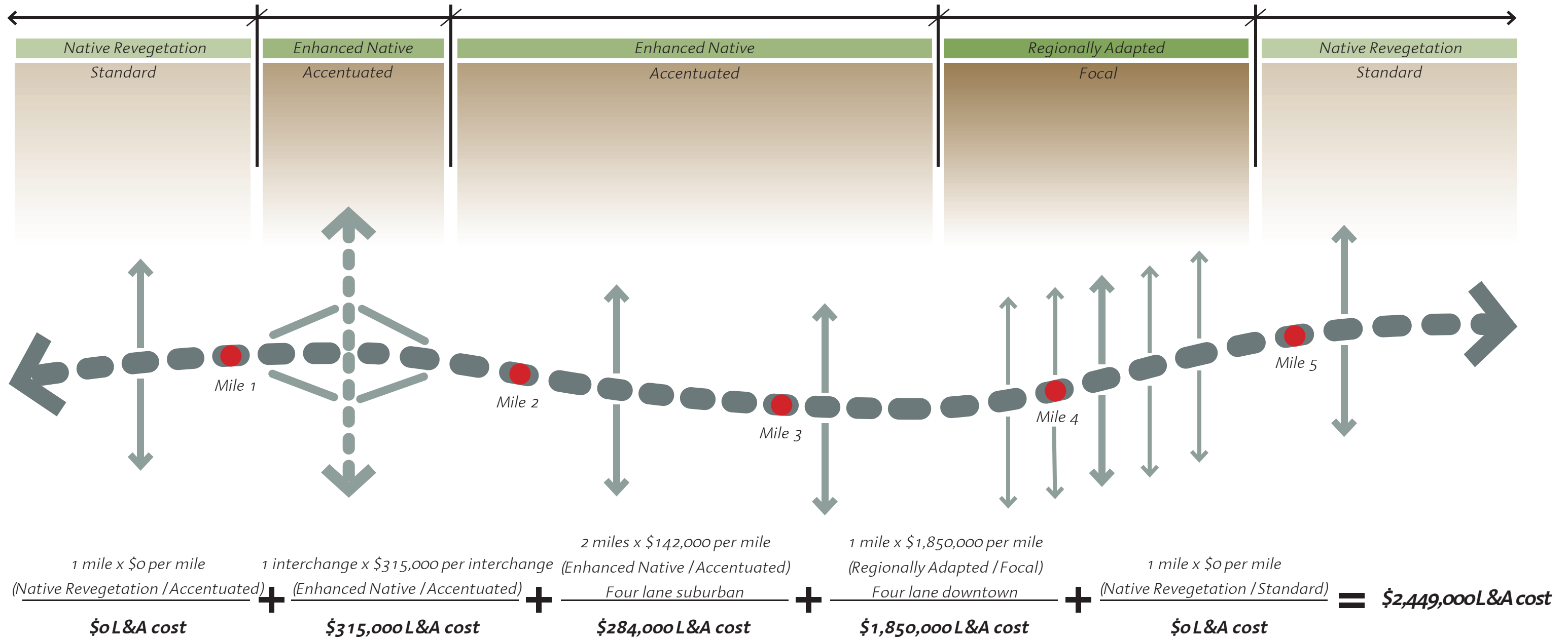


Total Cost: \$6,319,000 - \$9,437,000/mile of ROW

L&A Cost: \$3,147,000 - \$5,756,000/mile

The diagram below shows how the cost estimate information can be used to determine a planning level estimate of the landscape and aesthetics costs for this hypothetical seven mile section of highway corridor. The costs shown are for landscape and aesthetic enhancements that are above the defined NDOT standard.

Figure 49 - Planning Level Cost Estimate



MAINTENANCE COSTS

The Corridor Plan identifies the level of landscape and aesthetic treatment, and the maintenance investment. Therefore, it is important that maintenance cost data be incorporated in the Corridor Plan. Furthermore, local public agencies and others will be interested in maintenance expenses to help navigate the long-term maintenance implications of retrofit projects.

In collaboration with the Corridor Plan, long-term maintenance costs have been researched by UNLV and compiled as the *Maintenance Cost Study for Corridor Planning*. Figure 50 diagrams how total life-cycle maintenance costs were developed for the different landscape and aesthetic treatments. Figure 51 shows the maintenance costs that were determined for the various combinations of softscape and hardscape types. Current estimates exhibit relatively wide variations in cost due to the limited amount of data available, however, further research and tracking of projects will result in more clearly defined maintenance cost estimates.

Figure 50 - Total Life Cycle Maintenance Costs

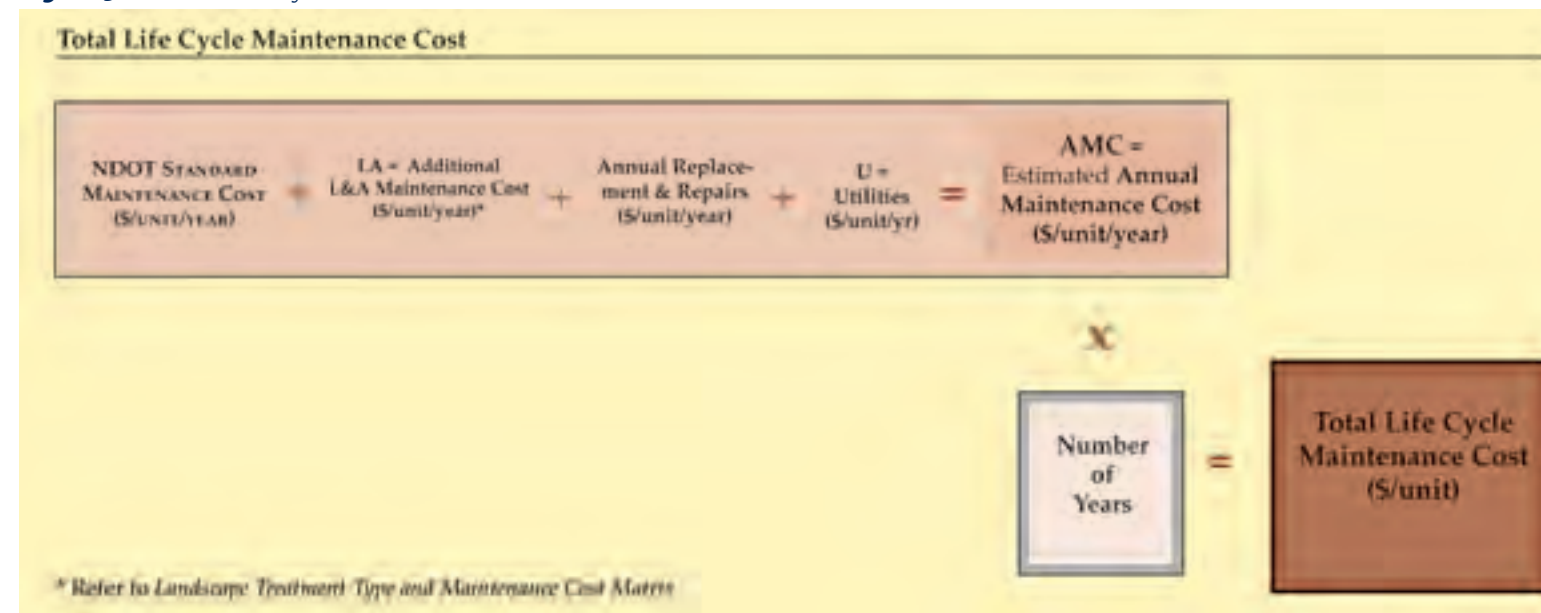


Figure 51 - Maintenance Costs for Landscape Treatment Types

Treatment Type	Hardscape				
	Standard	Accentuated	Focal	Landmark	
Softscape	Ground Treatment	High: \$4,655.11 Median: \$655.70 Low: \$520.00	High: \$2,383.19 Low: \$1,524.00	\$588.00 (based on one project, Cedar City)	Not Available
	Native Plant Revegetation	\$720.00*	\$1,676.40*	\$650.00*	Not Available*
	Enhanced Native	\$1,201.12 (based on one project only)	\$1,089.87 (based on one project only)	Entire Rest Area: High: \$549,200.00 Low: \$29,374.00	Welcome Center Memorial Pl. Cost not available
	Regionally Adapted	High: \$15,840.00 Median: \$3,116.88 Low: \$673.02	High: \$15,242.45 Median: \$5,445.00 Low: \$1,448.67	\$3,054.55 (based on one project only)	Not Available
	Regional Ornamental	High: \$11,775.11 Median: \$7,200.00 Low: \$433.33	High: \$8,500.00 Median: \$3,425.74 Low: \$2,279.59	\$3,005.00 (based on one project only)	\$197,846.36 (based on one project only)
	Turf	High: \$12,325.46 Median: \$6,057.00 Low: \$1,529.79	\$13,178.57 (based on one project only)	High: \$10,363.13 Low: \$3,135.00 (based on two projects, only)	High: \$9,214.70 Median: \$8,391.49 Low: \$3,325.82

High: Single project with highest cost
Median: Distribution of projects between high and low cost.
Low: Single project with lowest cost.

All entries are per acre annual costs unless otherwise noted.
* Natural Revegetation costs are assumed to be 10% more than Ground Treatment categories costs.

All entries are planning level estimates based on limited available data.

NOTE: Utilities and Repair & Replacement are not included in numbers.

* Prepared by UNLV Landscape Architecture and Planning Research Office





(1) Partnerships with agencies such as the BLM and USFS, as well as local communities and governing agencies enhance the ability to manage the corridor's scenic quality and maintain the open character along a highway.

SECTION TWO: Implementation

POTENTIAL FUNDING OPPORTUNITIES

Many opportunities exist to provide funding for the implementation of the corridor projects. Features described as standard will be undertaken by NDOT as new construction, capacity improvements, and replacement of facilities occurs. Upgrades to the standard landscape and aesthetic features will be considered as new highway construction occurs. Funding for new landscape and aesthetic projects associated with the state's highway program will be provided by State and Federal sources. Up to 3% of the total project construction cost may be allocated for landscape and aesthetic improvements associated with all new construction and capacity improvements.

When a landscape and aesthetics project can significantly influence an adjacent community or area, the community may choose to be involved in the process, and participate. The matching funds program provides matching funds up to 50% of the cost for specific community projects. In-kind services, State, and Federal monies may be used for the community match.

Additionally, communities may request enhanced levels of landscape and aesthetic treatments. Capital cost and maintenance cost-sharing agreements with NDOT are required. Communities may also require that developers with properties located directly adjacent to the NDOT right-of-way follow the Corridor Plan recommendations to improve their areas.

Banking landscape and aesthetic project funds is encouraged. In so doing, NDOT can shift landscape and aesthetics money to priority areas needing landscape and aesthetic treatment. The capacity to re-allocate funds allows NDOT to broadly manage landscape and aesthetics on a corridor-wide basis.

Facilities such as rest area and view pull-offs will require NDOT funding. However, funding partnerships with other agencies and organizations are encouraged. Other partnership opportunities include the development of the Statewide Place Name Sign Program and Audio Interpretation Program. With these two programs promoting statewide tourism, a partnership between NDOT and Nevada Commission on Tourism (NCOT) could succeed. Private sector partners, including the Nevada Mining Association and the Nevada Ranchers Association, could also be enlisted.

A Main Street Program in Nevada could assist numerous communities in downtown beautification and economic development efforts. This program could be anchored at the state level, with an organization such as the Nevada Commission on Economic Development. Funding could be provided by community chambers of commerce or other direct sources.

Project and programs described in the Corridor Plan are outlined in figure 52 along with opportunities for potential partnerships, suggested lead agency, and potential funding sources. Counties, cities, agencies, and other organizations should be familiar with the Corridor Plan and coordinate community plans, master plans, and other governing documents in order to provide an integrated approach towards achieving the vision and goals set forth. Active participation and review of the Corridor Plan, coordinated with a review of other community documents, will increase the potential for action and success.

Figure 52 - Potential Funding Opportunities

Projects and Programs	Lead Agency	Coordinating Agency	Possible Funding Sources
Community Gateways	Community	NDOT	Enhancement Fund, Community Match
Upgrade Downtown Streetscape	Community	NDOT	Enhancement Fund, Community Match, Landscape and Aesthetics up to 3% for new construction
Upgrade Suburban Streetscape	Community (with Developer support)	NDOT	Enhancement Fund, Community Match, Landscape and Aesthetics up to 3% for new construction
Upgrade Rural Streetscape	Community (with Developer support)	NDOT	Enhancement Fund, Community Match, Landscape and Aesthetics up to 3% for new construction
Pedestrian Crossings	NDOT	Community	Enhancement Fund, Community Match, Landscape and Aesthetics up to 3% for new construction, Developers building adjacent the ROW
Standard Sidewalk	NDOT	Community	NDOT funding
Enhanced Sidewalk	Community	NDOT	Enhancement Fund, Community Match, Landscape and Aesthetics up to 3% for new construction, Developers building adjacent the ROW
Street Trees and Planting Strips	Community	NDOT, NDF	Enhancement Fund, Community Match, Developers building adjacent the ROW, NDF plant supply
Community Lighting	Community	NDOT	Enhancement Fund, Community Match, Developers building adjacent the ROW
Community Rest Areas	Community	NDOT	Enhancement Fund, Community Match
Community Environmental Graphics	Community	NCOT	Enhancement Fund, Community Match
Statewide Gateways	NDOT	County and Communities	Enhancement Fund, NDOT funding sources
Roadside Services	NDOT	NDSP	NDOT funding sources
Statewide Place Recognition Sign Program	NDOT	NCOT	NDOT funding sources, NCOT grant
Audio Interpretation Program	NDOT	NCOT	NDOT funding sources, NCOT grant
Transportation Art	Community	NDOT	Enhancement Fund
Color Palette Retrofit of Existing Facilities	NDOT	Community	Enhancement Fund, Community Match
Non-Motorized Transportation Systems	Community	NDOT	Landscape and Aesthetics up to 3% for new construction, SAFETEA-LU
Standard Highway Facilities	NDOT		Landscape and Aesthetics up to 3% for new construction
Enhancements to Highway Facilities above what the 3% would Achieve	NDOT	Community	Enhancement Fund, Community Match, Developers building adjacent the ROW
Wildlife Crossings and Protection	NDOT	NDW	Landscape and Aesthetics up to 3% for new construction, NDW grant
Main Street Approach	Community	NDOT, Nevada Commission on Economic Development	Consortium of Communities, Nevada Commission on Economic Development grant
Native Wildflower Program	NDOT		Surface Transportation and Uniform Relocation Assistance Act, Landscape and Aesthetics up to 3% for new construction
Anti-littering Campaign	NDOT	Communities	NDOT funding
Scenic Highway Designation	NDOT		NDOT funding
Rest Area and Shuttle System in the Tahoe Basin	NDOT	NDSP, USFS, TRPA	Southern Nevada Land Planning Management Act

NDF – Nevada Division of Forestry
 NDSP – Nevada Division of State Parks
 NCOT – Nevada Commission on Tourism

NDW – Nevada Division of Wildlife
 USFS – United States Forest Service
 TRPA – Tahoe Regional Planning Agency

SECTION THREE: Priorities

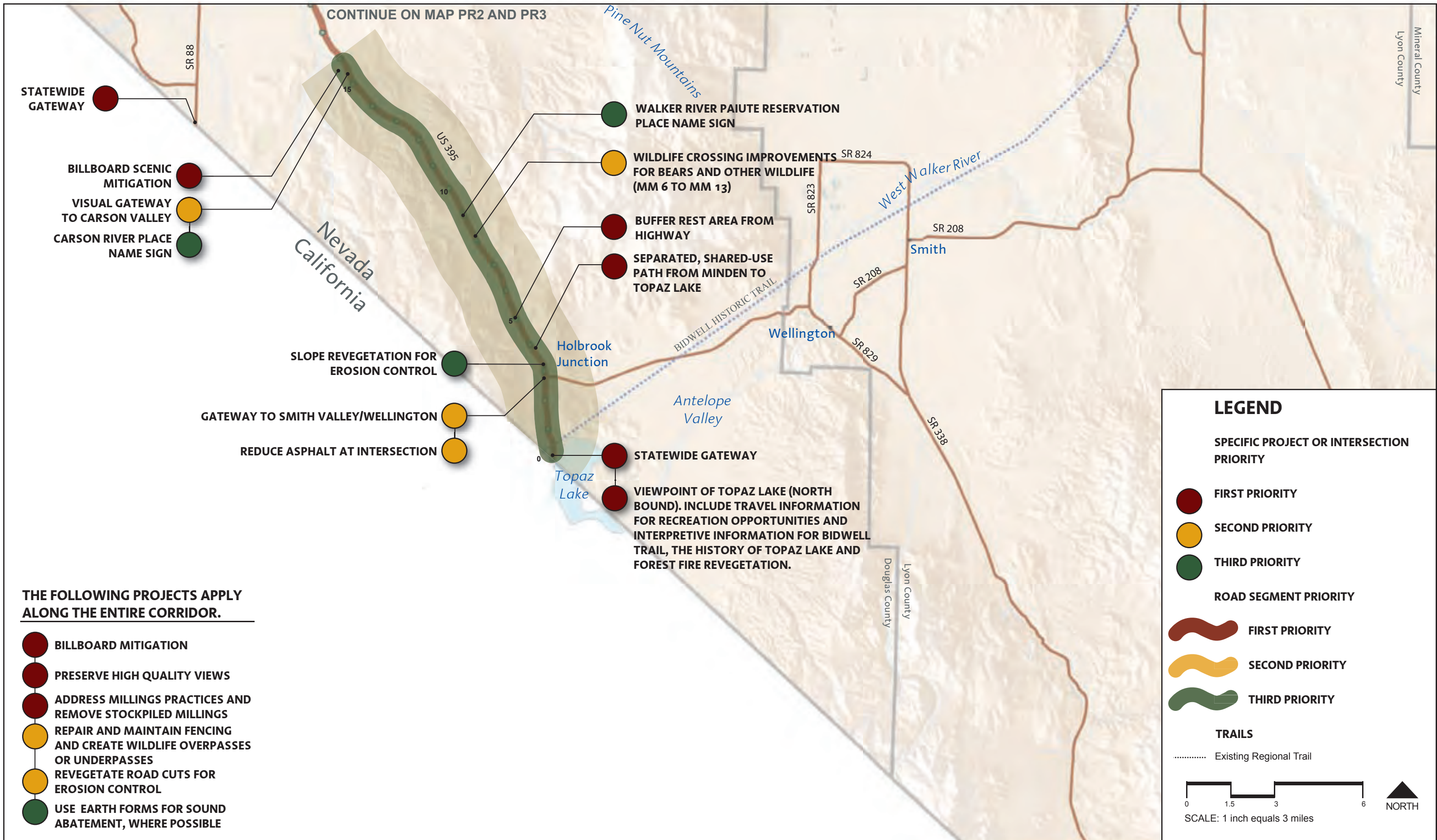
This section describes priority levels for projects within the landscape design segments. The priority levels are based on current capital improvements, as well as landscape and aesthetics planning. They are intended to act as a guide and represent those projects the Corridor Planning team recommends as having the greatest potential impact on the aesthetics of the entire corridor. The priorities identified in this chapter are subject to change according to the availability of funds for individual project improvements. Capital projects are significantly influenced by the availability of funding.

First priority is given to highly visible and identifiable projects and sections of road, areas of significant and immediate quality, and projects that are currently in progress. Second priority applies to projects that will provide additional benefits and aesthetics as part of the long range plan. Third priority is given to areas that currently display a reasonable level of aesthetic quality and, upon enhancement, will complete the landscape and aesthetics program for their particular Landscape Design Segment. General comments received from the public and TRC members influenced the designation of priorities.

The following activities have been selected as high priorities because of the immediate and significant impact they will have on the overall aesthetics and sense of place for the entire corridor.

- Enhancing the community and highway compatibility.
- Providing flexibility for streetscape improvements within urban areas.
- Retrofitting existing structures and hardscape elements through painting/staining. Creating a unified highway system using color and other features represents a major step towards place-making.
- Improving the roadway features in the Lake of the Sky Design Segment. The roadways within, and entries into, the Tahoe Basin represent areas of elevated visibility and importance.

Wildlife movement corridors are an important component of the corridor environment. Recommendations to analyze wildlife corridor movement and provide improved crossing structures are listed as medium priority due to the large capital cost. However, a few specific crossing areas are designated as first priority due to current crossing use and the importance of providing wildlife with safe and contiguous habitat connections. Community gateway establishment is noted as a second priority unless a project is underway because many communities have existing entry signage.



THE FOLLOWING PROJECTS APPLY ALONG THE ENTIRE CORRIDOR.

- BILLBOARD MITIGATION
- PRESERVE HIGH QUALITY VIEWS
- ADDRESS MILLINGS PRACTICES AND REMOVE STOCKPILED MILLINGS
- REPAIR AND MAINTAIN FENCING AND CREATE WILDLIFE OVERPASSES OR UNDERPASSES
- REVEGETATE ROAD CUTS FOR EROSION CONTROL
- USE EARTH FORMS FOR SOUND ABATEMENT, WHERE POSSIBLE

US 395, West US 50, SR 28, SR 207, and SR 431 landscape and aesthetics corridor plan



GREAT BASIN FOREST – PRIORITY PROJECTS
US 395: TOPAZ LAKE TO DOUGLAS CO. MM 16



DESIGN WORKSHOP
PLACES
Sand County Studios
JW Zunino & Associates
CH2MHill

THE FOLLOWING PROJECTS APPLY ALONG THE ENTIRE CORRIDOR.




-  BILLBOARD MITIGATION
-  PRESERVE HIGH QUALITY VIEWS
-  ADDRESS MILLINGS PRACTICES AND REMOVE STOCKPILED MILLINGS
-  REPAIR AND MAINTAIN FENCING AND CREATE WILDLIFE OVERPASSES OR UNDERPASSES
-  REVEGETATE ROAD CUTS FOR EROSION CONTROL
-  USE EARTH FORMS FOR SOUND ABATEMENT, WHERE POSSIBLE

LEGEND

SPECIFIC PROJECT OR INTERSECTION PRIORITY

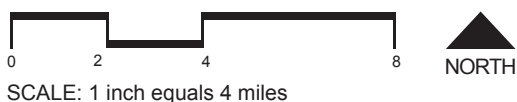
-  FIRST PRIORITY
-  SECOND PRIORITY
-  THIRD PRIORITY












ROAD SEGMENT PRIORITY





















-  FIRST PRIORITY
-  SECOND PRIORITY
-  THIRD PRIORITY

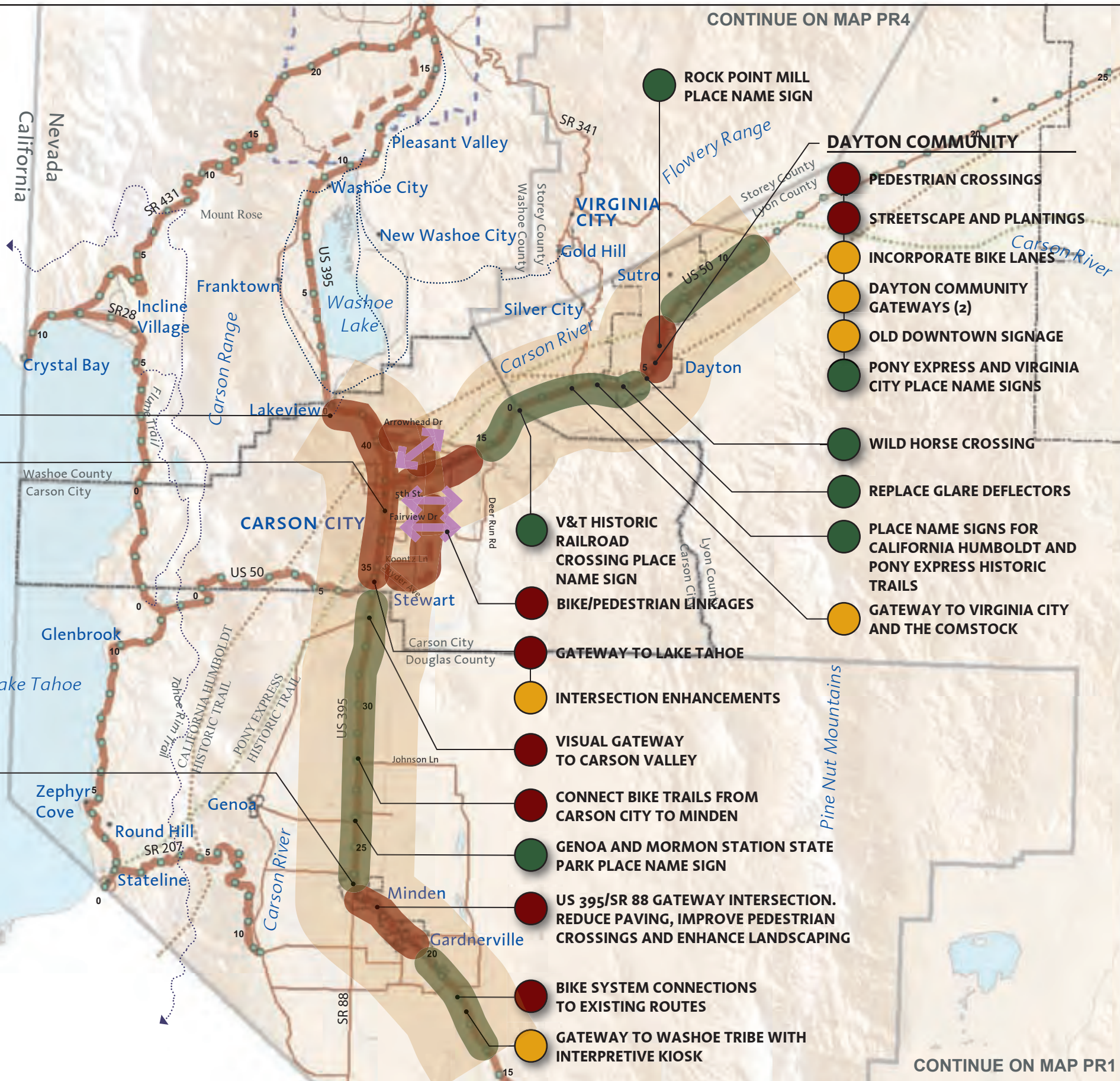
TRAILS

 Existing Regional Trail



-  INVERTED SIPHON PLACE NAME SIGN
- CARSON CITY COMMUNITY**
-  COMMUNITY GATEWAYS (3)
-  PEDESTRIAN CROSSING ENHANCEMENTS
-  COORDINATE STREETSCAPE PLANTINGS WITH URBAN FORESTRY PROGRAM
-  DEDICATED BIKE LANE
-  STATE CAPITAL COMPLEX INTERPRETATION
- MINDEN/GARDNERVILLE COMMUNITY**
-  COMMUNITY GATEWAYS (PER COMMUNITY PLANS)
-  PEDESTRIAN CROSSING ENHANCEMENTS
-  STREETSCAPE AND PLANTINGS
-  DEDICATED BIKE LANE
-  MULTI-USE TRAIL CONNECTIONS

-  PEDESTRIAN CROSSINGS
-  STREETSCAPE AND PLANTINGS
-  INCORPORATE BIKE LANES
-  DAYTON COMMUNITY GATEWAYS (2)
-  OLD DOWNTOWN SIGNAGE
-  PONY EXPRESS AND VIRGINIA CITY PLACE NAME SIGNS
-  WILD HORSE CROSSING
-  REPLACE GLARE DEFLECTORS
-  PLACE NAME SIGNS FOR CALIFORNIA HUMBOLDT AND PONY EXPRESS HISTORIC TRAILS
-  GATEWAY TO VIRGINIA CITY AND THE COMSTOCK
-  V&T HISTORIC RAILROAD CROSSING PLACE NAME SIGN
-  BIKE/PEDESTRIAN LINKAGES
-  GATEWAY TO LAKE TAHOE
-  INTERSECTION ENHANCEMENTS
-  VISUAL GATEWAY TO CARSON VALLEY
-  CONNECT BIKE TRAILS FROM CARSON CITY TO MINDEN
-  GENOA AND MORMON STATION STATE PARK PLACE NAME SIGN
-  US 395/SR 88 GATEWAY INTERSECTION. REDUCE PAVING, IMPROVE PEDESTRIAN CROSSINGS AND ENHANCE LANDSCAPING
-  BIKE SYSTEM CONNECTIONS TO EXISTING ROUTES
-  GATEWAY TO WASHOE TRIBE WITH INTERPRETIVE KIOSK



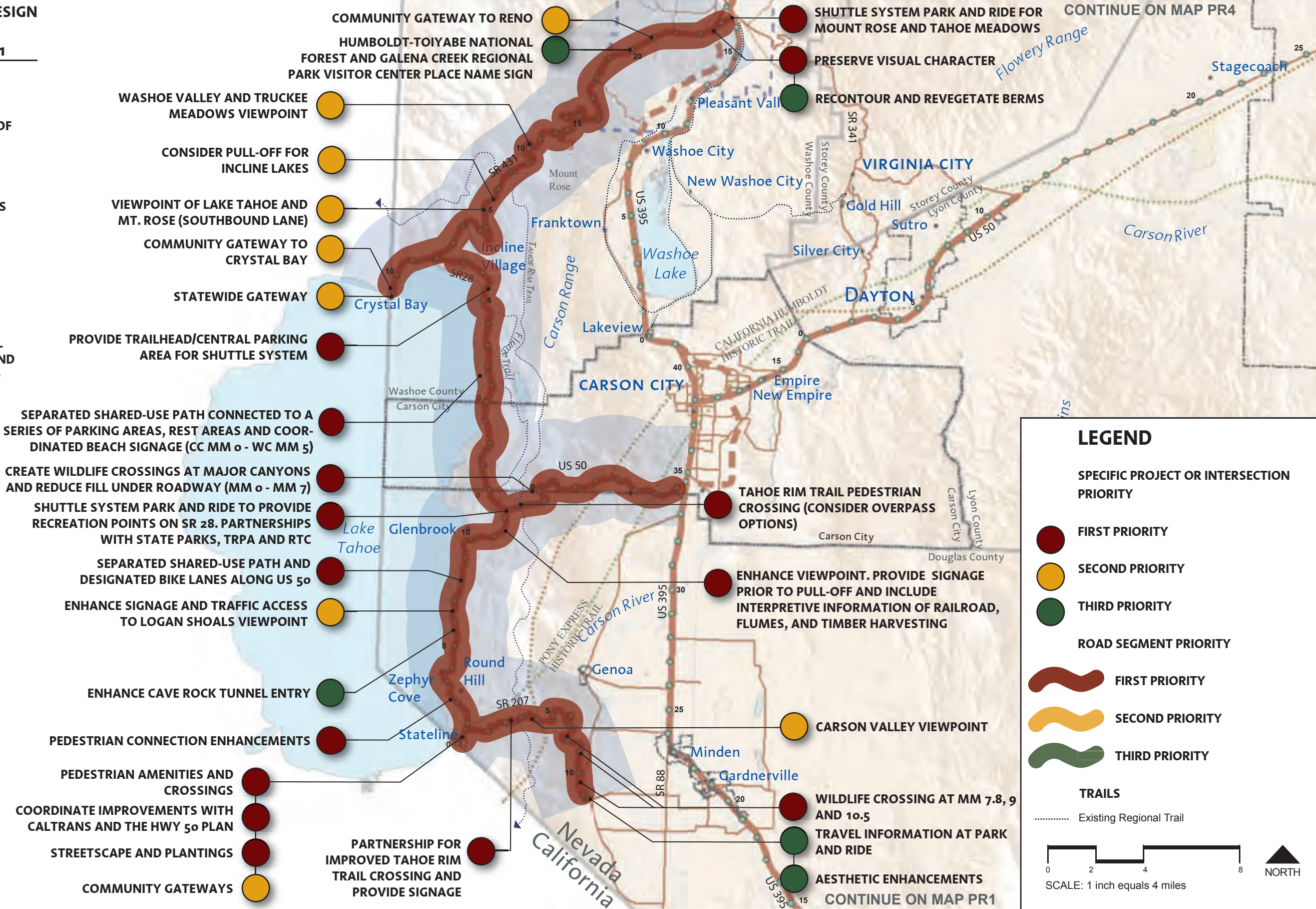
CONTINUE ON MAP PR4

CONTINUE ON MAP PR1

LAKE OF THE SKY LANDSCAPE DESIGN SEGMENT

US 50, SR 28, SR 207, AND SR 431

- SHARED-USE PATH SYSTEM AROUND THE LAKE WITH REST AREAS
- CREATE COORDINATED SYSTEM OF BIKE TRAILS AND REST AREAS
- IMPROVE WILDLIFE CROSSINGS
- VISUAL QUALITY IMPROVEMENTS ACCORDING TO TRPA SCENIC IMPROVEMENT PROGRAM
- ROCK CUTS AND EROSION ENHANCEMENTS
- REMOVE GABION WALLS AND REPAIR ROCK CUT
- PROVIDE CONSOLIDATED TRAVEL INFORMATION WITH PARKING AND PULL-OFF LOCATIONS IDENTIFIED
- REMOVE BILLBOARDS AND UNDERGROUND UTILITY LINES
- REDUCE VISUAL CONTRAST OF BARRIER RAILS AND GUARD RAILS AND USE A CONSISTENT TREATMENT TYPE
- COMPLETE THE WOODEN MILE MARKER PROGRAM



US 395, West US 50, SR 28, SR 207, and SR 431 landscape and aesthetics corridor plan

LAKE OF THE SKY – PRIORITY PROJECTS
LAKE TAHOE BASIN



DESIGN WORKSHOP
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JW Zunino & Associates
CH2MHill

MAP PR3
4.19

THE FOLLOWING LIST REPRESENTS THE PRIORITY OF INTERCHANGE RETROFITS ALONG US 395.

- FIRST PRIORITIES**
 - I-580/SR 431
 - PLUMB LANE MILL
 - I-80/US 395
- SECOND PRIORITIES**
 - SOUTH VIRGINIA STREET
 - NEIL/MEADOWOOD
 - MOANA
 - ODDIE
- THIRD PRIORITIES**
 - DAMONTE RANCH
 - SOUTH MEADOWS PARKWAY
 - GLENDALE
 - PANTHER
 - GOLDEN VALLEY
 - LEMMON

- NORTH MCCARRAN
- PARR/DANDINI
- STEAD

- RED ROCK
- BORDER TOWN
- COLD SPRINGS
- EAST LAKE
- BELLEVUE
- I-580/US 395

LEGEND

SPECIFIC PROJECT OR INTERSECTION PRIORITY

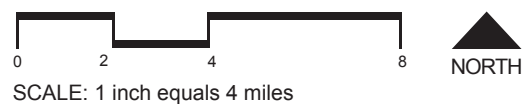
- FIRST PRIORITY
- SECOND PRIORITY
- THIRD PRIORITY

ROAD SEGMENT PRIORITY

- ▬ FIRST PRIORITY
- ▬ SECOND PRIORITY
- ▬ THIRD PRIORITY

TRAILS

- ⋯ Existing Regional Trail

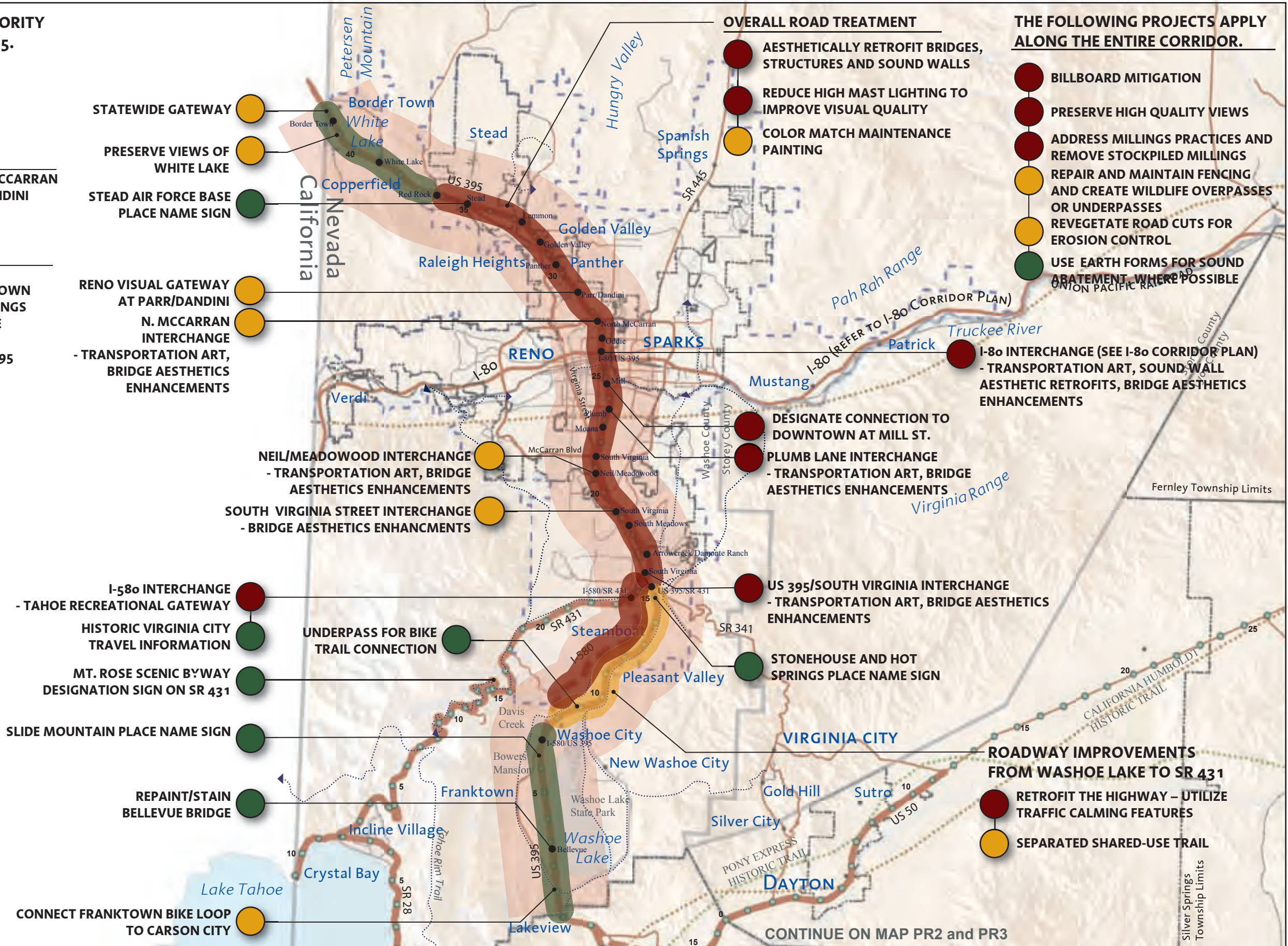


MAP PR4 4.20

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CH2MHill

CONSULTANT TEAM

**EDGE OF THE SIERRA – PRIORITY PROJECTS
RENO METROPOLITAN AREA**



US 395, West US 50, SR 28, SR 207, and SR 431 landscape and aesthetics corridor plan