

5 Stormwater Runoff Control, Landscape and Art Treatments

Stormwater Runoff Control Concept

The San Diego Regional Water Quality Control Board stormwater runoff requirements have become very stringent and require quantity and quality control for all runoff. Standard engineering methods are no longer acceptable for quality control. The requirements restrict the amount of runoff from a site to match the pre-construction amounts. The proposed parking lots will result in impervious surfaces that will result in additional runoff and will therefore have to meet these more stringent standard.

Figure 51 is a diagram showing a typical plan view of the stormwater concepts being proposed at the NASSCO rebuilt parking lots that touch the edge of Harbor Drive. The concept utilizes a combination of permeable concrete, flow inlet raised curbs, underground Silva Cells, open cobble stream courses and a bioswale for water quality improvements. A subsurface drainage system is proposed, but the majority of non-major storm events will be captured in the bioswales and be taken up by ground / soil reservoirs in and around the parking lot trees, as well as vertical infiltration trenches that run the length of the parking lots. Major storm events will be captured by overflow pipe inlets into the storm drain and in sheet flows over the bike path and into the road drainage solutions.

Figure 52 shows a cross section of how the stormwater infiltration and drainage system will work. The path will sheet flow into its own bio-swale. Though not shown on Figure 52, the smaller bio-swale will be interconnected with the larger bio-swale at the parking lot edge.

Landscape Treatments

Figure 53 depicts the proposed planting and groundcover plans for the same typical area shown in Figure 51. This diagram shows a higher level of detail in planting and also indicates the desire to utilize cobble river rock and shredded bark mulch in a significant percentage of the bio-swale areas.

The proposed trees are sample suggestions. All trees will need to have a high growing pattern to allow for a 8' height clearance for bike path users. Most of the proposed plant material are natives or drought tolerant and low maintenance. Though the trees in this typical diagram appear to have equal spacing, a dynamic rhythm has been established with tree gaps and groupings that are more visible when viewing the broader tree layouts seen in Figures 19- 24.

Figure 54 shows typical planting patterns proposed for the various roadway medians proposed in the project. The reconstructed median will be of varying widths so different tree options and plant materials are required to meet the City of San Diego's median planting street tree requirements. In many cases, the median will be too small for trees, but will contain continuity in design themes and understory plant material. As was the case for the bio-swales, the median will contain a large amount of river cobble rock, as well as decomposed granite and bark mulch. This will serve to lower the overall maintenance costs and allow for clarity in curvilinear patterns running through the median. Small medians and turn lanes that are less than 5' will not contain plant material, though the curvilinear cobble pattern will carry through.

Figure 55 includes imagery that captures the look and feel proposed for these bio-swales and medians. The figure also shows a variety of non-vegetative ground covers such as cobble, pebble, crushed rock and decomposed granite. The mulches will need to be shredded and coarse enough to not be carried away by flowing water. The subsurface soil materials around trees, in and around the Silva Cells, and in vertical infiltration trenches will need to include a composted filter media and growing median that helps to provide water quality improvements.

Figure 56 provides images of the proposed street trees that would be placed either in the bio-swales, parking lots or the medians. Parkway trees will need to be smaller than those proposed for the parking lots and the median. This figure also shows samples of some of the native shrubs that can be used in these planted areas.

Figure 57 shows a variety of native grasses and other plants that are ideal for use in the bio-swales. Plant materials in these locations need to be able to survive wet inundation periods, as well as dry periods equally well. Extensive amounts of groundcover color or accent is not envisioned, however the judicious use of color will be provided nearest the intersections and along segments where traffic or cyclists will tend to slow down.

Lighting Treatments

A variety of lighting types are proposed along the corridor. Taller vehicular scaled lights are proposed in the medians (see Figure 59 for images of the style being recommended). This lighting style needs to capture the industrial nature of the working waterfront. The use of guy wires and supporting horizontal beams are suggested to capture this character. These light standards would be breakaway type lights to improve driver safety.

A second level of lighting is proposed along the pathways. Though it is not intended to light the entire length of the pathways, a significant number of pedestrian level lighting is suggested. The lighting has been concentrated nearest the intersections and the driveway locations to increase safety. All cyclists along the route should be riding with lights if dark conditions exist. Pedestrians will benefit from a low level of light along the pathways that will be projected over the path from the tall center median lights. It is important to transition from dark to bright areas in order to give the eye a chance to adjust to different light levels. Figure 58 includes a sample of the pedestrian level light standard being recommended. The design of this light standard fits the nautical and industrial nature of the area. The light standard has been customized with a Barrio Logan cut-out lettering, as well as a working waterfront letters. The light fixture would also be outfitted with a bracket system to support a variety of art and banner options.

Other Walkway Amenities

Benches, water fountains and trash receptacles are not recommended along this pathway in order to reduce costs, maintenance costs and graffiti issues. The nature of this segment of the Bayshore Bikeway is that it is a linear experience, without many locations for public viewing of natural areas or other public spaces where individuals are likely to want to stop.

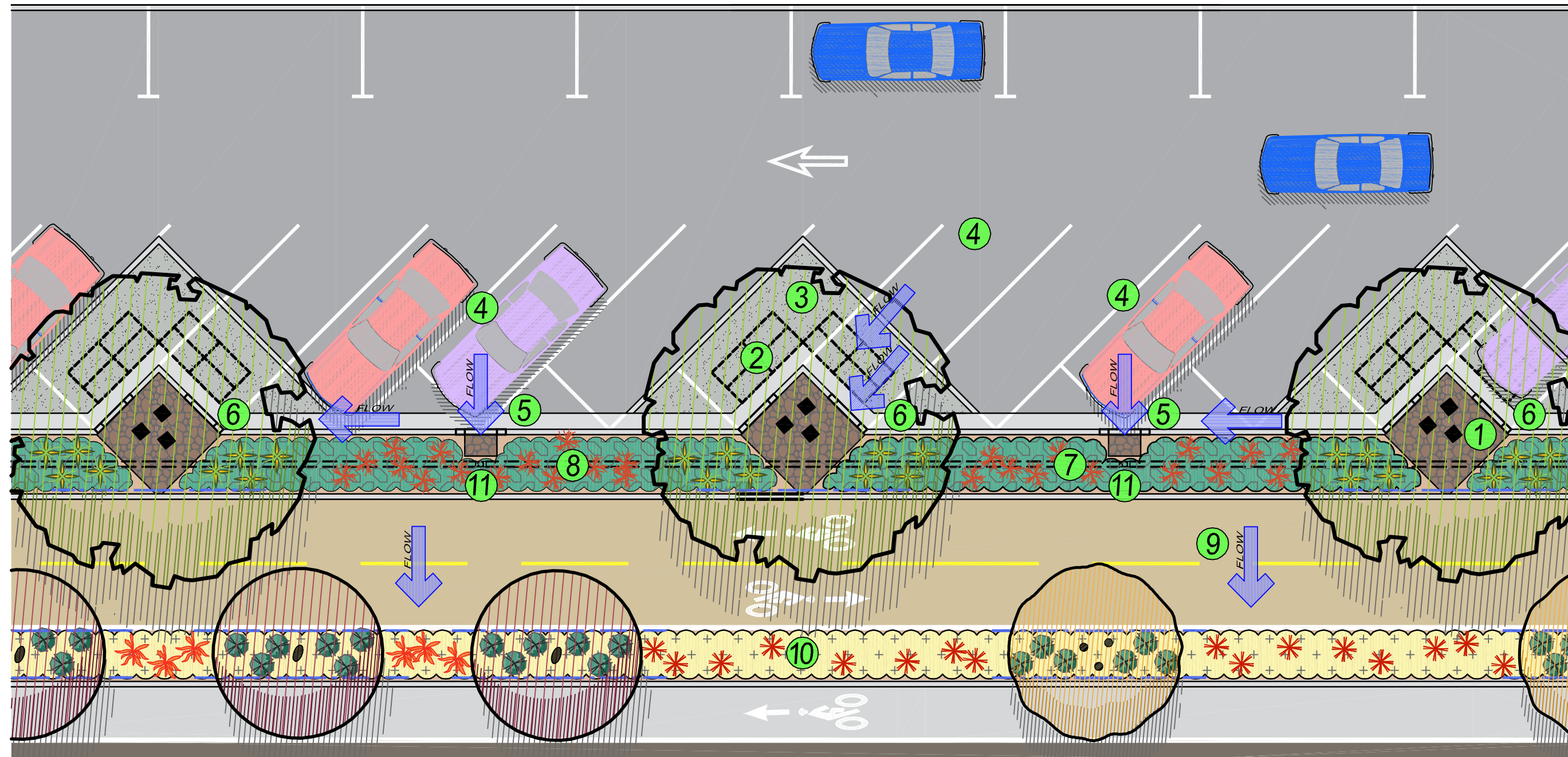
Art Opportunities

Figure 58 shows a variety of art concepts that could be created as part of the lighting system. A sample from Seattle, Washington can be seen in this figure to show how dimensional art could be very interesting. By having each light standard handled by a different artist, it would be possible to provide a great deal of visual interest and variety. The name of the art program is called "Art Revolution". This not only denotes the cultural independence of the Barrio, but is also a play on words that can denote revolving art that could move with the wind. What ever art is used, design guidelines should be provided to obtain a level of consistency while allowing for a great deal of creativity.

Figure 59 denotes the "Art Uprising" program contemplated to mark the different districts along the route. This combination of materials typically found in the industrial areas of Barrio Logan has been morphed with the art culture that is dominant in the area as well.

Figure 60 shows a concept for entry monuments indicated as "Industrial Art". This fusion of art and industry is consistent with all of the other art concepts contemplated.

Figure 51: Plan View of Stormwater Runoff Concept Plan

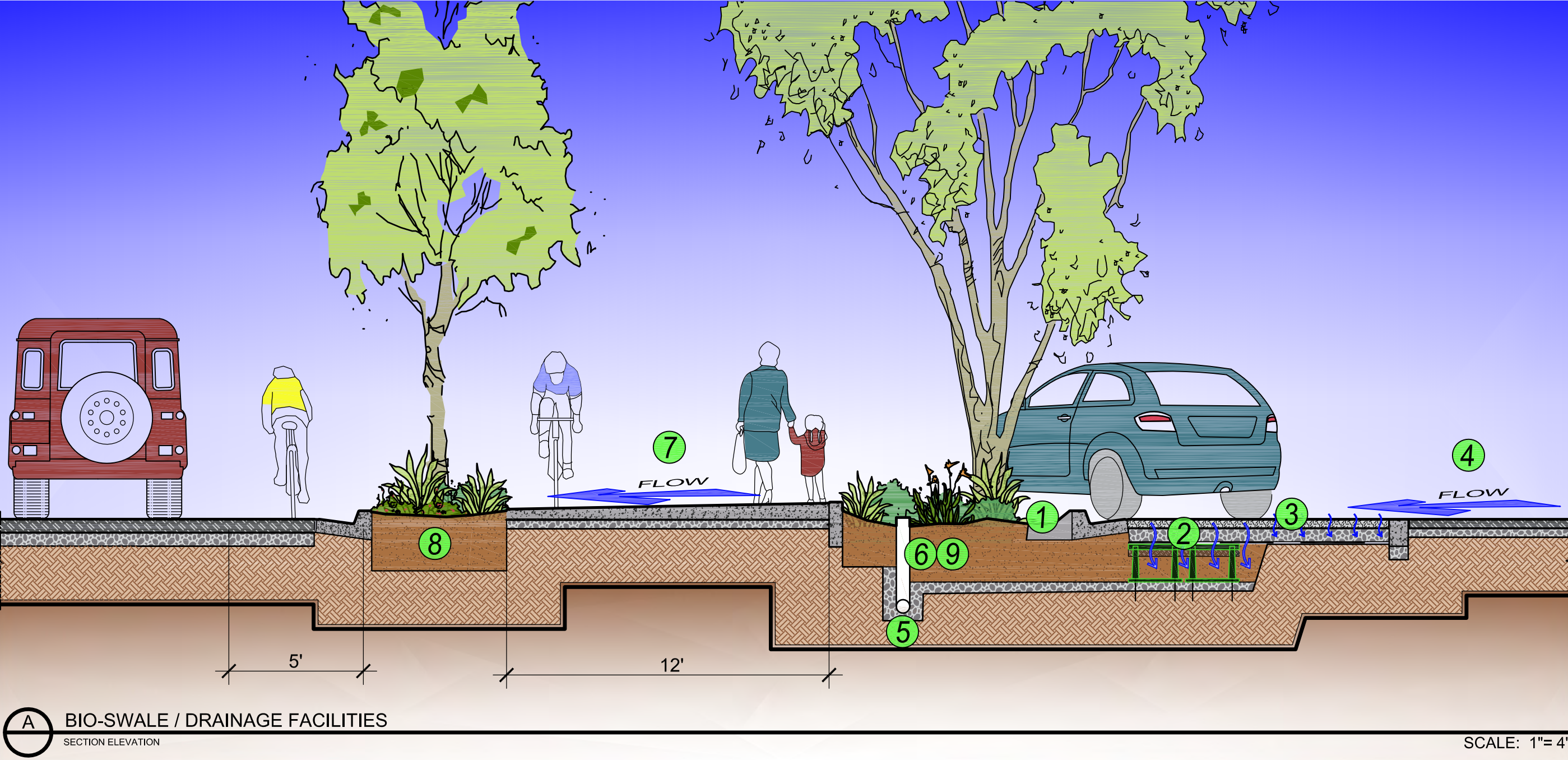


LEGEND

- | | |
|---|--|
| <ul style="list-style-type: none"> 1 COBBLE FILLED OPEN TREE WELL WITH BIO-FILTER APPROVED BACKFILL AND ROOTBARRIER 2 EIGHT "SILVA CELLS" 18" DEEP SUPPORT SYSTEMS WITH BIO-FILTER APPROVED BACKFILL 3 PERMEABLE CONCRETE SURFACE 4 PARKING GRADED TO DRAIN TO CURB 5 BREAK IN CURB WITH COBBLE COVERED ENERGY DISSIPATOR 6 NON PERMEABLE GUTTER WITH 1" PIPE INLET THROUGH CURB TO BIO-SWALE | <ul style="list-style-type: none"> 7 BIO-SWALE OVER VERTICAL INFILTRATION TRENCH WITH GRAVEL BACKFILL 8 SUB-SURFACE PERFORATED DRAIN CONNECTED TO STORM DRAIN FOR EXCESS WATER 9 TRAIL GRADED TO SHEET FLOW TO ZERO CURB BIO-SWALE 10 BIO-SWALE WITH BIO-FILTER APPROVED BACKFILL 11 OVERFLOW DRAINAGE STAND PIPE |
|---|--|

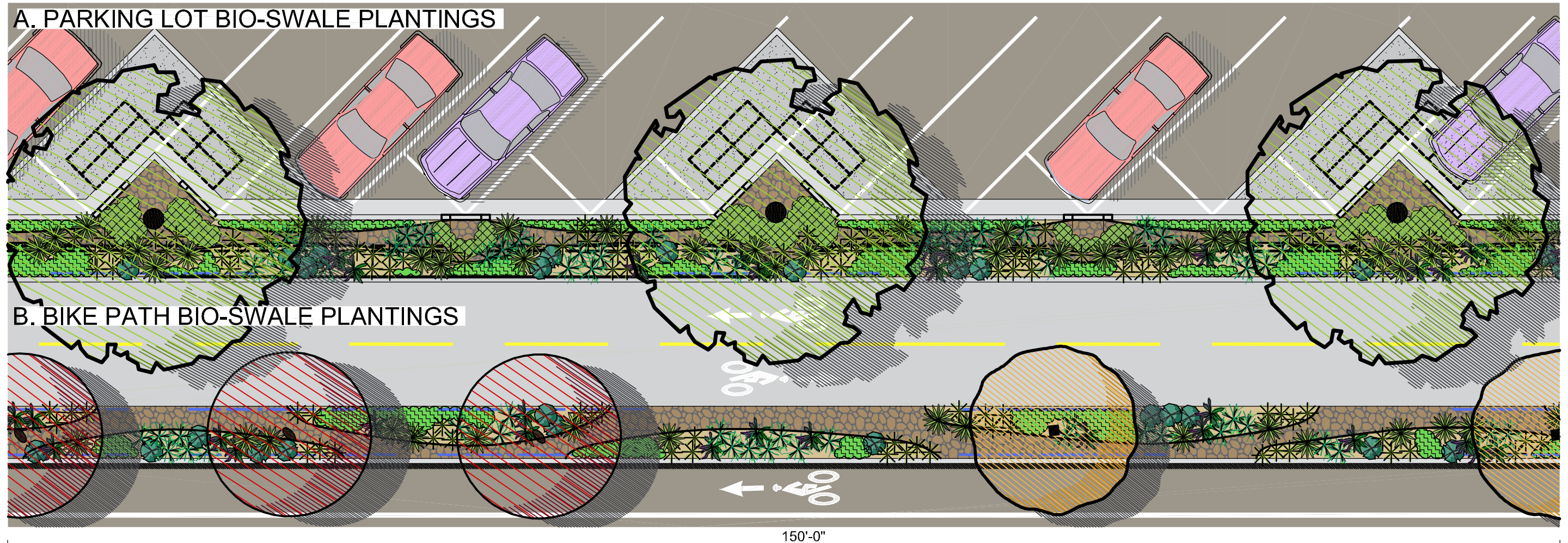
SCALE: 1"= 10'

Figure 52: Section View of Stormwater Runoff Concept Plan



LEGEND






- 1 COBBLE FILLED OPEN TREE WELL WITH BIO-FILTER APPROVED BACKFILL AND ROOTBARRIER
- 2 EIGHT "SILVA CELLS" 18" DEEP SUPPORT SYSTEMS WITH BIO-FILTER APPROVED BACKFILL
- 3 PERMEABLE CONCRETE SURFACE
- 4 PARKING GRADED TO DRAIN TO CURB
- 5 BIO-SWALE OVER VERTICAL INFILTRATION TRENCH WITH GRAVEL BACKFILL
- 6 SUB-SURFACE PERFORATED DRAIN CONNECTED TO STORM DRAIN FOR EXCESS WATER
- 7 TRAIL GRADED TO SHEET FLOW TO ZERO CURB BIO-SWALE
- 8 BIO-SWALE WITH BIO-FILTER APPROVED BACKFILL
- 9 OVERFLOW DRAINAGE STAND PIPE



NATIVE and/or DROUGHT TOLERANT BIO-SWALE PLANTINGS

TREES SUCH AS:

100% @ 36" box min.

- | | | |
|---|--|---------------------|
|  | <i>ARBUTUS 'Marina'</i> | Strawberry Tree |
|  | <i>LAGERSTROEMIA indica</i> | Crape Myrtle |
|  | <i>METROSIDEROS excelsa</i> | Christmas Tree |
|  | <i>PLANTANUS racemosa</i> | California Sycamore |
|  | <i>PYRUS calleryana 'Cleveland Select'</i> | Ornamental Pear |

NATIVE and/or DROUGHT TOLERANT GRASSES SUCH AS:

(SPACING 12" - 24" O.C.)


25% 5 GALLON, 75% 1 GALLON

- | | | |
|---|----------------------------|------------------------|
|  | <i>ARISTIDA purpurea</i> | Purple Three-Awn |
| | <i>CAREX praeegracilis</i> | California Field Sedge |
|  | <i>DISTICHLIS spicata</i> | Salt Grass |
| | <i>SCIRPUS cernuus</i> | Low Bulrush |
|  | <i>JUNCUS patens</i> | Spreading Rush |
|  | <i>MUHLENBERGIA rigens</i> | Deergrass |

CONT. NATIVE and/or DROUGHT TOLERANT GRASSES SUCH AS:

(SPACING 12" - 24" O.C.)

25% 5 GALLON, 75% 1 GALLON

- | | | |
|---|---------------------------------|-------------------|
|  | <i>NASSELLA viridula</i> | Green Needlegrass |
| | <i>ELEOCHARIS montevidensis</i> | Spike Sedge |



ACCENT PLANTS SUCH AS:

(SPACING 12" - 24" O.C.)

100% 1 GALLON 12" TO 18" O.C.

- | | | |
|---|-----------------------------|-------------------|
|  | <i>ACHILLEA millefolium</i> | Yarrow |
| | <i>FESTUCA californica</i> | California Fescue |
|  | <i>IRIS douglasiana</i> | Douglas Iris |
| | <i>SATUREJA douglasii</i> | Yerba Buena |

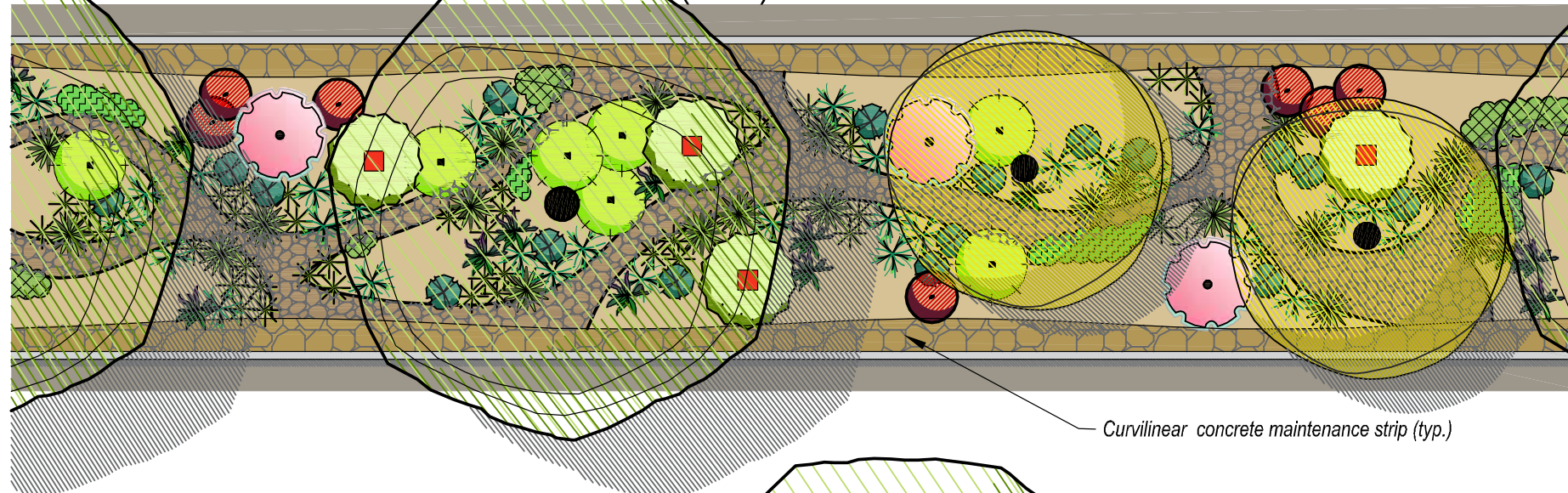
NON-VEGETATIVE GROUND COVER SUCH AS:

- | | |
|---|---|
|  | SHREDDED REDWOOD BARK MULCH OR DECOMPOSED GRANITE |
|  | RIVER ROCK COBBLE: 2" TO 8" |

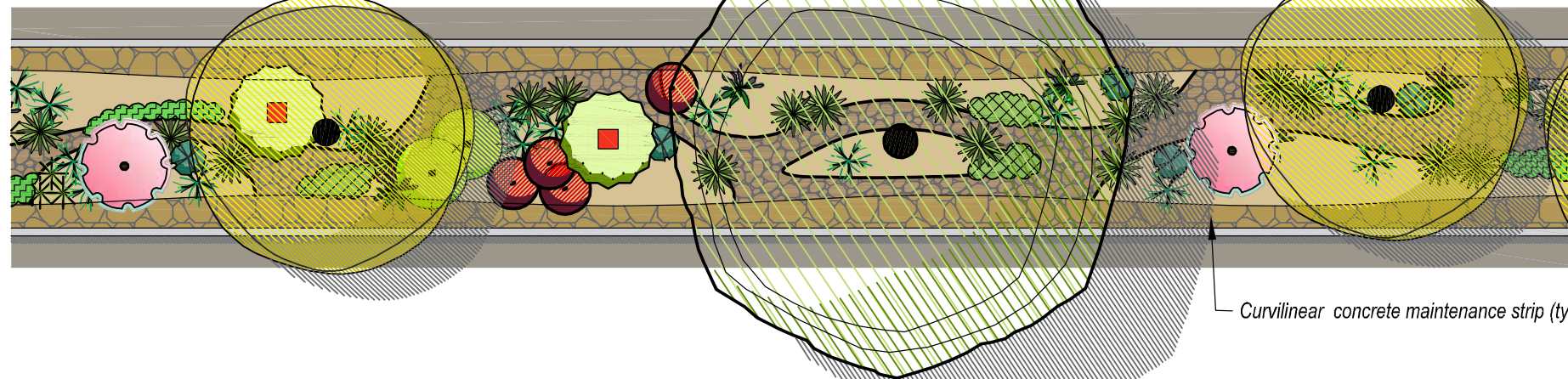
SCALE: 1"= 10'-0"

Figure 54: Median Landscape Treatments

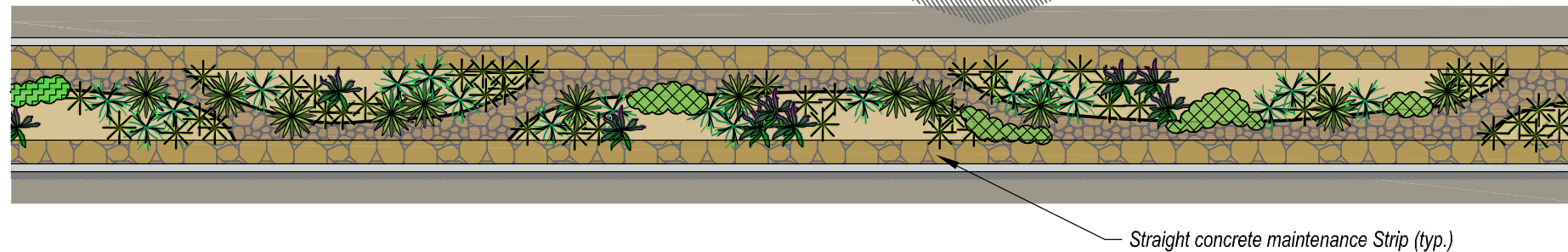
A. WIDE MEDIAN BIO-SWALE PLANTINGS (≥2')



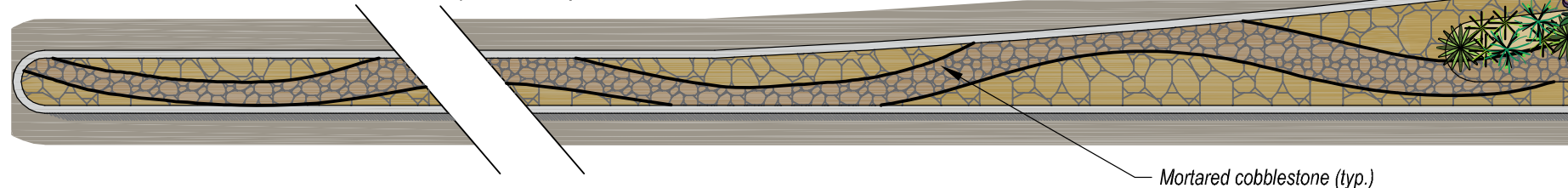
B. MEDIUM MEDIAN BIO-SWALE PLANTINGS (8' -12')



C. NARROW MEDIAN BIO-SWALE PLANTINGS (5' - 8')



D. TURN LANE BULL NOSE (3.5' - 5')






100'-0"

NATIVE and/or DROUGHT TOLERANT
MEDIAN BIO-SWALE PLANTINGS

TREES SUCH AS:





100% @ 36" box min.

-  *FRAXINUS uhdei* Shamel Ash
-  *PINUS torreyana* Torrey Pine
-  *PLANTANUS racemosa* California Sycamore
-  *TIPUANA tipu* Tipu Tree

SHRUBS SUCH AS:

(SPACING 12" - 24" O.C.)









25% 5 GALLON, 75% 1 GALLON

-  *MIMULUS cardinalis* Scarlet Monkeyflower
-  *RIBES viburnifolium* Catalina Perfume
-  *ROSA californica* California Wild Rose
-  *VENEGASIA carpesioides* Canyon Sunflower

NATIVE and/or DROUGHT TOLERANT
GRASSES SUCH AS:

(SPACING 12" - 24" O.C.)


25% 5 GALLON, 75% 1 GALLON

-  *ARISTIDA purpurea* Purple Three-Awn
-  *CAREX praegracilis* California Field Sedge
-  *DISTICHLIS spicata* Salt Grass
-  *SCIRPUS cernuus* Low Bulrush
-  *JUNCUS patens* Spreading Rush
-  *MUHLENBERGIA rigens* Deergrass
-  *NASSELLA viridula* Green Needlegrass
-  *ELEOCHARIS montevidensis* Spike Sedge




ACCENT PLANTS SUCH AS:

(SPACING 12" - 24" O.C.)

100% 1 GALLON 12" TO 18" O.C.

-  *ACHILLEA millefolium* Yarrow
-  *FESTUCA californica* California Fescue
-  *IRIS douglasiana* Douglas Iris
-  *SATUREJA douglasii* Yerba Buena

SITE AMENITIES SUCH AS:

-  SHREDDED REDWOOD BARK MULCH OR DECOMPOSED GRANITE
-  RIVER ROCK COBBLE: 2" TO 8"
-  STAMPED CONCRETE MAINTENANCE STRIP

SCALE: 1" = 10'-0"

POSSIBLE PLANT COMPOSITIONS:



POSSIBLE LOW MAINTENANCE MULCHES:



COBBLE STONE

CRUSHED ROCK

DECOMPOSED GRANITE

MULCHES

COMPOST
FILTER MEDIA

COMPOST
GROWING MEDIA

PARKWAY TREES SUCH AS:



ARBUTUS 'Marina'
Strawberry Tree



LAGERSTROEMIA indica
Crape Myrtle



METROSIDEROS excelsa
Christmas Tree



PYRUS calleryana
'Cleveland Select' - Pear

PARKING LOT OR MEDIAN TREES SUCH AS:



FRAXINUS uhdei
Shamel Ash



PINUS torreyana
Torrey Pine



PLATANUS racemosa
California Sycamore



TIPUANA tipu
Tipu Tree

SHRUBS SUCH AS:



MIMULUS cardinalis
Scarlet Monkeyflower



RIBES viburnifolium
Catalina Perfume



ROSA californica
California Wild Rose



VENEGASIA car.
Canyon Sunflower

NATIVE and/or DROUGHT TOLERANT GRASSES SUCH AS:



ARISTIDA purpurea
Purple Three-Awn



CAREX praegracilis
California Field Sedge



DISTICHLIS spicata
Salt Grass



Eleocharis mont.
Spike Sedge



JUNCUS patens
Spreading Rush



MUHLENBERGIA rigens
Deergrass



NASSELLA viridula
Green Needlegrass



SCIRPUS cernuus
Low Bulrush

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California Fescue

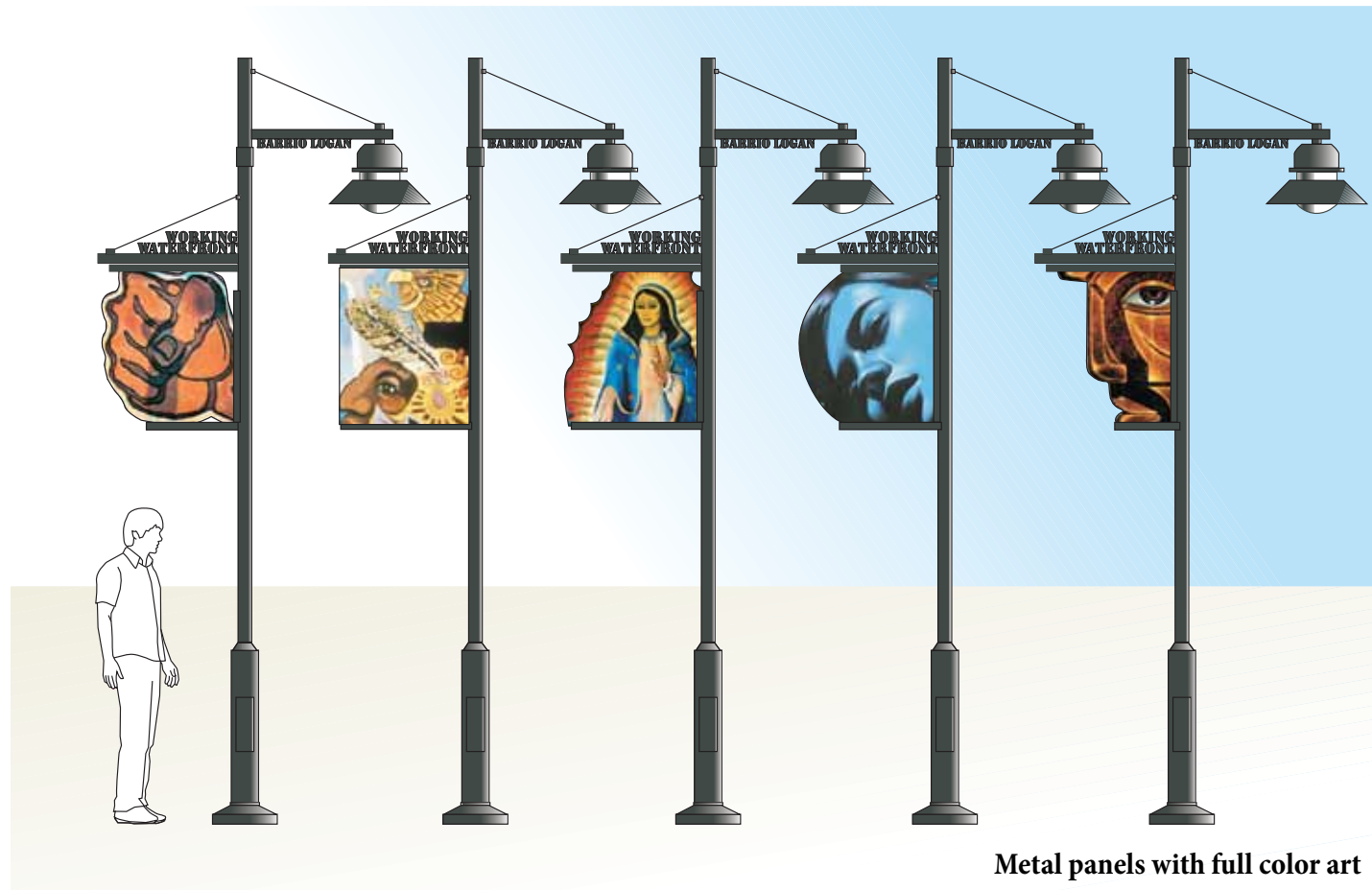


IRIS douglasiana
Douglas Iris

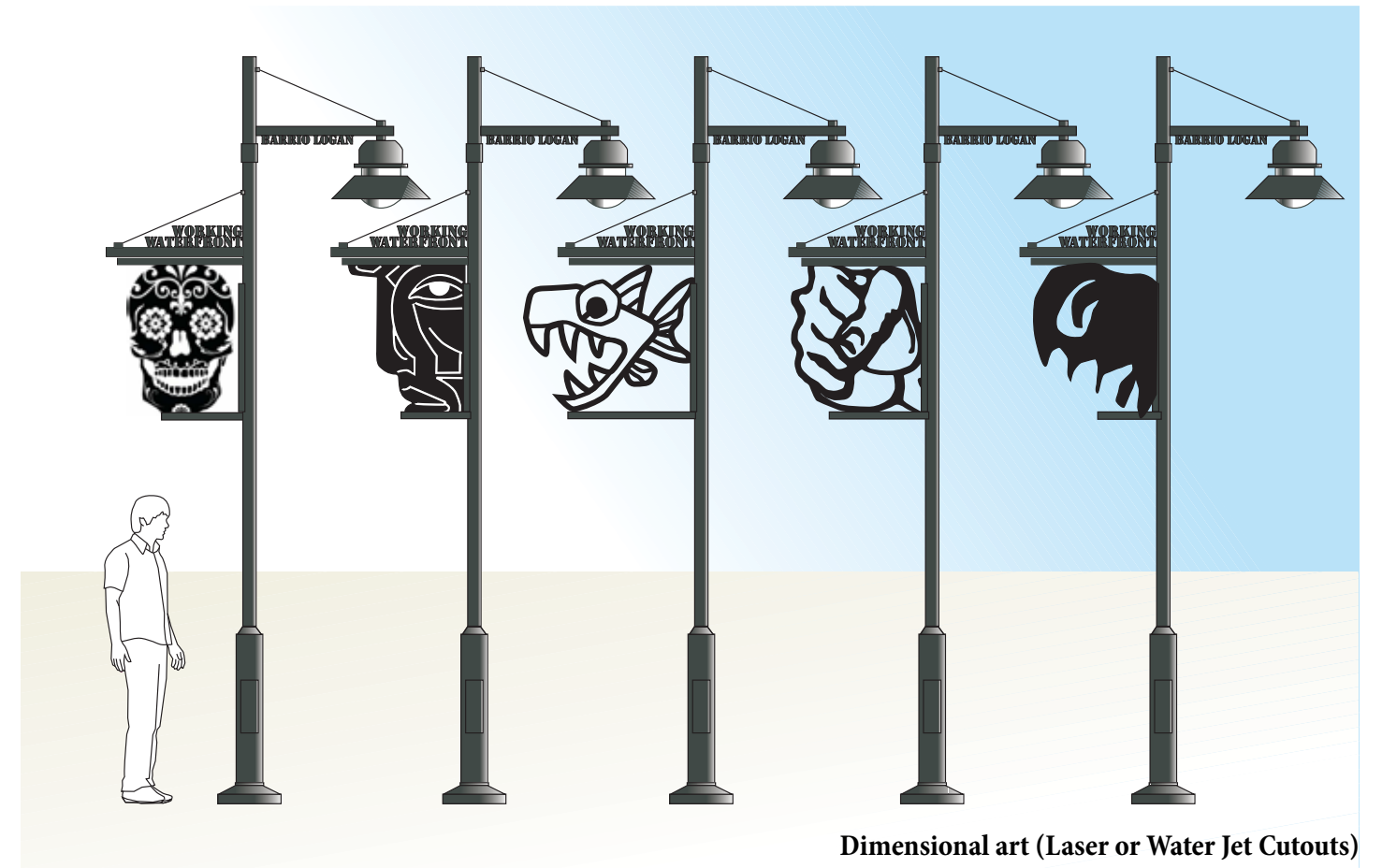


SATUREJA douglasii
Yerba Buena

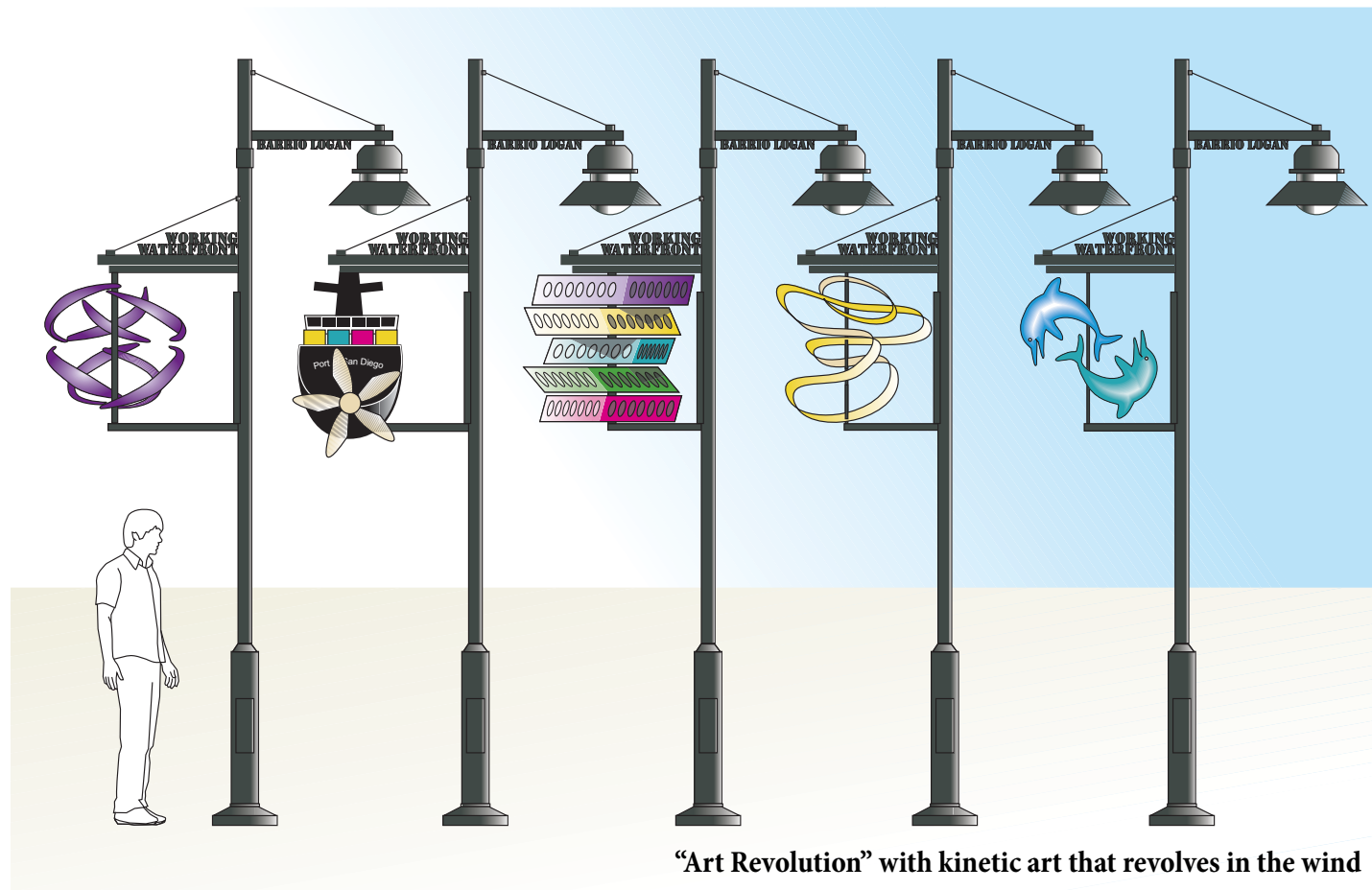
Figure 58: "Art Revolution" Recommended Art Concepts for Light Standards



Metal panels with full color art



Dimensional art (Laser or Water Jet Cutouts)



"Art Revolution" with kinetic art that revolves in the wind



Samples of dimensional art on light poles from Seattle's University Avenue

Figure 59: "Art Uprising" Recommended Art Concepts for Denote Districts along Harbor Drive



The vertical markers would be used to denote the general boundaries between the Maritime Operations, Mercado, Ship Repair, Ship Building and the Navy



Sample imagery of "I" beam designs using rusted "Corten" steel

The "I" beams would include Laser Jet or Water Jet cutout letters indicating the Working Waterfront as well as the Districts



The elements would build on the industrial and art character of Barrio Logan and the Working Waterfront



A support base would be designed to divert vehicles from collision impacts to the structure and for driver safety



The vertical markers would be used close to intersections and can work in narrow, medium or wide medians

Figure 60: "Industrial Art" Recommended Art Concepts for Two Entry Monuments at the South and North End of the Project



Barrio Logan cut-out letters that overhang Harbor Drive with a minimum of 15' clearance



The monument expresses the industrial nature of the area by using rusted Corten "I" beams that symbolically have art partially taking over the structure

Imagery Found in the Immediate Area



The "I" beams will include an element that looks like it is hanging, though it would be held secure on the structure



A barrier or support structure would have to be developed in order to decrease impacts from vehicular collisions and to protect the art project

6 Probable Costs, Phasing and Follow-On Studies Required

6

Estimate of Construction Costs

Area takeoffs were completed and multiplied by standard industry unit costs. Soft costs such as planning, engineering, permitting, environmental review, inspections, management and other contingency costs were then added to the line item costs. Because of the preliminary nature of the design and engineering and the lack of accurate base mapping, these costs should be considered very preliminary. The unit costs and construction techniques have not yet been assessed, adding an additional level of caution in the use of these very preliminary numbers. A range of costs should be used in discussing and programming for the implementation phase of the work efforts. Costs for all four roadway reconstruction options (see Figure 29 and 30) and all four bridge options (see Figure 31) were developed. Please refer to Tables 4 through 7 for each of the line item summaries per option. Table 8 summarizes the major cost elements of each of the four options.

Probable Maintenance Costs

The overall project will require a few different sources of maintenance funds. The roadway surfaces, along with some of the raised median hardscape surfaces, should be maintained by the City of San Diego as part of ongoing roadway, gas tax based funding. The ongoing maintenance of the hard surface Bayshore Bikeway would include TRANSNET based sales tax money for capital costs of construction, as well as repair and replacement funding. Other maintenance of the Bayshore Bikeway hardscape surfaces, light detection loops, actuators and other markings would fall under the City of San Diego Street Division.

Maintenance of the bio-swale stormwater runoff system, parking lot shade trees and landscape buffers between the bike path and the parking areas, should be funded by NASSCO or others associated with the use of these parking areas.

Maintenance of the Bayshore Bikeway bio-swale, parkway trees, parkway landscaping, median landscaping, irrigation systems, light fixtures and public art should all be placed under a maintenance assessment district or other assessed form of maintenance where adjacent properties or remote properties that receive a direct benefit from the improvement, are taxed to cover the annual costs of maintenance. The costs of this maintenance will be determined under a separate consultant led study. Table 10 summarizes the quantities of areas to be maintained, as well as the frequency and type of maintenance.

Follow-on Studies Required

This study suggests that the project as originally envisioned is feasible and can be accommodated without extreme expense or disruption to the vehicular carrying capacity of Harbor Drive or major impacts to private parking. However, the conceptual nature of the study did not allow for the identification of a number of issues that will need to be resolved in order to obtain a more accurate construction cost estimate and to determine the types of issues, constraints and options that should be further refined in order to implement the project.

The following is a prioritized list of follow-on research, mapping, design and engineering tasks that are essential for moving this project forward. These tasks include:

- 1) Cost estimation services to determine more accurate costs.
- 2) Civil engineering analysis of roadway expansion and reconstruction options.
- 3) Value engineering of major roadway improvement elements.
- 4) Additional input from the community, agencies major stakeholders.
- 5) Accurate property, easement and public right-of-way limits.
- 6) Accurate base mapping that indicates all major structures or utilities in the way of the Bayshore Bikeway project.
- 7) Structural engineering analysis of the Harbor Drive Bridge to determine the best solution for adding a 10' to 14' wide bike path facility across this bridge.
- 8) Civil engineering for stormwater runoff and drainage systems required to implement the plan and resolve water quantity and water quality issues (35% construction documents).
- 9) Civil engineering for grading solutions to determine proper drainage, ADA requirements and retaining walls (35% construction documents).
- 10) Structural engineering analysis of the Chollas Creek Bridge to determine the feasibility, options and costs of a 10' to 14' cantilever.
- 11) Traffic engineering to determine signal sequencing, coordination and MUTCD / ITE / City of San Diego requirements for roadway improvements.
- 12) Landscape architectural review and layout of planting materials, street tree requirements, bio-swales, median plantings and irrigations systems (35% construction documents).
- 13) Electrical engineering and lighting engineering to determine lighting levels and points of connection options (35% construction documents).
- 14) Refinement of the plan based on additional meetings, workshops, City of San Diego staff input, Port District staff and Commissioner input, County of San Diego input, stakeholder input and SANDAG review and suggestions.
- 15) Environmental review as required under CEQA.
- 16) Advisory approval for the conceptual plan and environmental review by the lead agency (which may include the City of San Diego, Port District or SANDAG).
- 17) Public art coordination and program development.
- 18) Follow on design, planning and engineering to a 100% design level including electrical, drainage, grading, pavements, landscape architecture, pathway amenities, lighting and irrigation systems.

Project Phasing

Bike and multi-use facilities with regional significance generally need to be built as one project. However, recognizing difficulties in approvals and funding, a phasing plan will likely be required. Projects such as this one should avoid piecemealing small segments, especially where a near roadway two way path is being contemplated. A cyclist would need to transition from a one-way on-street bike lane or route system to a two way on one side of the road multi-use trail system, which increases safety concerns and decreases connectivity. As such, full segment phasing between major intersections would have to be considered.

A logical progression of phasing would include the following:

- 1a) Reconstruction of NASSCO parking lots between 28th Street and Sampson Street. This would include new retaining walls and edge treatments to accommodate the northeast expansion of the pathway over the existing tracks that are required to be at or around 90 degrees.
- 1b) Harbor Drive reconstruction of the median and lane shifting towards the southwest of the northwest bound side of the roadway from 28th to Sampson Street. This would include major drainage and utility extensions for lighting.
- 1c) Construction of the Bayshore Bikeway from 28th to Sampson, including lighting, signage, street trees and bio-swales.
- 2a) NASSCO parking lot reconfigurations and stormwater drainage and utility systems from Chollas Creek northward to 28th Street.
- 2b) Harbor Drive reconstruction of the median and lane shifting towards the southwest of the northwest bound side of the roadway from Chollas Creek to 28th Street. This would include major drainage and utility extensions for lighting.
- 2c) Construction of the Bayshore Bikeway from 28th to Sampson, including lighting, signage, street trees and bio-swales.
- 3a) Harbor Drive reconstruction of the median and lane shifting towards the southwest of the northwest bound side of the roadway from Sampson to the south end of the Harbor Drive Bridge. This would include major drainage and utility extensions for lighting.
- 3b) Construction of the Bayshore Bikeway Sampson to the south end of the Harbor Drive Bridge.
- 3c) Implementation of the signage and entry monumentation system for the entire corridor, including the public art program.
- 4a) Construction of a cantilevered bridge on the Chollas Creek bridge and the construction of the path and connectors to the proposed path segments to the south of the study area.
- 5a) Construction of a cantilevered bridge on the Harbor Drive bridge and the construction of the path and connectors to the proposed path segments to the north of the study area, including connections to the waterfront and the Martin Luther King Promenade.

Table 4: Option 1 (Bridge and Roadway Reconfigurations) Initial Cost Estimates

Bayshore Bikeway: Harbor Drive Segment		Preliminary Cost Estimate				OPTION 1
Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.						
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget
OPTON 1 SUMMARY						
Non-ROW 1: NASSCO Parking Lots (32nd Street to Sampson Street)						
1. Parking Lot Construction						\$3,195,511
Project fees / Contingency						\$1,469,935
						\$4,665,446
Option 1: Minimal Roadway & ROW Improvements (No Bio-Swale Buffer)						
2. Roadway Reconstruction						\$369,828
3. Median Improvements						\$1,173,216
4. Roadway Infrastructure						\$457,126
5. Bike / Pedestrian Facilities						\$2,653,773
6. Identity Signage						\$0
7. Bridge Cantilevers						\$692,875
8. Landscape and Irrigation						\$1,099,291
9. Utility Connections & Relocations						\$770,500
Project fees / Contingency						\$3,175,308
Option 1: total:						\$10,391,918
Grand Total Estimated Construction Costs:						\$15,057,364

Bayshore Bikeway: Harbor Drive Segment Preliminary Cost Estimate OPTION 1

Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.							
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget	
Non-ROW 1: NASSCO Parking Lots (32nd Street to Sampson Street)							
1. Parking Lot Construction							
1.1	Existing parking lot demolition	159,400	SF	\$2.50	\$398,500	\$59,775	\$458,275
1.2	Mass grading, compaction and final grading	159,400	SF	\$2.50	\$398,500	\$59,775	\$458,275
1.3	Drainage improvements including bio-swales	1	LS	\$60,000.00	\$60,000	\$9,000	\$69,000
1.4	Asphaltic concrete with 6" base	159,400	SF	\$8.50	\$1,354,900	\$203,235	\$1,558,135
1.5	Parking lot striping	508	Spaces	\$25.00	\$12,700	\$1,905	\$14,605
1.6	Curb and gutter	10,100	LF	\$20.00	\$202,000	\$30,300	\$232,300
1.7	Belt Street intersection grading, compaction and base	2,135	SF	\$5.00	\$10,675	\$1,601	\$12,276
1.8	Parking lot entry/exit signage	11	LS	\$500.00	\$5,500	\$825	\$6,325
1.9	Irrigation meter	4	EA	20,000.00	\$80,000	\$12,000	\$92,000
1.10	Irrigation backflow preventer	4	EA	2,500.00	\$10,000	\$1,500	\$11,500
1.11	New planting area irrigation	22,140	SF	\$3.00	\$66,420	\$9,963	\$76,383
1.12	Parking lot/ street trees (36" box)	116	EA	\$800.00	\$92,800	\$13,920	\$106,720
1.13	Slope native plantings	5,769	SF	\$3.00	\$17,307	\$2,596	\$19,903
1.14	Parking lot stream course rock and cobble	68	CY	\$50.00	\$3,400	\$510	\$3,910
1.15	Parking lot bark mulch or decomposed granite	84	CY	\$65.00	\$5,460	\$819	\$6,279
1.16	Parking lot edge native plantings	16,371	SF	\$3.70	\$60,543	\$9,081	\$69,624
Subtotal						\$3,195,511	
Permit and inspection fees (2%):						\$63,910	
Design, Engineering, Management & Environmental Review (15%):						\$479,327	
As-built record drawings (1%):						\$31,955	
90 day landscape, graffiti and trash maintenance period (2%):						\$63,910	
Bond - Payment and performance (1%):						\$31,955	
Contingency (25%):						\$798,878	
Total						\$4,665,446	

Bayshore Bikeway: Harbor Drive Segment

Preliminary Cost Estimate

OPTION 1

Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.							
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget	
Option 1: Minimal Roadway & ROW Improvements (No Bio-Swale Buffer)							
2. Roadway Reconstruction							
2.1	Demolition of roadway pavements	0	SF	\$2.50	\$0	\$0	\$0
2.2	Roadway grinding	0	SF	\$5.00	\$0	\$0	\$0
2.3	Roadway asphalt patching	0	SF	\$6.00	\$0	\$0	\$0
2.4	Roadway concrete patching	0	SF	\$7.00	\$0	\$0	\$0
2.5	Roadway grading	0	SF	\$5.00	\$0	\$0	\$0
2.6	Base compaction	90,838	SF	\$0.71	\$64,495	\$9,674	\$74,169
2.7	Roadway asphalt paving	90,838	SF	\$2.50	\$227,095	\$34,064	\$261,159
2.8	Roadway concrete paving	0	SF	\$3.50	\$0	\$0	\$0
2.9	Roadway concrete dowelling and expansion joints	0	LS	\$25,000.00	\$0	\$0	\$0
2.9	Roadway striping & bolts dots	1	LS	\$30,000.00	\$30,000	\$4,500	\$34,500
3. Median Improvements							
3.1	Median drainage swales & subsurface excess piping	6,579	LF	\$5.00	\$32,895	\$4,934	\$37,829
3.2	Median concrete curb with stormwater cut throughs	20,661	LF	\$15.00	\$309,915	\$46,487	\$356,402
3.3	Median concrete gutter (where required) with stormwater cut throughs	0	LF	\$5.00	\$317,980	\$47,697	\$365,677
3.4	Median lighting (Large pole fixtures)	70	EA	\$2,425.00	\$169,750	\$25,463	\$195,213
3.5	Enhanced paving	11,853	SF	\$16.00	\$189,648	\$28,447	\$218,095
4. Roadway Infrastructure							
4.1	New traffic signal at Sicard Street	1	LS	\$175,000.00	\$175,000	\$26,250	\$201,250
4.2	Pedestrian crossing signals	8	EA	\$5,000.00	\$40,000	\$6,000	\$46,000
4.3	Class 2 bike lane signage and crossing markings	1	LS	\$2,500.00	\$2,500	\$375	\$2,875
4.4	Roadway delineators	1	LS	\$5,000.00	\$5,000	\$750	\$5,750
4.5	New traffic signage, stops signs & other regulatory signs	1	LS	\$175,001.00	\$175,001	\$26,250	\$201,251
5. Bike / Pedestrian Facilities							
5.1	10' multi-use path grading	118,217	SF	\$5.00	\$591,085	\$88,663	\$679,748
5.2	10' multi-use path base compaction	118,217	SF	\$0.71	\$83,934	\$12,590	\$96,524
5.3	10' multi-use path concrete retaining wall (8')	231	CY	\$864.00	\$199,584	\$29,938	\$229,522
5.4	10' multi-use path concrete retaining wall (4') with railing	85	CY	\$864.00	\$73,440	\$11,016	\$84,456
5.5	10' multi-use concrete path	118,217	SF	\$8.00	\$945,736	\$141,860	\$1,087,596
5.6	10' multi-use path striping	1	LS	\$6,000.00	\$6,000	\$900	\$6,900
5.7	10' multi-use path lighting (Small pole fixtures)	0	EA	\$1,800.00	\$0	\$0	\$0
5.8	10' multi-use path crossing	1	LS	\$30,000.00	\$30,000	\$4,500	\$34,500
5.9	10' multi-use path signage and crossing markings	1	LS	\$10,000.00	\$10,000	\$1,500	\$11,500
5.10	10' multi-use path: Concrete Protective Barrier (K-rail)	1	LS	\$20,000.00	\$20,000	\$3,000	\$23,000
5.11	10' multi-use path protective barrier (wood barrier)	6,957	LF	\$50.00	\$347,850	\$52,178	\$400,028
6. Identity Signage							
6.1	District markers	0	LS	\$15,000.00	\$0	\$0	\$0
6.2	District Monumentation signage	0	LS	\$30,000.00	\$0	\$0	\$0
7. Bridge Cantilevers							
7.1	Chollas Creek bridge cantilever	1	LS	\$350,000.00	\$350,000	\$52,500	\$402,500
7.2	Harbor Drive Bridge cantilever	0	LS	\$1,000,000.00	\$0	\$0	\$0
7.3	Lane Restriping	1	LS	\$2,500.00	\$2,500	\$375	\$2,875
7.4	Northbound sidewalk expansion w / k-rail	1	LS	\$250,000.00	\$250,000	\$37,500	\$287,500
7.5	Move existing center divide k-rail	0	LS	\$20,000.00	\$0	\$0	\$0
7.6	Northbound sidewalk expansion w/ class 2 added & k-rail	0	LS	\$650,000.00	\$0	\$0	\$0
8. Landscape and Irrigation							
8.1	Median Irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000	\$92,000
8.2	Median irrigation backflow preventer	4	EA	\$2,500.00	\$10,000	\$1,500	\$11,500
8.3	New median planting area irrigation	87,263	SF	\$2.50	\$218,158	\$32,724	\$250,881
8.4	Median stream course rock and cobble	176	CY	\$50.00	\$8,800	\$1,320	\$10,120
8.5	Median native planting areas with significant mulch or DG areas	435	CY	\$65.00	\$28,275	\$4,241	\$32,516
8.6	Median native plantings	47,130	SF	\$1.54	\$72,621	\$10,893	\$83,514
8.7	Median 36" box trees	130	EA	\$800.00	\$104,000	\$15,600	\$119,600
8.8	Parkway Irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000	\$92,000
8.9	Parkway irrigation backflow preventer	4	EA	\$2,500.00	\$10,000	\$1,500	\$11,500
8.10	New parkway planting area irrigation	34,785	SF	\$2.50	\$86,963	\$13,044	\$100,007
8.11	Parkway 36" box trees	252	EA	\$800.00	\$201,600	\$30,240	\$231,840
8.12	Parkway native plantings	18,992	SF	\$1.93	\$36,684	\$5,503	\$42,187
8.13	Parkway stream course rock and cobble	146	CY	\$50.00	\$7,300	\$1,095	\$8,395
8.14	Parkway native planting areas with significant mulch or DG areas	177	CY	\$65.00	\$11,505	\$1,726	\$13,231
9. Utility Connections & Relocations							
9.1	New electrical point of connection	1	LS	\$20,000.00	\$20,000	\$3,000	\$23,000
9.2	Relocate below ground utilities in the way	1	LS	\$100,000.00	\$100,000	\$15,000	\$115,000
9.3	Relocate major drainage facilities in the way	1	LS	\$200,000.00	\$200,000	\$30,000	\$230,000
9.4	Install subsurface trench, perforated piping & stand pipe	3,000	LF	\$50.00	\$150,000	\$22,500	\$172,500
9.5	Remove existing street lighting and cap off utilities	1	LS	\$100,000.00	\$100,000	\$15,000	\$115,000
9.6	New potable water point of connection	4	EA	\$25,000.00	\$100,000	\$15,000	\$115,000
Option 1 Subtotal						\$7,216,610	
Design, Engineering, Management & Environmental Review (15%):						\$1,082,492	
Permit and inspection fees (2%):						\$144,332	
As-built record drawings(1%):						\$72,166	
90 day landscape, graffiti and trash maintenance period (2%):						\$144,332	
Bond - Payment and performance (1%):						\$72,166	
Contingency (25%):						\$1,804,153	
Option 1 SubTotal						\$10,536,251	

Table 5: Option 2 (Bridge and Roadway Reconfigurations) Initial Cost Estimates

Bayshore Bikeway: Harbor Drive Segment		Preliminary Cost Estimate				OPTION 2
Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.						
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget
SUMMARY						
Non-ROW 1: NASSCO Parking Lots (32nd Street to Sampson Street)						
1. Parking Lot Construction						\$3,195,511
Project fees / Contingency						\$1,469,935
						\$4,665,446
Option 2: Moderate Roadway Improvements (Add on Lane with Median Rebuild)						
2. Roadway Reconstruction (NORTHEAST LANE ONLY)						\$1,602,438
3. Median Improvements						\$1,173,216
4. Roadway Infrastructure						\$457,126
5. Bike / Pedestrian Facilities						\$3,189,742
6. Identity Signage						\$396,750
7. Bridge Cantilevers						\$715,875
8. Landscape and Irrigation						\$1,099,291
9. Utility Connections & Relocations						\$885,500
Project fees / Contingency						\$2,951,181
						Option 2: total: \$12,471,118
Grand Total Estimated Construction Costs:						\$17,136,564

Bayshore Bikeway: Harbor Drive Segment		Preliminary Cost Estimate				OPTION 2
Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.						
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget
Non-ROW 1: NASSCO Parking Lots (32nd Street to Sampson Street)						
1. Parking Lot Construction						
1.1 Existing parking lot demolition	159,400	SF	\$2.50	\$398,500	\$59,775	\$458,275
1.2 Mass grading, compaction and final grading	159,400	SF	\$2.50	\$398,500	\$59,775	\$458,275
1.3 Drainage improvements including bio-swales	1	LS	\$60,000.00	\$60,000	\$9,000	\$69,000
1.4 Asphaltic concrete with 6" base	159,400	SF	\$8.50	\$1,354,900	\$203,235	\$1,558,135
1.5 Parking lot striping	508	Spaces	\$25.00	\$12,700	\$1,905	\$14,605
1.6 Curb and gutter	10,100	LF	\$20.00	\$202,000	\$30,300	\$232,300
1.7 Belt Street intersection grading, compaction and base	2,135	SF	\$5.00	\$10,675	\$1,601	\$12,276
1.8 Parking lot entry/exit signage	11	LS	\$500.00	\$5,500	\$825	\$6,325
1.9 Irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000	\$92,000
1.10 Irrigation backflow preventer	4	EA	2,500.00	\$10,000	\$1,500	\$11,500
1.11 New planting area irrigation	22,140	SF	\$3.00	\$66,420	\$9,963	\$76,383
1.12 Parking lot/ street trees (36" box)	116	EA	\$800.00	\$92,800	\$13,920	\$106,720
1.13 Slope native plantings	5,769	SF	\$3.00	\$17,307	\$2,596	\$19,903
1.14 Parking lot stream course rock and cobble	68	CY	\$50.00	\$3,400	\$510	\$3,910
1.15 Parking lot bark mulch or decomposed granite	84	CY	\$65.00	\$5,460	\$819	\$6,279
1.16 Parking lot edge native plantings	16,371	SF	\$3.70	\$60,543	\$9,081	\$69,624
				Subtotal		\$3,195,511
				Permit and inspection fees (2%):		\$63,910
				Design, Engineering, Management & Environmental Review (15%):		\$479,327
				As-built record drawings (1%):		\$31,955
				90 day landscape, graffiti and trash maintenance period (2%):		\$63,910
				Bond - Payment and performance (1%):		\$31,955
				Contingency (25%):		\$798,878
				Total		\$4,665,446

Bayshore Bikeway: Harbor Drive Segment

Preliminary Cost Estimate

OPTION 2

Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.						
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget
Option 2: Moderate Roadway Improvements (Add on Lane with Median Rebuild)						
2. Roadway Reconstruction (NORTHEAST LANE ONLY)						
2.1 Demolition of roadway pavements	0	SF	\$2.50	\$0	\$0	\$0
2.2 Roadway grinding (10%)	31,271	SF	\$5.00	\$156,356	\$23,453	\$179,809
2.3 Roadway asphalt patching (5%)	15,636	SF	\$6.00	\$93,814	\$14,072	\$107,886
2.4 Roadway concrete patching (5%)	15,636	SF	\$7.00	\$109,449	\$16,417	\$125,867
2.5 Roadway grading	0	SF	\$5.00	\$0	\$0	\$0
2.6 Base compaction	312,712	SF	\$0.71	\$222,026	\$33,304	\$255,329
2.7 Roadway asphalt paving	312,712	SF	\$2.50	\$781,780	\$117,267	\$899,047
2.8 Roadway concrete paving	0	SF	\$3.50	\$0	\$0	\$0
2.9 Roadway concrete dowelling and expansion joints	0	LS	\$25,000.00	\$0	\$0	\$0
2.10 Roadway striping & botts dots	1	LS	\$30,000.00	\$30,000	\$4,500	\$34,500
3. Median Improvements						
3.1 Median drainage swales & subsurface excess piping	6,579	LF	\$5.00	\$32,895	\$4,934	\$37,829
3.2 Median concrete curb with stormwater cut throughs	20,661	LF	\$15.00	\$309,915	\$46,487	\$356,402
3.3 Median concrete gutter (where required) with stormwater cut throughs	0	LF	\$5.00	\$317,980	\$47,697	\$365,677
3.4 Median lighting (Large pole fixtures)	70	EA	\$2,425.00	\$169,750	\$25,463	\$195,213
3.5 Enhanced paving	11,853	SF	\$16.00	\$189,648	\$28,447	\$218,095
4. Roadway Infrastructure						
4.1 New traffic signal at Sicard Street	1	LS	\$175,000.00	\$175,000	\$26,250	\$201,250
4.2 Pedestrian crossing signals	8	EA	\$5,000.00	\$40,000	\$6,000	\$46,000
4.3 Class 2 bike lane signage and crossing markings	1	LS	\$2,500.00	\$2,500	\$375	\$2,875
4.4 Roadway delineators	1	LS	\$5,000.00	\$5,000	\$750	\$5,750
4.5 New traffic signage, stops signs & other regulatory signs	1	LS	\$175,001.00	\$175,001	\$26,250	\$201,251
5. Bike / Pedestrian Facilities						
5.1 12' multi-use path grading	141,861	SF	\$5.00	\$709,305	\$106,396	\$815,701
5.2 12' multi-use path base compaction	141,861	SF	\$0.71	\$100,721	\$15,108	\$115,830
5.3 12' multi-use path concrete retaining wall (8')	231	CY	\$864.00	\$199,584	\$29,938	\$229,522
5.4 12' multi-use path concrete retaining wall (4') with railing	85	CY	\$864.00	\$73,440	\$11,016	\$84,456
5.5 12' multi-use concrete path	141,861	SF	\$8.00	\$1,134,888	\$170,233	\$1,305,121
5.6 12' multi-use path striping	1	LS	\$6,000.00	\$6,000	\$900	\$6,900
5.7 12' multi-use path lighting (Small pole fixtures)	60	EA	\$1,800.00	\$108,000	\$16,200	\$124,200
5.8 12' multi-use path crossing	1	LS	\$30,000.00	\$30,000	\$4,500	\$34,500
5.9 12' multi-use path signage and crossing markings	1	LS	\$10,000.00	\$10,000	\$1,500	\$11,500
5.10 12' multi-use path: Concrete Protective Barrier (K-Rail)	1	LS	\$20,000.00	\$20,000	\$3,000	\$23,000
5.11 Class 2 Bike Lane: 6" concrete curb & gutter	7,635	LF	\$50.00	\$381,750	\$57,263	\$439,013
6. Identity Signage						
6.1 District markers	6	EA	\$15,000.00	\$90,000	\$13,500	\$103,500
6.2 Light pole based artwork	60	EA	\$3,000.00	\$180,000	\$27,000	\$207,000
6.3 District Monumentation signage	1	LS	\$75,000.00	\$75,000	\$11,250	\$86,250
7. Bridge Cantilevers						
7.1 Chollas Creek bridge cantilever	1	LS	\$350,000.00	\$350,000	\$52,500	\$402,500
7.2 Harbor Drive Bridge cantilever	0	LS	\$800,000.00	\$0	\$0	\$0
7.3 Lane Restriping	1	LS	\$2,500.00	\$2,500	\$375	\$2,875
7.4 Northbound sidewalk expansion w/ k-rail	1	LS	\$250,000.00	\$250,000	\$37,500	\$287,500
7.5 Move existing center divide k-rail	1	LS	\$20,000.00	\$20,000	\$3,000	\$23,000
7.6 Northbound sidewalk expansion w/ class 2 added & k-rail	0	LS	\$650,000.00	\$0	\$0	\$0
8. Landscape and Irrigation						
8.1 Median Irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000	\$92,000
8.2 Median irrigation backflow preventer	4	EA	\$2,500.00	\$10,000	\$1,500	\$11,500
8.3 New median planting area irrigation	87,263	SF	\$2.50	\$218,158	\$32,724	\$250,881
8.4 Median stream course rock and cobble	176	CY	\$50.00	\$8,800	\$1,320	\$10,120
8.5 Median native planting areas with significant mulch or DG areas	435	CY	\$65.00	\$28,275	\$4,241	\$32,516
8.6 Median native plantings	47,130	SF	\$1.54	\$72,621	\$10,893	\$83,514
8.7 Median 36" box trees	130	EA	\$800.00	\$104,000	\$15,600	\$119,600
8.8 Parkway Irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000	\$92,000
8.9 Parkway irrigation backflow preventer	4	EA	\$2,500.00	\$10,000	\$1,500	\$11,500
8.10 New parkway planting area irrigation	34,785	SF	\$2.50	\$86,963	\$13,044	\$100,007
8.11 Parkway 36" box trees	252	EA	\$800.00	\$201,600	\$30,240	\$231,840
8.12 Parkway native plantings	18,992	SF	\$1.93	\$36,684	\$5,503	\$42,187
8.13 Parkway stream course rock and cobble	146	CY	\$50.00	\$7,300	\$1,095	\$8,395
8.14 Parkway native planting areas with significant mulch or DG areas	177	CY	\$65.00	\$11,505	\$1,726	\$13,231
9. Utility Connections & Relocations						
9.1 New electrical point of connection	1	LS	\$20,000.00	\$20,000	\$3,000	\$23,000
9.2 Relocate below ground utilities in the way	1	LS	\$100,000.00	\$100,000	\$15,000	\$115,000
9.3 Relocate major drainage facilities in the way	1	LS	\$200,000.00	\$200,000	\$30,000	\$230,000
9.4 Install subsurface trench, perforated piping & stand pipe	3,000	LF	\$50.00	\$150,000	\$22,500	\$172,500
9.5 Remove existing street lighting and cap off utilities	1	LS	\$100,000.00	\$100,000	\$15,000	\$115,000
9.6 New potable water point of connection	8	EA	\$25,000.00	\$200,000	\$30,000	\$230,000
				Option 2 Subtotal		\$9,519,938
				Design, Engineering, Management & Environmental Review (15%):		\$1,427,991
				Permit and inspection fees (2%):		\$190,399
				As-built record drawings (1%):		\$95,199
				90 day landscape, graffiti and trash maintenance period (2%):		\$190,399
				Bond - Payment and performance (1%):		\$95,199
				Contingency (25%):		\$2,379,984
				Option 2 Total		\$13,899,109

Table 6: Option 3 (Bridge and Roadway Reconfigurations) Initial Cost Estimates

Bayshore Bikeway: Harbor Drive Segment Preliminary Cost Estimate OPTION 3

Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.						
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget
SUMMARY						
Non-ROW 1: NASSCO Parking Lots (32nd Street to Sampson Street)						
1. Parking Lot Construction						\$3,195,511
Project fees / Contingency						\$1,469,935
						\$4,665,446
Option 3: Partial Roadway Rebuild (Full Surface Overlay, Add on Lane with Median Rebuild)						
2. Roadway Reconstruction						\$3,662,315
3. Median Improvements						\$1,173,216
4. Roadway Infrastructure						\$457,126
5. Bike / Pedestrian Facilities						\$3,189,742
6. Identity Signage						\$396,750
7. Bridge Cantilevers						\$1,267,875
8. Landscape and Irrigation						\$1,096,237
9. Utility Connections & Relocations						\$885,500
Project fees / Contingency						\$3,759,916
						\$15,888,678
						Option 3: total:
						\$20,554,123

Bayshore Bikeway: Harbor Drive Segment Preliminary Cost Estimate OPTION 3

Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.						
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget
Non-ROW 1: NASSCO Parking Lots (32nd Street to Sampson Street)						
1. Parking Lot Construction						
1.1 Existing parking lot demolition	159,400	SF	\$2.50	\$398,500	\$59,775	\$458,275
1.2 Mass grading, compaction and final grading	159,400	SF	\$2.50	\$398,500	\$59,775	\$458,275
1.3 Drainage improvements including bio-swales	1	LS	\$60,000.00	\$60,000	\$9,000	\$69,000
1.4 Asphaltic concrete with 6" base	159,400	SF	\$8.50	\$1,354,900	\$203,235	\$1,558,135
1.5 Parking lot striping	508	Spaces	\$25.00	\$12,700	\$1,905	\$14,605
1.6 Curb and gutter	10,100	LF	\$20.00	\$202,000	\$30,300	\$232,300
1.7 Belt Street intersection grading, compaction and base	2,135	SF	\$5.00	\$10,675	\$1,601	\$12,276
1.8 Parking lot entry/exit signage	11	LS	\$500.00	\$5,500	\$825	\$6,325
1.9 Irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000	\$92,000
1.10 Irrigation backflow preventer	4	EA	\$2,500.00	\$10,000	\$1,500	\$11,500
1.11 New planting area irrigation	22,140	SF	\$3.00	\$66,420	\$9,963	\$76,383
1.12 Parking lot/ street trees (36" box)	116	EA	\$800.00	\$92,800	\$13,920	\$106,720
1.13 Parking lot stream course rock and cobble	68	CY	\$50.00	\$3,400	\$510	\$3,910
1.14 Parking lot bark mulch or decomposed granite	84	CY	\$65.00	\$5,460	\$819	\$6,279
1.15 Slope native plantings	5,769	SF	\$3.00	\$17,307	\$2,596	\$19,903
1.16 Parking lot edge native plantings	16,371	SF	\$3.70	\$60,543	\$9,081	\$69,624
						Subtotal
						\$3,195,511
						Permit and inspection fees (2%): \$63,910
						Design, Engineering, Management & Environmental Review (15%): \$479,327
						As-built record drawings (1%): \$31,955
						90 day landscape, graffiti and trash maintenance period (2%): \$63,910
						Bond - Payment and performance (1%): \$31,955
						Contingency (25%): \$798,878
						Total
						\$4,665,446

Bayshore Bikeway: Harbor Drive Segment Preliminary Cost Estimate OPTION 3

Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.						
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget
Option 3: Partial Roadway Rebuild (Full Surface Overlay, Add on Lane with Median Rebuild)						
2. Roadway Reconstruction						
2.1 Demolition of roadway pavements	0	SF	\$2.50	\$0	\$0	\$0
2.2 Roadway grinding (10%)	65,949	SF	\$5.00	\$329,747	\$49,462	\$379,209
2.3 Roadway asphalt patching (5%)	32,975	SF	\$6.00	\$197,848	\$29,677	\$227,525
2.4 Roadway concrete patching (5%)	32,975	SF	\$7.00	\$230,823	\$34,623	\$265,446
2.3 Roadway grading	0	SF	\$5.00	\$0	\$0	\$0
2.5 Base compaction	0	SF	\$0.71	\$0	\$0	\$0
2.6 Roadway asphalt paving	659,494	SF	\$2.50	\$1,648,735	\$247,310	\$1,896,045
2.7 Roadway concrete paving (30%)	197,848	SF	\$3.50	\$692,469	\$103,870	\$796,339
2.8 Roadway concrete dowelling and expansion joints	1	LS	\$25,000.00	\$25,000	\$3,750	\$28,750
2.9 Roadway striping & botts dots	1	LS	\$60,000.00	\$60,000	\$9,000	\$69,000
3. Median Improvements						
3.1 Median drainage swales & subsurface excess piping	6,579	LF	\$5.00	\$32,895	\$4,934	\$37,829
3.2 Median concrete curb with stormwater cut throughs	20,661	LF	\$15.00	\$309,915	\$46,487	\$356,402
3.3 Median concrete gutter (where required) with stormwater cut throughs	0	LF	\$5.00	\$0	\$0	\$0
3.4 Median lighting (Large pole fixtures)	70	EA	\$2,425.00	\$169,750	\$25,463	\$195,213
3.5 Enhanced paving	11,853	SF	\$16.00	\$189,648	\$28,447	\$218,095
4. Roadway Infrastructure						
4.1 New traffic signal at Sicard Street	1	LS	\$175,000.00	\$175,000	\$26,250	\$201,250
4.2 Pedestrian crossing signals	8	EA	\$5,000.00	\$40,000	\$6,000	\$46,000
4.3 Class 2 bike lane signage and crossing markings	1	LS	\$2,500.00	\$2,500	\$375	\$2,875
4.4 Roadway delineators	1	LS	\$5,000.00	\$5,000	\$750	\$5,750
4.5 New traffic signage, stops signs & other regulatory signs	1	LS	\$175,001.00	\$175,001	\$26,250	\$201,251
5. Bike / Pedestrian Facilities						
5.1 12' multi-use path grading	141,861	SF	\$5.00	\$709,305	\$106,396	\$815,701
5.2 12' multi-use path base compaction	141,861	SF	\$0.71	\$100,721	\$15,108	\$115,830
5.3 12' multi-use path concrete retaining wall (8')	231	CY	\$864.00	\$199,584	\$29,938	\$229,522
5.4 12' multi-use path concrete retaining wall (4') with railing	85	CY	\$864.00	\$73,440	\$11,016	\$84,456
5.5 12' multi-use concrete path	141,861	SF	\$8.00	\$1,134,888	\$170,233	\$1,305,121
5.6 12' multi-use path striping	1	LS	\$6,000.00	\$6,000	\$900	\$6,900
5.7 12' multi-use path lighting (Small pole fixtures)	60	EA	\$1,800.00	\$108,000	\$16,200	\$124,200
5.8 12' multi-use path crossing	1	LS	\$30,000.00	\$30,000	\$4,500	\$34,500
5.9 12' multi-use path signage and crossing markings	1	LS	\$10,000.00	\$10,000	\$1,500	\$11,500
5.10 12' multi-use path: Concrete Protective Barrier (K-Rail)	1	LS	\$20,000.00	\$20,000	\$3,000	\$23,000
5.11 Class 2 Bike Lane: 6" concrete curb & gutter	7,635	LF	\$50.00	\$381,750	\$57,263	\$439,013
6. Identity Signage						
6.1 District markers	6	EA	\$15,000.00	\$90,000	\$13,500	\$103,500
6.2 Light pole based artwork	60	EA	\$3,000.00	\$180,000	\$27,000	\$207,000
6.3 District Monumentation signage	2	EA	\$50,000.00	\$100,000	\$11,250	\$111,250
7. Bridge Cantilevers						
7.1 Chollas Creek bridge cantilever	1	LS	\$350,000.00	\$350,000	\$52,500	\$402,500
7.2 Harbor Drive Bridge cantilever	0	LS	\$1,000,000.00	\$0	\$0	\$0
7.3 Lane Restriping	1	LS	\$2,500.00	\$2,500	\$375	\$2,875
7.4 Northbound sidewalk expansion w/ k-rail	0	LS	\$250,000.00	\$0	\$0	\$0
7.5 Move existing center divide k-rail	0	LS	\$20,000.00	\$0	\$0	\$0
7.6 Northbound sidewalk expansion w/ class 2 added & k-rail	1	LS	\$750,000.00	\$750,000	\$112,500	\$862,500
8. Landscape and Irrigation						
8.1 Median Irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000	\$92,000
8.2 Median irrigation backflow preventer	4	EA	\$2,500.00	\$10,000	\$1,500	\$11,500
8.3 New median planting area irrigation	87,263	SF	\$2.50	\$218,158	\$32,724	\$250,881
8.4 Median stream course rock and cobble	176	CY	\$50.00	\$8,800	\$1,320	\$10,120
8.5 Median native planting areas with significant mulch or DG areas	435	CY	\$65.00	\$28,275	\$4,241	\$32,516
8.6 Median native plantings	47,130	SF	\$1.54	\$72,621	\$10,893	\$83,514
8.7 Median 36" box trees	130	EA	\$800.00	\$104,000	\$15,600	\$119,600
8.8 Parkway Irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000	\$92,000
8.9 Parkway irrigation backflow preventer	4	EA	\$2,500.00	\$10,000	\$1,500	\$11,500
8.10 New parkway planting area irrigation	34,785	SF	\$2.50	\$86,963	\$13,044	\$100,007
8.11 Parkway 36" box trees	252	EA	\$800.00	\$201,600	\$30,240	\$231,840
8.12 Parkway native plantings	18,992	SF	\$1.93	\$36,684	\$5,503	\$42,187
8.13 Parkway stream course rock and cobble	146	CY	\$50.00	\$7,300	\$1,095	\$8,395
8.14 Parkway native planting areas with significant mulch or DG areas	177	CY	\$50.00	\$8,850	\$1,328	\$10,178
9. Utility Connections & Relocations						
9.1 New electrical point of connection	1	LS	\$20,000.00	\$20,000	\$3,000	\$23,000
9.2 Relocate below ground utilities in the way	1	LS	\$100,000.00	\$100,000	\$15,000	\$115,000
9.3 Relocate major drainage facilities in the way	1	LS	\$200,000.00	\$200,000	\$30,000	\$230,000
9.4 Install subsurface trench, perforated piping & stand pipe	3,000	LF	\$50.00	\$150,000	\$22,500	\$172,500
9.5 Remove existing street lighting and cap off utilities	1	LS	\$100,000.00	\$100,000	\$15,000	\$115,000
9.6 New potable water point of connection	8	EA	\$25,000.00	\$200,000	\$30,000	\$230,000
						Option 3 Subtotal
						\$12,128,761
						Permit and inspection fees (2%): \$242,575
						Design, Engineering, Management & Environmental Review (15%): \$1,819,314
						As-built record drawings(1%): \$121,288
						90 day landscape, graffiti and trash maintenance period (2%): \$242,575
						Bond - Payment and performance (1%): \$121,288
						Contingency (25%): \$3,032,190
						Option 3 Total
						\$17,707,992

Table 7: Option 4 (Bridge and Roadway Reconfigurations) Initial Cost Estimates

Bayshore Bikeway: Harbor Drive Segment						Preliminary Cost Estimate		OPTION 4
Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.								
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget		
SUMMARY								
Non-ROW 1: NASSCO Parking Lots (32nd Street to Sampson Street)								
1. Parking Lot Construction							\$3,195,511	
Project fees / Contingency							\$1,469,935	
							\$4,665,446	
Option 4: Full Roadway Rebuild (Full Roadway Rebuild & Drainage Improvements)								
2. Roadway Reconstruction							\$10,903,621	
3. Median Improvements							\$1,173,216	
4. Roadway Infrastructure							\$457,126	
5. Bike / Pedestrian Facilities							\$3,309,802	
6. Identity Signage							\$421,750	
7. Bridge Cantilevers							\$1,555,375	
8. Landscape and Irrigation							\$1,096,237	
9. Utility Connections & Relocations							\$885,500	
Project fees / Contingency							\$6,138,815	
							\$25,941,442	
							\$30,606,888	

Bayshore Bikeway: Harbor Drive Segment						Preliminary Cost Estimate		OPTION 4
Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.								
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget		
Non-ROW 1: NASSCO Parking Lots (32nd Street to Sampson Street)								
1. Parking Lot Construction								
1.1 Existing parking lot demolition	159,400	SF	\$2.50	\$398,500	\$59,775		\$458,275	
1.2 Mass grading, compaction and final grading	159,400	SF	\$2.50	\$398,500	\$59,775		\$458,275	
1.3 Drainage improvements including bio-swales	1	LS	\$60,000.00	\$60,000	\$9,000		\$69,000	
1.4 Asphaltic concrete with 6" base	159,400	SF	\$8.50	\$1,354,900	\$203,235		\$1,558,135	
1.5 Parking lot striping	508	Spaces	\$25.00	\$12,700	\$1,905		\$14,605	
1.6 Curb and gutter	10,100	LF	\$20.00	\$202,000	\$30,300		\$232,300	
1.7 Belt Street intersection grading, compaction and base	2,135	SF	\$5.00	\$10,675	\$1,601		\$12,276	
1.8 Parking lot entry/exit signage	11	LS	\$500.00	\$5,500	\$825		\$6,325	
1.9 Irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000		\$92,000	
1.10 Irrigation backflow preventer	4	EA	\$2,500.00	\$10,000	\$1,500		\$11,500	
1.11 New planting area irrigation	22,140	SF	\$3.00	\$66,420	\$9,963		\$76,383	
1.12 Parking lot/ street trees (36" box)	116	EA	\$800.00	\$92,800	\$13,920		\$106,720	
1.13 Slope native plantings	5,769	SF	\$3.00	\$17,307	\$2,596		\$19,903	
1.14 Parking lot stream course rock and cobble	68	CY	\$50.00	\$3,400	\$510		\$3,910	
1.15 Parking lot bark mulch or decomposed granite	84	CY	\$65.00	\$5,460	\$819		\$6,279	
1.16 Parking lot edge native plantings	16,371	SF	\$3.70	\$60,543	\$9,081		\$69,624	
							\$3,195,511	
							\$63,910	
							\$479,327	
							\$31,955	
							\$63,910	
							\$31,955	
							\$798,878	
							\$4,665,446	

Bayshore Bikeway: Harbor Drive Segment						Preliminary Cost Estimate		OPTION 4
Note: These costs are preliminary and do not reflect the level of refinement the plan will be adjusted to once more detailed design, engineering and utility research has been completed.								
	Quantity of Units	Unit of Measure	Unit Price (Installed)	Sub-total Cost	Contractor Profit and Markup (15%)	Full Program Budget		
Option 4: Full Roadway Rebuild (Full Roadway Rebuild & Drainage Improvements)								
2. Roadway Reconstruction								
2.1 Demolition of roadway pavements	659,494	SF	\$2.50	\$1,648,735	\$247,310		\$1,896,045	
2.2 Roadway grinding	0	SF	\$5.00	\$0	\$0		\$0	
2.3 Roadway asphalt patching	0	SF	\$6.00	\$0	\$0		\$0	
2.4 Roadway concrete patching	0	SF	\$7.00	\$0	\$0		\$0	
2.5 Roadway grading	659,494	SF	\$5.00	\$3,297,470	\$494,621		\$3,792,091	
2.6 Base compaction	659,494	SF	\$0.71	\$468,241	\$70,236		\$538,477	
2.7 Roadway asphalt paving	659,494	SF	\$2.50	\$1,648,735	\$247,310		\$1,896,045	
2.8 Roadway concrete paving	659,494	SF	\$3.50	\$2,308,229	\$346,234		\$2,654,463	
2.9 Roadway concrete dowelling and expansion joints	1	LS	\$50,000.00	\$50,000	\$7,500		\$57,500	
2.10 Roadway striping & bottle dots	1	LS	\$60,000.00	\$60,000	\$9,000		\$69,000	
3. Median Improvements								
3.1 Median drainage swales & subsurface excess piping	6,579	LF	\$5.00	\$32,895	\$4,934		\$37,829	
3.2 Median concrete curb with stormwater cut throughs	20,661	LF	\$15.00	\$309,915	\$46,487		\$356,402	
3.3 Median concrete gutter (where required) with stormwater cut throughs	0	LF	\$5.00	\$0	\$0		\$0	
3.4 Median lighting (Large pole fixtures)	70	EA	\$2,425.00	\$169,750	\$25,463		\$195,213	
3.5 Enhanced paving	11,853	SF	\$16.00	\$189,648	\$28,447		\$218,095	
4. Roadway Infrastructure								
4.1 New traffic signal at Sicard Street	1	LS	\$175,000.00	\$175,000	\$26,250		\$201,250	
4.2 Pedestrian crossing signals	8	EA	\$5,000.00	\$40,000	\$6,000		\$46,000	
4.3 Class 2 bike lane signage and crossing markings	1	LS	\$2,500.00	\$2,500	\$375		\$2,875	
4.4 Roadway delineators	1	LS	\$5,000.00	\$5,000	\$750		\$5,750	
4.5 New traffic signage, stops signs & other regulatory signs	1	LS	\$175,001.00	\$175,001	\$26,250		\$201,251	
5. Bike / Pedestrian Facilities								
5.1 12' multi-use path grading	141,861	SF	\$5.00	\$709,305	\$106,396		\$815,701	
5.2 12' multi-use path base compaction	141,861	SF	\$0.71	\$100,721	\$15,108		\$115,830	
5.3 12' multi-use path concrete retaining wall (8')	231	CY	\$864.00	\$199,584	\$29,938		\$229,522	
5.4 12' multi-use path concrete retaining wall (4') with railing	85	CY	\$864.00	\$73,440	\$11,016		\$84,456	
5.5 12' multi-use concrete path	141,861	SF	\$8.00	\$1,134,888	\$170,233		\$1,305,121	
5.6 12' multi-use path striping	1	LS	\$6,000.00	\$6,000	\$900		\$6,900	
5.7 12' multi-use path lighting (Small pole fixtures)	118	EA	\$1,800.00	\$212,400	\$31,860		\$244,260	
5.8 12' multi-use path crossing	1	LS	\$30,000.00	\$30,000	\$4,500		\$34,500	
5.9 12' multi-use path signage and crossing markings	1	LS	\$10,000.00	\$10,000	\$1,500		\$11,500	
5.10 12' multi-use path: Concrete Protective Barrier (K-Rail)	1	LS	\$20,000.00	\$20,000	\$3,000		\$23,000	
5.11 Class 2 Bike Lane: 6" concrete curb & gutter	7,635	LF	\$50.00	\$381,750	\$57,263		\$439,013	
6. Identity Signage								
6.1 District markers	6	EA	\$17,000.00	\$90,000	\$13,500		\$103,500	
6.2 Light pole based artwork	60	EA	\$5,000.00	\$300,000	\$45,000		\$345,000	
6.3 District Monumentation signage	2	EA	\$50,000.00	\$100,000	\$15,000		\$115,000	
7. Bridge Cantilevers								
7.1 Chollas Creek bridge cantilever	1	LS	\$350,000.00	\$350,000	\$52,500		\$402,500	
7.2 Harbor Drive Bridge cantilever	1	LS	\$1,000,000.00	\$1,000,000	\$150,000		\$1,150,000	
7.3 Lane Restriping	1	LS	\$2,500.00	\$2,500	\$375		\$2,875	
7.4 Northbound sidewalk expansion w/ k-rail	0	LS	\$250,000.00	\$0	\$0		\$0	
7.5 Move existing center divide k-rail	0	LS	\$20,000.00	\$0	\$0		\$0	
7.6 Northbound sidewalk expansion w/ class 2 added & k-rail	0	LS	\$650,000.00	\$0	\$0		\$0	
8. Landscape and Irrigation								
8.1 Median irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000		\$92,000	
8.2 Median irrigation backflow preventer	4	EA	\$2,500.00	\$10,000	\$1,500		\$11,500	
8.3 New median planting area irrigation	87,263	SF	\$2.50	\$218,158	\$32,724		\$250,881	
8.4 Median stream course rock and cobble	176	CY	\$50.00	\$8,800	\$1,320		\$10,120	
8.5 Median native planting areas with significant mulch or DG areas	435	CY	\$65.00	\$28,275	\$4,241		\$32,516	
8.6 Median native plantings	47,130	SF	\$1.54	\$72,621	\$10,893		\$83,514	
8.7 Median 36" box trees	130	EA	\$800.00	\$104,000	\$15,600		\$119,600	
8.8 Parkway irrigation meter	4	EA	\$20,000.00	\$80,000	\$12,000		\$92,000	
8.9 Parkway irrigation backflow preventer	4	EA	\$2,500.00	\$10,000	\$1,500		\$11,500	
8.10 New parkway planting area irrigation	34,785	SF	\$2.50	\$86,963	\$13,044		\$100,007	
8.11 Parkway 36" box trees	252	EA	\$800.00	\$201,600	\$30,240		\$231,840	
8.12 Parkway native plantings	18,992	SF	\$1.93	\$36,684	\$5,503		\$42,187	
8.13 Parkway stream course rock and cobble	146	CY	\$50.00	\$7,300	\$1,095		\$8,395	
8.14 Parkway native planting areas with significant mulch or DG areas	177	CY	\$50.00	\$8,850	\$1,328		\$10,178	
9. Utility Connections & Relocations								
9.1 New electrical point of connection	1	LS	\$20,000.00	\$20,000	\$3,000		\$23,000	
9.2 Relocate below ground utilities in the way	1	LS	\$100,000.00	\$100,000	\$15,000		\$115,000	
9.3 Relocate major drainage facilities in the way	1	LS	\$200,000.00	\$200,000	\$30,000		\$230,000	
9.4 Install subsurface trench, perforated piping & stand pipe	3,000	LF	\$50.00	\$150,000	\$22,500		\$172,500	
9.5 Remove existing street lighting and cap off utilities	1	LS	\$100,000.00	\$100,000	\$15,000		\$115,000	
9.6 New potable water point of connection	8	EA	\$25,000.00	\$200,000	\$30,000		\$230,000	
							\$19,802,628	
							\$396,053	
							\$2,970,394	
							\$198,026	
							\$396,053	
							\$198,026	
							\$4,950,657	
							\$28,911,836	

Table 8: Summary of Cost Estimates for all Options

POTENTIAL CONSTRUCTION COST SUMMARY OF ALL OPTIONS				
	OPTION 1	OPTION 2	OPTION 3	OPTION 4
1. Parking Lot Construction	\$3,195,511	\$3,195,511	\$3,195,511	\$3,195,511
Project fees / Contingency	\$1,469,935	\$1,469,935	\$1,469,935	\$1,469,935
	\$4,665,446	\$4,665,446	\$4,665,446	\$4,665,446
2. Roadway Reconstruction	\$369,828	\$1,602,438	\$3,662,315	\$10,903,621
3. Median Improvements	\$1,173,216	\$1,173,216	\$1,173,216	\$1,173,216
4. Roadway Infrastructure	\$457,126	\$457,126	\$457,126	\$457,126
5. Bike / Pedestrian Facilities	\$2,653,773	\$3,189,742	\$3,189,742	\$3,309,802
6. Identity Signage	\$0	\$396,750	\$396,750	\$421,750
7. Bridge Cantilevers	\$692,875	\$715,875	\$1,267,875	\$1,555,375
8. Landscape and Irrigation	\$1,099,291	\$1,099,291	\$1,096,237	\$1,096,237
9. Utility Connections & Relocations	\$770,500	\$885,500	\$885,500	\$885,500
Project fees / Contingency	\$3,175,308	\$2,951,181	\$3,759,916	\$6,138,815
	\$10,391,918	\$12,471,118	\$15,888,678	\$25,941,442
OPTION GRAND TOTALS:	\$15,057,364	\$17,136,564	\$20,554,123	\$30,606,888

Table 9: Maintenance Schedule and Quantities

Maintenance Quantities	Monthly	Quarterly	Annually	Unit	Maintenance Type and Frequency
<i>Parkway stream course rock and cobble</i>			15,768	SF	Annual inspection for loose rocks and weeding
<i>Parkway native planting areas with significant mulch or DG areas</i>	18,992			SF	Monthly inspection of irrigation and trash clean up
<i>Count of plants in parkway native planting area</i>		4,076		Plants	Quarterly inspection for plant replacement, disease control & weeding
<i>Median stream course rock and cobble</i>			19,146	SF	Annual inspection for loose rocks and weeding
<i>Median native planting areas with significant mulch or DG areas</i>	47,130			SF	Monthly inspection of irrigation and trash clean up
<i>Median Concrete Maintenance Strip</i>			20,679	SF	Very low maintenance, maybe some inspection for damage annually
<i>Count of plants in median native planting area</i>		8,069		Plants	Quarterly inspection for plant replacement, disease control & weeding
<i>Turn lane stream course rock and cobble mortar set</i>			5,405	SF	Annual inspection for loose rocks and weeding
<i>Turn lane Concrete Maintenance Strip</i>			6,448	SF	Very low maintenance, maybe some inspection for damage annually
<i>Median 36" box trees</i>			130	EA	Annual inspection for disease and pruning / shaping
<i>Parkway 36" box trees</i>			252	EA	Annual inspection for disease and pruning / shaping
Total Monthly Square Footage (all areas)	66,122				
Total Shrub, Groundcover Plant Count (all areas)		12,145			
Total Annual Square Footage (all areas)			67,446		
Total Tree Count (all areas)				382	