Los Angeles River Community Design ~ Studio City

Valleyheart Greenway

A report to

The California Coastal Conservancy

and

The Los Angeles & San Gabriel Rivers Watershed Council

By

The RIVER PROJECT

March 2002

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The RIVER PROJECT

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Introduction

The River Project - in partnership with Los Angeles County Public Works (LACDPW), Carpenter Avenue Elementary School and the Studio City Residents Association (SCRA), and with vision and support from the California Coastal Conservancy, completed design documents, a cost estimate and maintenance recommendations for the creation of a community green space and restoration of riparian habitat along a quarter mile of Los Angeles River. From this Studio City locale, extending from Laurel Canyon Boulevard to the west and Radford Avenue to the east, diverse community members – homeowners, renters, elementary school students and local activists – attended workshops and community meetings to participate in the plan that is presented in this report.

The process we implemented is as important to document in this report as are the plans and recommendations. Participants learned about the river; they learned about watershed issues including storm water management, native versus nonnative plants and other information, and were provided with tools to integrate these elements into an actual plan for the Valleyheart Greenway. Based on what they learned, they helped craft a plan that includes interpretive features, paths for both bicycles and pedestrians, community gathering areas, and native habitat areas to attract butterflies, pollinating insects and hummingbirds.

We achieved the goals established for this project. These were:

- To enhance public access to the Los Angeles River through education and the creation of a usable Greenway;
- To increase the riparian habitat of the Los Angeles River;
- To stimulate a sense of community ownership in the Greenway; and
- To educate the community about river issues such as its natural riparian heritage and its relation to the coast.

The professional design documents, which include cost estimates and maintenance recommendations, will facilitate the successful implementation of the design. The community involvement component, which far exceeded anyone's expectations, serves as a powerful model for similar efforts along the Los Angeles River. The combination of professional facilitation with community drive and ambition resulted in a plan that the California Coastal Conservancy could use as a win-win demonstration project. This project was an example of the best kind of public-private partnership. We are pleased to submit this report.

The Project

We had no idea until we actually began the process how hungry our community was to get involved and see some very positive changes in the way "we" deal with the Los Angeles River. To capitalize on this desire, The River Project, headed by Melanie Winter, applied to the Watershed Council for funding to initiate a community-driven design process that would result in usable, technical plans for the ***re***creation of a people-friendly Los Angeles River as it courses through Studio City.

Project History

People already used the river. They walked to the Farmer's Market. They walked their dogs. They walked to school. They took their lunch breaks. Even though it wasn't (still isn't) pretty to look at, there was something about the river that brought them. Part of it is proximity – the river dissects Studio City, separating the bustling business district of Ventura Boulevard from the residential neighborhoods to the North, so it's hard to miss if you're on foot. But in larger part, there is something about a river; and the people of Studio City wanted theirs to be special. They had already embarked on the process of improving the river's edge to a certain degree. Some people planted flowers along the river bank. Several neighbors got together and put up a sign encouraging others in the area to help beautify the river. And Melanie's neighbor encouraged The River Project team to work with Carpenter Avenue Elementary School and involve the children.

Project Participants

The following agencies and their networks of people participated in the planning and design recommendations for the Valleyheart Greenway:

- The River Project Team including
  - Melanie Winter - Project Director
  - Mary Sager McFadden - Landscape Architect
  - Ellen Mackey - Ecologist
  - Matt Kirk - Incledon Kirk Engineers
  - Noel J. Fearon Associates, Inc. - Cost Estimator

The River Project is a non-profit organization dedicated to improving the local neighborhoods and communities through the restoration of the Los Angeles & San Gabriel River Watersheds. The River Project seeks to promote the natural and historic heritage of Southern California and to connect communities by engaging them in the process of creating parkways and bikeways along our rivers. The River Project believes that the Los Angeles Greenway should be created in half-mile increments to fully involve the direct participation of the neighborhoods through which the river passes.

- ❖ Carpenter Avenue Elementary School (including school administration, educators, and most importantly, students – lots of students)

- ❖ The Los Angeles County Department of Public Works (including personnel from the Flood Control District, the Watershed Management Division, and the Los Angeles River Master Plan Project Manager)

- ❖ The Studio City Residents Association (SCRA)

Melanie and Mary, in addition to being integral to The River Project team, are both active SCRA members as well as appointees to the local City Council district's Neighborhood Oversight Committee for city-funded Los Angeles River Greenway projects. This link – community mobilizers on the one hand and Oversight Committee members on the other – afforded an advantage that helped the residents of Studio City achieve a level of quality and ownership that might not have come about had the project consultants come from outside the community.

Project Funding

Funding for the Valleyheart Greenway was provided by a grant from the California Coastal Conservancy under Proposition 204 and administered by the Los Angeles and San Gabriel Rivers Watershed Council (LASGRWC).

As required, the project met the following requirements of Proposition 204:

- ➢ To increase and enhance public access to the Los Angeles River Greenway
- ➢ To increase the riparian habitat of the Los Angeles River Greenway
- ➢ To educate the community about the river's native habitat and its relation to the coast

The project also addressed four of the eight major points of the LASGRWC's vision statement:

- ➢ Celebrating our Rivers with greenways, bikeways, habitat, and recreation areas
- ➢ Creating truly livable communities around the revitalized rivers
- ➢ Using all our water resources efficiently, using native plants in public landscapes
- ➢ Restoring habitat for birds and wildlife

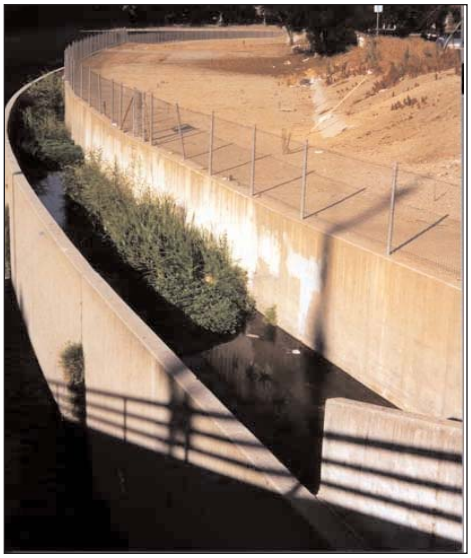
While most of the project was fully funded, Melanie and Mary contributed a significant amount of non-funded time to the student workshops, and to LACDPW to facilitate their timeline for implementation.

Project Requirements & Constraints

LACDPW and the US Army Corps of Engineers (ACE) share jurisdiction over the river system, and each has requirements for flood control operations which must be accommodated in every project undertaken along the Los Angeles River Greenway. Specific to this project, the design considerations included:

✧ ***Staging and Turn-around Areas***

At the west end of this river section, a weir borders the south bank of the river channel for approximately 400 feet. This weir is the terminus for storm water drainage from Laurel Canyon as it empties into the Los Angeles River. During rainfall, the weir handles tremendous volume and when dry is fertile ground for vegetation. In order to maintain capacity, once a year before the onset of the rainy season, Public Works uses a large truck with outriggers and a long crane to scoop out this volunteer vegetation. This truck requires a flat operating area adjacent to the weir and a wide turn-around area.



The Weir

✧ ***Planting Setbacks***

Plantings are restricted to a predetermined distance from the river channel.

Public Works is currently drafting greenway development guidelines. While they are not yet published, The River Project worked closely with Public Works personnel to ensure that plans for plantings avoided potential root system impact to the structural integrity of the channel walls and would not impact vehicular access.

✧ ***Adequate Access for Maintenance Vehicles***

The access points and trails must accommodate access for maintenance vehicles. A 12-foot wide DG path was designed for joint use with service vehicles.

✧ ***Conformance with County Standards***

Public works requires that amenities, such as fencing and retaining walls, meet the county standards to accommodate public use.

Project Opportunities

Revitalize the natural areas along the river

❖❖❖

Involve the community in the process

❖❖❖

Involve and empower the children

❖❖❖

Coordinate agency design and engineering standards with community goals and needs

❖❖❖

Present a workable, fundable model for future revitalization projects

❖❖❖

Provide the California Coastal Conservancy with an ideal project for implementation

Revitalize the natural areas along the river. The most obvious opportunity this project provides is to revitalize the natural areas along the river. Currently the areas on either side of the river are barren and neglected. Repairing and restoring this area will not only benefit native animals and plants, but will also provide vitally important open space area for the public to use and enjoy. Today, in neighborhood after neighborhood, there is the recognition that the loss of common shared green spaces is a detriment to that community. Many cities across this country have recognized this need and made efforts to preserve and restore parks and natural green areas. As with the current Valleyheart Greenway, many such efforts are community-driven.

Involve the community in the process. Meaningful community involvement is an important aspect to any such undertaking. Residents who are part of the effort, from planning to implementation, are likely to take "possession" of the results and help take care of and maintain the area. Such efforts help foster community spirit through community involvement. When people tend to work so far outside their own community, projects where people find themselves working with their neighbors, often for the first time, to improve their own neighborhood offer important community building opportunities. Providing the sense that the community is doing something together, rather than having something simply imposed upon it, is key to fostering interest and involvement, and ultimately, stewardship.

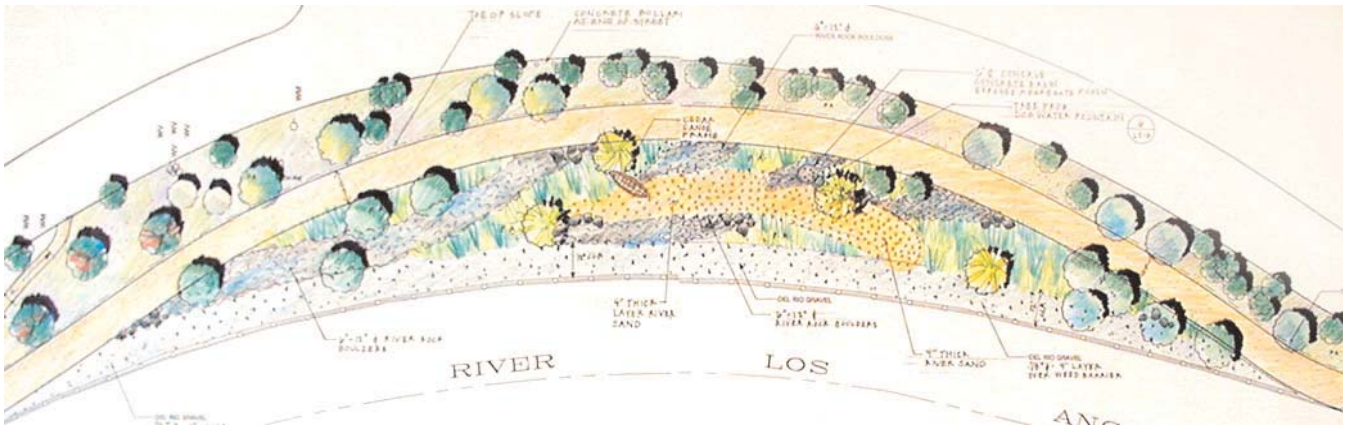
Involve and empower the children. Central to any community involvement is the active participation of its children. With this in mind, the Studio City project adopted the approach that efforts to involve and educate children in the local community would not only foster a sense of attachment to the river, but would also provide important understanding towards human interaction with the natural world. The current site will serve as an ongoing educational resource for the Carpenter School students as well as place for them to enjoy with their families.

Coordinate agency design and engineering standards with community goals and needs. At every step of the Valleyheart Greenway planning, community enthusiasm was informed by regulatory needs and public safety concerns. The process was neither heavy-handed on the one hand nor pie-in-the-sky on the other. It was cooperative, supportive and ultimately very successful.

Present a workable, fundable model for future revitalization projects. In terms of the long-range plan to revitalize and restore the Los Angeles River, the success of this project, especially the involvement of the community, provides a strong model for similar efforts in other communities all along the entire length of the river. With bond money available at the State level, as well as local access to watershed management, park and open space and other funding, the Valleyheart Greenway represents an ideal that can find its way into communities throughout the watershed and along the river itself.

Provide the California Coastal Conservancy with an ideal project for implementation. The California Coastal Conservancy is one of just a few state agencies that funds the important process of planning separately from implementation. Clearly informed about the necessity for good planning, the Conservancy positions itself to implement the best examples of projects throughout California. The Valleyheart Greenway is such a model project, and will ideally be taken to the next step.

Here is the plan; let's make it happen.



The Project Setting

This stretch of the Los Angeles River passes through an area with both residential and commercial areas. The project has several unique elements that make it perfect for precisely this kind of revitalization project. These unique elements are (1) the river itself, (2) the community and (3) overlapping and consistent planning documents that speak to the need for revitalization.

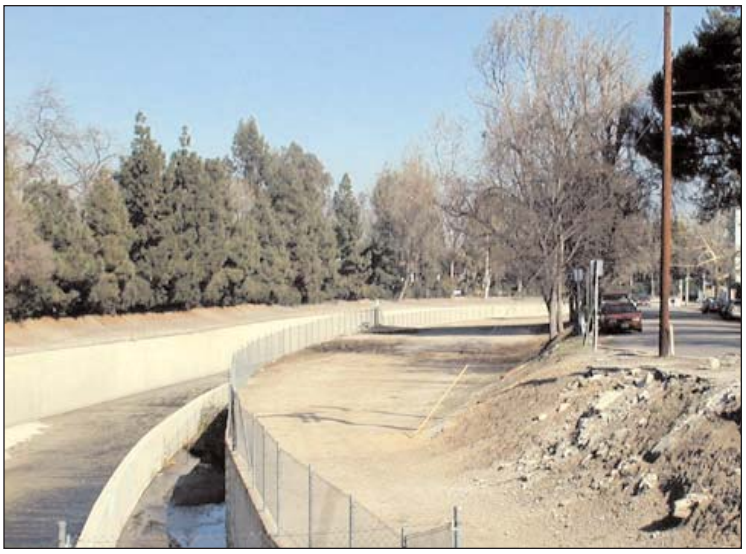
The River

The project site encompasses both banks of the Los Angeles River between Laurel Canyon Boulevard and Radford Avenue in Studio City, part of the sprawling San Fernando Valley. The project area is located just upstream of the Tujunga Wash confluence at CBS studios. It is situated east of Laurel Canyon Boulevard, one of the busiest north/south Valley-Los Angeles Basin commuter routes.

North Bank, looking east

The project area is LACDPW's flood control easement and comprises the areas along both banks between the river fence and street curb. The river easements here are somewhat unusual for the SF Valley in that they have sinuosity. They are also exceptionally broad in areas and provide some clearly defined seating or play areas. This stretch of river easement is approximately a quarter-mile long, and is generally very barren and denuded of vegetation. The north side along the street curb has a dense planting of Canary Island pine and oleander (both non-natives). The east end of the south bank has a stand of mature and diseased eucalyptus that represents a potential serious hazard to users of the Greenway.

At the project team's request, LACDPW commissioned a survey of the site and an arborist's report of the existing trees. The arborist recommended that many of the trees, particularly the eucalyptus, receive immediate supplemental watering and disease control. The report cited a number of the trees for removal.



South Bank, looking east

The Community

Studio City is a blend of commercial and residential areas. In 1962, the Studio City Residents' Association (SCRA) was established to help limit building heights on Ventura Boulevard so that the community could grow but in a neighborhood-friendly manner. This residential legacy is important to consider, and the SCRA is one of the largest residents associations in Los Angeles, representing over 2,300 member households. To the north of the river is 'The Grove,' a neighborhood that is largely comprised of single-family homes. To the south, the area is comprised of multi-family residential units and a complex of production offices that serve the CBS television network.

Upstream of Tujunga Wash confluence at CBS Studios

An area of high (LA) pedestrian use

Considering how car-crazy Los Angelenos are in general, the commercial district adjacent to the river gets substantial pedestrian traffic. Although undeveloped, residents on both sides of the river already used the area regularly to walk their dogs.

Also of significance is the fact that the area is just around the corner from the Studio City Farmers Market, which takes place every Sunday. The second largest market of its kind in Los Angeles, this heavily trafficked venue is considered a true community meeting place. The greening of the river along this corridor can only enhance that experience as well as draw visitors and more residents to the river.

Clearly the community has a strong, positive interest in the revitalization of this area and is eager for improvements to begin in their neighborhood. In a recent ***LA Times*** poll on the subject, responses were 10-to-1 in favor of the project. Residents on the south bank of the project site had already begun to plant flowers on their own and they even put up a sign urging neighbors to lobby their council member to bring the river Greenway to their side of Laurel Canyon Boulevard.

Concurrent Plans

Both the ***Los Angeles River Master Plan*** and the ***U.S. Army Corps of Engineers' Bicycle Study*** cover the project site and were referenced during the design development process. The Valleyheart Greenway project follows the plans, recommendations and ideas laid out in these documents, seeking to accommodate features, such as bicycle paths, in the final plan.

In addition to municipal planning documents, there are other plans and programs that deal with the Los Angeles River in Studio City. The City of Los Angeles, through the Prop K park bond, has designated $10 million dollars to be spent over the next 20 years for the LA River Greenway in the San Fernando Valley. Phase One of Prop K produced a master plan known as ***The Sherman Oaks to Studio City River Community Enhancement Plan*** for the area that extends from Lankershim Boulevard to the Sepulveda Basin, and a specific project plan for the area between Whitsett Avenue and Laurel Canyon Boulevard. The Valleyheart Greenway is immediately adjacent to the Prop K plan area at Laurel Canyon Boulevard and will serve to extend the implementation of the LA River Greenway another quarter-mile further east. This extension, when completed, will help the Greenway eventually connect to the pre-existing LA River Bikeway at Victory Boulevard. It is believed that, given the site's high visibility location at Laurel Canyon Boulevard and the location of the Farmer's Market, this project will demonstrate that the Prop K funded project is not an isolated park, but part of a planned 52-mile contiguous parkway that will connect Studio City to communities up and down the river.

Existing Walnut trees provide an excellent frame for an elevated pedestrian trail.

Student Involvement

The involvement of local children was seen as central to the current project effort. School-age children are enthusiastic, curious and eager to make their community a better place. We observed all of these traits during the workshops conducted at Carpenter Avenue Elementary School and the students' participation far exceeded the expectations of all of the team members.

The School & Students

Carpenter Elementary is a Los Angeles Unified public school located 3 blocks from the project site. The K through 5th grade school has 876 children and 45 teachers. According to its Web site, the school's current ethnic composition is broken down in the following manner: 73% white, 11% Hispanic, 6% black, 7% Asian/Pacific Islander. For the Valleyheart Greenway, The River Project enlisted the help of 40 second grade students in two classes, and a combined class of 36 accelerated learners in fourth and fifth grades. All ethnic groups were represented in the three classes we worked with.

The Curriculum

Student workshops were held from March 7- April 19, 2001. Scheduling was flexible to accommodate for school holidays, standardized testing and other events, but meetings were held at least once a week for each grade level and lasted from one to two hours each. The goal of these workshops was education; to educate the students on a number of topics such as the river's history, its natural/indigenous inhabitants and native plants and habitat, as well as aspects of designing green space in urban areas. Students were asked to research these topics and (depending on the grade level) write stories about the river and design features they (the students) would like to see incorporated in the final project design.

The workshops met California State Board of Education standards in Language Arts, Social Studies, Science and Math. See Appendix B for examples.

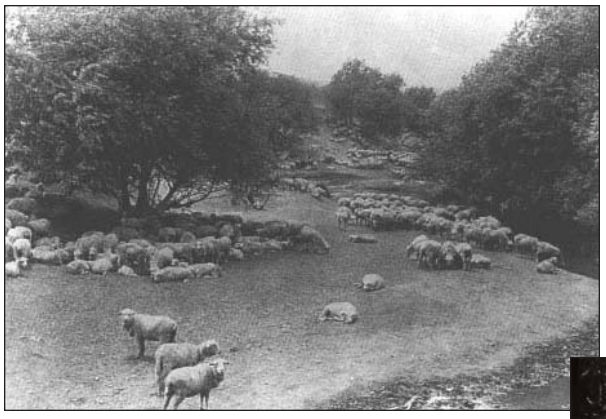
It cannot be overemphasized that student enthusiasm for and participation in the project far exceeded our expectations. We learned that the students had taken it upon themselves to organize and do additional research in their spare time to become 'subject experts' on local plants and animals. It is clear that the project-based learning experience – giving students the opportunity to ***do*** in the context of what they were learning – had a transformative effect that not even their teachers anticipated. Students wanted to work on the Valleyheart Greenway. They wanted to tell the project team what they had

discovered. They wanted us to know that they took this project as seriously as we did. Thomas enlisted 23 of his 4th and 5th-grade classmates to each research a different native plant. Ashley and other 2nd graders drew pictures of how the river ***should*** look. Other students designed Valleyheart Greenway features such as the hummingbird fountain, the frog gate and the butterfly garden. Still others wrote stories about the river. The collection that is made up of their dreams and knowledge is astounding, and added great depth to our design process.

Visions of the River's past, present and future
drawn by Ashley, 2nd grader at Carpenter School

The History of the River & the Community

In addition to the science and potential beauty of the river, we talked with the students about the history of the Los Angeles River, and of the Studio City area in particular. They learned about Portola's expedition, Crespi's description, and the D'Anza trail. They learned that the river site was affected by the arrival of the Spanish missions and the construction of the nearby El Camino Real. They learned how the growth of Los Angeles from the south through the Cahuenga Pass had an effect on the river, encouraging development along the flood plains. At one time, their



neighborhood was home to sheep ranches and walnut groves. In the 1920's, the Mack Sennett movie studios were built on the banks of the river at the current project site, the first on the Valley side of Hollywood. The students learned about the 1930 visionary Olmstead plan for parks in Los Angeles that would have allowed the river to run more freely by developing park space along its banks.

We examined the effects of the Los Angeles Aqueduct on the booming San Fernando Valley, which developed quickly into a suburban residential haven in the 1930s, dramatically increasing property

values. The natural cycle of flood and drought became too damaging to the developments now lining the river's banks and the Army Corps of Engineers was called in to turn the free flowing Los Angeles River into the flood control channel we see today.

The River's Inhabitants

We taught Carpenter students about the valley's original inhabitants, the Tongva and Chumash Indians. These people thought of the river as living, with a memory, and its own hopes and dreams. Students discussed how these people coexisted with the river by using its reeds to make baskets, canoes and shelters, its fish for sustenance and its waters for drinking and bathing. Students learned that these early people were careful never to take too much, understanding that they were dependent on the continued health of the river ecosystem. The mother of one of the students, who is of Tongva descent, was able to capture their imaginations with stories of her ancestors who lived near the Los Angeles River. She was able to show the students actual locations near their homes and schools where the Indians lived along the river, the hills they climbed and rocks and other sites that were an important part of their lives.

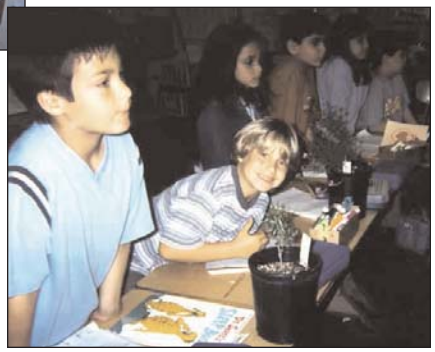
The second grade students read ***Paddle to the Sea,*** a book about a Native American boy and his canoe. Fourth and fifth grade students researched the Tongva culture.

We also explored the river's other inhabitants – animals, birds, butterflies, reptiles, amphibians and fish that ***used to*** live there. Students discussed the role the river played in providing these creatures with everything they needed to make a home. Students learned the concepts of threatened and endangered species, extinction and extirpation. Second graders read ***Where Once was a Wood***, a book about how a new housing development makes a local woods and its inhabitants disappear. More technical and scientific lessons dealt with the concepts of "riparian" and "habitat," as well as the components of food, shelter, cover, understory, flooding, invasive species and others.

San Emigdio Blue
(extirpated)
Plebejus emigdionis
Atriplex canescens.
Formerly common in Santa Clarita riparian, now converted by development.

Habitat & Native Plants

The project team ecologist presented the students with samples of more than a dozen different types of native plants. The students loved this hands-on approach. Some of the plants had bright flowers, others had aromatic leaves; some were thorny and others fuzzy and soft. Some students crushed the sage releasing its scent. Some ate lemonade berries, learning first hand how the native peoples supplemented their diets. Students learned that tubular flowers attract hummingbirds and those with flat petals are a landing pad for butterflies. All of the species brought by the ecologist were appropriate for the region's seasonal rainfall and would not need supplemental irrigation after establishment. All the students recognized at least one of the plants from their yards or neighborhoods and came back the next session full of stories about them. Fourth and fifth grade students researched native plant varieties specific to this eco-region, and that research ultimately guided the plant selection found in the project plan.

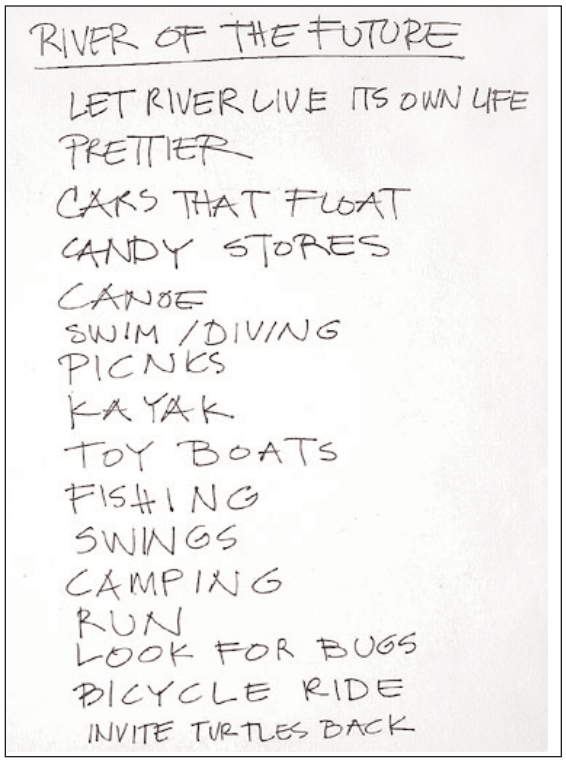


Learning about Design

In order to incorporate their visions into the planning document, students were instructed in a variety of design and development concepts. They were required to understand the nature of the site. Specifically, they had to understand the answers to the following questions:

- ❑ How large is the site?
- ❑ What shape is it?
- ❑ What types of buildings border it?
- ❑ Who uses it?
- ❑ How does the sun's path affect it?
- ❑ What types of plant material and built elements are already present onsite?

Second graders read a book about Frederick Law Olmstead, ***The Man who Made Parks.*** They discussed what parks meant to them and made a list of things they'd like to see at the river of the future.



To further understand these design concepts as they applied to the river, the older students measured their own classroom as an example. They then calculated, drawing upon on a survey of the river site, the number of classrooms that could fit in the area. They used tape measures and engineers' scales to get a sense of space as it was represented in two dimensions on the drawings. They learned to locate the compass points of north, south, east and west and drew the arc of the sun's path across the site.

Students had to observe their community and identify who the river's stakeholders were. This list came to include dog-walkers, apartment renters, families from single family residences, visitors to and staff of the adjacent CBS studios, joggers from the adjacent Body Rush Gym, homeless people ***as well as*** animal life in the area such as ducks, raccoons, possum, and "a coyote family."

Students discussed the shape and other details of the site. While definitely linear, the site also curves, reflecting the natural meander of the river prior to being channelized. The Los Angeles River is a part of the Pacific Flyway that is used by migrating ducks and geese as well as aircraft from nearby Burbank Airport as a guide as they fly down the valley between the San Gabriel and Santa Monica Mountains. Students also learned how the noise from airplane engines affects the nature of the site. And finally, the concrete channel itself has a huge, brooding presence, its scale dwarfing even the towering eucalyptus and pine trees that border it.

Finally, students sought to discover elements and patterns that would reflect the essence of the site, and then combine them to create an artful greenway for biking and walking through a restored native riparian habitat. Examples of incorporating meaningful design elements into a particular place were discussed. For example, Native Americans reflected the rattlesnake's diamond pattern on their basketry, and earthworks sculptor Robert Smithson designed a jetty into a spiral along the edges of The Great Salt Lake to reflect the ancient notion that the lake was salty because of its connection to the ocean by a whirlpool at its center.

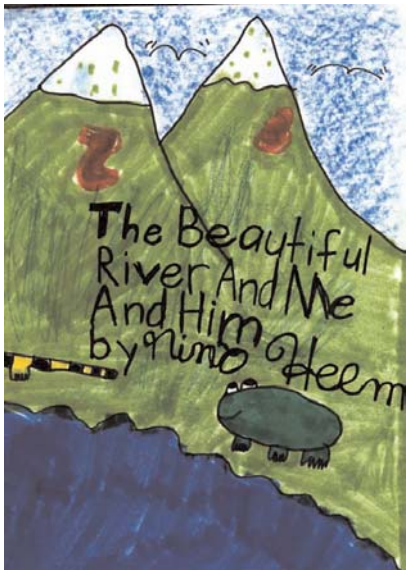
Student Projects

Once familiar with the historical, physical and biological makeup of the site, and comfortable with the principles of design development, students were then asked to complete a project that would help in the actual design development of the site. LACDPW provided large copies of the site survey map, engineers squares, large pads of drawing paper, colored pencils, crayons and markers for the students use. Second grade students wrote stories, and the older students provided research and actual plan designs.

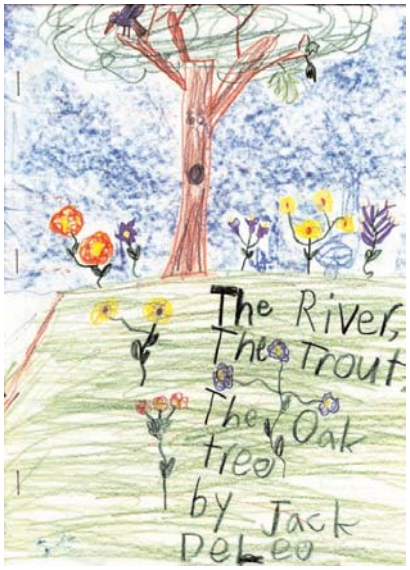
Second Grade Story Books

All of the second grade students were asked to write and illustrate a storybook about the River that would communicate something of what they had each learned from the workshops. The students' stories were expressive and imaginative. They ran the gamut from Tongva legends to modern day buddy adventure stories. Some were told from the perspective of animals. Others featured people working together to protect the environment or to bring the river back to life. All of them showed a clear and personal understanding of both the larger concepts as well as the small details that were discussed in the workshops. Some of the work was extraordinarily astute. All of them were vivid and heartfelt. Every book was complete with illustrated front and back covers, a title page, narrative with illustrations and an "about the author" page.

Carly Jackson

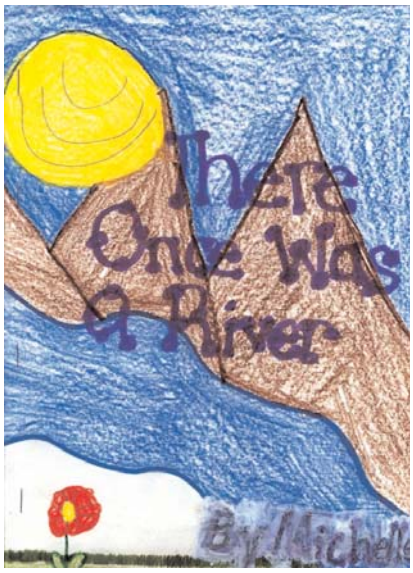


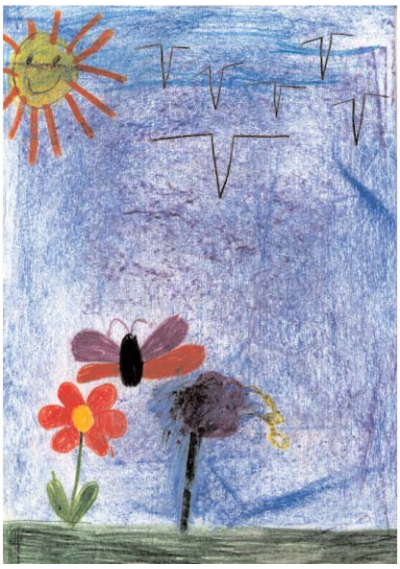
Nino Heem

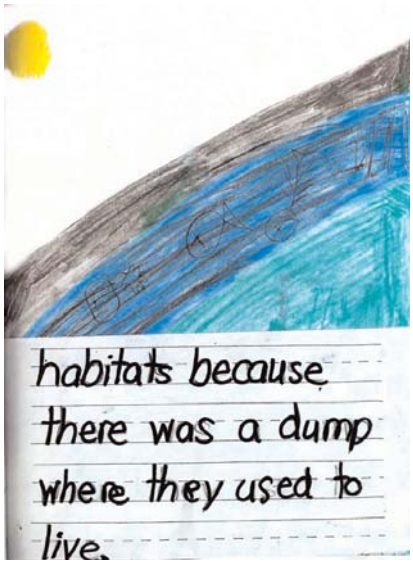


Jack DeLeo

The following is Michelle's workbook with excerpts from her story. She is a 2nd grader at Carpenter School:

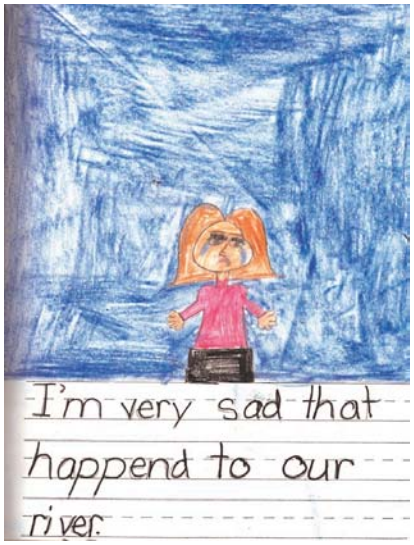


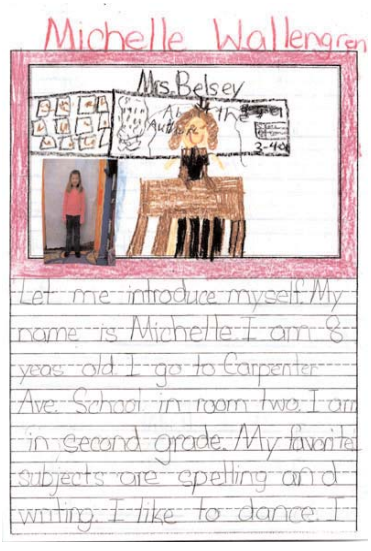




There Once was a River

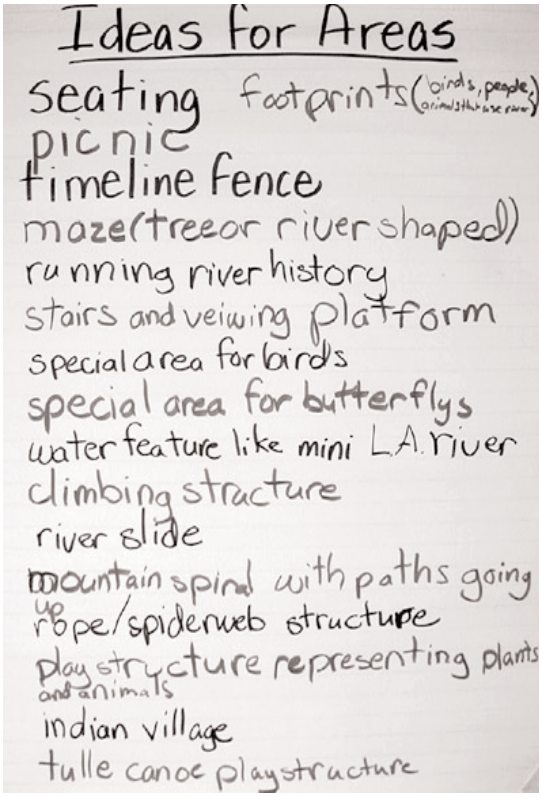
Once upon a time there was a river, the river was a beautiful sight to see. Animals like rabbits, turtles, and frogs used to live there. Long ago there were flowers and plants planted. Butterflies flew around the flowers and sucked the nectar from the perfumed insides. Also the river was a beautiful habitat, for many homes. The river now looks like a dump! People don't know it used to be a nice natural river. Sometimes I see people dump yellow, red and green paint into our river. They built concrete around the river and a gate around it too. So now our river looks gross and dirty. Animals moved away into different habitats because there was a dump where they used to live. I'm very sad that happened to our river.





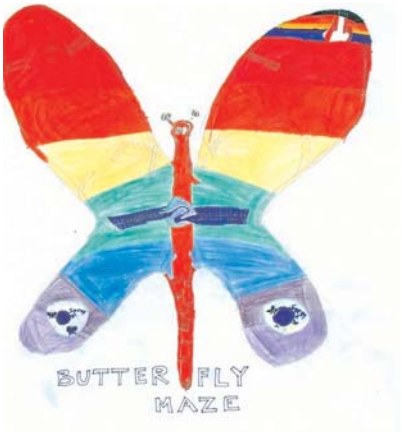
Fourth & Fifth Grade Research & Designs

The older students brainstormed design elements they would like to see at the proposed Valleyheart Greenway site. Ideas included fence panels illustrating the history of the river through a time line, a maze in the shape of a tree or river, special areas for birds and butterflies, a climbing structure, an Indian village, a Tule reed canoe, picnic areas and water features. They each chose an element and designed it. The students were then asked to choose between two projects: study native plants and prepare a presentation for Earth Day or continue to refine their design of a park element.

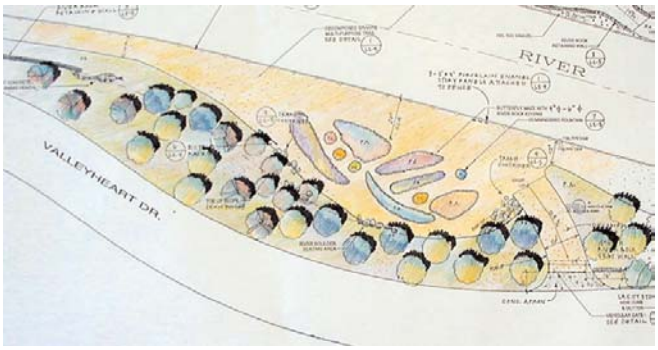


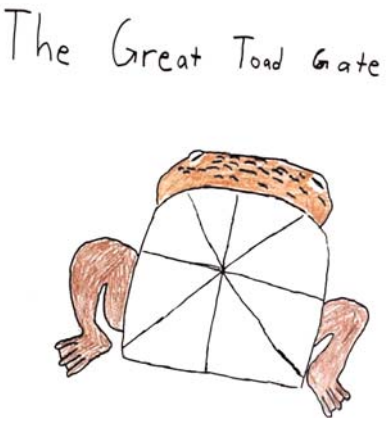
The students who decided to do native plant research used books and the internet to learn the complexities of habitat, food, shelter, cover and nesting properties. They looked at plant communities and investigated the specific properties and requirements of individual native plants. They looked at water and sun requirements, height and width. They looked for the bloom season of the flowering plants and which were favored by butterflies and hummingbirds. Using this research, they made recommendations to the team on the plants to be planted at the site as part of an Earth Day activity.

Others continued to design park elements such as a river slide with riparian flora and fauna represented alongside its meandering length, a maze in the shape of a butterfly composed of plants that attract butterflies, a fountain for hummingbirds in the shape of the native Anna's hummingbird, and a Great Toad gateway.

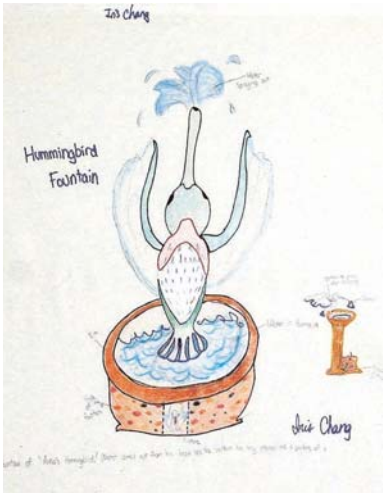


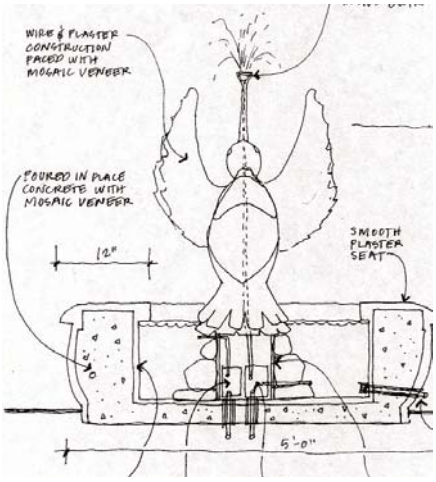
Chasen





Michael Harris





Iris Chang

Earth Day

Students love Earth Day, and while most Earth Day events have become environmentally "general," the Earth Day event celebrating the Valleyheart Greenway project was something special – it marked the launch of this project. The event, held on April 19th, 2001, was staged as the groundbreaking for the largest project that the Los Angeles River Master Plan had undertaken to date – ***the landscaping of the entire south bank of this project***. The event also helped to highlight the work of the Carpenter Avenue students and provided an opportunity to introduce the project to the larger community.

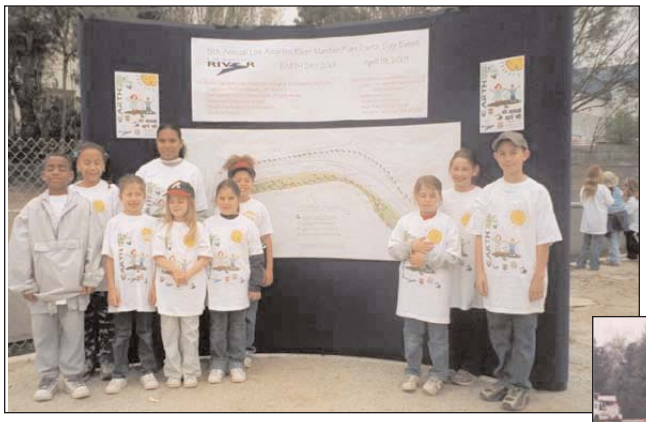
Earth Day Preparation

The River Project team held several meetings with LACDPW staff and members of the SCRA beautification committee in preparation for the event. Preliminary grading was done by LACDPW to accommodate a viable planting area for the event. They provided plants from a list the project team provided. They also donated staff time to help prepare the soils and dig holes for the trees. In order to help establish the plantings planned for the event, arrangements were made with the Department of Water and Power to extend water to the site, and the LACDPW contracted with North East Trees to install a drip irrigation system to our specifications.

Community outreach was done at the SCRA meetings and in their monthly newsletter and was furthered via distribution of a colorful Earth Day poster printed by the LACDPW. The students contributed to the poster design, which was reproduced on the t-shirts that Fifth district county supervisor Zev Yaroslavsky's office provided for all the participants. LACDPW provided the stage, podium and PA system, street closures, porta-potties, trash containers and site clean up. Local businesses provided water and lunch.

Earth Day Program

Many community members and parents of the Carpenter students were in attendance. A large format version of the initial conceptual design for the south bank was prominently displayed. Copies of the 2nd graders' storybooks and the 4th and 5th graders' designs were mounted on boards and hung for display along the river fence. Because of the importance of their role in the first phase of the project, students played a large role in the day's actual presentations and festivities. Many of the 4th and 5th grade students wore badges saying "Ask me about ..." which listed the native plants they had studied.



The 2nd grade students performed two songs about the

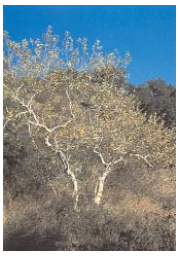
environment - ***Homeplace Planet*** and a rap tune, ***Recycle Now*** - accompanying themselves on percussion instruments they had made out of recyclable items. The 4th and 5th grade students presented a narrative that they had composed demonstrating some of the information they learned about the river's natural and cultural history; native plants, and landscape design.

Imagine you are a butterfly ...

Recycle, Recycle, Recycle Now

In addition to presenting cultural and technical information, the students were taught the basics of tree-planting by experts from the non-profit urban forestry group, North East Trees. In teams of two and three, the children planted and planted. All told, the students and their parents learned about and planted 12 fifteen-gallon trees:

Quercus agrifolia (coast live oak)
Platanus racemosa (western sycamore)
Populus fremontii (fremont cottonwood)
Cercis occidentalis (western redbud)



Western Sycamore

and 100 shrubs:

Heteromeles arbutifolia (toyon)
Ceanothus impressus (Santa Barbara mountain lilac)
Ceanothus papillosus roweanus Julia Phelps (small leaf mountain lilac)
Romneya coulteri (Matilija poppy)
Baccharis emoryi (coyote bush)
Rhus ovata (sugarbush)
Fremontodendron mexicanum (southern flannel bush)
Trichostema lanatum (wolly blue curls)
Verbena lilacina (lilac verbena)
Sphaeralcea ambigua (desert mallow)
Sisyrinchium bellum (blue eyed grass)
Eschscholzia Californica (California poppy)
Arctostaphylos uva-ursi Point Reyes (bearberry)
Oenothera caespitosa (tufted evening primrose)
Muhlenbergia rigens (deer grass)

Earth Day Impact

The Sunday after the planting, the project team visited the site to tend to the plants. The drip irrigation system had not been hooked up yet, and it was a warm spring. As they began hauling bucket after bucket of water to the site, a resident from across the way came out with his ukulele, sat down in the small shade area under one of the newly planted trees and started to play. Where a week previous had been a barren wasteland, now was a park inviting enough to sit and play one's ukulele on a Sunday.

April, 2001

January, 2002

May, 2002

Community Outreach

As mentioned previously, central to The River Project's philosophy is the belief that community involvement is essential to its efforts to help restore and revitalize areas along the LA River. The River Project respects and, indeed, relies upon the character and makeup of each individual community to make such restoration and revitalization efforts a success.

Students represent one aspect of a community. Following the Earth Day activities, The River Project began to engage local groups and businesses as active participants. Outreach efforts included a booth at the weekly farmer's market, meetings with the SCRA, open meetings with residents, and continued use of Carpenter Elementary School as a direct channel to parents.

The Farmer's Market

The team began outreach to area residents via the local Farmers Market held every Sunday around the corner from the project site on Ventura Place. With a booth donated by the SCRA, the team displayed the conceptual design, the student's design proposals and storybooks, photos of relevant native plants, site photos and other visuals. This forum provided opportunities for the community-at-large to become familiar with and provide input on the project.

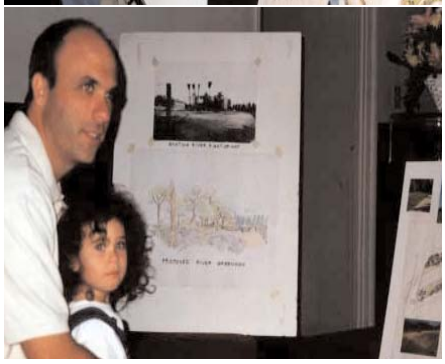
Carpenter Avenue Elementary Open House

In May, the students work and conceptual design were featured at Carpenter School's annual open house. Television monitors ran videos of the Earth Day event day taken by parents. Family members who had been unable to attend Earth Day were provided with an opportunity to experience the scope of the project and the students' investment through the students' work and the videos. Students and their families developed a strong sense of ownership in the project, and continue to visit the project site to check up on the plants and weed the site. Students have even named the trees.

Resident's Association

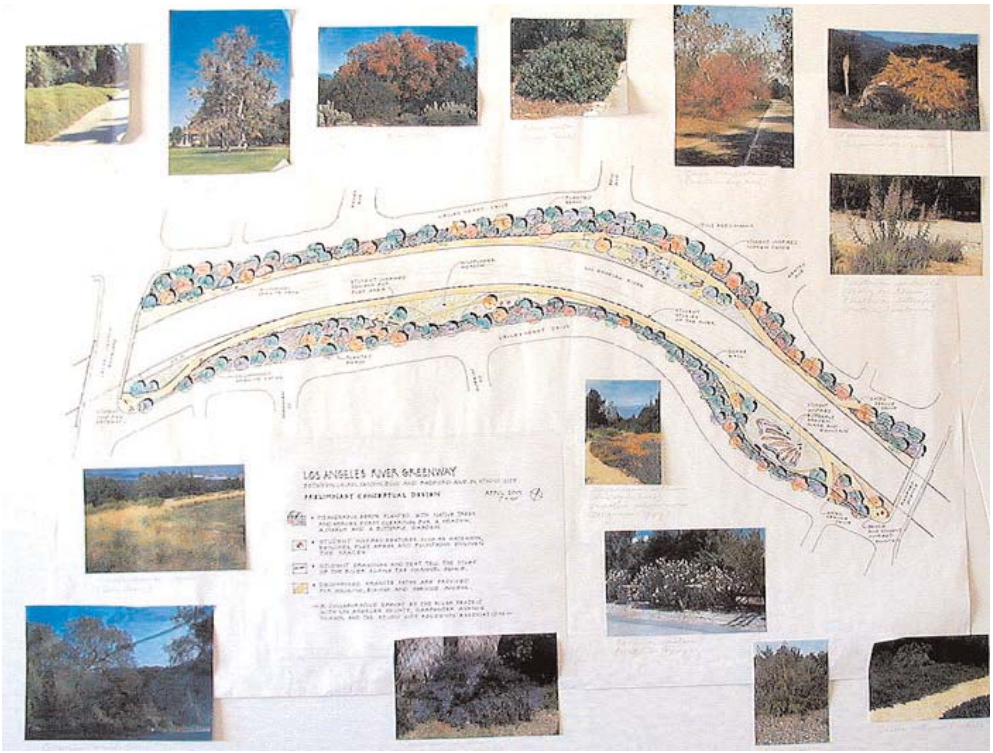
A formal presentation was made at the July meeting of the SCRA. Many people there were already aware of the project's details. Feedback from the residents was very positive. The nature of the comments and questions had progressed since an earlier presentation. Residents were invited to attend additional meetings to provide further input.

Neighborhood Meetings



The team scheduled two neighborhood meetings designed to give area residents a chance to review and discuss the plans in a dedicated forum; one on a weeknight and one on a weekend day. Postcard invitations to the meetings were hand-delivered to ***every household in the immediate project area*** (between Laurel Canyon Boulevard to the west, Radford Avenue to the east, Moorpark Avenue to the north and Ventura Boulevard to the south). Delivering the invitations by hand provided many opportunities to engage stakeholders in one-on-one discussions about both the specifics and overall objectives of the project.

Meetings were held Monday, July 16th from 6:30 – 8pm and Saturday, July 21st from 11am – 12:30 pm. The local Unitarian Church donated the use of their space. The conceptual design, area maps, student design work and storybooks, site photos and other relevant visuals were presented to encourage discussion. Interest was strong, not only in the specifics of this particular design, but also in the larger associated issues like watershed management and the natural history of the region. Residents offered constructive suggestions, including a request for creation of additional access points.



First conceptual design

With the ideas generated from the students and area residents, and understanding the requirements from LACDPW, a conceptual plan was developed for both banks of the river from Laurel Canyon Boulevard to Radford Avenue.

Design Development

Design Objectives

If we can encourage implementation of the recommended improvements, we will further our work towards restoring sufficient habitat to encourage native birds, insects and animals to come back to the river, or as a second grader suggested, to "invite the turtles back". Along with the wildlife, other residents of the area will be encouraged to stroll, meet their neighbors, bike, walk their pets, play and enjoy a natural river environment.

Features

The overall design can be categorized into four general features on the Design Development Plans. These are berms, clearings, hardscape, and student designs. These elements function not only as scenic features, but many as practical (i.e. support) features that will improve and sustain the area.

Berms

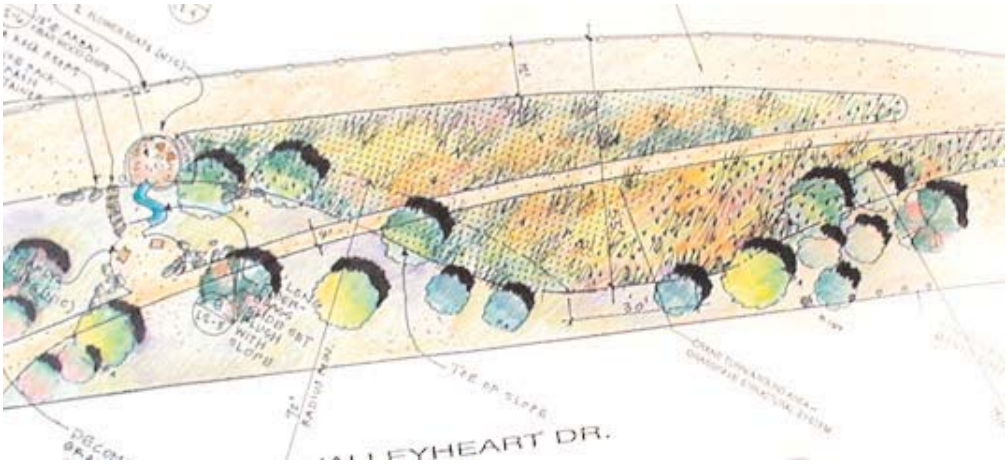
The first of these important design features is a series of meandering berms of improved and relocated soil that run the length of the site on both banks. The berms will enhance the existing wide, barren areas below the level of the street. These gently sloping planted areas will create a more natural transition between street level and river's edge. According to the plan, native trees, shrubs and groundcovers will be planted on these slopes to provide native riparian and chaparral habitats.

Due to the fact that the site has been channelized and otherwise poorly treated over many years, and due also to the lack of abundant plant life on these banks, the berms will be developed systematically. Rather than simply move and shape dirt mounds, we will first condition the soil with *Mycorrhizal inoculum* prior to planting. This inoculum can restore a healthy soil ecosystem and helps native roots establish quicker and become more resistant to drought disease and weed infestation. A drip irrigation system will then be installed to help the plantings establish for the first few years. Finally, a 3" layer of mulch will be laid.

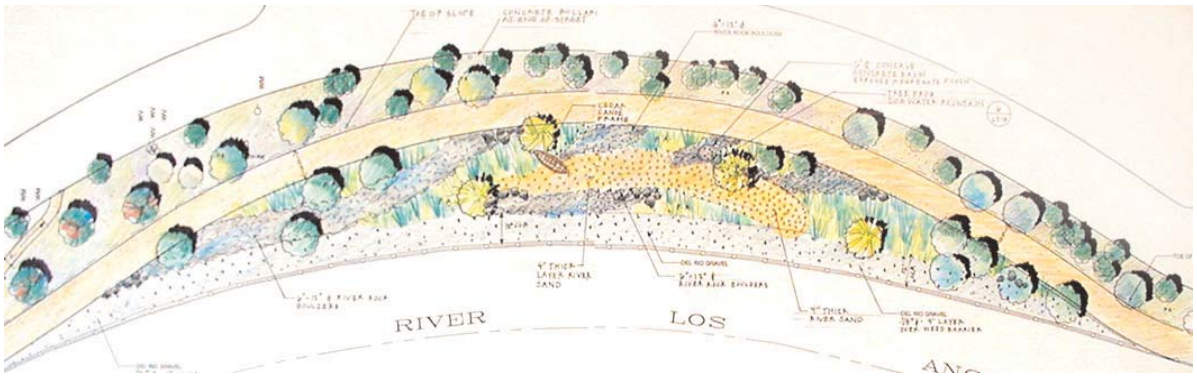
Clearings

The second design feature is a trio of clearings or "eddies" which will be created by the curving, planted berms. Each of the three clearings will have its own identity. There will be a wildflower meadow, a wetland and a butterfly maze.

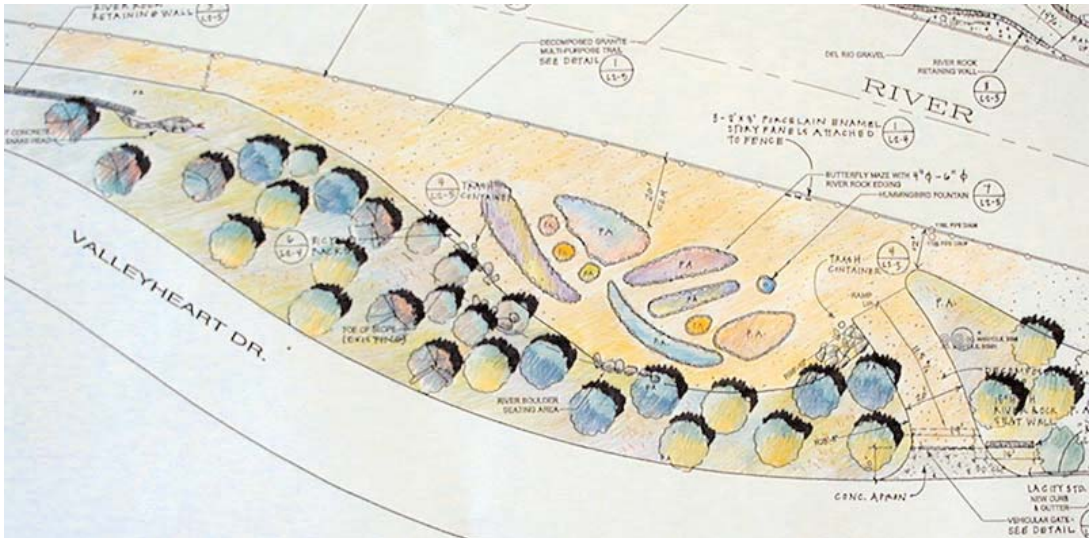
The wildflower meadow will function both as a meadow ***and as the turn-around area for the weir clean-out truck***. To accomplish both purposes (meadow habitat and truck turn-around), the floor of the meadow will be paved with a plastic ring structural system and planted with low growing native grasses and wildflowers. This plastic ring paving system is commonly used for fire lanes in parks and college campuses and planted with lawn grass. It is strong enough to support the County's maintenance truckloads and virtually invisible when planting has matured. A decomposed granite pedestrian path will traverse the meadow.



The second clearing, a wetland, corresponds to a bend in the river where, in times of heavy flood, water washes over the channel wall onto this flat floodplain. The intention is to recreate the environment of a wetland with gravel, sand and river rock boulders, as well as native riparian plants. Irrigation in this area will need to be supplemented occasionally to simulate a seasonal wetland habitat. A dog-watering fountain and a tule reed canoe play structure inspired by student design will be located here.



The third clearing includes a maze inspired by the shape and pattern of a butterfly wing. Flowering plants that attract butterflies and hummingbirds will be used in the planting beds. Central to this clearing is a fountain designed with both still water for birds and a fine mist for hummingbirds. The fountain has been envisioned in the shape of an Anna's hummingbird. Both the maze and fountain are based on student designs.



Hardscape

The plan calls for porous decomposed granite (DG) throughout the project to emphasize habitat instead of urbanity. A 12-foot-wide multipurpose DG trail along the river's edge will be used for watershed management and pedestrian walking or jogging. A level area 20 feet from the river fence will be reserved for a future City Department of Transportation Class A asphalt bike path.

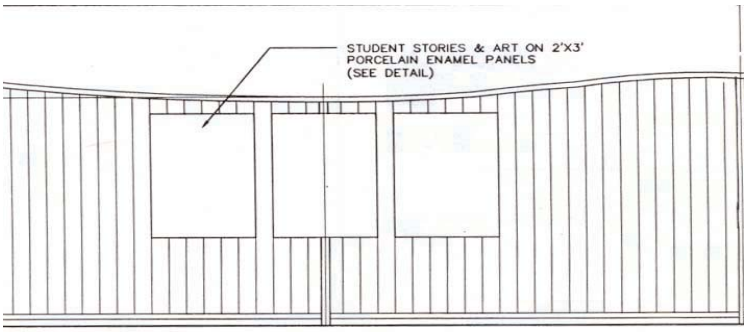
Exposed aggregate concrete paving will only be used at street level and on the handicapped-accessible ramp down to the site at the Laurel Canyon gateway. This steep ramp requires an 8-foot tall retaining wall, which will be built as a vegetated wall planted with native grasses and bulbs. Low retaining walls and steps will be composed of river rock boulders, and one long low retaining wall will be designed to resemble a rattlesnake, reflecting a student design. Boulders will also be used in a natural layout for casual seating.

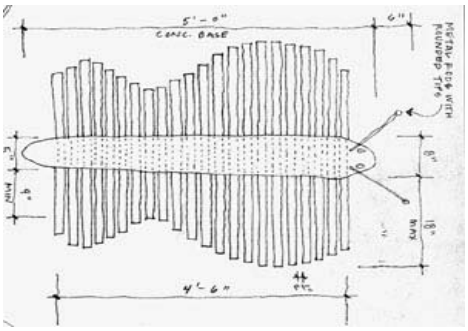
The existing chain link fence will be replaced with an undulating metal picket fence as designed for the City-sponsored greenway adjoining this project to the west. The two bridge guardrails at Laurel Canyon Boulevard and Radford Avenue are not currently to code and will be replaced with new designs reflecting the river.

Student Designs

The final design element incorporates quite a few of the ideas and designs of the second, fourth and fifth graders at Carpenter Elementary. These "future users" of the Greenway have invested a great deal of research, energy, effort, enthusiasm ***and vision*** into designing things they would like to see and use.

The first of these student design features will be the 'Stories of the River' by the second graders, complemented by drawings and native plant reports by the fourth and fifth graders. They will be reproduced on porcelain panels attached to the river fence at three selected sites along the river walk. These will serve as a reminder of the very real and important involvement of the students and also remind users that this is ***their*** river and ***their*** park.





Other student-designed elements will be interpreted by professional artists and craftsmen, including:

The 'Great Toad Gateway' which will be the functional entrance to the south bank at Laurel Canyon Boulevard;

A 20-foot long meandering plastic slide embedded in the slope with a rendition of native flora and fauna installed along its side;

Seating areas with benches in the forms butterflies, flower seats, and a half-log picnic table;

A rattlesnake retaining/seat wall;

An experiential play structure in the shape of a traditional Tongva tule canoe;

A dog-watering fountain in the shape of a Pacific Tree Frog;

A maze in the form of a butterfly wing and planted to attract butterflies and hummingbirds; and

A fountain in the shape of an Anna's hummingbird.

Working with a civil engineer who is highly familiar with this stretch of river, the team prepared a full set of landscape design documents. The set includes preliminary grading plans and details, hardscape plans and details, planting plans and details, general specifications, plant maintenance guidelines and a professional construction cost estimate. (See Appendix B and C). The plant palette involves an assemblage that attracts butterflies and birds, and which creates a riparian habitat compatible with the urban surroundings. (See Appendix D).

The production of design documents and the cost estimate are the result of a closely iterative process with the LACDPW who ***now plans to implement the design on the river's south bank beginning in late 2002.***

Specifications & Cost Estimate

Future Plans

To this point, the Studio City project has not only proceeded as conceived and planned, but it has exceeded expectations by generating greater levels of interest and involvement than were hoped for. Through the involvement of students and by tapping pre-existing community concerns and desires, the current project promises to be a huge success upon its completion.

- LACDPW plans to implement all grading and landscaping for the south bank of the project area and to install the Great Toad Gate and the rattlesnake retaining wall. However, while they have promised to provide the appropriate areas for the other amenities, they will not be funding the majority of the student-designed improvements. The River Project team has continued to advise and consult with the LACDPW's engineers as they progress through the construction document phase. We have committed to providing these services pro bono to facilitate the County's process and to ensure that the integrity of the community's vision is translated in the final project. LACDPW plans to break ground on this phase in late fall of 2002.

- In keeping with the community spirit of the project, The River Project plans to coordinate a community-based capital campaign over the next few months to implement the remaining amenities. We are engaging local artisans and craftspeople to translate the students' designs into facilities that will both respect the children's design work and meet building and safety codes. One supporter has already come forward and "the residents of Ben Avenue" have offered to sponsor one of the designs. Local businesses have also expressed interest in "adopting" amenities.

Students and their families have, as was hoped, developed a strong sense of ownership in the project, visiting the project site to check up on the plants and naming the trees. This success can serve as the model for future elements of this project as well as for future projects along the river. There are 52 miles of river to be reclaimed and it is the hope of the River Project that there are 52 communities that will participate with equal enthusiasm.

Next Steps

The River Project now hands off the project to new stakeholders – the Los Angeles County Department of Public Works, the Watershed Council and the California Coastal Conservancy.

We would like to see these next steps come to pass:

The north side of the project area is as yet unspoken for. We'd like to see the California Coastal Conservancy implement the project plans fully and enthusiastically as one of its demonstration implementation projects. Our thorough set of documents and the investment at the community level certainly encourage great consideration of this request.

The process utilized, in part by design and in part by learning as we went, should be fully documented, produced as a curriculum and made available for future Los Angeles River projects. Funding should be identified for publication and some sort of distribution network should be created to facilitate this process.

Ongoing cooperation between the California Coastal Conservancy and the LACDPW can foster ongoing community enthusiasm and support for the river and the rehabilitation/restoration effort we have just begun.

Conclusion

The Los Angeles River has always been essential to the lives of the inhabitants along its banks. This is still true today whether residents are aware of it or not. The river has also always been, and continues to be, effected by what is made of it. And more can be made of it. The goal of The River Project is to promote the natural and historic heritage of Southern California and to connect communities by engaging them in a creative, learning process.

Although not yet complete, it would be hard to argue that the Studio City project has not already been a success. From the enthusiasm and efforts of students to the commitment of neighbors and community groups, a great deal of work by a great many people has already taken place.

Although perhaps not as large as rivers in other cities around the country, the Los Angeles River and its banks can be renewed to provide the kind of open space seen in such other cities. Once complete with bike paths, playing fields, native plants and animals as well as other features, the river will draw people to it and communities together. It is a special river. The plans developed as a result of this project are accurate and complete. This is a golden opportunity. We have sincerely enjoyed this project and look forward to others in this same vein.

Reference Materials

Reference Materials

Landscape Standards and Plant Palette for the Los Angeles River and Tujunga Wash
Withers, Sandgren & Smith, Ltd. for
Los Angeles County Department of Public Works, Draft 2002

Los Angeles River Greenway: Sherman Oaks to Studio City River Community Enhancement Plan
City of Los Angeles, Department of Recreation and Parks, May 2001

Los Angeles River Master Plan
Los Angeles County Department of Public Works and
National Parks Service - Rivers, Trails, and Conservation Assistance Program, June 1996

Los Angeles River Recreational Development, Final Master Plan and Environmental Assessment
US Army Corps of Engineers, Los Angeles District, March 1998

Paddle-to-the-Sea
Holling Clancey Holling, Houghton Mifflin Co., 1941

The Man Who Made Parks : The Story of Parkbuilder Frederick Law Olmsted
Frieda Wishinsky, Song Nan Zhang (Illustrator), Tundra Books, 1999

Where Once Was A Wood
Denise Fleming, Henry Holt & Co., 1996

List of Appendices

Valleyheart Greenway

APPENDICES

APPENDIX A

Conceptual Site Plan

REPOSITORY INFORMATION:

Los Angeles & San Gabriel Rivers Watershed Council
111 North Hope Street, Suite No. 627
Los Angeles, California 90012
(213) 367-4111
Rick Harter, Executive Director
Rick@lasgrwc.org

California Coastal Conservancy
1330 Broadway, Suite No. 1100
Oakland, California 94612
(510) 286-1015
Chris Kroll, Los Angeles Region Project Manager
ckroll@scc.ca.gov

The River Project
11950 Ventura Boulevard, Suite No. 7
Studio City, CA 91604
(818) 980-9660
Melanie Winter, Director
winter@TheRiverProject.org

Examples of California Educational Standards

The following are examples of categories where the workshops correlated to the California State Board of Education's standards for Grade Four:

Grade 4 Language Arts:

Reading
2.0 reading comprehension
3.0 literary response & analysis

Writing
2.0 writing applications

Listening & Speaking
1.0 listening & speaking strategies
2.0 speaking applications

Grade 4 Social Studies:

4.1 Students demonstrate an understanding of the physical and human geographic features that define places and regions in California.
4.2 Students describe the social political cultural and economic life and interactions among people of California from the pre-Columbian societies to the Spanish mission and Mexican rancho periods
4.4.7 Students trace the evolution of California's water system into a network of dams, aqueducts and reservoirs

Grade 4 Science

Life Sciences:
2. All organisms need energy & matter to live and grow.
3. Living organisms depend on one another and on their environment for their survival

Investigation and Experimentation:
6. Scientific progress is made by asking meaningful questions and conducting careful investigations

Grade 4 Math:

Numbers Sense:
3.0 Students solve problems involving addition, subtraction, multiplication and division of whole numbers and understand the relationships among the operations.

Measurement & geometry
1.0 Students understand perimeter and area

Statistics data analysis and probability
1.0 Students organize, represent, and interpret numerical and categorical data and clearly communicate their findings.

Mathematical Reasoning:
2.0 Students use strategies, skills and concepts in finding solutions
3.0 Students move beyond a particular problem by generalizing to other situations.

DESIGN DEVELOPMENT OUTLINE SPECIFICATIONS

The River Project
11950 Ventura Boulevard #7 Studio City, CA 91604
818·980·9660

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY

B. Provide all work in accordance with the Contract Documents for a Los Angeles River Valleyheart Greenway on the south side of the river between Laurel Canyon Boulevard and Radford Avenue in Studio City.
C. The project generally consists of grading, concrete and decomposed granite paving, concrete retaining walls, turf block, a planted retaining wall system, and planting. The project is approximately 1/4 mile long.
D. Work by Others: to be determined.
E. Work Staging: to be determined.

SECTION 01040
COORDINATION

PART 1 GENERAL

1.01 SUMMARY

A. Scheduling, submittals and the work of various trades and specification sections to be coordinated by the Contractor. Difference or disputes amongst subcontractors and tight conditions to be resolved by the Contractor.

SECTION 01060
REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Work will conform to the current editions and requirements of applicable regulatory agencies including, but not limited to the following:
California Code of Regulations
Uniform Building Code, 1994 edition
Local ordinances and amendments to the above Codes
LA County Standards for Public Works
Best Management Practices
Americans with Disabilities Act of 1990

SECTION 01091
REFERENCE STANDARDS

PART 1 GENERAL

1.01 SUMMARY

A. Standards of the following Trade Associations and Organizations may be used to establish levels of quantity and quality required:

AAMA	American Architectural Manufacturers Association
ACI	American Concrete Institute
AHDGA	American Hot Dip Galvanizers Association
AIA	American Institute of Architects
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CRSI	Concrete Reinforcing Steel Institute
ICBO	International Conference of Building Officials
OSA	Office of the State Architect
PS	US Dept. of Commerce Product Standard
WCRSI	Western Concrete Reinforcing Steel Institute

SECTON 01200
PROJECT MEETINGS

PART 1 GENERAL

1.01 SUMMARY

A. Preconstruction conference shall be held prior to the start of construction , as scheduled and administered by the Owner's Representative, to discuss and establish procedures for the Project.

B. Progress meetings shall be held periodically as required by the progress of the Work. Meetings shall be scheduled, agenda prepared and minutes recorded and distributed by the Contractor.

SECTION 01300
SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

A. Progress Schedules: Developed and kept current by the Contractor in critical path network form for approval by Owner.

B. Shop Drawings, Product Data and Samples: Scheduled and processed by Contractor for Architect's review and action.

SECTION 01400
QUALITY CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. Testing Laboratory: Selected, retained and paid for by Owner to perform and report on tests and inspections of materials, installations and other Work of Contractor to determine compliance with the Contract Documents.

B. Testing Agency: Selected, retained and paid for by Contractor and acceptable to Owner to perform and report on tests and inspections required of Contractor by Contract Documents.
C. Retesting: Where tests or inspections indicate non-compliance, costs of retesting will be borne by the Contractor.

SECTION 01500
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Temporary Utilities: Electricity, telephone, water, sanitary facilities to be arranged for, connected, paid for and removed by Contractor.
B. Construction Aids: Hoists, cranes, scaffolding and staging to be provided by Contractor.
C. Security Fence: Install at perimeter of site (contract limit line). Include pedestrian and vehicular access gates and access controls.
D. Temporary Controls: Dust, noise and debris to be controlled per requirements of Owner and regulatory agencies.
E. Project Identification Sign: A 4 foot by 8 foot plywood panel designed and constructed by Owner. No other signs permitted.
F. Temporary Structures: Provided, maintained and removed by Contractor. Location as directed by Owner.

SECTION 01600
MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Product Handling: Materials and equipment delivered, stored and handled per Contract Documents and manufacturer's recommendations.
B. Product Options and Substitutions: Limited to items specified or to proposals promptly submitted, adequately documented and approved by Architect.

SECTION 01700
CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SUMMARY

A. Cleaning: Debris and excess materials removed, spaces left broom clean and project generally left in condition acceptable to Owner.

B. Record Documents: Changes and deviations shall be recorded as work progresses and transcribed on to a final set of documents at Project completion.

C. Warranties and Bonds: Provide extended warranties, bonds, service and maintenance.

D. Maintenance Materials: Provide multiple sets of manuals for Owner's use with maintenance and operating instructions for each item of equipment installed.

E. Commissioning: Provide a training period for Owner's personnel to learn operation and maintenance procedures from the Contractor, equipment manufacturer's representatives, suppliers and installers.

END OF DIVISION

DIVISION 2 SITEWORK

SECTION 02060
SITE DEMOLITION

PART 1 GENERAL

1.02 SUMMARY

F. Provide both selective and complete structure demolition and removal as indicated on the drawings. All demolished materials shall be removed from the site and disposed of at an Owner approved location.
G. Protection: Existing utilities and improvements on and adjacent to the site indicated to remain.
H. Salvage: Items and materials as required for reinstallation and as directed by Owner.

SECTION 02115
TREE PROTECTION AND REMOVAL

PART 1 GENERAL

1.02 SUMMARY

B. Provide all labor, materials, equipment, transportation and services necessary for and incidental to performing all tree protection, removal and maintenance operations as shown on the drawings and specified in this Section.

SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Provide excavation, trenching, filter fabric, back-filling, filling, compaction and grading.

1.2 UNIT PRICE FOR UNSUITABLE SOIL MATERIALS

A. Unsuitable Soil Materials:

1. Soils Engineer exclusively shall make the determination of unsuitable soil materials.
2. Excavation, replacement and disposal of unsuitable soil materials, if any, shall be considered additional work to that indicated on the Drawings, specified, or reasonably inferred by the Contract Documents. and, by appropriate change order, be charged to the Owner and the cost to Owner shall be determined in the manner provided in the General Conditions.
3. Measurement of the quantity of unsuitable soil materials shall be accurately made by Contractor and verified by the Soils Engineer.
4. The quantity of unsuitable soil materials excavated, replaced and disposed of shall, for payment purposes, be the actual volume of the excavation, calculated from grades determined before and after the work at the excavation area.
5. Excavation required by the Contract Documents and excavation, replacement or disposal of soil materials required because of Contractor's failure to comply with the Contract Documents shall not be compensated as unsuitable soil materials.

1.3 PROJECT CONDITIONS

A. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations. Do not use explosives.

1.4 MAINTENANCE/OPERATION

A. Do not allow water to accumulate in excavations or graded areas.

B. Protect graded areas from traffic and erosion. Repair and reestablish grades in settled, eroded, and rutted areas.

C. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, remove and replace or scarify soil materials, reshape, and re-compact to specified density prior to further construction.

PART 2 - PRODUCTS

2.2 BACKFILL AND FILL MATERIALS

A. Unless other materials are specifically indicated for backfilling and filling, use soil materials excavated from site or approved imported fill material.

B. Imported Fill Materials: Shall consist of material required for construction of fills, and unless otherwise designated in the Specifications, the contractor shall make arrangements for obtaining imported borrow and shall pay all costs involved.

Contractor shall notify owner or soils engineer sufficiently in advance of opening any borrow site so that adequate time will be allowed for testing the material and establishing cross section elevations and measurements of the ground surface. Contractor shall be responsible for all costs incurred for approval of the borrow site and imported fill material.

C. Select Fill Under Interior Floor Slabs-On-Grade: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100

percent passing a 1-1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.

D. Sand Backfill: Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter.

E. Pea Gravel Backfill: Naturally rounded stone, 1/8 inch minimum to 3/4 inch maximum size; free of clay, shale and organic matter.

F. Crushed Stone for Underdrains: Washed natural stone; crushed or uncrushed; 3/4 inch minimum to 1 inch maximum size; free of clay, shale, sand, debris and organic matter.

G. Rip Rap: Washed natural stone; crushed or uncrushed; with 100 percent passing a 12 inch sieve, 30 to 50 percent passing a 6 inch sieve, and 0 percent passing a 3 inch sieve; free of clay, shale, sand, debris and organic matter.

H. Render all backfill and fill materials free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen parts, vegetation and other deleterious matter.

2.3 FILTER FABRIC

A. Filter fabric shall be of nonwoven needle punched construction composed of polypropylene, polyethylene or polyamide fibers. The fabric should free of any chemical treatment or coating, allow the passage of water and be inert to chemicals commonly found in soil.

B. Acceptable Manufacturers and Products:

1. Reemay, Inc., [TYPAR 3401] [TYPAR 3341]
2. Hoechst Celanese Corp./Spunbond Business Unit, [TREVIRA "S"1120] [TREVIRA 1125]
3. Phillips Fibers Corp., SUPAC 4NP

PART 3 - EXECUTION

3.2 EXCAVATION

A. Excavate site materials to establish required elevations.

B. Excavate trenches for piping and conduit to the uniform width required for 6 to 9 inches clearance on both sides of pipe or conduit, except where additional width is required for proper installation of joints, fittings, valves and other work, and except where otherwise indicated.

C. Carry depth of trenches for piping to establish indicated flow lines and invert elevations.

D. Excavate for exterior water-bearing piping so that top of piping will not be less than 36 inches vertical distance below finished grade, unless otherwise indicated.

E. Excavate for electrical conduit so that top of conduit will not be less than 1'-6" vertical distance below finished grade.

F. Trim bottoms of excavations to leave solid base to receive other work. Keep excavation bottoms clean and clear of loose materials.

G. Correct unauthorized excavation in a manner acceptable to Soils Engineer, at no cost to Owner.

3.3 FILTER FABRIC INSTALLATION

A. Line excavations with filter fabric where indicated on drawings.

B. Overlap adjoining fabric panels at least 18".

3.4 BACKFILLING AND FILLING

A. Place specified backfill and fill materials in layers to establish required elevations.

B. Do not place backfill or fill materials on surfaces that are muddy, frozen, or contain frost or ice.

C. Remove rock or gravel larger than 2 inches in any dimension, debris, waste, obstructions, and deleterious matter from ground surface prior to placement of fills.

D. Plow, strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill materials will bond with existing surface.

E. When existing ground surface has a density less than that specified herein under "Compaction", break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to specified depth and percentage of maximum density or relative density.

F. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

G. Place backfill and fill materials uniformly around structures, materials and equipment to approximately same elevation in each lift.

H. Completely fill and compact under piping and conduit. Shape fill to fit bottom 90 degrees of cylinder. Support piping and conduit during placement and compaction of bedding fill.

I. Moisten or aerate each layer of backfill or fill prior to compaction as necessary to provide optimum moisture content. Compact each layer to specified percentage of maximum density or relative density.

3.5 COMPACTION

A. Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D1557 and not less than the following percentages of relative density, determined in accordance with ASTM D4254, for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils):

1. Under Buildings (including future) and Paving Areas: Compact top 8 inches of existing ground surface and each layer of backfill or fill material to 95 percent maximum density for cohesive soils or 90 percent relative density for cohesionless soils.
2. Other Areas: Compact top 8 inches of existing ground surface and each layer of backfill or fill material to 90 percent maximum density for cohesive soils or 85 percent relative density for cohesionless soils.

B. Where soil materials must be moisture conditioned before compaction, uniformly apply water to surface. Prevent free water from appearing on surface of soil materials during or subsequent to compaction operations.

C. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

D. Compact soil materials around piping and conduit with hand-operated tampers.

E. Do not allow heavy vehicles, equipment or machinery to operate directly over piping and conduit until a minimum of 18 inches of backfill has been placed and compacted.

3.6 GRADING

A. Grade site to establish required elevations.

3.7 UNSUITABLE SOIL MATERIALS

A. Excavate, replace and dispose of site soil materials determined to be unsuitable by Project Engineer, if Project Engineer so directs.

B. Replace unsuitable soil materials with Common Fill Materials specified and backfill, compact and grade the replacement materials as specified herein.

C. Dispose of unsuitable soil materials off site.

3.8 TOLERANCES

A. Perform earthwork operations to establish required elevations and dimensions within the following tolerances, except that no tolerance will be permitted that would allow a lesser size than indicated for footings and foundations or a lesser thickness than indicated for paving, paving base courses and concrete floor slabs-on-grade.

1. Under Buildings and Paving Areas: Plus or minus 1/2 inch.
2. Other Areas: Plus or minus 1 inch.

3.9 FIELD QUALITY CONTROL

A. The Owner will furnish testing and inspection services during earthwork operations. Such services will include general inspections of earthwork operations, testing of fill materials and compaction, and inspection of excavations to such extent as determined by Project Engineer.

3.10 REMOVAL

A. Remove excess excavated material, rock and gravel, debris, waste, vegetation and deleterious matter from earthwork operations and dispose of off site.

SECTION 02505
GRANULAR PAVING

PART 1 GENERAL

1.02 SUMMARY

B. Decomposed granite paving with binder, as selected by Architect, over filter fabric on compacted subgrade. At crane operation area, apply decomposed granite paving with binder over filter fabric and compacted aggregate base as indicated on the drawings.

SECTION 02517
TURFBLOCK PAVING

PART 1 GENERAL

1.02 SUMMARY

F. The Conditions of the Contract and all Sections of Division 1 are hereby made a part of this Section.

G. Description of Work:
   a. Provide and install sandy gravel roadbase as per Geotechnical Engineer's recommendations and/or as shown on drawings, to provide adequate support for project design loads (Vehicle weight: 68,775 lbs).
   b. Provide Grasspave2 Paving System products including Grasspave2 units, Hydrogrow soil conditionser, and installation per the manufacturer's instructions furnished under this section.
   c. Provide and install clean sharp sand to fill the Grasspave2 units for planting, and decomposed granite for walk surfaces.
   d. Provide and install plant materials as shown on the Drawings.

H. Completely coordinate the work of all other trades.

I. Related Sections:
   1. Section 02300 Earthwork
   2. Section 02750 Concrete Paving
   3. Section 02810 Irrigation Systems
   4. Section 02900 Landscaping

1.03 QUALITY ASSURANCE

A. Installation shall be performed only by skilled work people with a satisfactory record of performance on landscaping or paving projects of comparable size and quality.

1.04 SUBMITTALS

A. Submit a 3 foot by 3 foot section of Grasspave2 material for review.
B. Submit manufacturer's product data and installation instructions.
C. Submit material certificates for base course and sand fill materials.

1.05 DELIVERY, STORAGE AND HANDLING

A. Protect Grasspave2 units from damage during delivery and store under tarp when time from delivery to installation exceeds one week. Keep Hydrogrow in a dark and dry location.

1.06 PROJECT CONDITIONS

A. Review installation procedures and coordinate Grasspave2 work with other work affected. Generally Grasspave2 is installed at the same time as project planting.
B. All hard surface paving adjacent to Grasspave2 areas must be completed prior to installation of Grasspave2.
C. Do not build on wet, saturated or muddy subgrade. Grasspave2 is best placed when ambient air temperatures exceed 55 degrees F.
D. Protect partially completed paving against damage from other construction traffic when work is in progress, and until plant root systems have matured (from 3-8 weeks). Any barricades constructed must still be accessible to emergency and fire equipment during and after installation.
E. Protect adjacent work and surfaces from damage during Grasspave2 installation.

PART 2 MATERIALS

2.01 AVAILABILITY

A. Manufacturer: (Grasspave2 and Hydrogrow) Invisible Structures, Inc. (800-233-1510)

2.02 MATERIALS

A. Base Course: Sandy gravel material from local sources commonly used for road base construction, passing the following sieve analysis:

% Passing	Sieve Size
100	3/4"
85	3/8"
60	#4
30	#40
less than 3	#200

1. Sources of the material can include either "pit run" or "crusher run". Crusher run material will generally require sharp sand to be added to mixture (20-30% by volume) to ensure longterm porosity.
2. Selected material should be nearly neutral in pH (range from 6.5 to 7.2) to provide adequate root zone development for turf.

B. Hydrogrow Conditioner: A dry synthetic crystal made of polyacrylimide (less0.1%) polymer. This polymer is non-toxic and neutral in pH, and will absorb 150 to 350 times its weight in water from most tap sources. Hydrogrow is a non-ionic form of polymer which allows absorption of fertilizers and other minerals without degradation. Alternative polymers of ionic or anionic forms will not be allowed to be substituted.

C. Grasspave2 Grass Paving Units: Lightweight injection-molded plastic units 0.5x0.5x0.25 m (20"x20"x1" high, 2.7 sf each) with hollow rings rising from a strong open grid allowing maximum grass root penetration and development. The plastic shall be 100% post-consumer recycled plastic resins, predominately HDPE, with a minimum 3% carbon black concentrate added fro UV protection. Loading capability is equal to 402 kg/cm2 (5700 psi) when filled with sand, over an appropriate depth of roadbase. Standard color is black. Unit weight= 510g (18 oz), volume= 8% solid. Units will be shipped in

pre-assembled rolls from 1 meter (40") to 2.5 meters (8.2') wide. Contact manufacturer for size options.

D. Sand: Obtain clean sharp sand (washed concrete sand) to fill the 25 mm (one inch) high rings and spaces between the rings when seeding or using 13mm (half inch) thick sod (soil thickness).

E. Seed and Rooted Plugs: Use plant materials as shown on the drawings, of the preferred species for local environmental and projected traffic conditions, from certified sources. Seed shall be provided in containers clearly labeled to show seed name, lot number, net weight, % weed content and guaranteed % of purity and germination.

F. Mulch: Shall be of wood or paper cellulose types of commercial mulch materials often used in conjunction with hydroseeding operations. Mulches of straw, pine needles, etc. will not be acceptable because of their low moisture holding capacity.

G. Fertilizer:A commercial "starter" fertilizer, with Guaranteed Analysis of 17-23-6, or as recommended by the local grass supplier, for rapid germination and root development.

H. Grasspave2 sign: A sign to identify the presence of Grasspave2 paving, stating that special maintenance is required, with the Manufacturer's phone number, and made of durable materials for outdoor exposure shall be provided and installed, subject to Owner's Representative's review of sample and approval. Installation location to be determined by Owner's Representative.

PART 3 INSTALLATION

3.01 INSPECTION

A. Examine subgrade and base course installed conditions. Do not start Grasspave2 installation until unsatisfactory conditions are corrected. Check for porosity of subsoils, existence of subsurface drainage (if needed), improperly compacted trenches, debris and improper gradients.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact General Contractor for resolution.

3.02 PREPARATION

A. Place base course material over prepared subbase to grades shown on plans, in lifts not to exceed 150 mm (6"), compacting each lift separately to 95% Modified Proctor. Leave 25mm (1") for Grasspave2 unit and sand/sod fill to Final Grade.

B. Spread all Hydrogrow mix provided (spreader rate= 4.5kg per 100 sq m. (10 lbs per 1000 sf) evenly over the surface of the base course with a hand-held, or wheeled, rotary spreader. The Hydrogrow mix should be placed immediately before installing the Grasspave2 units to assure that the polymer does not become wet and expanded when installing the units.

3.03 INSTALLATON OF GRASSPAVE2 UNITS

A. Install the Grasspave2 units by placing units with rings facing up, and using pegs and holes provided to maintain proper spacing and interlock the units. Units can be easily shaped with pruning shears or knife. Units placed on curves and slopes shall be anchored to the base course, using ISI Anchors or 16d common nails with fender washer, as required to secure units in place. Tops of rings shall be flush with the surface of adjacent hard-surface pavements.

B. Install sand in rings by "backdumping" directly from a dump truck, or from buckets mounted on tractors, which then exit the site by driving over rings already filled with sand. The sand is then spread laterally from the pile using flat bottomed shovels and/or wide "asphalt rakes" to fill the rings. A stiff bristled broom should be used for final "finishing" of the sand. The sand must be "compacted" by using water from hose, irrigation heads or rainfall, with the finish grade no less than the top of rings and no more than 6mm (.25") above top of rings.

3.04 INSTALLATION OF GRASS

A. Install seed and mulch over sand-filled rings with commercial hydroseeding equipment, at rates shown on plans and per manufacturer's recommendations. Coverage must be uniform and complete. Following germination of the seed, areas lacking germination larger than 8"x8" must be reseeded immediately. Seeded areas must be mulched, fertilized and kept moist during development of the plants (6-8 weeks).

B. Install rooted plugs into sand-filled rings at on-centers shown on plans and as recommended by grower. Coverage must be uniform. Rooted plugs must be mulched, fertilized and kept moist during development of plants (6-8) weeks.

C. Protect newly seeded and planted areas from traffic until development of plants (6-8 weeks).

3.05 MAINTENANCE

A. Remove and replace segments of Grasspave2 units where three or more adjacent rings are broken or damaged, reinstalling as specified, so no evidence of replacement is apparent.

B. Perform cleaning during the installation of work and upon completion of the work. Remove all excess materials, debris and equipment from the site. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

SECTION 02520
PLAYGROUND SURFACING

PART 1 GENERAL

1.02 SUMMARY

C. A license to construct a Fibar Systems according to these specifications must first be obtained from Fibar Systems as licensor of the patent rights of Fibar Systems reflected in U.S. patent numbers 4,679,963;5,026,207,5;076,726; and other patents pending.

D. To preserve warranty, FibarMat wear mats must be installed under all slide exits.

E. Provide Fibar System Playground Safety Surface in areas indicated on the drawings.

F. Provide playground surfacing immediately after installing playground equipment.

G. Fibar Systems and FibarMats are available from: Fibar Systems, Suite 300, 80 Business Park Drive, Armonk, New York, 10504-1705. (800-342-2721)

PART 2 MATERIALS

2.01 Provide Fibar Systems No. 100, engineered wood fibre to a compacted depth of approximately 8 inches over top layer of FibarFelt 100% polyester, non-woven geotextile fabric.

2.02 The amount of Fibar Engineered Wood Fibre necessary to provide the approximate depth after compaction is as follows: 8" depth- 38 cubic yards-per 1000 sf playground area

2.03 Provide one FibarMat (minimum size 36"x36"x1.5" with a 2" bevel edge on all sides) under each slide exit. Total quantity required is one.

PART 3 QUALITY CONTROL

3.01 Surfacing shall be IPEMA-CERTIFIED Engineered Wood Fibre. Standard wood chips or bark mulch will not be acceptable.

3.02 Supplier must provide test results for Engineered Wood Fibre and FibarMats for impact attenuation in accordance with ASTM F 1292 Standard Specification for Impact Attenuation of surface Systems Under and Around Playground Equipment. Results must be provided for new and for 12 year old Engineered Wood Fibre Material.

3.03 Testing of FibarMats in accordance with ASTM F 1292 must show G-max values of less than 200G and HIC values of less than 1,000 for a 4' drop height.

3.04 Supplier must provide test results for the Engineered Wood Fibre in accordance with ASTM F 2075 Specification for Engineered Wood Fibre For Use as a Playground Safety Surface Under and Around Playground Equipment.

3.05 Supplier must provide test results in accordance with ASTM F 1951 (formerly ASTM PS 83), Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.

3.06 Supplier must certify that the surface meets the intent of the Americans with Disabilities Act (ADA).

3.07 Supplier must provide a written manufacturer's 12 year warranty against loss of resiliency and a lifetime warranty on the FibarFelt fabric.

3.08 Supplier must provide $75 million product liability insurance certificate with the Owner named as certificate holder, prior to delivery.

PART 4 INSTALLATION

4.01 Install the FibarFelt, FibarMat and Fibar material in accordance with the manufacturer's instructions.
4.02 Avoid contamination of the Fibar material with sand, gravel, mud or native soil.

PART 5 MAINTENANCE

5.01 Depending on weather and usage, a Fibar surface will compact to provide access for wheelchairs, crutches, walkers and wheeled vehicles within 2-6 weeks of installation.
Remove debris- especially stones, broken glass, or other foreign objects. Inspect frequently.
5.02 Areas of constant wear and impact should be raked level. Pay particular attention to the base of the slide.
5.03 Weed by hand as necessary.
5.04 Installations typically require top-offs to maintain the required 8" of depth after three years of use.

SECTION 02750
CONCRETE PAVING AND SITE WORK

PART 1 GENERAL

1.01 Summary: Provide site concrete work complete, including all walk and slab paving, walls, curbs, gutters, aprons and vehicular paving.
1.02 Mock-up: Provide a 5'x5' sample of paving color and finish for approval by Owner's Representative.
1.03 Concrete pavement, sidewalks, curbs, curb ramps, curb and gutter, and gutters shall conform to the requirements of the Standard Specifications for Public Works Construction and the Americans with Disabilities Act of 1990.
1.04 Base material shall be crushed miscellaneous base conforming to the requirements of the Standard Specifications for Public Works Construction with thickness conforming to the project soils report, if applicable.

PART 2 MATERIALS

2.01 Concrete Materials:

A. Portland Cement: Type II, in conformance with ASTM C 150, with 2 years minimum use experience with the proposed aggregates without detrimental reaction. One brand from the same source shall be used throughout the project.
B. Standard Weight Aggregates: In conformance with ASTM C 44. Grading of standard weight aggregates shall conform to UBC Standard No. 26-2 (except as modified by this Section).
C. Coarse Aggregates: Clean, hard, fine-grained, sound crushed rock or washed gravel or a combination of both, uniformly graded from ¼ inch minimum to maximum size specified for concrete mix. Grading of coarse aggregates shall conform to UBC Table 26-2-A, with the exception that the total percentage of fine and coarse aggregates retained on any one sieve be a minimum of 6 % and maximum of 22% of the total combined aggregates.
D. Sand: Uniformly graded clean sand free from excessive fines, organic materials or other deleterious substances.
E. Water: Clean and free of deleterious materials.

2.02 Concrete Mixes:

A. Vehicular Paving: 4,000 psi at 28 days, 4 inch slup at point of discharge, 1-1/2 inch maximum aggregate size.
B. Walk Paving: 3,000 psi at 28 days, 4 inch slump at point of discharge, 1 inch maximum aggregate size.
C. Curbs and Gutters: 3000 psi at 28 days, 4 inch slump at point of discharge, 1 inch maximum aggregate size.
D. Site Walls: 4000 psi at 28 days, 4 inch slump at point of discharge, 1 inch maximum aggregate size, 0.065 shrinkage limit at 28 days.

2.03 Minimum Thickness:

A. Vehicular Paving: 6 inches
B. Walk Paving: 6 inches
C. Curbs and Gutters: 6 inches high by 7-1/2 inches wide at gutter line, with 1-1/2" batter back from top to bottom.
D. Walls: As required by Civil drawings.

2.04 Construction Joints:

A. Control Joints: Saw-cut joints at 10' on center or as indicated in the drawings.
B. Expansion Joints: Provide expansion joints where indicated in the drawings, where walks meet other structures and at 20' on center maximum.

2.05 Sidewalks:

A. All sidewalks shall match existing adjacent widths.
B. Minimum thickness shall be 5" without reinforcing, unless noted otherwise.
C. Expansion and control joints shall conform to Los Angeles Department of Transportation Standards Specifications.
D. Finishing shall conform to LA DOT Standard Specifications unless noted otherwise on the drawings.
E. Weed Killer: EPA approved, non-selective, non-flammable.

SECTION 02785
PAVEMENT MARKING

PART 1 GENERAL

1.02 Provide lines on paving with special paint to indicate pedestrian cross walks, per Los Angeles Department of Transportation Standard Specifications.

1.5 SECTION 02810

1.6 IRRIGATION SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Landscape irrigation system.
B. Related work specified elsewhere.

1.02 REFERENCE SPECIFICATIONS AND STANDARDS

A. County of Los Angeles Plumbing Ordinance.
B. Standard Specifications for Public Works Construction (Greenbook Latest Edition).

1.03 RESTRICTIONS TO THE WORK

A. Contractor shall be responsible to coordinate all work with the County of Los Angeles.

1.04 SUBMITTALS

A. Submit for approval in accordance with Standard Specifications for Public Works Construction.
B. Irrigation Material Submittal List and Descriptive Literature.

Within 20 days after award of contract, submit for acceptance, six (6) copies of completed list:

Include manufacturer's name and model numbers for all materials required under this contract, together with two (2) copies of descriptive literature for each of the items listed on the **Irrigation Material Submittal List**. Contractor shall commence no work prior to receiving statement of acceptance of irrigation material submittal list and descriptive literature from Agency. Submit items as follows:

Automatic irrigation controller
Solar powered automatic irrigation controller
Controller protective enclosure
Electrical wire, conduit, connector and pull box
Outdoor Combination Electrical Service Pedestal

Plastic pipe and fitting
Plastic pipe primer and solvent cement
Tracer/warning tape

Copper pipe and fitting

Backflow preventer and strainer unit
Backflow protective enclosure
Valve box
Flow meter
Master valve
Automatic remote control valve
Gate valve
Quick coupling valve
Valve operating wrench
Hand turning union

Flood bubbler
Flexible PVC pipe
Drip emitter
Drip filter
Diffuser bug cap
Air relief valve
Automatic flush valve
In-line pressure regulator

C. Record drawings.
   1. The Contractor shall provide and keep up to date a complete 'as-built' record set of prints which shall be corrected daily and show every change from the original drawings and specifications and the exact 'as-built' locations, sizes and kinds of equipment.
   2. Before the date of the final inspection, the contractor shall transfer all information and drafted by Contractor from the 'as-built' prints to a sepia mylar. All work shall be neat, in ink and shall be approved by the Agency.
   3. The Contractor shall dimension from two (2) permanent points of reference, building corners, sidewalk, or road intersections, etc., the location of all buried pipes and valves, any and all pilot wires to valves and controllers and all electric service lines to controllers. Dimensions shall be taken prior to backfilling of trenches.

D. Controller charts.
   1. Provide two (2) hermetically sealed plastic covered charts (20 mils. thick minimum) for each automatic controller, showing

only the systems operated by that controller. Charts to be as large as possible to fit door and meet approval of the County before being acceptable for insertion in plastic. Charts to be in controllers for the final observation by the County.

2. The Chart is to be a reduced drawing of the actual as-built system. However, in the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a size that will be readable when reduced.
3. Chart shall be a black line print with a different color used to show area of coverage for each station.
4. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being a minimum 20 mils. thick.
5. These charts must be completed and approved prior to final inspection of the irrigation system.

E. Operation and Maintenance Manuals.

1. Prepare and deliver to the Agency, prior to completion of construction, all required and necessary descriptive material in complete detail and sufficient quantity, properly prepared in three individually bound copies of the operation and maintenance manual (loose leaf binders are acceptable). The manual shall describe the material installed and shall be in sufficient detail to permit operation personnel to understand, operate and maintain all equipment. Spare parts lists and related manufacturer information shall be included for each equipment item installed. Each complete, bound manual shall include the following information:

    a. Index sheet stating Contractor's address and telephone number.
    b. Duration of guarantee period.
    c. List of equipment with names and addresses of local manufacturer representatives.
    d. Complete operating and maintenance instructions on all major equipment.

F. Permits and inspections. Obtain and pay for all permits and inspections required. Deliver all certifications of inspection to the Agency.

G. Refer to the drawings for the location of the water meters and the point of connections for the water supply. Refer to the drawings for

the electrical service meters and the point of connections for the electrical supply.

1.05 CONFERENCE PRIOR TO COMMENCEMENT OF WORK

A. Immediately upon awarding of contract, and prior to commencing work, the Contractor shall confer with the Agency regarding the general details of the work involved in this contract.

PART 2 – MATERIALS

2.01 MATERIALS

Use new materials of the best grade, unless otherwise noted on plans, for each respective item, and of the same manufacturer for all items of one (1) type.

A. Pipe.
   1. Copper pipe: Type "K," hard temper wrought copper fittings; solder sweat type up to 2-1/2" diameter; use wrought copper fittings over 2-1/2".
   2. Plastic pipe and fittings.
      a. **Upstream of remote control valves (main lines): For pipe sizes up to and including 1-1/2" pipe use Schedule 40 PVC or Schedule 80 PVC pipe. For 2" pipe up to and including 4" pipe use Class 315 PVC or Schedule 80 PVC pipe.**
      Downstream of remote control valves (lateral lines): For pipe sizes up to and including 1-1/2" pipe use Schedule 40 PVC pipe. For 2" size and larger use Class 315 PVC pipe.
      b. Extrude from 100% virgin normal impact unplasticized polyvinyl chloride (PVC) Type I, Grade I resin. Threaded nipples to be PVC Type II.
      c. Pipe homogeneous throughout, free from visible cracks, holes or foreign materials. The pipe shall be free from blisters, dents, wrinkles or ripples, die and heat marks.
      d. **Supplier shall be responsible to certify that manufactured pipe meets the stated levels of quality.** Continuously and permanently mark pipe with

manufacturer's name or trademark, kind and size (IPS) of pipe, material, manufacturer's lot number, schedule or type, ASTM qualifying designation, and NSF seal of approval.

e. Testing of pipe. The contractor shall show written certification by supplier that polyvinyl chloride pipe has successfully passed the following tests:
   (1) Acetone text. Immerse a sample of pipe in 99% pure anhydrous acetone for 15 minutes; at the end of this time there should be no evidence of flaking or delamination on the inner or outer walls of the pipe. Evidence of softening and swelling shall not constitute failure.
   (2) Flattening. Cut a test specimen two inches long from each end of the pipe sample. Flatten each test specimen between parallel plates of a press until the distance between the plates, in inches, is equal to sixty (60) percent of the pipe o.d., and there shall be no evidence of cracking, splitting or breaking.

f. Plastic pipe fittings and connections.
   (1) Rigid polyvinyl chloride (PVC) virgin Type I, Schedule 40 with working pressure no lower than that of pipe. Sockets to be tapered conforming to the outside diameter of the pipe, as recommended by ASTM standards. All fittings are to withstand the 15 minute acetone test, as for pipe, and shall be approved.
   (2) Molded fittings shall be marked with manufacturer's name or trademark, type PVC, size, ASTM qualifying designation and NSF seal of approval. Extruded couplings to be produced from NSF rated raw materials and meet ASTM Standards. **Supplier shall be responsible to certify that extruded fittings and connections meet the stated levels of quality.**

g. Plastic pipe primer and solvent cement as recommended by pipe manufacturer. No clear primer may be used.

B. Drip Emitter pipe and fitting.

1. Drip emitter pipes shall be non-rigid vinyl-chloride hose extruded from integrally algae-resistant poly-vinyl chloride (PVC) resin conforming to ASTM Designation D2287 by Salco Products, Inc. or approved equal. The pipes shall have the following characteristics:

   Durometer Hardness (A Scale) - 88 to 94 tested per ASTM Method D2240; Specific Gravity, nominal - 1.40 to 1.44 tested per ASTM Method D792(A); Tensile Strength, minimum - 1,800 psi tested per ASTM Method D412; Brittleness Temp., maximum - 15C tested per ASTM Method D746(A).

   The hose to be uniformly black in color, homogeneous throughout and smooth inside and outside, free from foreign materials, cracks, holes, dents, wrinkles and blisters. The hose should have the inside diameter of 0.50 inches, wall thickness of 0.090 inches, outside diameter of 0.680 inches.
2. See above section 2.01 A. 2. f. plastic pipe fittings for all fittings for the drip emitter pipes.

C. Irrigation riser assembly.

1. Utilize triple swing joint irrigation riser. Assembled in field using Schedule 40 threaded ells and Schedule 80, Type II PVC nipples (threaded both ends) or galvanized steel, same size as detailed for irrigation head inlet. No street ells allowed.

D. "Detectable" type tracer/warning tape to be 'Blue', 2" wide minimum, with the words "Buried Water Line Below" - Refer to main line installations.

E. Concrete.

1. Use Portland cement, conforming to ASTM C-150, Type II, unless otherwise specified.
2. Sand fine granular material resulting from the natural disintegrating of rock and free from injurious amounts of oil, mica, clay and other deleterious substances. Sand, when tested in accordance with ASTM Standard Method of Test C-117, shall not exceed 3% by weight of clay or silt.
3. Rock and gravel. Mechanically wash all rock for use in concrete consisting of gravel or a combination of gravel and

sound crushed rock, having clean, hard, tough durable and uncoated pieces, free from injurious amount of soft, friable, thin elongated or laminated pieces, alkali, oil, organic or other deleterious substances.

F. Gate valves and valve boxes (Including valves for PVB). All valves to be AWWA approved. (Do not use corporation hub-type valves on transite.)
   1. Gate valves shall be the same size as the pipe lines in which they are installed and shall open "left." All valves shall be packed with an approved brand of graphited braid stem packing.
   2. For sizes 2" and smaller.
      a. 150 pound saturated steam rated.
      b. Brass body. ASTM B-62.
      c. Screwed joints.
      d. Non-rising stem.
      e. Screwed bonnet.
      f. Solid disc.
      g. Equipped with handwheel.
   3. For sizes 2-1/2" and larger.
      a. 200 pound O.W.G.
      b. Iron body. ASTM A-126, Class B.
      c. Flanged joints.
      d. Non-rising stem.
      e. Bolted bonnet.
      f. Double disc.
      g. Equipped with operating nut.

G. Backflow preventer and strainer unit.
   1. Shall be Los Angeles County Health Agency approved and be installed in accordance with local water company requirements and County Code.
   2. Backflow preventer. Refer to plan for manufacturers name and model number.
   3. Backflow device to be protected from vandalism and freezing temperatures where applicable.
   4. Strainer shall be wye type, constructed of bronze, 300 PSIG, threaded connection for sizes ½"-2" or cast iron, 125 PSI, flanged connection for sizes 2 ½"-12" with monel 3/32" strainer basket; removable. Same size as backflow preventer.

H. Automatic control system
1. Automatic controller without permanent electrical supplies.
a. Automatic controller. Refer to plan for required manufacturer's name and model number.
2. Automatic irrigation control wire.
a. Electric operated.
(1) Twenty-four volt wire to solenoid valves to be direct burial conductor type UF #14 AWG copper, 3/64" thickness, PVC coating, U.L. approved.
(2) Common wires to be white coded and pilot wires to be color coded; using a minimum of eight (8) different colors.
(3) Twenty-four volt valve solenoid shall be corrosion proof stainless steel protected by solid epoxy resin. Coil to operate one valve at 4,000 feet on No. 14 wire. No solenoid valve shall bleed to atmosphere.
3. Automatic control valves.
a. Refer to plan for approved manufacturer's name, model number and size.
b. All valves shall be of the same manufacturer.
c. Valves shall be completely serviceable from the top without removing the valve body from the mainline system.

I. Valve Boxes.
1. For remote control valves, Y-filter assembly, flow meters, master valves, pressure regulators, quick couplers and wire splices.
a. Concrete with cast iron hinged lock lid cover, 9-1/2" x 15-1/2" min.
b. All covers shall be marked "Irrigation" by the manufacturer unless otherwise noted on plans/details.
2. For gate valves.
a. Concrete with lock lid cover marked "Water", 8" I.D. adjustable, concrete sleeve.
3. For air relief valves, flush valves.
a. Valve boxes shall be foam folded with polyofin plastic 11"x17" with bolt-down locking devices and hinged cover by Carson Brooks Plastics, LTD or Applied Engineering Products or approved equal.

b. All covers shall be marked “Irrigation” by the manufacturer.

J. Irrigation heads and drip emitters.
1. Refer to plan for manufacturer's name and model number required.

K. Check valves and/or anti-drain valves.
1. Check valves vertical type same size as riser with stainless steel spring (5 to 6 pounds) loaded bronze type poppet valve lined with a flat neoprene disc. Valves seat shall be tapered to seat against disc.
2. Horizontal check valves shall be constructed of bronze with closing disc plate set on angle, disc holder shall contain renewable composition disc, these discs shall close tight to prevent drain back.
3. Vertical or horizontal anti-drain valve constructed of corrosion free materials, heavy duty PVC housing with stainless steel spring and neoprene internal components, adjustable from 5'-0 to 40'-0 elevation.

L. Air vent/Air Relief valve.
1. Air relief assembly shall consist of a air/vacuum relief valve made of black or gray plastic, have a 1/2-inch MIPT inlet, and include fittings as required to connect to dripline tubing.

M. Diffuser Bug Cap.
1. Bug cap shall have a flanged shield diffuser to minimize soil erosion at emission point.

N. Valve Identification Tags
1. Identification tags for electrical remote control valves shall be manufactured from polyurethane behr desopan. Use Christy’s standard tag hot stamped with black letters on yellow background. The tags shall be numbered to match programming as indicated on the Drawings. Provide one (1) tag of each electric remote control valve.

O. Materials to be furnished. The following items shall be "turned-in" to the Agency prior to final inspection and acceptance of the irrigation system:
1. Two (2) sets of operation and maintenance manuals.
2. Two (2) controller chart for each controller installed.
3. One (1) 5'-0 valve wrench where 2-1/2" size and larger gate valve is installed.
4. Two (2) keys for opening each type lock lid valve box installed.

5. Two (2) keys for each controller installed.
6. Two (2) sets of wrenches for servicing and adjusting each type irrigation head installed.
7. 10% additional of each "Type" irrigation head and drip emitter installed. (See Plan).
8. 5% additional length of Dripline tubing.

1.7 END OF SECTION

SECTION 02820
FOUNTAINS

PART 1 GENERAL

1.01 SUMMARY

A. Provide water-circulating fountain system consisting of pump, motor, nozzle and jet, together with all necessary piping and drainage fittings for water feature.

SECTION 02870
SITE AMENITIES

PART 1 GENERAL

1.02 SUMMARY

C. Provide site amenities as indicated on the drawings.

1.03 SUBMITTALS

A. Product literature.
B. Samples: One sample showing finish and form of the following:
   a. Concrete trash container
   b. Concrete bollard
   c. Metal bicycle rack
   d. Metal bollard

e. Fiberglass slide

PART 2 MATERIALS

2.01 Concrete Trash Container: Model #TGRCA, 30 gallon, gray etch exposed aggregate finish, spun aluminum lid, and plastic liner by Petersen Precast Site Furnishings (800- 832-7383).
2.02 Concrete Bollard: Model # AL-1, gray etch exposed aggregate finish by Petersen Precast Site Furnishings (800-832-7383). Attach a red reflector to bollard as indicated on the drawings.
2.03 Metal Bicycle Rack: Heavy duty winder bicycle rack Model # HW-23P-7-SF-G by Madrax Inc. (800-448-7931).
2.04 Metal Bollard: Removable bollard Model # BOL 450-SF-G by Madrax Inc. (800-448-7931).
2.05 Fiberglass Slide: 22" wide, 10' long, 6' tall fiberglass slide in an "S" curve formation by Summit (800-890-0215).
2.06 Anchors: Provide manufacturer's standard anchorage components for pedestal mounting to concrete paving and footing for the bicycle racks and metal bollards.

PART 3 INSTALLATION

3.01 Install in accordance with manufacturer's printed installation instructions.
3.02 Repair damaged surfaces to acceptance of Owner's Representative. Clean items to remove dirt and stains.

2.1

2.2 SECTION 02900
2.3 LANDSCAPING

PART 1 GENERAL

1.01 DESCRIPTION

A. Landscaping.

B. Related work specified elsewhere:
   1. Irrigation Systems
   2. Landscape Maintenance

1.02 SUBMITTALS

A. Approvals.
   1. Provide written evidence that landscape irrigation system has been inspected and approved prior to start of any work of this section.
   2. Agronomic Soil Report
      a. After completion of the grading operations and prior to soil preparation, the Contractor shall, at his expense, obtain a soils test report from an approved professional agronomic soils testing laboratory.
      b. Contractor shall submit the name, address and phone number of the consulting soil testing laboratory for approval prior to obtaining services.
      c. The approved soil testing laboratory report shall indicate soil analysis for native plant growth suitability, and recommendations for soil preparation in all planting areas and soil mix for backfill of planting container material.
      d. The recommendations of the agronomic soil report shall take precedence over the quantities of soil amendments and material mix specified in the backfill mix; and only when those specifications exceed the minimum requirements specified herein.
      e. Contractor shall submit one (1) copy of the agronomic soil report to the Agency, and shall not begin any landscape planting work until the report has been evaluated and approved by the Agency.
      f. Contract price adjustments if required due to the above shall be made by unit price or change order.

B. Certificates. Prior to construction, written certifications shall be submitted to the Agency for the following:
   1. Quantity of organic fertilizer.
   2. Quantity of fumigant.

3. Quantity of wood shavings.
4. Quantity of peat.
5. Quantity of herbicide.
6. Quantity of soil conditioner - fertilizer type.
7. Quantity of agricultural gypsum.
8. Quantity of soil sulfur.
9. Quantity of activated charcoal ("Gro-Safe").
10. Quantity of mycorrhizal inoculum soil conditioner (“GroLife”).

PART 2 MATERIALS

2.01 MATERIALS

A. Soil fumigant. For pre-planting treatment to kill soil fungi, nematodes, weeds and weed seed, both annual and perennial and soil insects as approved by the Agency.

B. Fertilizer.
   1. Organic type.
      a. Processed sludge.
   2. Commercial type.
      a. 10-6-4. Standard commercial brand.
      b. Calcium nitrate, standard commercial brand.
      c. 21-3-5. Standard commercial brand.
   3. Soil conditioner - fertilizer type. ("GRO-POWER" as manufactured by Southern California Organic Fertilizer Co., Inc.).
      a. “Gro-Power Plus" guaranteed analysis 5-3-1, 50% humus, 15% humic acid with bacteria included. No poultry, animal or human waste acceptable. Material will be bagged in 50 lb. bags.
      b. "Gro-Power" Controlled Release guaranteed analysis 12-8-8, 25% humus, 5% humic acids with bacteria included. No poultry, animal or human waste acceptable. Material will be bagged in 40 lb. bags.
   4. B-1 Vitamin supplement- Use in diluted form at ½ strength.

C. Mycorrhizal Inoculum Soil Conditioner. “GroLife” as manufactured by GRO-POWER, INC. 15065 Telephone Avenue, Chino, CA 91710 (909) 393-3744.
D. Agricultural gypsum. Minimum consistency of CaSO4H2O - 97% with a typical screen analysis of 85% minus 100 mesh.
E. Soil sulfur. To consist of 99% pure sulfur. 99% of particles passing a 1/8" screen.
F. Activated charcoal. "Gro-Safe" as manufactured by ICI United States, Inc. Specialty Chemical Division.
G. Peat. Free from alkali.
H. Tree supports.
    1. Stakes for trees. Lodge Pole pine, made from the entire bole of the tree with bark removed. Completely treat in a solution of copper naphthanate.
        a. 2" or 2-1/2" diameter.
        b. 8'-0 length minimum for 5 gallon trees; and 10'-0 length minimum for 15 gallon trees and 24" box trees.
        c. Stakes shall be conically pointed at one end, with 10" long taper point and chamfered at the other end.
        d. Tree ties.
            (1) "Wonder Tree Ties." Install per manufacturer's specifications. Wonder Tree Ties, 151 9th Avenue - Unit 'U', City of Industry, CA 91746. (818) 336-3512, or approved equal.

G. Plant material.
    1. Trees, shrubs, vines, ground cover.
        a. Refer to landscape planting plan for plant list and quantities. Plant list should be used only as a guide.
        b. Size as per planting plan plant list. Condition - American Nursery Standards.
        c. Quality.
            (1) Healthy, shapely, well rooted, disease and insect free, not deformed or root bound.
            (2) Grown in nurseries inspected by State Agency of Agriculture.
            (3) Free of abrasions, knots, injuries or disfigurations.
        d. Label or tag one of each variety of plant with proper botanical name identifying genus, species and (if applicable) variety.
    2. Inspection and approval.

a. Inspection location.
   (1) Required upon delivery to site. All plants are to be inspected approved at the project site.
b. Plants not approved by Owner are to be removed from site immediately, and replaced with plants deemed suitable by the Owner at the contractor's expense.
c. The Owner shall have the right to inspect and reject unsatisfactory or defective plant material at any time during the progress of the work.

d. Nitrogen stabilized wood shavings fine grade containing 1% nitrogen added to each lb. of shavings. "Nitrohumus" by Kelloggs.

H. Soil Preparation of top 4"-8" of soil shall consist of:

Micorrhizal inoculum- 20 lbs per 1,000 sf; 1,000 lbs per acre
Gro-Power Plus 5-3-1- 150 lbs per 1,000 sf; 7,000 lbs per acre
Wood Shavings/Compost- 2-3 cy per 1,000 sf; 80-120 cy per acre

I. Prepared mulch. Equal parts of shavings and peat moss with 10 lbs. calcium nitrate per 100 cu. ft. of mulch, thoroughly mixed. One (1) cu. ft. of baled peat is equal to two (2) cu. ft. of loose peat.

J. Prepared backfill mix shall consist of:

Native topsoil - 2/3 parts by volume
Wood shavings - 1/3 part by volume
Micorrhizal inoculum - 1/4 cup "Grolife" for 6" dia. planting hole
- 1 cup "Grolife" for 12" dia. planting hole
- 2 cups "Grolife" for 18" dia. planting hole
- 3 cups "Grolife" for 24" dia. planting hole
- 4 cups "Grolife" for 36" dia. planting hole
- 6 cups "Grolife" for 48" dia. planting hole
- 8 cups "Grolife" for 60" dia. planting hole

Or as recommended by agronomic soil report.

K. Pre-Emergence herbicide to be broad spectrum approved by the Agency.

L. Post-Emergence herbicide to be broad spectrum approved by the Agency.
   1. Contact weed killer that does not leave a stain or residue.
   2. Weed killer which utilizes the biological process of 'Translocation' to destroy all parts of the treated weed ("Roundup" by Monsanto).

M. Imported topsoil.
   1. Imported topsoil shall be Class A top soil.
   2. Separate agronomical soils report shall be submitted for each source of imported topsoil for approval by the Agency.

N. Wood chips shall be manufactured from any clean, green softwood, free of diseases and pests. Chips from kiln-dried or air-dried material will not be accepted. Chips shall be produced by machinery equipped with knives or blades which cut, rather than shred or break, the material. Chips shall be graded so that substantially all chips are made from 1/2" to 3" in length, 1/2" to 1-1/2" in width, and from 1/8" to 1/2" in thickness.
   1. Chips may be produced from tree trimmings, however chips which contain trash or extraneous matter will not be accepted.

1.8 END OF SECTION

SECTION 02910
LANDSCAPE MAINTENANCE

PART 1 GENERAL

1.01 DESCRIPTION

A. Provide equipment, materials, services, and do all work necessary to perform landscape maintenance to limits of work indicated on Drawings and Specifications.

1.02 SUBMITTALS

A. Submit a tentative schedule, description of methods, and equipment to be
used.

1.03 MAINTENANCE PERIOD

A. Maintenance shall commence at the completion of the construction contract with all punch list items signed-off and a letter of completion signed by Owner as indicated in Landscaping Specifications.
B. Maintenance period by Construction Contractor shall be for 90 days from date of project completion and acceptance by Owner.
C. On-going maintenance operations shall also follow these guidelines.

1.04 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
1. National Arborist Association, 3537 Stratford Rd. Wantagh, NY 11793
(NAA).
2. L.A River Master Plan Native Plant List
3. California Native Plant Society Guidelines

1.05 OWNER-REQUIRED INFORMATION FROM CONTRACTOR

A. During the maintenance period, provide records to Owner regarding man-hours required per task, and cost to accomplish the work per task.

B. Notify Owner of the intended work schedule sufficiently in advance to allow Owner time to serve as field observer during the maintenance period.

1.06 SITE FAMILIARIZATION

A. Carefully and closely inspect the area of development within the Limit of Work Line to become familiar with site conditions.

B. Meet and walk the site with the Owner at the initiation of the maintenance program to determine the site conditions. All planting areas and irrigation systems are included within the Limit of Work.

1.07 QUALITY ASSURANCE

A. Trees, shrubs, and ground covers:
   1. All materials shall be maintained in a healthy and, vigorous condition at all times. Tree crowns shall exhibit a full head of foliage; leaves shall show no desiccation, and the color shall be consistent with the species. Trunks, bark, and outer skin shall have no "unhealed breaks" or scars, decay cavities, indications of tunneling, or evidence of soft wood.
   2. Materials shall not exhibit symptoms of attack by any manner of plant pest or fungus, either in the leaf structure, the bark of outer skin, at the base of the trunk, or in the root system.
   3. Trees planted and staked or guyed with water basins shall have stakes and guys firm, with a full thickness of mulch and water basins fully maintained. (Owner may direct removal of water basins, during the maintenance period.)
   4. Shrubs and ground covers shall have a neat, healthy appearance, and shall be trimmed in a manner to preserve the natural character of the plants. Planting beds shall be inspected once a month.

B. Irrigation system:
   1. Irrigation system shall be supplemented by hose as required. Contractor shall visit site, inspect the system, and confer with Owner regarding the system's capabilities.
   2. Grass and shrubs shall not interfere with operation of the irrigation heads.
   3. System shall operate automatically on the normal watering schedule as approved by Owner.
   4. System shall operate without breaks or interruptions in service. Malfunctions shall be promptly reported and repaired.

C. Pavement:
   1. Hardscape paving shall be free from clippings, edgings, or vegetative trimmings caused by maintenance operations.

   2. Vehicles shall be equipped with drip pans. Contractor shall be responsible for all damage to paved surfaces caused by

dripping from vehicles.

D. General cleanliness:
   1. The entire area shall be maintained in a neat and clean condition. The site shall be inspected once a month for first 2 years then seasonally (four times per year) thereafter. There shall be no accumulation of debris or litter along shrubs, beds, pathways, steps, and other structures.
      2. During leaf drop, there shall be no accumulation creating hazards or hardships for pedestrian or bike traffic. Pathways raked clear of leaves.

1.08 MAINTENANCE TASK SCHEDULES

A. Submit a report semi-monthly, including photographs, to Owner which covers observations and conclusions made during the site walk. The report shall include maintenance task schedules adjusted by Contractor to cover all special conditions or problems at that time. The final acceptable schedules will be as approved by Owner.
B. Notify Owner of the intended work schedule sufficiently in advance to allow Owner time to serve as field observer during the maintenance period.

1.09 MONTHLY SUMMARY REPORT

A. Deliver to Owner a monthly summary report on the condition of the pathway areas, planting areas, and irrigation system. Include 4 in. x 6-in. color photographs for damaged items or damaged or dying plant materials. The format and headings shall be the same for each report.
B. If it becomes necessary to revise maintenance task schedules based on changing conditions or problems, which arise, include revised schedules in the summary report.

1.10 SAMPLES AND APPROVALS

A. Before ordering, if ordering materials for the site should become necessary, submit typical samples to Owner for selection and approval. Do not order materials until approval by Owner has been obtained. Delivered materials shall closely match approved samples.
B. Submit list of proposed equipment to be used in the work.

1.11 MAINTENANCE INSTRUCTIONS

A. Within 30 days prior to start of maintenance operations, provide to Owner a notebook of written maintenance instructions for all pathway areas, planting areas, and irrigation systems within the project area. All necessary information needed to maintain areas and systems shall be provided, including man-hours required per task and cost per task to accomplish the work including total area sq. ft. for all areas to be maintained. Submit four copies of instructions to Owner for approval. Owner may require resubmittals of maintenance instructions if it is determined that the information provided is not sufficient or adequate to allow for proper maintenance.

B. Maintain a log on site available for review by Owner of all applied products, materials, including fungicides and mycorrhizae, showing the dates of application, the areas of application, the rate of application, the method of application, brand names, and product description.

1.12 QUALIFICATIONS OF CONTRACTOR

A. Demonstrate experience by landscape maintenance principals in *native plant* landscape maintenance. In addition, provide the name of the school or organization from which their training and experience was obtained, and the address and period of time by dates from start to finish of training. Give names of companies, addresses, and written references. Maintenance Contractor shall be bondable and show evidence of financial stability satisfactory to Owner that it is in good financial position to carry out the work. Contractor shall be able to take on the maintenance and welfare of the Contract areas throughout the specified period. Such care and maintenance of the Contract area shall be supervised by Contractor.

B. All applications of materials, including fungicides and insecticides, and shall be kept to an absolute minimum and applied by licensed applicators in a manner that will ensure maximum effectiveness of materials and minimal hazard to the public, property, and total ecological environment. All claims, lawsuits, or litigation arising directly or indirectly from application or use of maintenance materials shall be the sole responsibility of Contractor. Types of materials and rates of application, where applicable, shall be consistent with recommendations of appropriate state and local

governing agencies.

1.13 CONTRACTOR RESPONSIBILITY

A. Conform to provisions of Specifications in performing the work required. Make management recommendations to Owner, which will enhance the appearance of the site.
B. During the term of this agreement, maintain insurance coverage in amounts deemed by Owner to be mutually adequate.
C. During the term of this agreement, comply with all pertinent federal, state, and local ordinances and regulations.
D. Provide periodic inspections of the site when requested by Owner.

PART 2 MATERIALS

2.01 EQUIPMENT

A. Furnish and utilize adequately maintained equipment in sufficient quantity to properly carry out the work specified herein. Unless specific arrangements are made in advance with Owner, Contractor's maintenance equipment shall not be stored on-site.

2.02 PLANTS

A. Replace plants, trees, shrubs, grasses and vines that are dying or in poor condition in accord with Owner's approval. Submit to Owner a list of replacement materials, indicating botanical name, common name, size, and unit cost installed complete and in place. In addition, indicate if the material is under the Contract installation warranty period. Obtain Owner's approval and written authorization prior to all replacements.
B. Evaluate on a case by case basis whether plant will be replaced. As plants mature and fill in replacement plants may not be necessary and will need to be assessed by the Native Plant Contractor.
C. All replacement plant materials shall be planted in accord with Landscaping Specifications.

2.03 GUYING AND STAKING MATERIALS

A. In accord with Landscaping Specifications and installation details.

PART 3 EXECUTION

3.01 PROCEDURES - GENERAL

A. The following procedures may be adjusted as required by monitor's observations and recommendations.

3.02 TRASH AND LITTER PICK-UP

A. Complete trash and litter cleanup of all pathway and planting areas within the limit of work shall be carried out a minimum of once a month and additionally as necessary to maintain the site in a clean, neat, and orderly condition.
B. Trash receptacles shall be emptied twice per week or as needed.
C. Trash shall be legally disposed of off-site.

3.03 DAMAGE INSPECTION

A. Regularly inspect areas and report all vandalized and otherwise damaged materials or conditions within the Limit of Work.

3.04 PLANT MATERIAL MAINTENANCE

A. Weeding and edging:
1. Mulched planting beds and individual mulched plant pits shall be neat in appearance and maintained to the lines originally laid out.
2. Hand weeding of mulched planting beds and pits shall be done to maintain mulch depths indicated on installation documents.
3. Debris from weeding shall be removed from site and disposed of properly by Contractor.

B. Weed control:
1. All plant materials shall be closely monitored for insect and disease problems. Due to the nature of these problems, plants

shall be inspected weekly by a native plant specialist. **Insecticides shall be applied on a control basis under the supervision of a licensed certified pesticide applicator (PCA) and approved by Owner and only when deemed absolutely necessary.**

2 Safety measures shall be employed to ensure that toxic substances are used in a responsible manner without adversely affecting plant materials and the general public. These measures include applying materials in accord with manufacturer's recommendations, alerting Owner regarding the timing, material, its toxicity, and its usage.

C. Disease and pest control:

1. As necessary, provide all seasonal spraying and/or dusting of trees, shrubs, and ground covers. Spray materials and techniques shall be as recommended by a local native plant specialist in cooperation with the local agricultural extension service.
2. Show spraying dates on schedule submitted to Owner.

D. Soil Amendment/Fertilization:

1. According to Specifications upon installation.

E. Mulching:

1. Maintain a minimum depth of 3 in. of organic mulch or as specified on Planting Drawings and Specifications over the entire surface of the plant beds and tree pits to maintain a neat and attractive appearance. The mulch shall be maintained throughout the growing season and new mulch shall be installed as required to keep a neat and attractive appearance.

F. Pruning:

1. Pruning techniques shall be in accord with ANSI A300 standards and Owner's direction.
2. Trees shall be pruned in late fall or during the winter months to remove dead, damaged, or diseased wood and to encourage new and healthy growth, to limb up, shape, or allow unobstructed views. With young trees, the first few years will require minimum pruning so they are allowed to develop 'natural branching' systems rather than removing wood from lower portions of trees. Pruning shall occur only when damage has occurred.
    a. All pruning cuts shall be made adjacent to bud or branch to reduce sucker growth. Cuts at the trunk of a tree shall be

made in line with the "collar" where the branch meets the trunk-not parallel with the trunk. Tree branch collar shall not be damaged.

b. Deciduous trees shall be pruned to maintain shape and clearance. Broken branches or dead material shall be removed as necessary. Lower branches of trees shall be removed should they interfere with pedestrian or vehicular traffic as directed by Owner.

3. Shrubs:
   a. The broadleaf evergreens shall be lightly pruned after flowering and before the new growth matures and turns dark green. Prune to retain the natural character and shape of the plant using hand pruners, not hedge shears.
   b. Deciduous shrubs shall be pruned after flowering, removing no more than 1/3 of the old wood. Prune to retain the natural character and shape of the plant using hand pruners, not hedge shears. Approval of pruning goal must be approved by Owner prior to the work.
   c. Rejuvenation and special pruning can occur at any time of the year, depending upon the specific type of shrub. This must be determined by a Native Plant Specialist.
   d. Multi-stemmed upright shrubs shall be put on a 3- or 4-year rotation once they have approached mature or desired size. In this manner 1/3 to 1/4 of the largest stems are removed to the ground each year.
4. Vines shall be pruned after the new growth has developed but before the new growth matures and turns dark green. Primarily only ends of vines will require pruning to keep vines from spreading into adjacent beds, paved areas, protected areas, and to direct the vine in the desired direction and encourage new growth. Pruning shall be performed to retain natural character of vines and to disguise pruning cuts on ends of vines.

G. Tree guys and water basins:
1. Tighten guy wires, reshape saucers, and refurbish sand mulch as required. Remove guys when tree root system is adequately established for the tree canopy and trunk to move without falling over in windy conditions. Remove water basins after tree rooting has occurred and as approved by Owner.

H. Dead and/or damaged plant material removal:

1. Remove plant material (as required throughout the year) that is dead, damaged beyond repair, or badly diseased when no appropriate treatment is likely to save it or return it to an appearance that is acceptable to Owner.

I. Plant material replacement:

1. Plants that are dead or not in satisfactory condition as determined by Owner, shall be removed from site. These plants and any plants missing shall be replaced as soon as conditions permit. All replacements shall be plants of the same variety and size as plants that were removed. Obtain Owner's approval for costs prior to installation.

3.05 LANDSCAPE IRRIGATION SYSTEM MAINTENANCE

A. System familiarization:

1. Contractor shall inspect irrigation system and become familiar with layout of the system, materials and equipment used, and services relative to it. This includes irrigation system as installed, all piping, valves, sprinkler heads, access boxes, controls, drains, and appurtenances.

B. Shop drawings:

1. Contractor shall obtain a set of the complete shop drawings and "As Built" drawings from Owner.

C. Operation and maintenance manual:

1. At the start of the irrigation system maintenance program, Contractor shall obtain one copy of the "Operation and Maintenance Manual" from Owner. No substitution of irrigation equipment will be permitted unless approved by Owner in writing before substitution is made.

D. System maintenance procedures:

1. Maintain irrigation system in optimum operating condition during entire maintenance period. Ensure that manufacturer's printed instructions and recommendations are closely followed.
2. If at any time any item or part of the system is not functioning properly or is not as intended, bring the condition to the attention of Owner and record the problem in the monthly summary report. All replacement parts, materials, and labor (except for defects in original parts, materials, and workmanship which shall be the responsibility of others to replace and repair) shall be the responsibility of Contractor to provide and ensure that the

necessary repairs or changes are made to bring the system to an operable and acceptable condition. Carry out the replacement with Owner and with the cost being borne by Owner, unless there has been negligence on the part of Contractor.

3. All replacement parts and irrigation pipe shall be by the same manufacturer or Owner approved equivalent.
4. In all cases for repairs or changes, a reasonable time period shall be determined during which the work can be accomplished.
5. Be responsible for the following items on a monthly basis:
    a. Check spray and emitter heads to ensure their proper operation and check for damage. Adjust head spray patterns if required to provide complete and adequate coverage of areas to be watered.
    b. Clean spray heads and trim grass around heads.
    c. Immediately repair all damage that may occur, after notifying Owner and noting the problem in the monthly summary report.
6. Test entire irrigation system at the start of the maintenance period.
    a. Irrigation system shall be tested for satisfactory operation. Water shall be turned into each portion of irrigation line and maintained at full pressure. If unsatisfactory performance or leaks develop, this shall be described in the summary report, the condition corrected, and these testing procedures repeated until satisfactory operation is obtained.
    b. Check all heads to ensure their proper operation and coverage.
    c. Check all electrical and plumbing systems to ensure their proper operation.
    d. Observe the operation for a complete day's cycle.

END OF DIVISION

DIVISION 3 CONCRETE

SECTION 03100
CONCRETE FORMWORK

PART 1 GENERAL

1.03 SUMMARY

A. Provide permanent and temporary forms, form liners, coatings, form ties, form tie hole plugs, rustication strips and other accessories.

SECTION 03200
CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Provide reinforcement using ASTM A615, Grade 60, deformed steel bars; ASTM A185 welded wire fabric; and accessories.

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

A. Provide cast-in-place concrete work at foundations and walls.
B. Concrete:
   1. Foundations and walls: 4,000 psi Class A
   2. Miscellaneous non-structural applications: 3000 psi Class B
C. Miscellaneous: Non-shrink grout, vapor barrier, curing compounds, waterstops, premolded joint filler strips and similar items.

D. Installation: Per applicable American Concrete Institute Standards.

SECTION 03450
ARCHITECTURAL PRE-CAST CONCRETE

PART 1 GENERAL

1.01 SUMMARY

A. Provide and install plain, smooth-faced architectural pre-cast concrete shapes in the form of a rattlesnake tail and head, as shown on the drawings.
B. Custom pre-cast shapes to be provided by DuraArt Stone.

END OF DIVISION

DIVISION 4 MASONRY

SECTION 04220
CONCRETE UNIT MASONRY

PART 1 GENERAL

1.04 SUMMARY

B. Provide Verdura 30 planted concrete block retaining wall as shown on the drawings. Provide all related reinforcement and drainage required.
C. Verdura 30 planted concrete block retaining walls are provided by Soil Retention Systems, Oceanside, CA (760)966-6090).

END OF DIVISION

DIVISION 5 METALS

SECTION 05500
METAL FABRICATION

PART 1 GENERAL

1.05 SUMMARY

D. Provide fencing, handrails, and guardrails as shown on the drawings.
E. Provide shop drawings showing at large scale the construction of the various parts, methods of joining, thickness of metals, profiles of surfaces, reinforcing anchorage and structural supports. Include information regarding concealed and exposed joints, welds and fastenings.

PART 2 MATERIALS

2.01 Standard structural steel shapes, bars and plates: ASTM A36
2.02 Architectural and miscellaneous steel: ASTM A283, grade optional
2.03 Steel pipe: ASTM A53, Type E or S, Grade B
2.04 Steel tubing: Cold-formed, ASTM A500; hot or cold rolled, ASTM A611
2.05 Sheets: ASTM A446, with zinc coating in accordance with ASTM A525, grade as selected by the fabricator.
2.06 Galvanizing: ASTM A123, hot-dip, 2 ounces per square foot coating on actual surface with minimum 1.8 ounce coating on any specimen.

END OF DIVISION

DESIGN DEVELOPMENT STAGE

CONSTRUCTION COST ESTIMATE

for

THE LOS ANGELES RIVER - VALLEYHEART GREENWAY

at

LAUREL CANYON BOULEVARD to RADFORD AVENUE
STUDIO CITY, CALIFORNIA

prepared for: *The* River Project
11950 Ventura Blvd. #7
Studio City, CA 91604
818.980.9660

prepared by: Joel J. Fearon Associates Inc.
Construction Cost Consultants
23323 Los Codona Avenue, Torrance CA 90505
Telephone : (310) 378-0595
Fax : (310) 378-2035
NJF Associates Inc.

BASIS OF THE COST ESTIMATE

			Dated	Received
Drawings:	Landscaping:	L0-1..0-2; L1-1..1-3; L2-4..2-6; L3-1..3-4	03-Dec-01	04-Dec-01
		L2-1..2-3	03-Dec-01	14-Jan-02
	Civil Engineering:	C-01…C-05	08-Oct-01	04-Dec-01
Documents:		Refined shrub list	05-Dec-01	05-Dec-01
Meetings and discussions:		Meeting and site walk with Landscape Architect 11/28/01		

PRICING ASSUMPTIONS

Bidding: Assumed that the project will be competitively bid **as a single contract** by at least **three** competent General Contractors.

Labor costs: Assumed that prevailing wage contract conditions **WILL** apply to this project.

Line item pricing: Estimate line items are priced as "Subcontractor net price to General Contractor", including Subcontractor's overhead, profit and sales tax as appropriate. Allowances for General Contractor's overhead, profit and/or management fee are added on the estimate summary page.

Cost escalation: Estimate line items are priced at current market rates, including allowance for cost escalation during construction. Allowance for cost escalation to anticipated bid date or construction start date is added on the estimate summary page.

Construction schedule: Overall construction period of 3 months assumed for estimating purposes.

SCOPE OF WORK INCLUDED

Site works: Demolitions, regrading and landscaping the existing river banks; New concrete and decomposed granite paving; irrigation and planting; New picket fence to the existing river channel.

EXCLUSIONS

General :

- Legal and financing costs
- Owner's fire and all-risk insurance
- Furniture, fittings and loose equipment
- Work outside the areas impacted by construction, other than for utility connections.
- Utility connection charges
- Handling, removal or encapsulation of hazardous materials or contaminated soil

Project specific :

- Storm water drainage
- Signage, informational billboards etc.
- Site lighting
- Cost escalation beyond March 2002, other than escalation during construction

NJF *Associates Inc.*

DESIGN DEVELOPMENT STAGE
CONSTRUCTION COST SUMMARY

		South Bank	North Bank	TOTAL
Gross site areas (SF):		*76,500*	*65,000*	*141,500*
Division				$
2 Sitework		410,311	262,109	**672,420**
3 Concrete		80,070	12,238	**92,308**
4 Masonry		91,070	75,810	**166,880**
5 Metals		221,200	173,110	**394,310**
6 Wood and plastics		0	0	**0**
7 Thermal and moisture protection		5,363	0	**5,363**
8 Doors and windows		0	0	**0**
9 Finishes		0	0	**0**
10 Specialties		0	0	**0**
11 Equipment		0	0	**0**
12 Furnishings		0	0	**0**
13 Special Construction		0	0	**0**
14 Conveying systems		0	0	**0**
15 Mechanical		0	0	**0**
16 Electrical		5,250	3,000	**8,250**
17 Communications Systems		0	0	**0**
Subtotal :		**$813,264**	**$526,267**	**$1,339,531**
1 General Contractor's Site management	5.0%	40,663	26,313	**66,976**
Contractor Insurances	1.5%	12,809	8,289	**21,098**
Bonds	1.3%	11,268	7,291	**18,559**
General Contractor's Fee	4.0%	35,120	22,726	**57,846**
Pre-Construction Contingency	5.0%	45,656	29,544	**75,200**
Escalation allowance to anticipated bid date	1.0%	9,588	6,204	**15,792**
BUDGET FOR CONSTRUCTION BIDS - Jan/Mar 2002		**$968,368**	**$626,634**	**$1,595,002**
Cost per SF of gross site area:		*$12.66*	*$9.64*	*$11.27*

SUGGESTED BUDGETS FOR OWNER'S DIRECT WORK

Remove & replace existing bridge guardrails (One side of each bridge only)	**$59,000**
River slide, "Fibar" play area and river rock steps	**$6,000**
Hummingbird fountain, including utility connections	**$26,000**
Great Toad gateway - fabrication & installation	**$15,000**
Tree Frog dog water fountain and bowl - fabrication & installation	**$20,000**

NJF Associates Inc.

DESIGN DEVELOPMENT COST ESTIMATE CSI FORMAT Division / Description	Unit	U/price $	South Bank Quantity	South Bank Cost $	North Bank Quantity	North Bank Cost $	Total $
02 SITE WORK							
02200 Site Preparation							
Site Demolition							
Remove existing chainlink fencing and gate to river channel	LF	2.75	1,390	**3,823**	1,440	**3,960**	7,783
Remove fence post and posthole grout; grout and seal posthole to Army Corps of Engineers	EA	35.00	190	**6,650**	195	**6,825**	13,475
Remove and preserve existing vehicle access gates	EA	200.00	2	**400**	1	**200**	600
Break up existing concrete sidewalks and aprons; load rubble	SF	5.00	1,060	**5,300**	750	**3,750**	9,050
- low retaining wall, footing and steps at	LF	40.00	27	**1,080**		**0**	1,080
Site clearing							
Site clearing and miscellaneous minor demolitions; remove rubble	SF	0.15	76,500	**11,475**	65,000	**9,750**	21,225
Fell and remove trees; grub up roots - <=12"	EA	125.00	17	**2,125**	15	**1,875**	4,000
12" - 24" diameter	EA	250.00	2	**500**	5	**1,250**	1,750
>24" diameter	EA	450.00	5	**2,250**	1	**450**	2,700
General protection to preserved existing utility poles, street lights, etc.	SF	0.10	76,500	**7,650**	65,000	**6,500**	14,150
Protection to gas pipeline	EA	1,200.00	1	**1,200**		**0**	1,200
Relocate existing guywire	EA	250.00	1	**250**		**0**	250
Protect existing preserved trees; trimming and maintenance	EA	175.00	5	**875**	78	**13,650**	14,525
Remove rubble and debris							
Haul debris to dump or recycling center; dump fees	CY	50.00	150	**7,500**	120	**6,000**	13,500
02300 Earthwork							
Excavation and Fill							
Bulk excavation for new ramp; stockpile on site	CY	10.00	600	**6,000**		**0**	6,000
Load from stockpile, haul, fill and compact to new grades	CY	7.50	600	**4,500**		**0**	4,500
Imported dirt fill, dumped in bulk fill areas	CY	8.50	2,000	**17,000**		**0**	17,000
Compact and rough grade fill in paved and planted areas	CY	2.50	1,600	**4,000**		**0**	4,000
Grading to finished levels	SF	0.20	76,500	**15,300**	65,000	**13,000**	28,300
02500 Utility Services							
NO WORK							
02517 Turfblock Paving							
"Grasspave 2" paving system							
"Grasspave 2" recycled plastic paving units; "Hydrogrow" soil mix for seeding; sharp sand fill	SF	4.00	5,500	**22,000**		**0**	22,000

DESIGN DEVELOPMENT COST ESTIMATE CSI FORMAT Division / Description	Unit	U/price $	South Bank Quantity	South Bank Cost $	North Bank Quantity	North Bank Cost $	Total $
Compacted gravel base, 10"-12" thick	SF	1.60	5,500	**8,800**		**0**	8,800
Reinforced concrete header curb, 6"x12"	LF	12.00	450	**5,400**		**0**	5,400
02505 Granular Paving							
Decomposed granite paving							
DG chips with binder, 1/4" down - 4" thick; filter fabric underlayment	SF	2.33	26,500	**61,647**	18,100	**42,106**	103,753
Compacted gravel base for crane zone - 8"	SF	1.20	2,200	**2,640**		**0**	2,640
Header boards - 2"x4" recycled plastic board, screwed to stakes	LF	1.65	2,850	**4,703**	2,550	**4,208**	8,911
Pea gravel							
Del Rio gravel beds, 1/8"; with weed barrier - 4" deep	SF	0.80		**0**	5,500	**4,400**	4,400
River sand							
River sand bed with weed barrier, 4" deep	SF	0.65		**0**	1,800	**1,170**	1,170
02520 Playground Surfacing							
Wood fibre play surface material, "Fibar Systems # 100" or similar - 8" thick; filter fabric underlayment							*Excluded*
"Fibarmat" at base of slide							*Excluded*
02600 Drainage and Containment							
NO WORK							
02750 Concrete Paving							
Reinforced concrete paving, including joints and curing; exposed aggregate finish							
Poured in place concrete in sidewalks and ramp slabs - 6" thick	CY	140.00	70	**9,800**	12	**1,680**	11,480
Steel reinforcing bar	#	0.80	3,500	**2,800**	500	**400**	3,200
Compacted gravel base for paving- 6" thick	SF	0.75	3,500	**2,625**	500	**375**	3,000
Expansion joint	LF	5.50	120	**660**	40	**220**	880
Exposed aggregate finish; water blast and broom finish - allow	SF	2.00	3,500	**7,000**	500	**1,000**	8,000
Protect and work around existing preserved pullboxes etc.	EA	200.00	6	**1,200**	3	**600**	1,800
Curb ramp	EA	150.00	2	**300**	2	**300**	600
Work to existing public road surfaces							
Concrete curb and gutter , LA City standard	LF	20.00	200	**4,000**	90	**1,800**	5,800
Painted crosswalk lines	LF	3.00	220	**660**	170	**510**	1,170
02870 Site Amenities							
Site furniture							
Concrete trash container	EA	600.00	3	**1,800**		**0**	1,800
Bicycle rack	EA	475.00	3	**1,425**		**0**	1,425

DESIGN DEVELOPMENT COST ESTIMATE CSI FORMAT Division / Description	Unit	U/price $	South Bank Quantity	South Bank Cost $	North Bank Quantity	North Bank Cost $	Total $
Fiberglass slide with supports and base - approx. 12' long x 2'6" wide							*Excluded*
02810 Irrigation Systems							
Budget for landscape irrigation system							
Record drawings, charts, O&M manuals, spares and tools	LS	750.00	1	**750**	1	**750**	1,500
Main connections and irrigation water lines							
Point of connection to existing riser assembly; main shut off valve	EA	1,000.00	1	**1,000**	1	**1,000**	2,000
Solar powered automatic irrigation controller with protective enclosure, 24 stations - allow	EA	7,500.00	1	**7,500**	1	**7,500**	15,000
Main water lines, in trenches; Schedule 40/80 PVC piping, tracer warning tape and low-voltage control wiring - allow for 2"-4" piping	LF	12.00	1,500	**18,000**	1,300	**15,600**	33,600
Branch remote control valve, box and cover - allow	EA	500.00	15	**7,500**	12	**6,000**	13,500
Drip irrigation system							
Allowance for branch piping, drip system and emitters	SF	0.60	46,500	**27,900**	36,000	**21,600**	49,500
Branch water service to the Hummingbird			1				*Excluded*
- to the Tree Frog fountain					1		*Excluded*
02900 Landscaping							
Plant preparation							
Shredded organic mulch layer, 3" thick; material provided by Owner	SF	0.16	46,500	**7,440**	36,000	**5,760**	13,200
General planting							
California native wildflower seed mix, hand scattered throughout all planting areas; 20 #/acre	MSF	16.00	47	**752**	36	**576**	1,328
Wildflower meadow seeding							
Groundcover plants from rooted plugs	EA	1.10	6,650	**7,315**		**0**	7,315
Trees; including excavation for rootball, stakes and backfill mix							
California native, 15 gallon	EA	112.00	93	**10,416**	62	**6,944**	17,360
Shrubs; including excavation for rootball and backfill							
California native, 1 gallon	EA	16.00	5,400	**86,400**	4,400	**70,400**	156,800
Total for Division 02 SITE WORK :				**$ 410,311**		**$ 262,109**	$ 672,420
03 CONCRETE							
03300 Cast-in-place Concrete							

DESIGN DEVELOPMENT COST ESTIMATE CSI FORMAT Division / Description	Unit	U/price $	South Bank Quantity	South Bank Cost $	North Bank Quantity	North Bank Cost $	Total $
Poured in place structural concrete, including forms and rebar							
Miscellaneous isolated footings and supports for Owner installed features	EA	300.00	5	**1,500**	2	**600**	2,100
Equipment pads and simliar - allow	CY	175.00	3	**525**		**0**	525
Curb walls, seat wall and low retaining walls, per detail 3/L2-5; concrete 4000 PSI; footing average 2'x9"; wall height average 2'6"	LF	82.00	480	**39,360**	139	**11,398**	50,758
Concrete V-ditch, 12"x4"	LF	6.50	480	**3,120**		**0**	3,120
Core drill for railing stanchions	EA	30.00	45	**1,350**	8	**240**	1,590
Curb walls to ramp, per detail 1/C-05; concrete 4000 PSI; 8" wide x 24" high	LF	48.00	150	**7,200**		**0**	7,200
Core drill for railing stanchions	EA	30.00	32	**960**		**0**	960
Retaining walls							
Poured in place structural concrete, pumped; 4000 PSI	CY	175.00	20	**3,500**		**0**	3,500
Formwork to walls, assume 3 uses	SF	8.50	1,500	**12,750**		**0**	12,750
Expansion joint, filler and sealer - allow	LF	7.00	30	**210**		**0**	210
Steel reinforcing bar - allow 2.5 #/SF	#	0.80	1,900	**1,520**		**0**	1,520
Cast in ties for stone cladding - allow	EA	2.25	200	**450**		**0**	450
Reinforced concrete drainage swale, 24"x8"	LF	25.00	30	**750**		**0**	750
Reinforced concrete bowl and base slab to Hummingbird fountain; approx. 5' diameter x 18" high above finished grade			1				*Excluded*
- to Tree Frog fountain; approx. 6' diameter concave basin					1		*Excluded*
03450 Architectural Precast Concrete							
Decorative features							
Precast concrete rattlesnake tail and head; PIP concrete base and anchors - allow	LF	125.00	55	**6,875**		**0**	6,875
Total for Division 03 CONCRETE :				**$ 80,070**		**$ 12,238**	$ 92,308
04 MASONRY							
04220 Concrete Unit Masonry							
Interlocking precast concrete planter wall units "Verdura 30" planted retaining wall system; soil reinforcement; soil backfill in stages	SF	15.00	620	**9,300**		**0**	9,300
04400 Stone work							
River rock work							
Rock veneer wall cladding, 6" thick, random size stones 6"-12"	SF	18.00	2,400	**43,200**	415	**7,470**	50,670

DESIGN DEVELOPMENT COST ESTIMATE CSI FORMAT Division / Description	Unit	U/price $	South Bank Quantity	South Bank Cost $	North Bank Quantity	North Bank Cost $	Total $
Rock base to Hummingbird fountain support framing							*Excluded*
Rip-rap stones, 6"-12" diameter, set in cement	SF	9.00		**0**	3,150	**28,350**	28,350
Rock curb and base, 4"-6" rocks	LF	14.00	610	**8,540**		**0**	8,540
Steps and risers	LF	20.00		**0**	30	**600**	600
Decorative boulders, 3' -5' diameter	EA	390.00	77	**30,030**	101	**39,390**	69,420
Total for Division 04 MASONRY :				**$ 91,070**		**$ 75,810**	$ 166,880
05 METALS							
05500 Metal fabrications							
Miscellaneous metals							
Stainless steel support framing and connection box for Hummingbird fountain							*Excluded*
Railings and gates							
Galvanized steel pipe railings, 1 rail	LF	40.00	130	**5,200**	24	**960**	6,160
, decorative guardrail and handrail to top of retaining walls, 3'6" high; galvanized finish	LF	110.00	190	**20,900**		**0**	20,900
Galvanized steel fabricated picket fence to the river channel; variable height, 5'-6'; TS posts and rails, top rail bent to pattern; 5/8" pickets at 4"	LF	100.00	1,375	**137,500**	1,390	**139,000**	276,500
Single gate and lock	EA	500.00	1	**500**		**0**	500
Concrete footing and setting post; field welding panels	EA	75.00	176	**13,200**	178	**13,350**	26,550
Shop drawings and submittals	LS	1,500.00	1	**1,500**	1	**1,500**	3,000
Rework existing vehicle access gate, as per detail 3/L2-6; new artistic metal cutouts, welded to existing frame; reinstall gate	EA	7,500.00	1	**7,500**	1	**7,500**	15,000
New gate post, hinges and concrete footing	EA	900.00	2	**1,800**	2	**1,800**	3,600
Protective bollards							
Precast concrete fixed bollard, with base	EA	750.00	8	**6,000**	12	**9,000**	15,000
Heavy duty galvanized steel removable bollard, 36" high; concrete base and mounting plate	EA	1,000.00	5	**5,000**		**0**	5,000
"No Parking" sign with base and footing	EA	500.00	1	**500**		**0**	500
Decorative metal panels							
Decorative porcelain enamel panels, approx. 2'x2'; stainless steel frame and attachments to new	EA	2,400.00	9	**21,600**		**0**	21,600
Total for Division 05 METALS :				**$ 221,200**		**$ 173,110**	$ 394,310
06 WOOD AND PLASTICS							
06100 Rough carpentry							
NO WORK							

DESIGN DEVELOPMENT COST ESTIMATE CSI FORMAT Division / Description	Unit	U/price $	South Bank Quantity	South Bank Cost $	North Bank Quantity	North Bank Cost $	Total $
06200 Finish carpentry							
NO WORK							
Total for Division 06 WOOD AND PLASTICS :				**$ -**		**$ -**	$ -
07 THERMAL AND MOISTURE PROTECTION							
07100 Dampproofing and Waterproofing							
Retaining walls							
Waterproofing and drain board to walls	SF	2.75	1,950	**5,363**		**0**	5,363
Total for Division 07 THERMAL AND MOISTURE PROTECTION :				**$ 5,363**		**$ -**	**$ 5,363**
08 DOORS AND WINDOWS							
NO WORK							
Total for Division 08 DOORS AND WINDOWS :				**$ -**		**$ -**	$ -
09 FINISHES							
09200 Plaster and Gypsum Board							
Exterior							
Cement plaster capping to curved fountain base, integral color; smooth finish with bullnose edging							*Excluded*
Waterproof cement plaster to curved fountain							*Excluded*
09300 Tile work							
Exterior							
Mosaic finish to the curved fountain base - allow			1				*Excluded*
- to Tree Frog fountain					1		*Excluded*
09900 Painting							
NO WORK							
Total for Division 09 FINISHES :				**$ -**		**$ -**	$ -
10 SPECIALTIES							
NO WORK							
Total for Division 10 SPECIALTIES :				**$ -**		**$ -**	$ -
11 EQUIPMENT							
NO WORK							
Total for Division 11 EQUIPMENT :				**$ -**		**$ -**	$ -
12 FURNISHINGS							
NO WORK							

DESIGN DEVELOPMENT COST ESTIMATE **CSI FORMAT** *Division* *Description*	*Unit*	*U/price* *$*	**South Bank** *Quantity*	*Cost* *$*	**North Bank** *Quantity*	*Cost* *$*	**Total** *$*
Total for Division 12 FURNISHINGS :				**$ -**		**$ -**	$ -
13 SPECIAL CONSTRUCTION							
NO WORK							
Total for Division 13 SPECIAL CONSTRUCTION :				**$ -**		**$ -**	$ -
14 CONVEYING SYSTEMS							
NOT USED							
Total for Division 14 CONVEYING SYSTEMS :				**$ -**		**$ -**	$ -
15 PLUMBING AND MECHANICAL							
15400 Plumbing Systems							
NO WORK							
15500 Fire Protection Systems							
NO WORK							
15700 Mechanical System Piping and Equipment							
NO WORK							
15800 Heating, Ventilation and Air-Conditioning							
NO WORK							
Total for Division 15 PLUMBING AND MECHANICAL :				**$ -**		**$ -**	$ -
16 ELECTRICAL							
16200 Electrical Power							
Allowance for electrical service pedestal and feeder from utility company connection point; exterior mounted	EA	3,000.00	1	**3,000**	1	**3,000**	6,000
Utility and convenience power outlets, WP/GFI; including conduit and wiring - allow	EA	450.00	5	**2,250**		**0**	2,250
Power connection to Hummingbird fountain							*Excluded*
Controller/timer							*Excluded*
16500 Lighting							
NO WORK							
Total for Division 16 ELECTRICAL :				**$ 5,250**		**$ 3,000**	$ 8,250
17 COMMUNICATIONS SYSTEMS							
NO WORK							
Total for Division 17 COMMUNICATIONS SYSTEMS :				**$ -**		**$ -**	$ -

SITE

Gross site area									
						141,401	SF		
	Count	*#*	*L*	*W*	*D/H*				
South bank - L2.1	1.00	0.50	68.00	41.00	1.00	1,394			
	1.00	0.50	38.00	50.00	1.00	950			
	1.00	1.00	100.00	38.00	1.00	3,800			
to matchline	1.00	1.00	250.00	59.00	1.00	14,750			
L2.2 to match	1.00	1.00	440.00	53.50	1.00	23,540			
L2.3	1.00	1.00	520.00	61.73	1.00	32,098		76,532	South
	1.00	1.00	1.00	1.00	1.00				
North - L2.1, 12/03/01	1.00	0.50	40.00	55.00	1.00	1,100			
to matchline	1.00	1.00	328.00	43.38	1.00	14,227			
L2.2 to match	1.00	1.00	498.00	51.82	1.00	25,805			
L2.3	1.00	1.00	507.00	46.82	1.00	23,737		64,869	North
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
						141,401	SF	141,401	0

Cut & stockpile									
						600	CY		
	Count	*#*	*L*	*W*	*D/H*				
Ramp at Laurel	1.00	1.00	180.00	18.00	5.00	16,200			
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
						16,200	CF	0	0

Total Fill									
						2,138	CY		
	Count	*#*	*L*	*W*	*D/H*				
Ramp at Laurel	1.00	0.50	180.00	15.00	10.00	13,500			
C-02	1.00	1.00	250.00	37.50	3.00	28,125			
C-03	1.00	1.00	90.00	55.00	2.00	9,900			
	1.00	0.50	55.00	225.00	1.00	6,188			
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
						57,713	CF	0	0

Scrape & regrade									
						141,401	SF		
	Count	*#*	*L*	*W*	*D/H*				
South	1.00	1.00	76,532.00	1.00	1.00	76,532			
North	1.00	1.00	64,869.00	1.00	1.00	64,869			
	1.00	1.00	1.00	1.00	1.00				
						141,401	SF	0	0

Demo (E) sidewalks									
						744	SF		

		Count	*#*	*L*	*W*	*D/H*				
North	L1-1	1.00	1.00	36.00	8.00	1.00	288			
	L1-3	1.00	1.00	76.00	6.00	1.00	456			
		1.00	1.00	1.00	1.00	1.00				
							744	SF	0	0

Remove trees 21 EA

		Count	*#*	*L*	*W*	*D/H*				
North; <=12" -	L1-3	1.00	15.00	1.00	1.00	1.00	15			
	L1-2	1.00		1.00	1.00	1.00	0			
	L1-1	1.00		1.00	1.00	1.00	0		15	
North; 12"-24" -	L1-3	1.00	3.00	1.00	1.00	1.00	3			
	L1-2	1.00	1.00	1.00	1.00	1.00	1			
	L1-1	1.00	1.00	1.00	1.00	1.00	1		5	
North; >24" -	L1-3	1.00	1.00	1.00	1.00	1.00	1			
	L1-2		1.00	1.00	1.00	1.00	0			
	L1-1		1.00	1.00	1.00	1.00	0		1	
		1.00	1.00	1.00	1.00	1.00				
		1.00	1.00	1.00	1.00	1.00				
							21	EA	21	0

Protect trees 78 EA

		Count	*#*	*L*	*W*	*D/H*				
North -	L1-3	1.00	50.00	1.00	1.00	1.00	50			
	L1-2	1.00	18.00	1.00	1.00	1.00	18			
	L1-1	1.00	10.00	1.00	1.00	1.00	10			
		1.00	1.00	1.00	1.00	1.00				
		1.00	1.00	1.00	1.00	1.00				
							78	EA	0	0

Net import of fill						1,538	CY		
	Count	*#*	*L*	*W*	*D/H*				
Total fill	1.00	1.00	57,713.00	1.00	1.00	57,713			
DDT stockpiled	(1.00)	1.00	16,200.00	1.00	1.00	(16,200)			
	1.00	1.00	1.00	1.00	1.00				
						41,513	CF	0	0
Concrete paving; exp agg finish						3,927	SF		
	Count	*#*	*L*	*W*	*D/H*				
South -L2.1 - Ramp	1.00	3.14	17.50	17.50	1.00	962			
	1.00	1.00	130.00	12.00	1.00	1,560			
L2.3 - Apron	1.00	1.00	32.50	14.00	1.00	455			
At Radford	1.00	1.00	18.00	25.00	1.00	450		3,427	
	1.00	1.00	1.00	1.00	1.00				
North - L2-1	1.00	1.00	36.00	9.00	1.00	324			
L2-3; Conc apron	1.00	1.00	22.00	8.00	1.00	176		500	
	1.00	1.00	1.00	1.00	1.00				
						3,927	SF	3,927	0

Curb ramp — 4 EA

	Count	#	L	W	D/H	
L2.1	1.00	2.00	1.00	1.00	1.00	2
L2.3	1.00	2.00	1.00	1.00	1.00	2
	1.00	1.00	1.00	1.00	1.00	
						4 EA 0 0

Bases for OFCI items — 6 EA

	Count	#	L	W	D/H	
L2.1	1.00	4.00	1.00	1.00	1.00	4
L2.3	1.00	2.00	1.00	1.00	1.00	2
	1.00	1.00	1.00	1.00	1.00	
	1.00	1.00	1.00	1.00	1.00	
						6 EA 0 0

Painted crosswalk lines — 390 LF

	Count	#	L	W	D/H	
L2.1	1.00	2.00	55.00	1.00	1.00	110
	1.00	2.00	45.00	1.00	1.00	90
L2.3	1.00	2.00	55.00	1.00	1.00	110
	1.00	2.00	40.00	1.00	1.00	80
	1.00	1.00	1.00	1.00	1.00	
	1.00	1.00	1.00	1.00	1.00	
						390 LF 0 0

Fibre wood chips — 154 SF

	Count	#	L	W	D/H	
L2.2 - below slide	1.00	3.14	7.00	7.00	1.00	154
	1.00	1.00	1.00	1.00	1.00	
	1.00	1.00	1.00	1.00	1.00	
						154 SF 0 0

Grasspave — 5,516 SF

	Count	#	L	W	D/H	
L2.2	1.00	0.50	45.00	95.00	1.00	2,138
	1.00	1.00	30.00	46.00	1.00	1,380
	1.00	0.50	47.00	85.00	1.00	1,998
	1.00	1.00	1.00	1.00	1.00	
	1.00	1.00	1.00	1.00	1.00	
	1.00	1.00	1.00	1.00	1.00	
						5,516 SF 0 0

Conc header 6"x12" — 455 LF

	Count	#	L	W	D/H	
L2.2	1.00	1.00	455.00	1.00	1.00	455
	1.00	1.00	1.00	1.00	1.00	
	1.00	1.00	1.00	1.00	1.00	
	1.00	1.00	1.00	1.00	1.00	
						455 LF 0 0

Del Rio gravel						5,466	SF		
	Count	*#*	*L*	*W*	*D/H*				
North L2-3	1.00	1.00	95.00	3.22	1.00	306			
	1.00	1.00	210.00	12.00	1.00	2,520			
L2-2	1.00	1.00	220.00	12.00	1.00	2,640			
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
						5,466	SF	0	0

4" river sand						1,800	SF		
	Count	*#*	*L*	*W*	*D/H*				
North L2-3	1.00	1.00	90.00	15.00	1.00	1,350			
L2-2	1.00	0.50	45.00	20.00	1.00	450			
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
						1,800	SF	0	0

6"-12" river rock						3,137	SF		
	Count	*#*	*L*	*W*	*D/H*				
North L2-3	1.00	1.00	40.00	9.00	1.00	360			
	1.00	1.00	25.00	6.00	1.00	150			
	1.00	0.50	20.00	15.00	1.00	150			
	1.00	1.00	15.00	7.00	1.00	105			
L2-2	1.00	1.00	42.00	8.00	1.00	336			
	1.00	1.00	139.00	14.00	1.00	1,946			
	1.00	0.50	10.00	18.00	1.00	90			
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
						3,137	SF	0	0

DG walkways						44,584	SF		
	Count	*#*	*L*	*W*	*D/H*			Volume CY	Weight Ton
Gross site - South & North	1.00	1.00	141,401.00	1.00	1.00	141,401		1,746	
DDT other surfaces	(1.00)	1.00	76,817.00	1.00	1.00	(76,817)		(948)	
	(1.00)	1.00	3,927.00	1.00	1.00	(3,927)		(48)	
	(1.00)	1.00	154.00	1.00	1.00	(154)		(2)	
	(1.00)	1.00	5,516.00	1.00	1.00	(5,516)		(68)	
	(1.00)	1.00	5,466.00	1.00	1.00	(5,466)		(67)	
	(1.00)	1.00	1,800.00	1.00	1.00	(1,800)		(22)	
	(1.00)	1.00	3,137.00	1.00	1.00	(3,137)		(39)	
	1.00	1.00	1.00	1.00	1.00				
						44,584	SF	550	925

Whiteman Aggregates (818)896-0377; 12/4/01 $ 22.50

Header boards to DG — 5,394 LF

	Count	#	*L*	*W*	*D/H*			
South - L2-1	1.00	1.00	640.00	1.00	1.00	640		
L2-2	1.00	1.00	800.00	1.00	1.00	800		
L2-3	1.00	1.00	850.00	1.00	1.00	850		
Rpt river rock curbs	1.00	1.00	550.00	1.00	1.00	550		2,840
	1.00	1.00	1.00	1.00	1.00			
North - L2-1	1.00	1.00	670.00	1.00	1.00	670		
L2-2	1.00	1.00	988.00	1.00	1.00	988		
L2-3	1.00	1.00	896.00	1.00	1.00	896		2,554
	1.00	1.00	1.00	1.00	1.00			
						5,394	LF	5,394	0

Crane zone - 8" base — 2,200 SF

	Count	#	*L*	*W*	*D/H*			
South - C-02	1.00	1.00	110.00	20.00	1.00	2,200		
	1.00	1.00	1.00	1.00	1.00			
	1.00	1.00	1.00	1.00	1.00			
						2,200	SF	0	0

Verdura planter wall — 563 SF

	Count	#	*L*	*W*	*D/H*			
C-02	1.00	0.50	150.00	7.50	1.00	563		
	1.00	1.00	1.00	1.00	1.00			
	1.00	1.00	1.00	1.00	1.00			
						563	SF	0	0

Seat wall & footing - det 3/L2-5 & V-ditch — 619 LF

	Count	#	*L*	*W*	*D/H*			
South - L2-1	1.00	1.00	190.00	1.00	1.00	190		
L2.2	1.00	1.00	135.00	1.00	1.00	135		
L2.3	1.00	1.00	155.00	1.00	1.00	155		
North - L2.3	1.00	1.00	139.00	1.00	1.00	139		
	1.00	1.00	1.00	1.00	1.00			
						619	LF	0	0

Retaining walls — 743 SF

	Count	#	*L*	*W*	*D/H*			
S - L2-1	1.00	1.00	120.00	1.00	4.50	540		
L2.2	1.00	1.00	45.00	1.00	4.50	203		
	1.00	1.00	1.00	1.00	1.00			
						743	SF	0	0

River rock cladding						2,600	SF		
	Count	*#*	*L*	*W*	*D/H*				
Seat walls - South	1.00	1.00	480.00	1.00	3.00	1,440			
Ret wls	1.00	1.00	743.00	1.00	1.00	743			
Seat walls - North	1.00	1.00	139.00	1.00	3.00	417			
	1.00	1.00	1.00	1.00	1.00				
						2,600	SF	0	0
Curb wall & footing - det 1/C-05						150	LF		
	Count	*#*	*L*	*W*	*D/H*				
S; L2-1	1.00	1.00	150.00	1.00	1.00	150			
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
						150	LF	0	0
Galvanized railing, 5 rail						384	LF		
	Count	*#*	*L*	*W*	*D/H*				
South - L2-1	1.00	1.00	315.00	1.00	1.00	315			
L2-2	1.00	1.00	45.00	1.00	1.00	45			
	1.00	1.00	1.00	1.00	1.00				
North - L2-3	1.00	1.00	24.00	1.00	1.00	24			
	1.00	1.00	1.00	1.00	1.00				
						384	LF	0	0
New railing to channel						2,763	LF		
	Count	*#*	*L*	*W*	*D/H*				
South - L2-1	1.00	1.00	415.00	1.00	1.00	415			
L2-2	1.00	1.00	455.00	1.00	1.00	455			
L2-3	1.00	1.00	505.00	1.00	1.00	505		1,375	
	1.00	1.00	1.00	1.00	1.00				
North - L2-1	1.00	1.00	368.00	1.00	1.00	368			
Return @ bridge	1.00	1.00	15.00	1.00	1.00	15			
L2-2	1.00	1.00	498.00	1.00	1.00	498			
L2-3	1.00	1.00	507.00	1.00	1.00	507		1,388	
	1.00	1.00	1.00	1.00	1.00				
						2,763	LF	2,763	0
Post & footing to channel railing - 8' oc						354	EA		
	Count	*#*	*L*	*W*	*D/H*				
South - L2-1	1.00	54.00	1.00	1.00	1.00	54			
L2-2	1.00	57.00	1.00	1.00	1.00	57			
L2-3	1.00	65.00	1.00	1.00	1.00	65		176	
	1.00	1.00	1.00	1.00	1.00				
North - L2-1	1.00	49.00	1.00	1.00	1.00	49			
L2-2	1.00	64.00	1.00	1.00	1.00	64			
L2-3	1.00	65.00	1.00	1.00	1.00	65		178	
	1.00	1.00	1.00	1.00	1.00				
						354	EA	354	0

Gate — 1 EA

	Count	*#*	*L*	*W*	*D/H*	
South L2-1 - Single	1.00	1.00	1.00	1.00	1.00	1
	1.00	1.00	1.00	1.00	1.00	
						1 EA

Rework existing gate — 2 EA

	Count	*#*	*L*	*W*	*D/H*	
South L2-3 - 19'	1.00	1.00	1.00	1.00	1.00	1
North L2-3 - 19'	1.00	1.00	1.00	1.00	1.00	1
	1.00	1.00	1.00	1.00	1.00	
						2 EA

Pocelain enamel panels — 9 EA

	Count	*#*	*L*	*W*	*D/H*	
S L2-1	1.00	3.00	1.00	1.00	1.00	3
L2-2	1.00	3.00	1.00	1.00	1.00	3
L2-3	1.00	3.00	1.00	1.00	1.00	3
	1.00	1.00	1.00	1.00	1.00	
						9 EA

River rock curb — 640 LF

	Count	*#*	*L*	*W*	*D/H*	
South - L2-2	1.00	12.00	5.00	1.00	1.00	60
L-2.3	1.00	1.00	550.00	1.00	1.00	550
	1.00	1.00	1.00	1.00	1.00	
North - L-2.3, 6" risers	1.00	6.00	5.00	1.00	1.00	30
	1.00	1.00	1.00	1.00	1.00	
						640 LF

LA City Curb & gutter — 298 LF

	Count	*#*	*L*	*W*	*D/H*		
South - L2-1	1.00	1.00	53.00	1.00	1.00	53	
L2-3	1.00	1.00	35.00	1.00	1.00	35	
L-2.3 at Alley	1.00	1.00	120.00	1.00	1.00	120	208
	1.00	1.00	1.00	1.00	1.00		
North - L2-1	1.00	1.00	44.00	1.00	1.00	44	
L2-3	1.00	1.00	46.00	1.00	1.00	46	90
	1.00	1.00	1.00	1.00	1.00		
						298 LF	298

LA City No Parking sign — 2 EA

	Count	*#*	*L*	*W*	*D/H*	
South - L-2.3 at Alley	1.00	2.00	1.00	1.00	1.00	2
	1.00	1.00	1.00	1.00	1.00	
						2 EA

Concrete swale — 30 LF

	Count	#	*L*	*W*	*D/H*			
S; L2-1; 2' wide	1.00	1.00	30.00	1.00	1.00	30		
	1.00	1.00	1.00	1.00	1.00			
						30 LF	0	0

Boulders 3'-5' — 178 EA

	Count	#	*L*	*W*	*D/H*			
South - L2.1	1.00	21.00	1.00	1.00	1.00	21		
L2.2	1.00	24.00	1.00	1.00	1.00	24		
L2.3	1.00	32.00	1.00	1.00	1.00	32	77	
	1.00	1.00	1.00	1.00	1.00			
North - L2.1	1.00	32.00	1.00	1.00	1.00	32		
L2.2	1.00	26.00	1.00	1.00	1.00	26		
L2.3	1.00	43.00	1.00	1.00	1.00	43	101	
	1.00	1.00	1.00	1.00	1.00			
	1.00	1.00	1.00	1.00	1.00			
						178 EA	178	0

Bollards — 25 EA

	Count	#	*L*	*W*	*D/H*			
South - Removable - L2.1	1.00	2.00	1.00	1.00	1.00	2		
L2.2	1.00		1.00	1.00	1.00	0		
L2.3	1.00	3.00	1.00	1.00	1.00	3	5	
Fixed conc - L2.1	1.00	4.00	1.00	1.00	1.00	4		
L2.2	1.00	4.00	1.00	1.00	1.00	4		
L2.3	1.00		1.00	1.00	1.00	0	8	
	1.00	1.00	1.00	1.00	1.00			
North - Fixed conc - L2.1	1.00		1.00	1.00	1.00	0		
L2.2	1.00	8.00	1.00	1.00	1.00	8		
L2.3	1.00	4.00	1.00	1.00	1.00	4	12	
	1.00	1.00	1.00	1.00	1.00			
	1.00	1.00	1.00	1.00	1.00			
						25 EA	25	0

Site furniture — 6 EA

	Count	#	*L*	*W*	*D/H*			
Bike rack - L2.1	1.00	1.00	1.00	1.00	1.00	1		
L2.2	1.00	1.00	1.00	1.00	1.00			
L2.3	1.00	2.00	1.00	1.00	1.00	2		
Trash - L2.1	1.00	1.00	1.00	1.00	1.00	1		
L2.2	1.00	1.00	1.00	1.00	1.00			
L2.3	1.00	2.00	1.00	1.00	1.00	2		
	1.00	1.00	1.00	1.00	1.00			
	1.00	1.00	1.00	1.00	1.00			
	1.00	1.00	1.00	1.00	1.00			
						6 EA	0	0

Planting

Planted areas — 76,817 SF

	Count	*#*	*L*	*W*	*D/H*				
South - L2.3	1.00	1.00	78.00	6.50	1.00	507			
	1.00	0.50	56.00	9.00	1.00	252			
	1.00	0.50	150.00	47.00	1.00	3,525			
	1.00	0.50	75.00	10.00	1.00	375			
	1.00	1.00	375.00	34.54	1.00	12,952			
Butterfly maze	1.00	1.00	250.00	5.00	1.00	1,250			
L2.2	1.00	1.00	255.00	24.45	1.00	6,236			
	1.00	1.00	30.00	12.00	1.00	360			
	1.00	1.00	155.00	42.00	1.00	6,510			
DDT walkway	(1.00)	1.00	145.00	4.00	1.00	(580)			
	(1.00)	3.14	9.00	9.00	1.00	(254)			
L2.1	1.00	1.00	375.00	28.31	1.00	10,617			
DDT walkway	(1.00)	1.00	210.00	4.00	1.00	(840)		40,910	
	1.00	1.00	1.00	1.00	1.00				
North - Gross site	1.00	1.00	64,869.00	1.00	1.00	64,869			
DDT DG paths - L2.3	(1.00)	1.00	73.00	5.00	1.00	(365)			
	(1.00)	1.00	50.00	5.00	1.00	(250)			
	(1.00)	1.00	482.00	12.00	1.00	(5,784)			
Conc apron	(1.00)	1.00	22.00	8.00	1.00	(176)			
L2-2	(1.00)	1.00	519.00	12.00	1.00	(6,228)			
	(1.00)	1.00	88.00	4.00	1.00	(352)			
L2-1	(1.00)	1.00	370.00	12.00	1.00	(4,440)			
	(1.00)	1.00	160.00	4.00	1.00	(640)			
Sidewalk	(1.00)	1.00	36.00	9.00	1.00	(324)			
Del rio gravel	(1.00)	1.00	5,466.00	1.00	1.00	(5,466)			
River sand	(1.00)	1.00	1,800.00	1.00	1.00	(1,800)			
River rock	(1.00)	1.00	3,137.00	1.00	1.00	(3,137)		35,907	
	1.00	1.00	1.00	1.00	1.00				
						76,817	SF	76,817	0

Trees & Shrubs - 15 gallon 155 EA

	Count	*#*	*L*	*W*	*D/H*	
South - CO - L3.1	1.00	14.00	1.00	1.00	1.00	14
L3.2	1.00	7.00	1.00	1.00	1.00	7
L3.3	1.00	9.00	1.00	1.00	1.00	9
PR - L3.1	1.00	4.00	1.00	1.00	1.00	4
L3.2	1.00	6.00	1.00	1.00	1.00	6
L3.3	1.00	6.00	1.00	1.00	1.00	6
AC - L3.1	1.00	3.00	1.00	1.00	1.00	3
L3.2	1.00	3.00	1.00	1.00	1.00	3
AR - L3.1	1.00	4.00	1.00	1.00	1.00	4
L3.3	1.00	5.00	1.00	1.00	1.00	5
QA - L3.1	1.00	6.00	1.00	1.00	1.00	6
L3.2	1.00	2.00	1.00	1.00	1.00	2
L3.3	1.00	2.00	1.00	1.00	1.00	2
QD - L3.2	1.00	2.00	1.00	1.00	1.00	2
PF - L3.2	1.00	4.00	1.00	1.00	1.00	4
L3.3	1.00	5.00	1.00	1.00	1.00	5
SM - L3.2	1.00	3.00	1.00	1.00	1.00	3
QE - L3.2	1.00	1.00	1.00	1.00	1.00	1
QR - L3.3	1.00	1.00	1.00	1.00	1.00	1
QC - L3.3	1.00	3.00	1.00	1.00	1.00	3
PC - L3.3	1.00	3.00	1.00	1.00	1.00	3
	1.00	1.00	1.00	1.00	1.00	
North	1.00	62.00	1.00	1.00	1.00	62
	1.00	1.00	1.00	1.00	1.00	
	1.00	1.00	1.00	1.00	1.00	

						155	EA	0	0
Groundcover shrubs						9,843	EA		
	Count	*#*	*L*	*W*	*D/H*				
Repeat planted areas South	1.00	1.00	40,910.00	1.00	0.13	5,455			
DDT (E) shrub area	(1.00)	1.00	10.00	20.00	0.13	(27)			
	1.00	1.00	1.00	1.00	1.00			5,428	
	1.00	1.00	1.00	1.00	1.00				
Planted areas North	1.00	1.00	35,907.00	1.00	0.13	4,788			
DDT around extg trees	(1.00)	1.00	280.00	10.00	0.13	(373)			
	1.00	1.00	1.00	1.00	1.00			4,415	
	1.00	1.00	1.00	1.00	1.00				
						9,843	EA	9,843	0
Wildflower groundcover						6,640	EA		
	Count	*#*	*L*	*W*	*D/H*				
Repeat Grasspave	1.00	1.00	5,516.00	1.00	1.15	6,340			
Verdura block areas	1.00	300.00	1.00	1.00	1.00	300			
	1.00	1.00	1.00	1.00	1.00				
	1.00	1.00	1.00	1.00	1.00				
						6,640	EA	0	0

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