

City of Rancho Cucamonga

*Haven Avenue
Grade Separation Project*



2009-2010 Awards Program

Please complete one form for each nomination.

CIVIL ENGINEER OF THE YEAR PRIVATE, GOVERNMENT OR YOUNG CIVIL ENGINEER OF YEAR (Circle One)	
Name:	
Title:	
Employer:	
Address:	
Phone:	Fax:
On a separate sheet of paper, please provide the following information about the nominee: Education and professional registration, work experience, professional and society affiliations, patents, publications and presentations, community service and public education, honors and awards.	
OUTSTANDING CIVIL ENGINEERING PROJECT	
Project Name: Haven Avenue Grade Separation	
Project Address or Location: 8876 Haven Avenue, Rancho Cucamonga CA 91730	
Project Owner Name or Company: City of Rancho Cucamonga	
Contact Person: Mark A. Steuer, Director of Engineering Svcs/City Engineer	
Mailing Address: 10500 Civic Center Drive, Rancho Cucamonga CA 91730	
Phone: 909-477-2740	Fax: 909-477-2741
On a separate sheet of paper, please provide information on how the project meets the criteria for this award. Consider all phases of the project, including planning, design, construction, and operation maintenance. Describe any special features, innovations, and challenges. Include information on the environmental impacts and public benefits of the project, attach a color photograph or photocopy of the project and any articles from trade journals or newspapers about the project.	
CIVIL ENGINEERING PROJECT IMPROVEMENT	
Project Name:	
Project Address or Location:	
Project Owner Name or Company:	
Contact Person:	
Mailing Address:	
Phone:	Fax:
On a separate sheet of paper, please provide information on how the project meets the criteria for this award. Consider all phases of the project, including planning, design, construction, operation, and maintenance. Describe any special features, innovations, and challenges. Provide information on how the project merges with the original facility, the environmental impacts, and the public benefits. Attach a color photograph or photocopy of the project and any articles from trade journals or newspapers about the project.	
To be completed for each nomination.	
SUBMITTED BY:	
Name: Jerry Dyer	
Title: Senior Civil Engineer	
Company: City of Rancho Cucamonga	
Address: 10500 Civic Center Drive, Rancho Cucamonga CA 91730	
Phone: 909-477-2740	Fax: 909-477-2741

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Submitted in consideration for: Outstanding Civil Engineering Project Award

HAVEN AVENUE GRADE SEPARATION PROJECT

Haven Avenue is a six-lane divided arterial with freeway interchanges at Interstate 10 and Interstate 210 in the City of Rancho Cucamonga, California.

In November 2008, the City began construction of the Haven Avenue Grade Separation Project. This project involved lowering a major 6-lane roadway to separate the existing railroad tracks from vehicular traffic.

The primary goals of this project were two-fold: to improve traffic safety and to improve pedestrian and vehicular circulation. First, elevating the railroad tracks served to separate vehicles and pedestrians from the growing number of freight and commuter trains crossing Haven Avenue, thereby eliminating the potential for vehicular/pedestrian and train collisions. Second, traffic delays caused by each passing train would also be resolved. About 20,000 vehicles and 40 trains crossed at this location daily. This caused vehicular traffic to idle about 64 minutes daily.



Technical Description. The newly constructed underpass preserves the existing vertical railroad alignment and required reconstruction of approximately 1,700 feet of roadway. The grade separation structure is a four-span bridge spanning over the lowered roadway section. The bridge superstructure consists of 44 precast, prestressed arched concrete box girders, simply supported at the abutments and bents. The bridge is approximately 40' wide, carrying two railroad tracks. The maximum span lengths are 53' across the paved street portion and 33' span across sidewalks. In total, the bridge is 172' long.



4,000psi compressive strength concrete mix was used on all precast elements except the concrete girders, which were constructed with 6,000psi concrete. The structure is designed to support two trains passing simultaneously over the roadway.

The concrete girders each weigh between 108,000 and 148,000 pounds depending on the length of the span. In total, 34 columns, 106 baluster bases, 642 balusters, 369 baluster caps, 4 precast concrete logo medallions, and concrete walls were constructed.

Design/Innovative Construction. Haven Avenue serves as a major gateway to the City; and as such, the aesthetics and architectural treatments used on the bridge were key design considerations. Staff envisioned the bridge to be an arched bridge that would compliment the profile of the San Gabriel Mountains which provide a beautiful backdrop to the City looking north. The arched appearance is a fundamental form of the bridge and the precast arch girders are unique in their class. Architectural reveals in the outside girders enhance the arched soffit.

The precast balusters and balustrades along the top of the bridge provide a safety barrier for railroad personnel performing regular maintenance duties. This type of ornamental railing, bold color, massive columns, and curvilinear arches are often featured in world-class buildings and fine architecture. These elements set the bridge apart from the classical bridge design of "form follows function."

Uniqueness/Complexity/Challenges. Girders were placed by crane on the bridge seats without de-energizing overhead 66kv electrical lines. Electrical lines were directly overhead one-quarter of the bridge. The two existing railroad tracks were shoe-flied to the north of their existing alignment. Shoring was constructed to support the active tracks while the bridge footprint was fully excavated. Because of



the limited space between the shoe-fly track and the bridge construction, a special design to the Railroad Standard for shoring had to be obtained. The project's complex shoring installation was subsequently published on the cover of the SCRRA Shoring Design Manual.

Utility owners did not complete utility relocations on time and their impact on construction operations ran into the construction schedule by over 5 months. One utility was not relocated until midway into the project. This required supporting the buried conduits as the soils around these conduits were excavated. Once utility conduits were removed the cables were exposed. The cables were not removed until the majority of the excavation (about 144,000 cubic yards) was completed. These construction challenges caused delays to the schedule; however, added manpower and extended work shifts – at times 24-hour work schedules – enabled the project to return to the original schedule. The project met a critical milestone in the schedule when the new roadway was reopened on December 16, 2009, just 12 1/2 months after breaking ground.

Bridge columns were designed to be cast in place. However, due to the limited space between the bridge structure and the shoring, it was better to precast off-site. Ultimately, the precast method allowed for project acceleration which helped to make up the time lost to utility relocation delays. It also allowed for the completion of other concurrent tasks instead of performing sequential construction, it eliminated workspace constraints, and it provided an enhanced appearance of the columns.

Aesthetics. When traveling into the City, the arches of the bridge compliment the mountains behind it. The sharp, clean lines of the precast girders, columns, baluster railings and the overall mass of the structure as a whole are dramatic and eye-catching. The detail of each component is even further enhanced by the bold Burnt Tuscan color of the bridge, a color that provides a stunning contrast with both the sky and mountains. The City has received countless praise commenting on the visual beauty of the bridge.



Impact on Physical Environment. Environmental impacts were assessed and standard mitigations were used. There were no significant environmental impacts.

Benefit to the Community. Haven Avenue was a 6-lane arterial roadway that was disrupted daily by rail traffic. Not only did the separation provide for an uninhibited flow of traffic, it also provides for the safety of vehicular, pedestrian and rail traffic alike.

The elimination of idling time while waiting for rail traffic to cross promotes cleaner air and lessens commuting time. Eliminating idling time at this location has saved about 2.5 tons of CO₂ from being released into the environment each year.

Further, the unique design of the bridge serves as a symbol of pride in the community. And residents, businesses, and commuters find the bridge refreshing and inspiring.

Conclusion. Construction of the Haven Avenue Grade Separation project began in November 2008. The roadway was substantially completed and reopened to traffic on December 16, 2009; final landscaping was completed in the beginning of February 2010. Rail service was never disrupted during this process and the roadway was subject to a full closure only two times throughout the entire project, limited to 4 and 6 weeks each.

The execution of the Haven Avenue Grade Separation Project demonstrated on-point project management, cooperation between multiple agencies, and a design vision that when completed exceeded expectations. This project is an example of the City of Rancho Cucamonga's objective to construct superior facilities. This project provided for safety considerations also: Zero injuries were sustained and no lost time was incurred during the entire grade separation *and* throughout the construction of the bridge. Finally, according to the Southern California Regional Rail Authority (SCRRA), this project was the fastest grade separation of this scale completed in the region and was completed at an exceptionally competitive cost of \$24,000,000.





Before





After



WEDNESDAY CALENDAR

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Make an evening shopping date

Enjoy an evening of shopping with the whole family at Claremont Wednesdays from 5 to 9 p.m. at First Street near Oberlin and Second avenues. The event will include fresh veggies, fruits and more up for grabs as well as crafts, kitchen goods and more. Admission is free. Information: (951) 733-2588; www.claremontwednesdays.org

Glass House celebrates 20 years

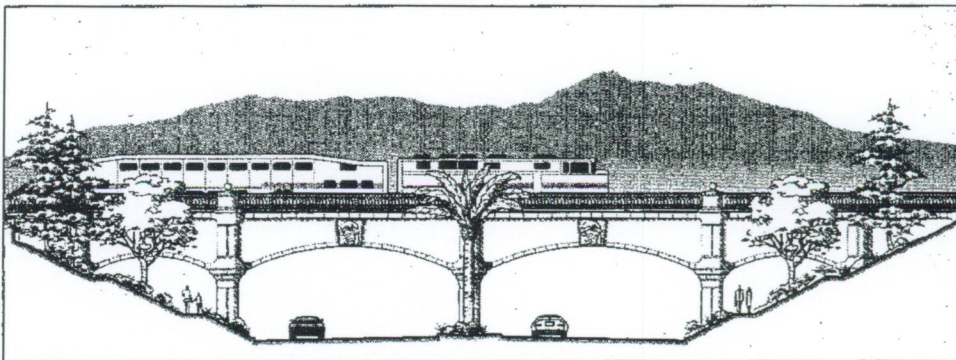
The East Coast punk-rock band Bouncing Souls will take over the Glass House in Pomona, 200 W. Second St., as it celebrates its 20th anniversary with Bayside, Broadway Calls and No More Idols. Admission is \$20. Information: (714) 740-2000; www.theglasshouse.us

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An artist's rendering of the Haven Avenue underpass in Rancho Cucamonga. Haven will be closed for six weeks, beginning Friday.

Courtesy Photo



6-week hiatus for Haven Ave.

By Wendy Leung Staff Writer

RANCHO CUCAMONGA — Haven Avenue between Sixth Street and Arrow Route will be closed for six weeks starting Friday for the final phase of a massive construction project that will put street traffic underneath the railroad tracks.

The street is expected to reopen Dec. 16.

"When Haven is opened again, the project would be complete," said Jerry Dyer, city senior civil engineer. "This is the one last inconvenience people will have to deal with."

After the morning rush about 10 a.m. Friday, all lanes on a stretch of Haven will be closed and traffic will be directed to detour along Milliken Avenue.

Officials are encouraging motorists are encouraged to avoid the area altogether and instead use Hermosa and Milliken avenues.

Once the project is finished, drivers will be able to travel on Haven uninterrupted by rail traffic.

With City Hall, the courthouse, Chaffey College and a burgeoning office corridor on Haven, the thoroughfare has become one of the busiest in the city.

According to Dyer, about 20,000 vehicles and 40 trains use the Haven intersection every day.

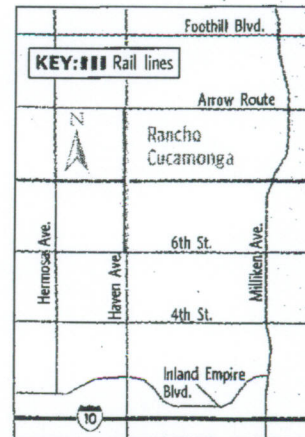
Workers have already started laying tracks on the newly built arch bridge. The \$28 million project is funded

by the city Redevelopment Agency and San Bernardino Associated Governments, the transportation planning agency for San Bernardino County, through Measure I funds.

More road improvements are in store for the city after the bridge completion. The city will put a fresh layer of asphalt on Haven from Fourth Street to Foothill Boulevard and also put in new landscaping.

Farther on the city's horizon, the rail crossing at Etiwanda Avenue could get a treatment similar to Haven's. It has not been decided whether street traffic would be placed under or over the railroad tracks, according to Dyer.

"That project is just a twinkle in our eye right now," Dyer said.

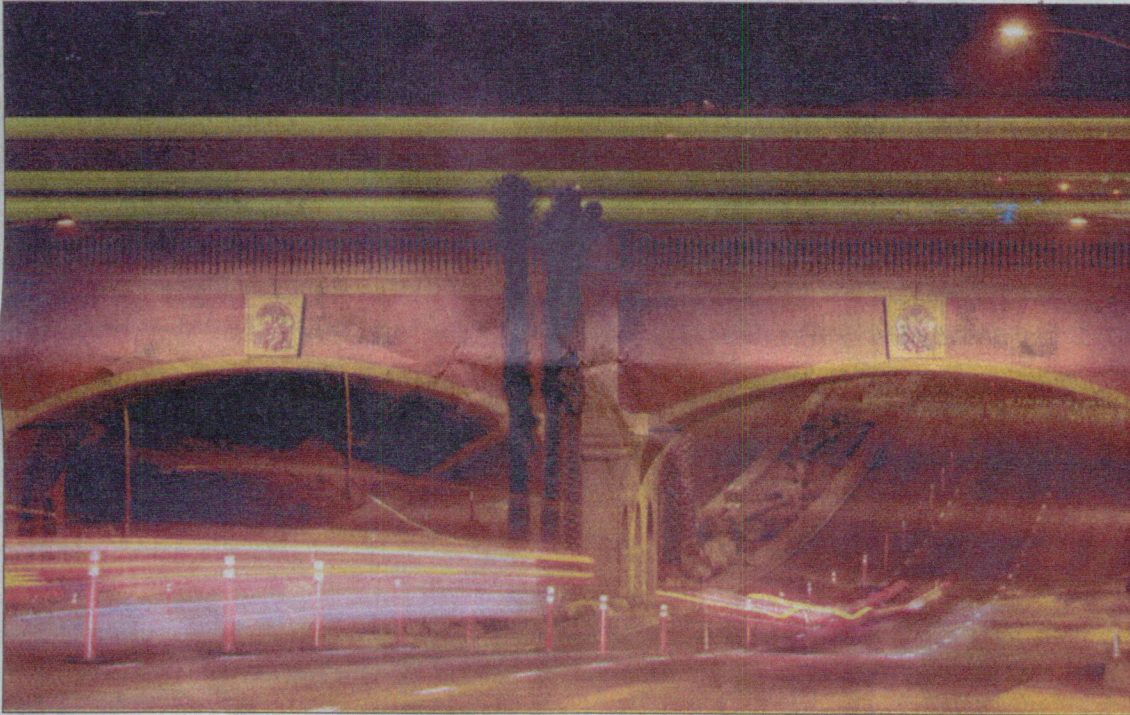


HAVEN HIATUS

Haven Avenue between Sixth Street and Arrow Route will be closed for six weeks starting Friday to route street traffic underneath the railroad tracks. Google Earth; staff graphic

RANCHO CUCAMONGA

Bridge project done



Will Lester Staff Photographer

An eastbound Metrolink train travels over the new Haven Avenue bridge Wednesday evening as vehicles pass through during this two-second time exposure image. The underpass opened Wednesday evening.

Haven Ave. opens again

By Wendy Leung
Staff Writer

RANCHO CUCAMONGA — City leaders said goodbye to congestion, detours and headaches associated with Haven Avenue construction on Wednesday as they marked the completion of a bridge project that separates rail and vehicle traffic.

After six weeks of closure, Haven Avenue reopened around 5 p.m. Wednesday for motorists to travel one of the city's busiest thoroughfares uninterrupted by rail traffic. The \$28 million project, paid for by the city and San Bernardino Associated Governments, puts vehicular traffic underneath a concrete arch bridge.

Prior to construction, vehicular traffic stopped every day for a total of 64 minutes for 40 trains to cross Haven Avenue.

BRIDGE A4

BRIDGE

From A1

"You can imagine our excitement as we look forward to permanently reopening the road to traffic this evening, knowing what a positive impact (the project has) upon the thousands who travel Haven Avenue every day," said Mayor Don Kurth.

The bridge, at 172 feet long and 39 feet wide, is adorned with two grape clusters representing the city logo. Portions of the bridge are painted a shade of orange that some engineers called "burnt Tuscany."

The project — funded partly through Measure I, the half-cent transportation sales tax in San Bernardino County — broke ground 12 months ago and finished ahead of schedule.

"Santa came early for the Haven Avenue commuters," Kurth said.

Landscaping on Haven near the bridge is expected to be completed next month. The street will also be repaved early next year.

The bridge construction is one of several engineering

projects the city had planned. Next year, a portion of Foothill Boulevard in the western end of the city is scheduled to be widened and the bridge near Baker Avenue is scheduled to be replaced.

Bridge projects similar to the Haven underpass will also take place on Etiwanda and Archibald avenues in the future.

At a brief ribbon-cutting ceremony prior to the street opening, the City Council and business and political leaders praised the aesthetics of the

bridge, which framed snow-capped mountains in the afternoon sun.

While City Engineer Mark Steuer provided details of the new bridge, an eastbound Metrolink train rumbled overhead.

"And it works. See?" Steuer said.

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