



# **ATTACHMENT A**

## **Phase 2 Alternatives Analysis**

**Prepared for:**

**Sacramento Regional Transit District**

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## 1 INTRODUCTION AND SUMMARY

This report presents the results of an approximate 18-month study of the feasibility of incorporating a new light rail transit (LRT) station along the Sacramento Regional Transit (RT) NE Corridor of the Blue Line alignment. The purpose of this effort has been two-fold. In Phase 1, the purpose was to determine the operational feasibility, financial costs, potential ridership, community desirability and a number of other issues associated with a potential station. In Phase 2, the purpose has been to refine the station siting and develop a concept design for further definition in subsequent phases of the project development effort. This report briefly summarizes Phase 1 and presents the results of the Phase 2 analysis; it also serves as the Final Report.



A number of technical documents have been prepared, along with key community, technical and RT Board interactions as noted below. This blending of technical work and community interaction/input has guided the project outcome. Key efforts and deliverables include the following:

- ✓ Spring 2005 – Detailed Operational Analysis conducted by Sacramento Regional Transit resulting in the conclusion that a Dos Rios Station was operationally feasible. Concept-level engineering and environmental analysis of potential LRT station sites prepared and documented.
- ✓ Spring 2005 – First newsletter sent to over 1,500 individuals.
- ✓ Spring 2005 – Over 31 stakeholder interviews in the Dos Rios area to ascertain their concerns, issues and sense of opportunities.
- ✓ Spring 2005 – Potential siting location interest identified by the California State Department of Parks and Recreation (DPR) in the Dos Rios area for the future California Indian Heritage Center (CIHC) museum and interactive venues site.
- ✓ May 3, 2005 – Held Open House on project which was attended by 24 community members and 10 interested agency staff.
- ✓ June 23, 2005 – Released Phase 1 Alternatives Analysis report which documented a Dos Rios LRT Station was technically feasible, there were and are community concerns that need to be responded to in terms of environmental design, the potential for ridership and the costs associated with a potential, but undefined, station site.
- ✓ July 25, 2005 – Presented results of Phase 1 to Sacramento Regional Transit Board of Directors. The RT Board “authorized” moving into Phase 2.
- ✓ Fall 2005 – Focused on station siting and screening analysis and meetings with additional stakeholders. Resulted in a draft screening of six potential station sites along North 12<sup>th</sup> Street between the American River on the north and North B Street on the south. Elements are detailed herein and in the screening document dated November 30, 2005.

- ✓ Fall 2005 – A second newsletter sent to over 1,500 individuals.
- ✓ October 18, 2005 – Released *Proposed Architectural Program Statement* (Appendix A) which expressed the aspirations for the Dos Rios Station (elements are detailed later in this document).
- ✓ November 9, 2005 – Held Open House on the project and the draft screening of station sites with the community. Approximately 25 community members, including a representative from Assemblyman Dave Jones' office, as well as representatives from the City of Sacramento, Capitol Station District, California State Parks/California Indian Heritage Center, social service agencies, neighborhood and community organizations, and area businesses and residents, attended this second Open House. Attendees expressed their inputs and preferences on the station siting and the “key design elements” that should or should not be included in the station concept (elements are detailed later in this document).
- ✓ November 30, 2005 – Released *Screening of Station Locations Report* which detailed the technical analyses and community input received that led to the identification of a (draft) “preferred” site by staff on the north side of Sproule Avenue, adjacent to 12<sup>th</sup> Street (Site “D”).
- ✓ December 12, 2005 – Presented results of *Screening of Station Locations* to Sacramento Regional Transit Board of Directors. The RT Board directed staff to assess Site “D” and Site “E” further during the more-detailed design charrette.



North 12<sup>th</sup> Street corridor adjacent to Ahern Street

12th Street for the future Gateway Boulevard.

- ✓ February 6, 2006 – Conducted a “design charrette” with 24 individuals from Regional Transit and interested and affected agencies to develop a conceptual design and land-use plan for the proposed station site(s).
- ✓ March 10, 2006 – Working session with staff from Sacramento Regional Transit, city of Sacramento Departments of Transportation, Planning and Parks, California State Parks, and the Capitol Station District to discuss the implications of the proposed Richards Boulevard interchange with SR 160 and the adopted “180-foot ROW” along north
- ✓ April 24, 2006 – Determination by RT Engineering and Operations staff that concerns over the relocation of a turnout and the interlock were more significant and costly than initially envisioned. Upon further study and field assessment, this concern was alleviated and Site D (located immediately north of Sproule) was re-affirmed as the superior site for a future Dos Rios-area LRT station. Subsequent planning, environmental and preliminary & final design phases will occur.
- ✓ August 2006 and September 2006 (pending) – Presentation to the Sacramento Regional Transit Board of Directors on the results of Phase 2.

Upon completion of the September 2006 presentation to the RT Board, the Dos Rios Alternatives Analysis effort will be completed. Future efforts will be predicated on the actions of the Regional Transit Board, the availability of funding, the status of the CIHC and other matters identified by Regional Transit.

## **Summary Results**

The Dos Rios-area LRT station alternatives analysis was a two-phase effort. The summary results of each phase follow.

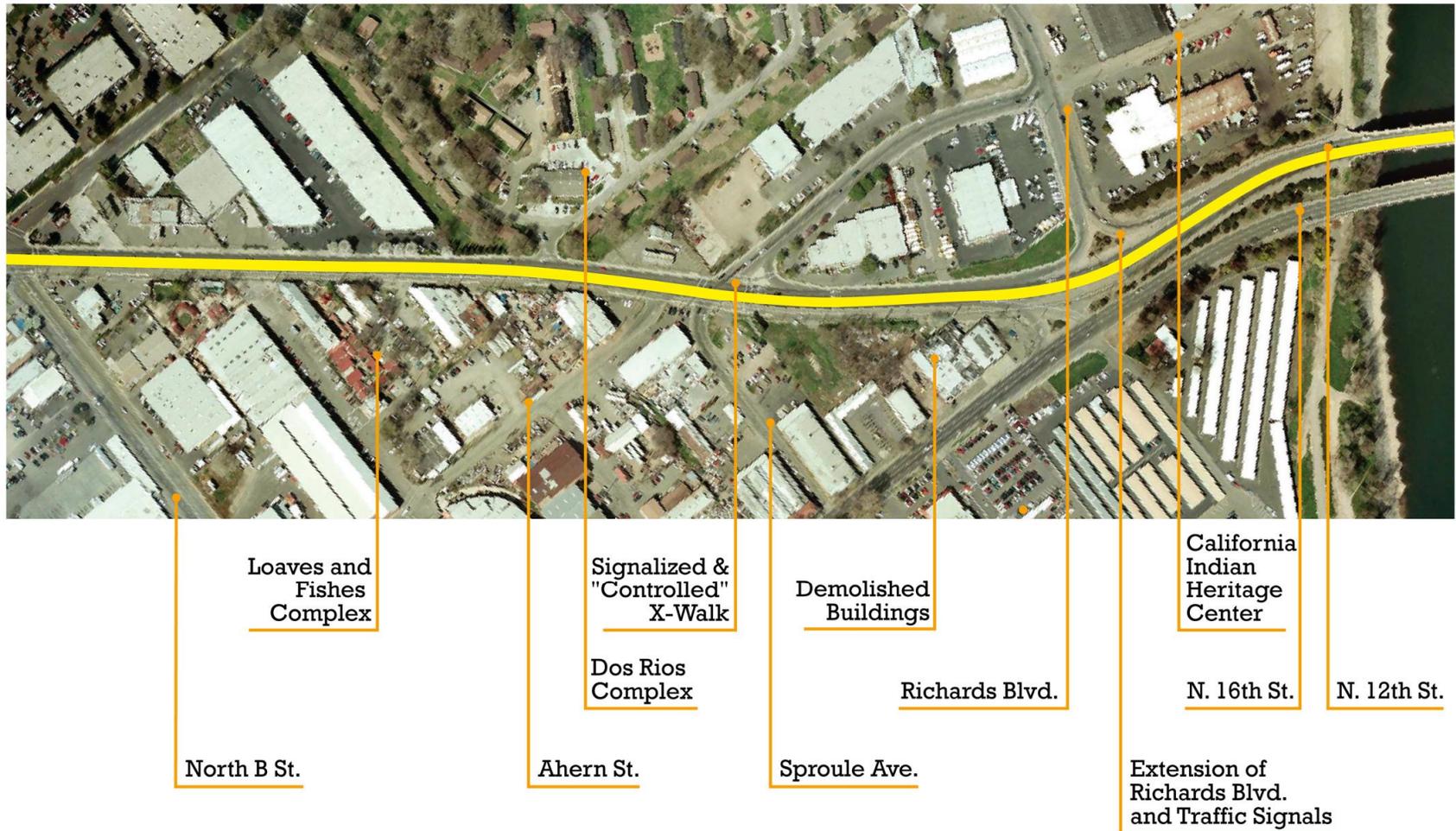
### **Phase 1 Summary Results**

- ✓ A new Dos Rios-area LRT station was evaluated in terms of future operations by applying the RailSim V7 operational model and testing the station concept. The additional station does not affect the schedule, total running time, or the train meet locations for the existing system. It can be accommodated.
- ✓ The train operating schedule includes a small amount of recovery time to schedule reliability. The Dos Rios Station stop is consuming some of the recovery time and that is why under on-time operations it is not affecting the meets or the total running time between Watt/I-80 and Meadowview. By reducing the amount of recovery time there will be an increase in the number of incidents that will degrade on-time performance and reliability.
- ✓ An estimate of ridership, based on current land uses, indicates that approximately 650 riders (of which 475 are estimated to be direct “social service users”) would be experienced at this station per day. Some of these riders would be “new” and some would shift from the La Valentina Station. In the year 2025, the estimated ridership, based on existing land use plans, is forecasted to be approximately 1,500 daily riders (of which 850 are estimated to be direct “social service users”).
- ✓ Figure 1-1 illustrates for the land use and activity context for the Dos Rios area. The future land use plans may include the development of the California Indian Heritage Center (CIHC) in the general area of the northwest quadrant of North 12<sup>th</sup> Street and Richards Boulevard. This site has been selected as the preferred site and master planning is now underway. Preliminary estimates of attendance for this facility range from 500,000 to 900,000 annual visitors.
- ✓ Community input was obtained from 31 stakeholder interviews and general public meetings. The input received was generally in support of constructing a new station in the area. Most of the residents in the Dos Rios, Alkali Flat and Mansion Flat areas spoke in support of a new Dos Rios station. Social service agencies in the area were also in support of a new station as it would make their facilities more accessible to their clients. Mixed input was received from businesses in the area. Some business owners were concerned about security issues.

Upon consideration of the information, the Board of Directors found the possible station to be operationally feasible and directed staff to proceed with Phase 2 of the study, an analysis of potential sites for the station, the development of a conceptual design plan and a more refined cost estimate for the station.

Figure 1-1: Land Use Activities and Context

# Community Context

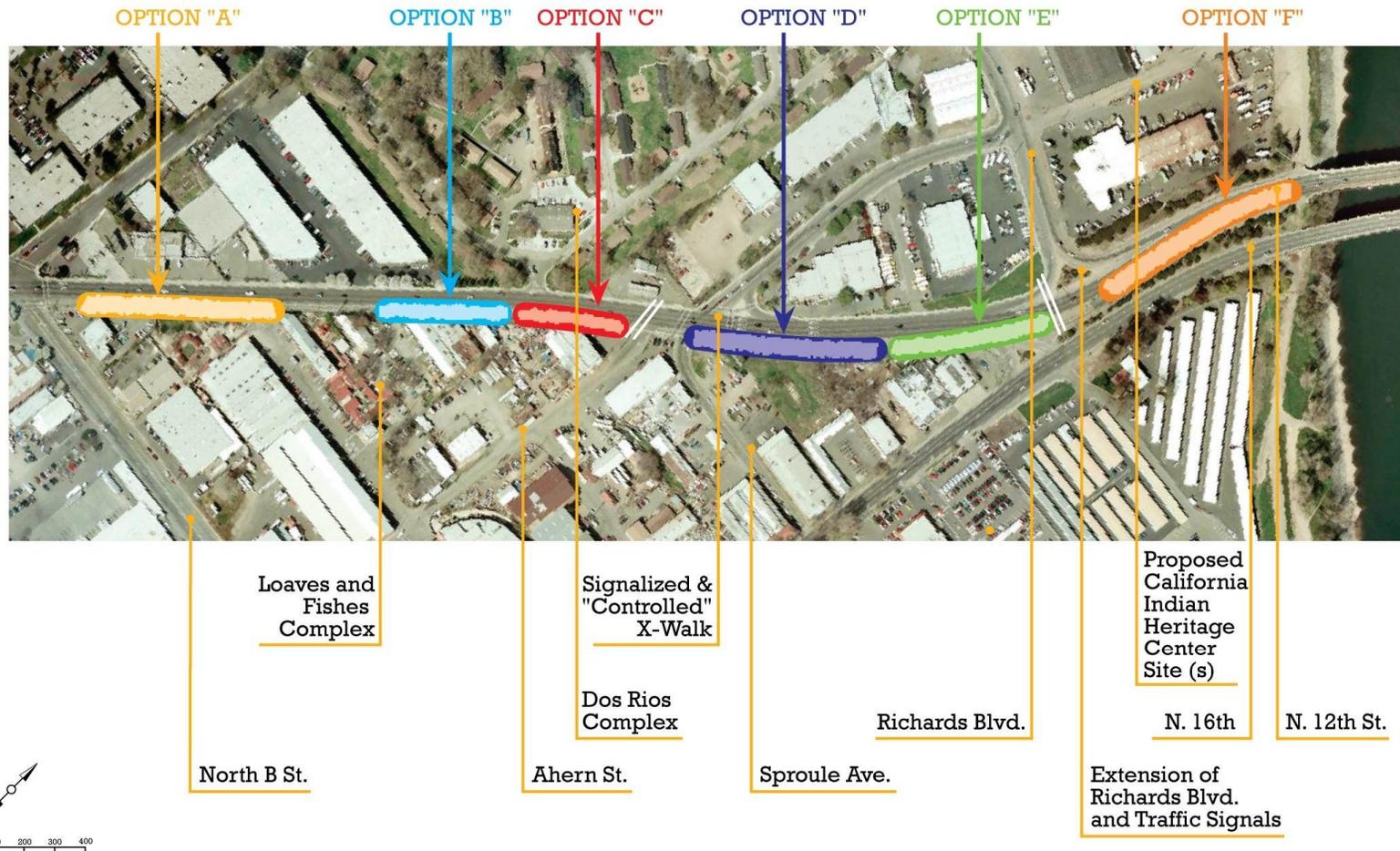


## **Phase 2 Summary Results**

- ✓ Six locations, as illustrated in Figure 1-2, between North B Street and the American River were initially identified as candidate station sites. These sites were then evaluated and rank-ordered based on a set of evaluation criteria. The location just north of Sproule Avenue (Site D) was identified as the preferred and superior site by the consultant team.
- ✓ Site D, along with all of the sites, was presented to the community at an Open House on November 9, 2005. The community expressed support for Site D and provided input on the various design features for a Dos Rios-area station. Site E, a candidate station site to the north between Site D and the (future) Richards Boulevard extension, was the second-ranked site.
- ✓ A recommended station site, Site D, was presented to the Regional Transit Board on December 12, 2005. The RT Board directed staff to further assess Site D and Site E as the candidate sites.
- ✓ A “design charrette” was conducted on February 6, 2006 with over 25 individuals from various public agencies and private interests. The charrette focused on assessing the issues and feasibility of the two sites, developing a conceptual design and an analysis of the neighborhood and context in which a future Dos Rios-area LRT station would exist. The charrette concluded Site D (north of Sproule) was the preferred site and also identified potential technical engineering issues with Site E. However, it was recognized that a LRT Station could be located in many locations between Sproule and Richards Boulevard, as opposed to only directly adjacent to Sproule Avenue.
- ✓ Subsequent meetings revealed the potential implications of two transportation-related issues of a future/proposed Richards Boulevard extension and interchange at SR160 and the adopted 180-foot ROW along North 12<sup>th</sup> Street. The 180-foot ROW extends to the east and essentially places a Dos Rios station in a median away from development. Both projects reduce the opportunities for a successful Dos Rios-area station that integrates well with surrounding redevelopment and transit-oriented development (TOD) strategies. Both projects are either directly or indirectly related to the Union Pacific Railyards assessment of the latest re-development plan. This assessment is presently in a state of review with final project needs anticipated in 12 to 18 months.
- ✓ In April 2006, RT Engineering and Operations staff raised additional concerns regarding the cost and operational feasibility of relocating the track switch and a turnout required to locate a station at Site D. Engineering staff considered reconsideration of Site D. These issues were assessed and it was concluded that Site D remained the superior site.
- ✓ The technical analysis has concluded that Site D is the superior site and should be studied further in subsequent technical work. However, until resolution of the 180-foot ROW issue along North 12<sup>th</sup> Street (future Gateway Boulevard) is resolved, environmental clearance cannot be obtained for a station concept at Site D, or any of the locations studied (A through F). RT and city of Sacramento staff need to continue to work collaboratively on the optimum concept for these facilities.

Figure 1-2: Dos Rios-Area Station Sites Evaluated

# Dos Rios-Area Station Sites



## **Summary Recommendations**

Based on the efforts completed, the RT staff recommendations of the Dos Rios-area LRT station alternatives analysis are:

1. A station should be constructed in the Dos Rios area in a site location north of North B Street and south of the Richards Boulevard extension to North 12<sup>th</sup> & North 16<sup>th</sup> Streets. Site D, just north of Sproule Avenue, has been identified as the superior site to be studied further in subsequent technical and environmental analyses. The ultimate station design should be resolved at a time that is consistent with:
  - a. A determination by the city of Sacramento as to the future right-of-way width on North 12<sup>th</sup> Street;
  - b. A determination as to the status and design of the Richards Boulevard interchange with North 12<sup>th</sup> & North 16<sup>th</sup> Streets and extension east to the Capitol City Freeway (Business 80); and
  - c. The adoption of the General Plan Update (GPU) for the city of Sacramento. The GPU for the Dos Rios neighborhood recognizes that it is necessary to successfully accommodate the station and foster its integration into a vibrant, mixed-use community. This will be accomplished in several ways, among them being changing designated land uses from industrial to mixed use.
2. Regional Transit should continue to participate with the city of Sacramento on the assessment of land uses in the Dos Rios area, as well as the future concepts for the North 12<sup>th</sup> Street right-of-way and the Richards Boulevard interchange. RT's interest is not only in the location of a station adjacent to the Ahern/Sproule intersection, but also the potential benefits or impacts the transportation design concepts could have on future transit oriented development at a Dos Rios-area station site. Integration of complimentary land uses with the station concept will also lead to a successful project.
3. Recognizing that the proposed California Indian Heritage Center (CIHC) presents a unique and potent ridership source of future ridership for the station and the overall system, RT should continue close coordination with the CIHC efforts on master planning and environmental assessment. Light Rail Transit offers a unique opportunity for serving the future CIHC if properly designed. In addition, improving and encouraging bicycle and pedestrian access to/from the CIHC is also crucial to the success of the projects and the rejuvenation of the community.
4. Because of the unique nature of the Dos Rios area of some of the existing land uses, implementation of various Crime Prevention through Environmental Design (CPTED) strategies should be employed at this site in the LRT station design.

## 2 BACKGROUND

The Dos Rios-Area LRT Station alternatives analysis consisted of two phases that extended over a 18-month period. This section briefly describes the background efforts and information that were developed in the process.

### **Purpose and Need**

The *purpose* of a Dos Rios-area LRT Station is to expand the system coverage and increase ridership by adding an additional station in this area.

The *need* for this station is many-fold. The Dos Rios-area neighborhood (also known as the “Gateway Area”) is located approximately 2,500-feet north of the La Valentina Station in the Alkali Flats neighborhood and approximately 1-mile south of the Globe Station in North Sacramento. These distances are well beyond the standard 1/4- to 1/3-mile “walkshed” for most users.

According to the Year 2000 census, the Dos Rios area is more transit-dependent than the city of Sacramento overall by way of having a preponderance of lower auto ownership levels and lower income levels. In addition, the public housing project, Dos Rios Housing Complex, and a number of public and private social service providers are located in this area.

And finally, the area is beginning to experience a sense of redevelopment and new investment. Most importantly is the conceptual siting of a future California Indian Heritage Center (CIHC) in the Dos Rios area. The CIHC was selected by the California State Department of Parks and Recreation in the summer of 2005 to be located generally in the northwest quadrant of the Richards Boulevard & North 12<sup>th</sup> Street (SR 160) intersection. One reason for selecting this site for the CIHC was the potential access to LRT for the estimated 500,000 to 900,000 annual visitors that are anticipated at buildout of the CIHC.

### **Operational Feasibility**

A light rail transit (LRT) “operational analysis” was conducted by Sacramento Regional Transit to determine the effects of adding a station in the Dos Rios area on the overall system. The operations analysis was concerned with, and focused on, estimating the effects on overall service reliability (maintaining schedules and having sufficient recovery time), projected location of train “meets” in relation to the single track segment north of the Dos Rios area, and the number of trainsets required to operate the service with and without the additional station.

An operational analysis was conducted by RT staff using the RailSim Suite V7 software package and the “post Folsom-Amtrak implementation” operational scenario (scheduled for full opening in fall 2006). The concern of RT was focused on three operational areas; the results of the analysis are as follows:

1. Are the locations of where light rail trains would meet acceptable, and would the addition of a Dos Rios-area station force these “meets” to occur on the single-track American River Bridge crossing area which is unacceptable? The analysis concluded that the “meets” would not be adversely affected related to the bridge or the station.

2. Is the amount of “recovery time” (the time available to “recover” the schedule should there be unplanned delays as the train moves from station to station) sufficient for RT operation? Based on the analysis conducted by Sacramento RT, there was determined to be sufficient recovery time with a Dos Rios-area station included in the system.
3. Does the addition of a Dos Rios-area station affect overall congestion levels and the operation adversely? The constraints caused by the single track sections outbound of Grand Avenue, the Lumberjack curve, and across the American River Bridge north of the proposed Dos Rios Station would cause train delays. The additional time needed to stop at a new station would negatively impact the schedule adding to congestion, but not significantly. The traffic congestion in the downtown area that is already causing train delays may be increased by the DNA line and this will need to be studied further (in a separate effort by others).

In summary, Sacramento Regional Transit staff concluded the addition of a Dos Rios-area station was operationally feasible and would not adversely affect the system operations.



### Community Input

Effort was expended in alternatives analysis to understand the concerns and aspirations of the Dos Rios community and various stakeholders. This effort consisted of conducting over 31 interviews with stakeholders. A listing of the stakeholder groups interviewed is illustrated below. In addition to these interviews, public “open houses” were held on Tuesday, May 3, 2005 and Wednesday, November 9, 2005 at the Dos Rios Community Housing Complex. Other outreach tools included newsletters and a cooperative open house with the Gateway

Master Plan project that was underway by the City of Sacramento, Department of Public Works in 2005.

The key stakeholder groups interviewed for this project are noted below.

Stakeholders	Stakeholders
Alkali Flats Neighborhood Representatives	Downtown Sacramento Partnership
Basler-Dreher Neighborhood Rep.	Loaves & Fishes
Capitol Station District Representative	Route 33 Bus Riders
Dos Rios-Area Business Owners	Sacramento City Staff
Dos Rios-Area Developers	Sacramento County DHA
Dos Rios Homes Housing Project	Sacramento County Supervisor
Dos Rios-Area Land Owners	Sacramento Mayor & Council Member
Dos Rios-Area Residents	Sacramento Regional Transit Board & Staff

Source: Parsons Brinckerhoff & The Hoyt Company

The critical issues identified from the stakeholder interviews were:

1. The sentiment among all interviewees is that North 12th Street, the “Gateway to the Capitol,” is a blighted area stricken with the migrating “homeless and their shopping carts,” and associated trash and clutter problems. It is clear to those interviewed that there is a need to solve the social problem, but the majority questioned if a Dos Rios LRT station would help solve this problem.
2. A large number of people are migrating from the Alkali Flat/La Valentina LRT station to the social services area each day. While some use Bus Route 33, there remains a high volume of pedestrians. Thus, the interviewees believe that there is a “transportation disconnect.”
3. If there is to be a station at some point in the Dos Rios area, the community would like assurances from Regional Transit and the city of Sacramento, that the station would be properly integrated into the community and not just “transfer the problem” (although some interviewees would prefer this) from other stations.
4. The CIHC with potential of 500K to 900K visitors per year at buildout provides good support for the neighborhood. Additional new development and redevelopment would further support the community and increase ridership.
5. Dos Rios residents look forward to a LRT station that would provide improved transit access and connectivity to shopping (e.g. the shopping at 19<sup>th</sup> & R Street, the Downtown Mall and other areas).
6. City Parks views this as an important transportation link to the conceptual regional park and zoo along the American River.

On May 3, 2005, the Sacramento Regional Transit District (RT) held an Open House for Phase 1 of the project at the Dos Rios Homes Housing Project located within the project study area. There were 25 community members in attendance, along with representatives from RT, the city of Sacramento, social service agencies, neighborhood and community organization groups.

On November 9, 2005, the RT held a second Open House for Phase 2 of the project at the same location. The second Open House was attended by over 25 individuals including representatives from social service agencies, neighborhood and community organization groups, businesses and residents.

A majority of the comments received from both Open Houses favored locating a light rail station in the vicinity. Respondents indicated that it would serve the residents in the neighborhood as well as those employed nearby along Richard Boulevard.

Among the desired station elements, “safety and security” ranked the highest followed by “handicapped access”, “good lighting”, a “shelter” and a “traffic signal”. Respondents also indicated that a station at Dos Rios would enhance pedestrian safety along North 12<sup>th</sup> Street by decreasing foot traffic to and from the Alkali Flat/La Valentina station.

With regards to the placement of a station, a station site north of Sproule was identified as the most acceptable by the community.

The results of the two Open Houses were documented and provided to Sacramento Regional Transit for their files.

## Design Issues & Criteria

An Architectural Program Statement (APS) for the proposed Dos Rios-area Light Rail Transit (LRT) Station was prepared (see Appendix A -- *Architectural Program Statement for a Future Light Rail Station in the Dos Rios Area, February 6, 2006*). The APS provides general guidance to interested and involved parties on the architectural design for the development of an LRT station in the Dos Rios area. A number of sources have been used to develop the APS. These sources include:

- ✓ Sacramento Regional Transit District design guidance; various Crime Prevention Through Environmental Design (CPTED) sources; and
- ✓ Input from the community via the Open House meetings and stakeholder interviews.

Table 2-1 illustrates the key design guidance for a future Dos Rios-area LRT Station that has been applied and should be noted.

**Table 2-1: Key Design Guidance**

<b>Criteria</b>	<b>Comment or Application</b>
<b>Station Platform</b>	Double-sided; 360 to 400 feet in length; minimum 10-feet wide, preferably 20-feet; located with minimum horizontal curvature as possible. Clear demarcation between “RT areas” including between bus and light rail waiting areas (that can be policed and controlled by RT) and “general public areas” that can be policed, but are not necessarily controlled by RT. Americans with Disabilities Act (ADA) compliant design.
<b>Modes of Access</b>	Light rail, bus route(s) interface, auto passenger drop-off/pick-up, bicycles and pedestrians; no auto parking on-site.
<b>Recommended Amenities</b>	Shelter(s), leaning bars and individual seating, dial-out only phone, public art, lighting and landscaping and monitoring cameras. Transit oriented development integrated and urban/loft concepts. Barrier between the west side platform to prohibit jay-walking across North 12 <sup>th</sup> Street.
<b>Amenities Considered, but Rejected</b>	Driver restroom, public restrooms, public lockers, bench seating (sleep on), police substation.
<b>Architectural Guidance</b>	Sympathetic to California Indian Heritage Center (CIHC), sympathetic to brick facades in the District, vertical art elements on ends (especially if/when the Richards Interchange is constructed)

## Conceptual Design

Figure 2-1: Dos Rios Interim Intersection

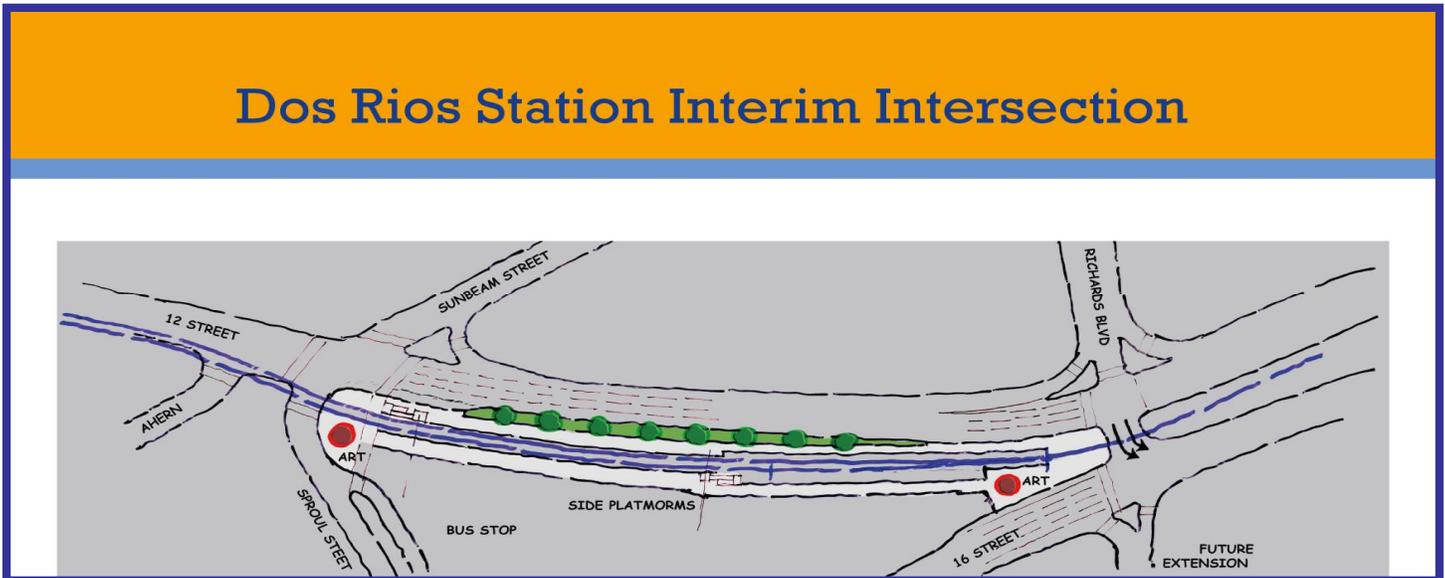


Figure 2-1 illustrates a concept layout for Site D with the “Interim Intersection” concept for the extension of Richards Boulevard. The station is located between Sproule and Richards with side platforms, bus connectivity via Sproule and strong art elements.

In the concept above and the following concept, it is noted that a positive barrier fence along the west side of the station platform, combined with a north-south pedestrian walkway would be required to channel pedestrians towards the two traffic controlled intersections of North 12<sup>th</sup> & Sproule/Ahern/Sunbeam and North 12<sup>th</sup> & Richards Boulevard and to discourage jay-walking across North 12<sup>th</sup> Street.

**Figure 2-2: Dos Rios Future Interchange**

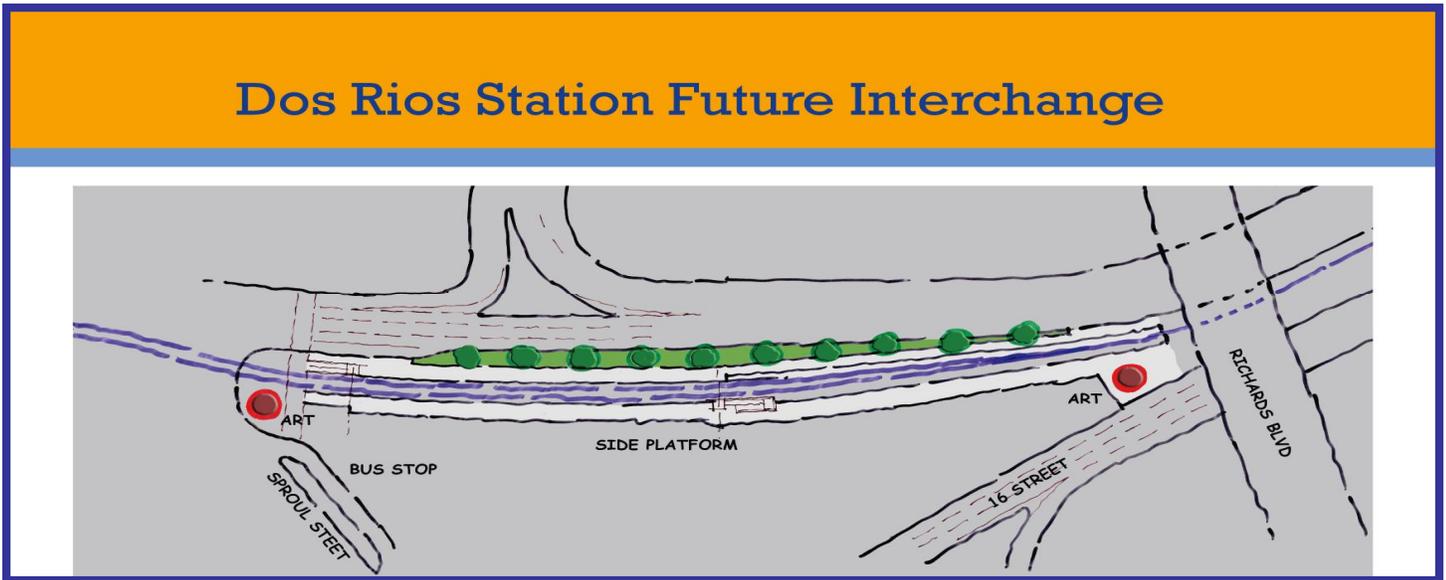


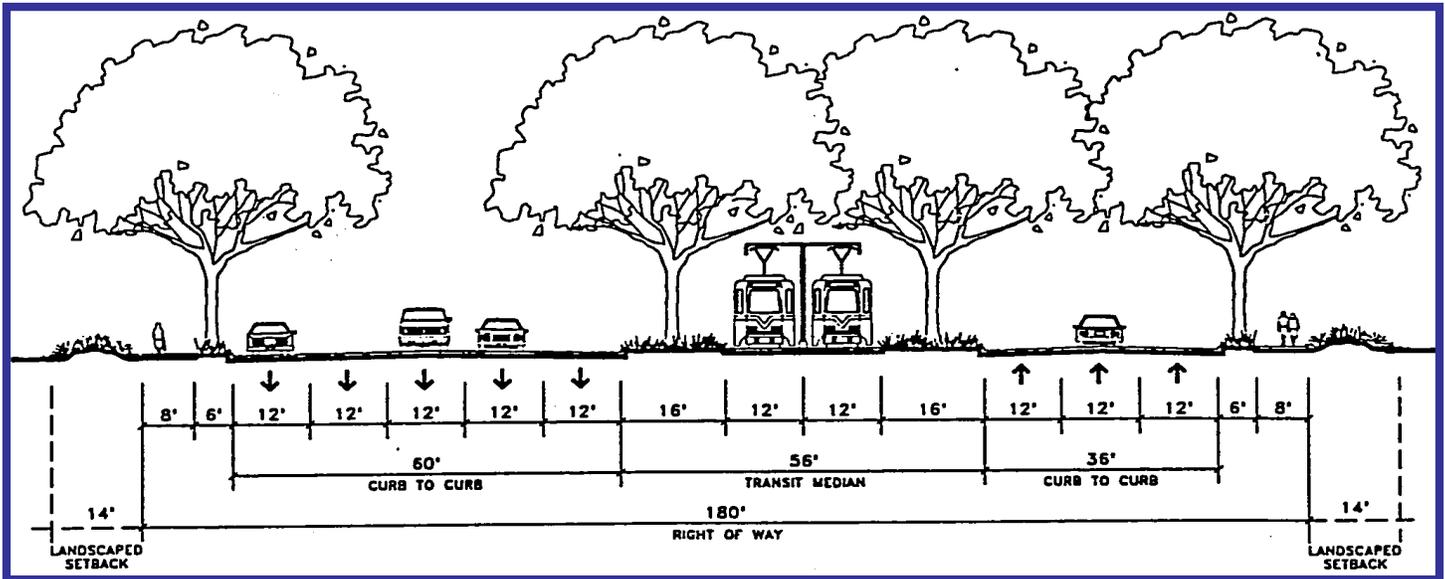
Figure 2-2 above illustrates a concept layout with the “Proposed Interchange” for the Richards Boulevard extension for Site D. This station concept has similar design elements as the previous concept with the main difference being the grade separation. Because of the overpass at the north end of the platform, an ADA-compliant means of directly accessing Richards Boulevard to the north would be required for pedestrians to access Richards Boulevard and the CIHC if it is located in this area.

### **180-Foot ROW for Gateway Boulevard**

Gateway Boulevard is presently envisioned as a “major portal to the downtown” which “will provide a new entry to the Central City from both SR-160 and the I-5 freeway.” Following the existing North 12<sup>th</sup> Street alignment from the American River, the two-way boulevard concept continues in a southwesterly direction into the Union Pacific Railyards redevelopment area. Figure 2-3 illustrates the cross-section of this boulevard concept as was adopted by the city of Sacramento in the late 1990’s.

As illustrated, it is envisioned that the LRT line would change from its present side-running configuration along North 12<sup>th</sup> Street to a median operation. As envisioned, this cross-section would suggest a median-located LRT stop could be accommodated within the 56-foot “transit median” (although a 60-foot “transit median” would be more consistent with RT design guidance and practice). For pedestrian control reasons, the stop would need to be located adjacent to a signalized intersection such as Sunbeam/Sproule or Richards Boulevard in the interim.

**Figure 2-3: Gateway Boulevard Between North B Street and the American River**



**Source:** *Facility Element of the Railyards Specific Plan*, prepared by ROMA Design Group, April 1997; page 27.

The adopted cross section has several effects on the placement of the Dos Rios-area station and its design concept.

- ✓ While an LRT station can conceptually be located within the adopted “transit median”, further assessment of the median, passenger load requirements and the placement of a Dos Rios-area station is necessary so that the station functions in a safe and efficient manner.
- ✓ Because the proposed station would be median-located, as opposed to side-running and located with the Gateway Boulevard concept, it must have at least one end of the platform adjacent to a signal-controlled crossing.

Assuming a mid-block pedestrian-only crossing would not be acceptable, the station would have to be located at either the Sproule/Sunbeam/North 12<sup>th</sup> Street intersection or the interim Richards Boulevard/North 12<sup>th</sup> Street intersection. Since the Richards Boulevard/12<sup>th</sup> Street intersection is interim only, a Dos Rios LRT station may need to be located at the Sproule/Sunbeam/North 12<sup>th</sup> street intersection (Site D).

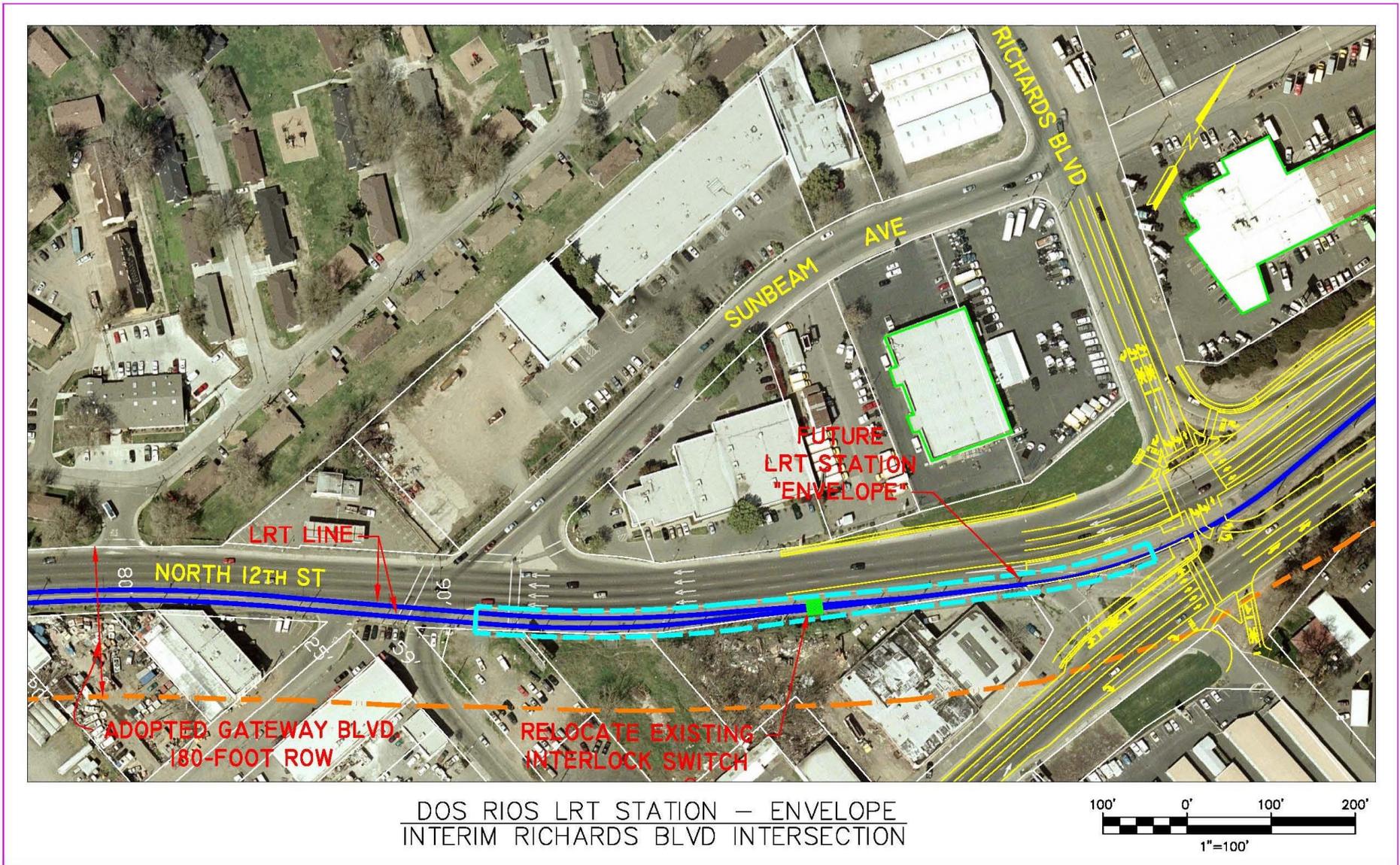
- ✓ The inclusion of the 180-foot right-of-way for Gateway Boulevard essentially eliminates the ability to have integrated transit oriented development as a direct part of the station concept. Similarly, a direct feeder bus connection with the station located in the median becomes difficult, and perhaps impossible, to achieve.

On March 9, 2006 a new Union Pacific Railyards development proposed was submitted to the city of Sacramento for review and assessment. This new proposal changes the intensity and mix of uses as compared to the previously-adopted 1994 (as amended) “ROMA Plan”. Thus, the circulation elements are subject to study and possible change. City of Sacramento staff is presently beginning to re-assess the circulation elements in

the areas around the Railyards, including the Richards Boulevard and North 12<sup>th</sup> Street area. This re-assessment will take “12 to 18 months” to complete and may or may not result in a new street configuration for North 12<sup>th</sup>. Until the re-assessment is completed and any resulting changes are adopted by the City Council, the presently-adopted 180-foot ROW remains in place as city policy. Figure 2-4 illustrates the “Interim Richards Boulevard Extension” and the Dos Rios station concept.

The 180-foot ROW concept would affect Site D (north of Sproule) in terms of precise station location (side or median) and the design concept. Until the “180-foot ROW” issue is resolved, the site cannot be environmentally cleared.

Figure 2-4: Interim Richards Boulevard Extension and Site D Station Concept



## **Richards Boulevard Extension and Grade Separation**

Completed in the early 2000's by the city of Sacramento, the North Area Access Study identified a number of long-term circulation system improvements that would be required to not only meet the projected traffic demands of the areas north of the downtown, but also improve access into and across the area. The vision presented in the North Area Access Study for Richards Boulevard is to have Richards extend from its present beginning at I-5 to the east across SR 160 and along a path somewhat parallel to the American River connecting with a new interchange at Business 80 near the "Centrage" development area. This extension of Richards Boulevard is envisioned to provide access to the proposed Sutter Regional Park and a proposed relocated Sacramento Zoo, as well as improve vehicular access to land uses between I-5 and Business 80.

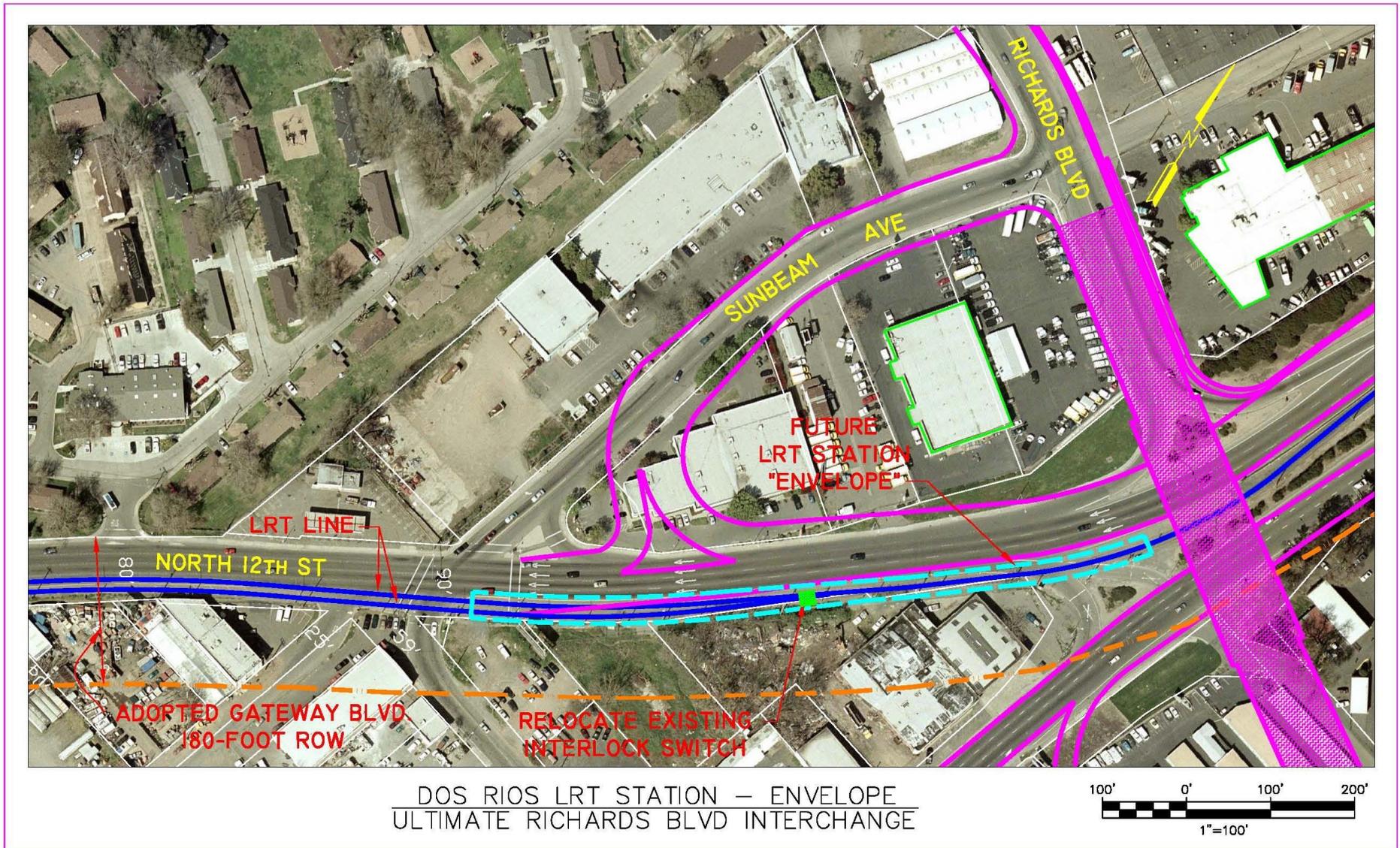
At SR-160, the proposed concept is to construct an interchange that would accommodate the projected traffic flows with Richards Boulevard passing over SR-160/North 12<sup>th</sup> and 16<sup>th</sup> Streets. Figure 2-5 illustrates a conceptual layout of this interchange.

With this interchange concept, the following are noted:

- ✓ The concept illustrated is a concept only and not adopted policy. This concept too will probably be re-evaluated to some extent as part of the Union Pacific Railyards development proposal.
- ✓ The concept illustrated reflects a relatively high design speed standard. Conceivably, the city may reduce the design standard and thus may modify the ramp configurations at some point in the future to reflect this change.
- ✓ The overpass would require a clearance of 16 to 20 feet over the light rail tracks for the bottom of the structure. The structure depth might be five feet in depth to accommodate the loads. Thus, the Richards Boulevard structure could be 20 to 25 (or more) feet above North 12<sup>th</sup> and 16<sup>th</sup> Streets as it passes over these streets.
- ✓ Since it is envisioned that the CIHC would be located somewhere in the northwest quadrant of Richards and North 12<sup>th</sup> Street and the CIHC is anticipated to attract 500,000 to 900,000 annual visitors, pedestrian access between the LRT station and the CIHC campus should be encouraged and provided. If the Dos Rios LRT station is located adjacent to or just south of Richards Boulevard, an ADA-compliant means of access will be an integral part of the project.
- ✓ Site E (adjacent to and south of the interim Richards Boulevard extension) is a less-superior station site, as it would be impacted by the design of the future Richards Boulevard overpass and interchange.

Thus, the proposed extension concept of Richards Boulevard to the east with an interchange at SR-160 could affect the proposed Dos Rios-area LRT station. The interchange project will need to provide access to/from the station and the overhead structure to accommodate the anticipated pedestrian flows generated by the future CIHC. Figure 2-5 illustrates the grade separation (interchange) and the Dos Rios station concept.

Figure 2-5: Richards Boulevard/SR 160 Interchange Concept and Site D Station Concept

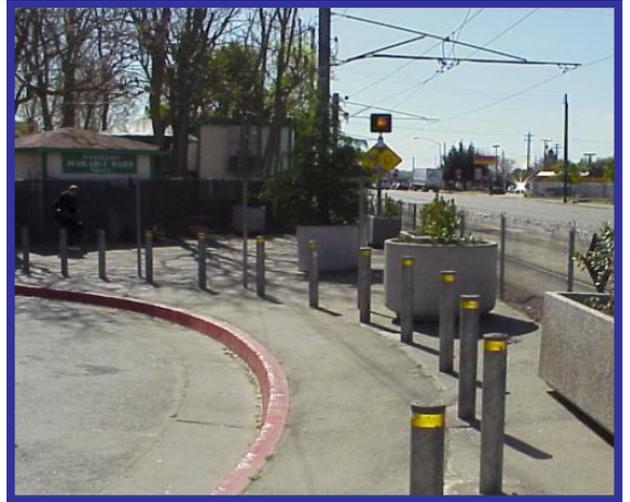


## Land Use Issues

Land use issues are critical to the successful development of the Dos Rios-area LRT station. Primary objectives for the station are to enhance the quality of life for the existing system's users, support and encourage development of a strong community, and serve future developments well.

The Dos Rios area faces obvious challenges – but also presents great opportunities. Figure 2-6 illustrates some of the opportunities this area presents and they are noted as:

- ✓ A future California Indian Heritage Center;
- ✓ Expansion of the American River trail system leading to a future Regional Park and relocated zoo to the east;
- ✓ Transit-oriented and mixed-use development and redevelopment within the ¼-mile “walkshed” of a future LRT station; and
- ✓ An overall improvement of the infrastructure, facades, and treatments in this “gateway” district.



*Loaves & Fishes' "Friendship Park"*

Of these projects, perhaps most important and most immediate is the potential siting of the California Indian Heritage Center (CIHC) in the northwest quadrant of Richards Boulevard and North 12<sup>th</sup> Street. While a specific site has not yet been selected, master planning is presently underway by the State of California. It is envisioned that master planning will be completed by the end of 2006 and that environmental clearance will follow. The CIHC alone could conceivably generate a significant number of transit trips as it achieves its potential and the LRT station could become one mitigation strategy for any project-related traffic impacts. Other potential opportunities in the area include the potential redevelopment of this warehouse district, under-utilized riverfront properties that have potential for significant development, new amenities along the riverfront and regional parks. One could envision a vibrant, mixed-use district with historic brick facades, stable neighborhoods, major recreation venues and a direct transit link to/from the region. The General Plan Update for the city of Sacramento embraces these concepts.

The Dos Rios LRT station is one key element of this vision. To be successful, placement of the Dos Rios LRT station must follow a few key guidelines:

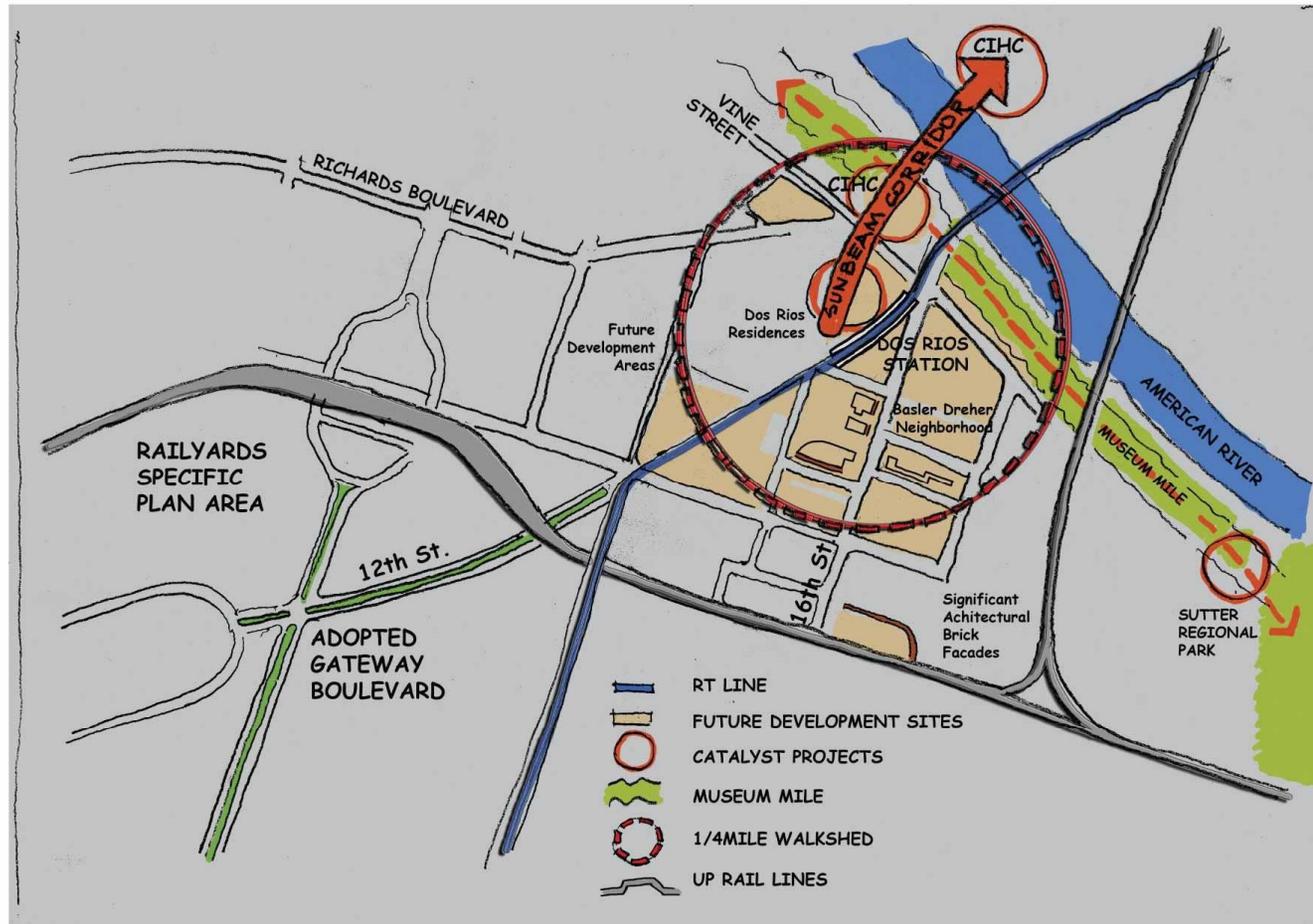
- ✓ Compliment and help realize the community vision of the future;
- ✓ Help shape and enhance the future land use to achieve that vision and be integral to the community through mixed-use development;
- ✓ Be an investment in an identifiable, user-friendly and safe location with quality design; and
- ✓ Become a partnership with other stakeholders – in this case the city, landowners & developers and the CIHC.

One of the concerns with the Dos Rios area LRT station is the potential inconsistency between the guidelines on the previous page and the concept of a 180-foot ROW with a “transit median” station. Such a station doesn’t necessarily support a mixed-use and integrated development. It isn’t necessarily a safe or user-friendly location. There are few “partners” to partner with (especially on the private development side). Such a station could become a relatively isolated and barren facility; it emphasizes transportation function, but discourages community identity and integration. As such, it may attract undesirables which discourage the primary objectives stated – enhancing the quality of life for the system users, supporting and encouraging the community vision, and not serving future development as well as it could.

The city of Sacramento is aware of these concerns and is working towards their resolution as part of the planning processes affecting this area. Sacramento Regional Transit is collaborating with the city on these matters as well.

Figure 2-6: Analysis of Opportunities In the Dos Rios Area

# Dos Rios LRT Station Analysis of Opportunities



In terms of the Dos Rios area, what appears to be lacking is an up-to-date and integrated land use plan that recognizes the recent changes in the marketplace and lays out a vision for the future of the Dos Rios (or “Gateway”) area and addresses the transportation issues. Developing a land use plan would help to focus the station location, design and integration, while providing overall direction to the private sector.

### Ridership Potential

A key determinant for the station is the level of ridership anticipated. In the case of a Dos Rios-area station, the level of anticipated ridership is somewhat speculative and quite variable based on the ultimate site design, as well as the outcome of the California Indian Heritage Center (CIHC) master planning process to be completed at the end of 2006. Estimated ridership and a technical report, *Ridership Forecast for a Potential Dos Rios LRT Station*, dated April 19, 2005, was prepared for this project based on the assumptions known at that time.

Subsequent to the preparation of that document, the CIHC selected the Dos Rios-area as the preferred location for siting the facility. Master planning of sites is now underway for that project. Should the CIHC come to fruition and should the Dos Rios-area station be sited in proximity to the CIHC, the level of ridership may increase substantially over that which was originally estimated. Table 2-2 presents a range of ridership estimates for the Dos Rios Station.

**Table 2-2: Potential Dos Rios-Area LRT Station Ridership**

Estimated LRT Ridership w/o CIHC					
Year	Social Service (SS)	Non - SS	Total		
“Today”	475	175	650		
2025	875	625	1,500		
Estimated Ridership from CIHC (Estimated Annual Visitors by CA Parks: 500,000 to 900,000)					
Estimated “Average Day” and “Peak Day” Visitors and Potential LRT Users (Based on various percentages for transit)					
Scenario	Total Visitors	At 2%	At 5%	At 10%	At 20%
Low Average Day	1,400	30	70	140	280
Medium Average Day	2,000	40	100	200	400
High Average Day	2,500	50	125	250	500
Low Peak Day	14,000	300	700	1,400	2,800
Medium Peak Day	20,000	400	1,000	2,000	4,000
High Peak Day	25,000	500	1,250	2,500	5,000

Source: Parsons Brinckerhoff

Note: “Average Day” assumes annual visitors divided by 360 days. “Peak Day” assumes 10 times “average day” use. Low assumes 500,000 annual visitors; Medium assumes 700,000 annual visitors; and High assumes 900,000 annual visitors. (All numbers are rounded). In addition to the CIHC, other new development and re-development efforts that increase the resident population would also increase ridership.

As illustrated in Table 2-2, the Dos Rios-area LRT station is estimated to have 650 daily riders in the near-term and approximately 1,500 riders in the future – based on existing land use plans in place and without the CIHC in place. With the CIHC, ridership might be expected to increase, perhaps as much as three-fold on a peak visitor day. If 4,000

to 5,000 riders used the LRT station on a peak day, this would place the station on the higher end of all RT LRT stations in terms of ridership.

The image of the Dos Rios Station will also play a role in its ridership. If the station's image is positive, ridership will increase. If the station is poorly located, segregated from other uses, and has an image that is poor as a result, ridership will suffer. If a vision of a more-intensified mixed-use land use plan, with the CIHC and a well-designed, located and maintained station that is integrated is achieved over the next 20 years, the ridership at this station could rival other non-downtown stations in the Regional Transit system.

### 3 STATION SITE SCREENING AND PREFERRED SITE

Six locations between the American River on the north and North B Street on the south were identified as candidate sites for a Dos Rios-area station site. These six sites were evaluated based on criteria developed in concert with Regional Transit staff. This section briefly describes the six sites, an initial set of screening criteria that were applied and the results. A full discussion of the screening process is presented in the *Station Screening Work Paper*, dated November 30, 2005.

The results of this initial screening were then “vetted” with the community, the Regional Transit Board and staff from several departments within the city of Sacramento. Based on this process and the additional information obtained, a final “superior” site was identified.

#### Candidate Station Sites

As illustrated in Figure 3-1, six locations were identified as candidate sites for consideration. The six sites were:

**Site A – Locate a new station north of North B Street.** This site is approximately 1/3-mile from the La Valentina LRT station; if constructed, it would impact the Loaves & Fishes facilities and operation.

**Site B -- Locate a new station south of Ahern Street and north of North C Street.** This option would locate a station east of the existing tracks along North 12<sup>th</sup> Street, and would begin +/- 400-feet south of Ahern Street (and extend south from this point). It may impact the Loaves & Fishes complex and is closer to the proposed CIHC.

**Site C – Locate a new station just south of Ahern/Sproule Avenue.** The station platform would extend from just south of Ahern/Sproule Avenue and end approximately adjacent to Sitka Street. This concept may require a re-design of the Ahern/Sproule intersection to tie into North 12<sup>th</sup> Street; it could be developed in a way that is consistent with the Gateway Master Plan circulation system. A previously identified concept developed by RT would place the station adjacent to Sproule and close Ahern. That concept is not consistent with the Gateway Master Plan circulation system.

**Site D – Locate a new station just north of Sproule Avenue.** This site would be closer to the CIHC and have a controlled access crossing of North 12<sup>th</sup> Street. It would be located on (or adjacent to) the triangular parcel of land north of Sproule that has potential for redevelopment.

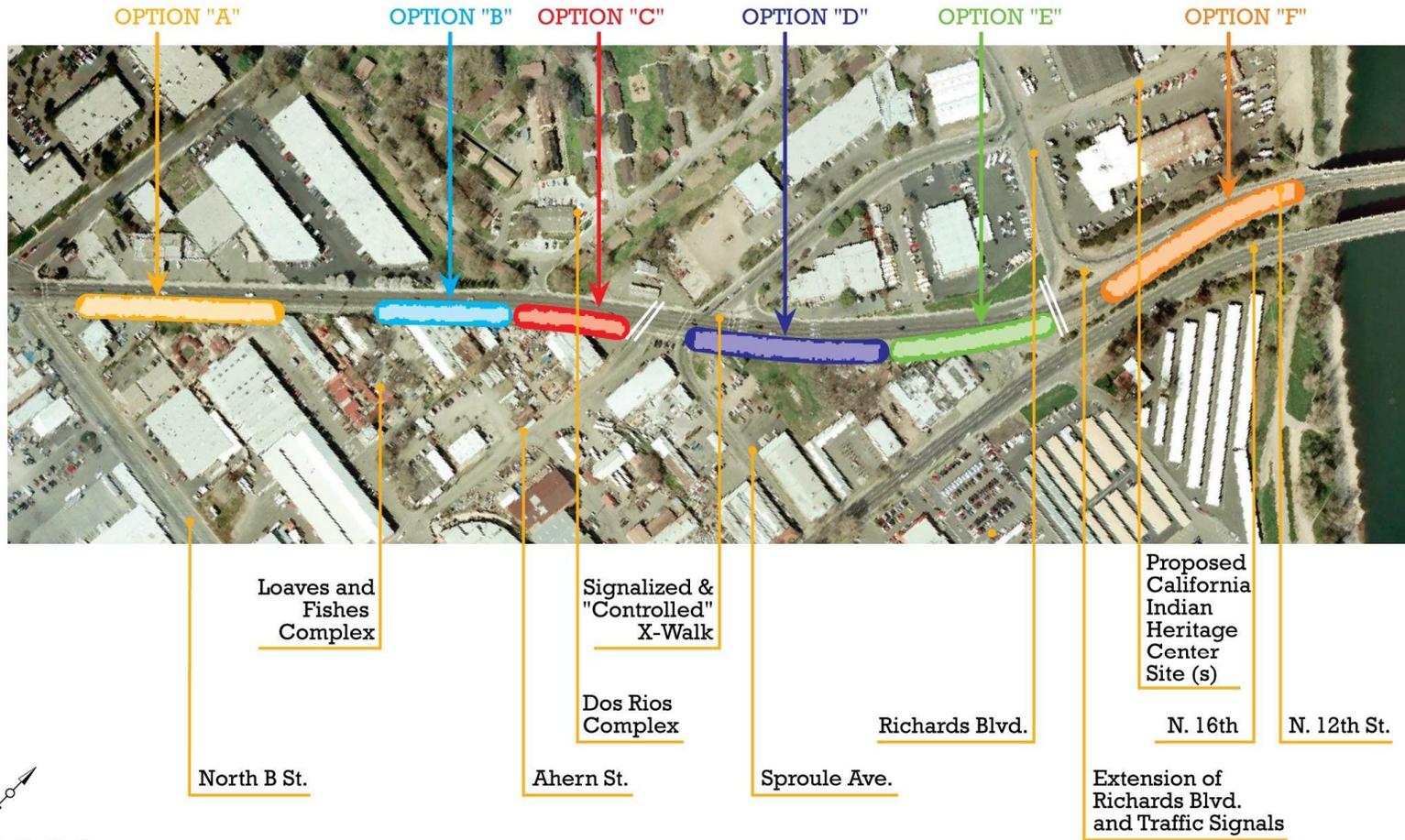
**Site E – Locate a new station just south of the (future) Richards Boulevard Extension.** This site is similar to Site D but with the station platform located north several hundred feet and adjacent to the future Richards Boulevard extension to 16<sup>th</sup> Street. It has the closest proximity to the CIHC of all feasible station sites.



*Northerly View of North 12th Street next to Loaves & Fishes*

Figure 3-1: The Six Candidate Sites

# Dos Rios-Area Station Sites



**Site F – Locate a new station just north of the (future) Richards Boulevard Extension** – Site F would have the platform located just north of the future Richards Boulevard extension and would extend to the north onto the single-track and American River crossing approach. Site F is located on a single track, reverse-curve section of rail (violates RT criteria for station placement) that is on a 3% grade essentially requiring re-design of the light rail section and/or would preclude the station from being fully accessible under ADA and Title 24.

### **Screening Criteria and Application**

The screening process was conducted by applying a number of criterion identified based on RT needs, input from the community, and/or transportation planning practice. Table 3-1 presents the screening matrix of the application of the criteria. Presented below is a brief discussion of the criteria and the rationale or purpose of each. The criteria are weighted equally and are categorized in alphabetical order.

### **Community Considerations**

1. Community/Neighborhood input – Input from the community at large as developed from community meetings and comments received, but especially the immediate neighborhood(s) was determined and a qualitative documentation of the level of support (or non-support) for the station is noted;
2. Environmental issues or concerns – Known or identified environmental issues would be considered that are not specifically identified elsewhere in the screening criteria. To date, the various sites appear to have minimal differences from an environmental perspective. The differences are noted;
3. Environmental justice (Equity) – As a qualitative assessment, the level of transit-dependent population for each of the Dos Rios-area station sites. While each site is within an “EJ” population – some are closer and provide more accessibility to permanent population(s) in the community – when compared to others. At the same time, the greater the impact on the homeless population facilities, the more negative that impact is;

### **Costs**

1. Capital cost – Relative capital costs based on the anticipated amount of incremental trackwork required (specifically, if affected, the relocation of the interlock);
2. Incremental operational and capital cost to RT – Ideally, a quantitative estimate of the cost of the station to Regional Transit that identifies the net additional O&M and Capital Cost (annualized) to RT. At this time, each of the station sites is assumed to have the same incremental costs – because no additional sources of funding or special costs have been identified;
3. Operations Cost – Additional operational costs associated with a proposed station. Because each station is assumed to have (at this time) the same operational costs, there is no difference between the station sites;
4. ROW Cost – The relative estimated value of right-of-way (ROW) required based on the anticipated level of ROW “takes” anticipated;

## **Operational Issues**

1. Local bus network(s) effect – A qualitative assessment of the effect on existing bus services in the area;
2. Operational difficulty to implement – A quantitative assessment of whether the proposed station can be accommodated operationally was conducted in Phase 1 to determine the feasibility of a Dos Rios-area station. In the Phase 2 analysis, a qualitative assessment of the operational ability to construct each of the proposed stations is identified and estimated;
3. Pedestrian access/safety – The level of pedestrian control and safety concerns associated with the various sites;

## **Redevelopment/Transit Oriented Development Potential**

1. Proximity to CIHC site – The relative proximity to the proposed future California Indian Heritage Center (CIHC) is used as the basis for this screening criterion;
2. Transit Oriented Development potential – A qualitative assessment of the potential for development or redevelopment within the walk shed of the proposed station site was conducted; and

## **Ridership**

1. Ridership potential – An overall ridership estimate was previously discussed. The “proximity to the CIHC” serves as a surrogate for determining the relative ridership potential with the closer the station is to the CIHC, the greater the potential overall ridership.
2. Other over-riding concerns – Various “other concerns” identified and noted.

Application of the screening criteria was conducted and the resulting “scoring” is based on a scale from a “– 2” (Very Negative) to a “+2” (Very Positive). Table 3-1 presents the results of the scoring process. The “scores” for each of the criterion for each station were then added and reported at the bottom of Table 2. Based on the overall “summary score”, the stations were ranked. The ranking is also presented in Table 3-1 at the bottom.

Following the initial screening, the RT Board of Directors reviewed the results in December 2005 and directed staff to further assess the top two candidate sites – Site D and Site E. A second assessment of the two sites occurred as part of the Design Charrette in February 2006. The results of the second assessment determined that both sites were technically feasible with some differential in costs, but very similar benefits. Site E was closer to the CIHC and Site D closer to the Dos Rios Community Housing Complex.

Subsequent discussions between RT and city of Sacramento Department of Transportation (DOT) staff revealed that the two transportation elements in this area (the adopted 180-foot ROW and the future Richards Boulevard interchange and extension east) would affect the final selection of a station site between Sproule and Richards Boulevard and are presently being re-assessed. Further, the assessment of these two projects was affected by the new land use proposal for the re-development of the Union Pacific Railyards. DOT staff noted that the re-assessment would take 12 to 18 months to complete.

**Table 3-1: Screening of Dos Rios-Area Stations Matrix**

Criterion	Station Site Options						Notes
	A	B	C	D	E	F	
<b>1. Community / Neighborhood input</b>	--1	--2	+1	+1	0	0	At first and second Open House, community interest generally highest near Ahern & Sproule.
<b>2. Environmental issues or concerns</b>	0	0	0	0	0	--1	Potential for river/biological issues with Site F.
<b>3. Environmental justice (Equity)</b>	--1	--2	--1	+2	0	--1	Sites B & C adversely affect Loaves & Fishes; Sites C and D serve Dos Rios Housing Complex most directly and provide a controlled access across N 12 <sup>th</sup> Street.
<b>4. Capital cost (relative)</b>	--1	0	0	0	--2	-2	Costs associated with track impacts, grades and/or traffic controls and switch relocation.
<b>5. Incremental costs to RT</b>	0	0	0	0	--0	--0	No differentiation at the time of screening between sites was identified.
<b>6. Operations cost</b>	0	0	0	0	--1	--2	Sites E & F are more-circuitous to serve with bus operations.
<b>7. ROW cost (relative)</b>	--2	--1	--1	--1	0	0	Relative ROW costs appear to increase as one goes south towards N. "B" Street.
<b>8. Local Bus network(s) effect</b>	+2	--1	+1	+1	--1	--2	Existing services (#33) on N "B" and Ahern Streets; and (#15) Richards to Arden/Del Paso.
<b>9. Operational difficulty to implement</b>	0	0	0	0	--1	--2	Moving interlock is more problematic. Option F is also on a grade and curve.

Criterion	Station Site Options						Notes
	A	B	C	D	E	F	
10. Pedestrian access/safety	+1	--1	+2	+2	+2	0	Proximity to Dos Rios Housing Complex and CIHC with direct link and/or controlled access scores higher; Option F has only one access.
11. Proximity to CIHC potential site	--2	--2	0	0	+2	+1	Assume CIHC is in SW corner of American River & North 12 <sup>th</sup> .
12. Transit Oriented Development potential	--1	--1	0	+1	+1	--2	Redevelopment potential appears greatest at mid-northern end of study area.
13. Ridership potential	0	0	0	+1	+2	0	Ridership potential increases closer to proposed CIHC and then drops as proximity to other sites decreases.
14. Other over-riding concerns	--1	--2	--2	0	--1	--2 (FF)	Option A – Lack of “greentime” for North B Street intersection Options B & C – Adversely affects Loves & Fishes master plans; Option D — Concerns about relocation of “turnout” expressed in April 2006 addressed Option E – “Turnout relocation and construction under traffic is an issue Option F – Grades, track curvature violate RT criteria; relocation of interlock is a “fatal flaw”.
<b>Total “Score”</b>	--6	--12	0	+7	+1	--13	Sum of all criterion scores
<b>Rank (based on “Total Score”)</b>	4th	5th	3rd	1st	2nd	6th	

**Scale:** --2 = Very Negative; --1 = Negative; 0 = Neutral; + 1 = Positive; +2 = Very Positive  
-- FF – “Fatal Flaw” stated by RT Engineering in April 2006

Site D was identified as the superior site. However, a final station design cannot be made until after the completion of studies that may or may not “un-adopt” the 180-foot ROW along North 12 Street and/or reconfirm the need, location and design for the Richards Boulevard interchange with SR 160. Further, a visionary land use plan for the Dos Rios area could influence the station site design as well. The land use planning process has begun with the General Plan Update effort and could capitalize on the CIHC and Railyards master planning processes now underway.

#### **4 STATION LOCATION CONCEPT**

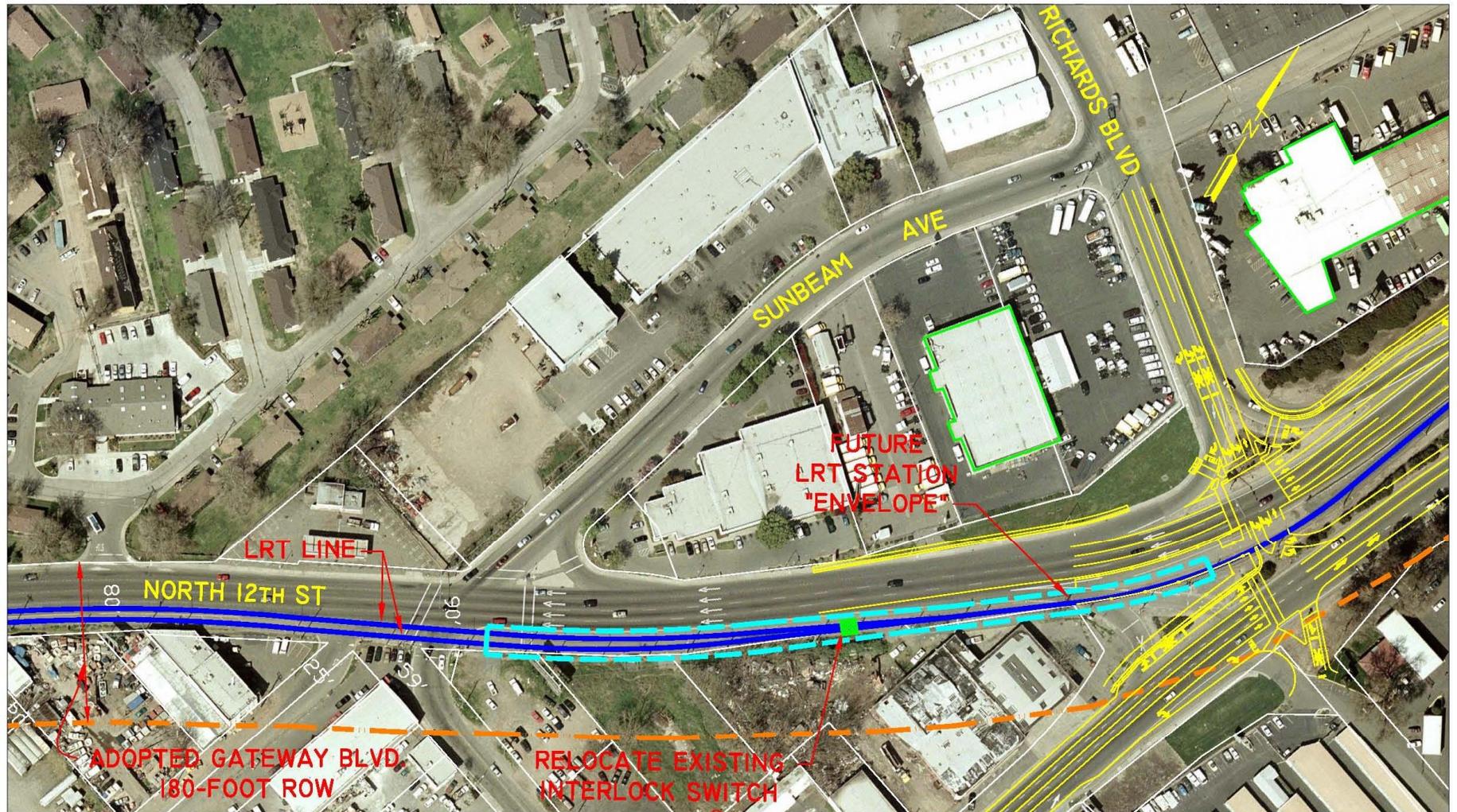
As noted in Section 3, Site D is the superior site for Dos Rios-area LRT station. A final design cannot be made until after the completion of studies that may or may not “un-adopt” the 180-foot ROW along North 12 Street and/or reconfirm the need, location and design for the Richards Boulevard interchange with SR 160 and/or adopts a new land use vision and plan for the area (as part of the General Plan Update). Sacramento RT and city of Sacramento staff, continuing to work collaboratively as they have, will resolve these issues in an optimum and balanced way.

Figures 4-1 and 4-2 illustrate the concept of a station in this reach of the northeast rail line. Also illustrated is the approximate 180-foot adopted ROW line, as well as the proposed Richards Boulevard interchange in concept as prepared by the city of Sacramento. These figures are provided for context review.

Several key points are noted:

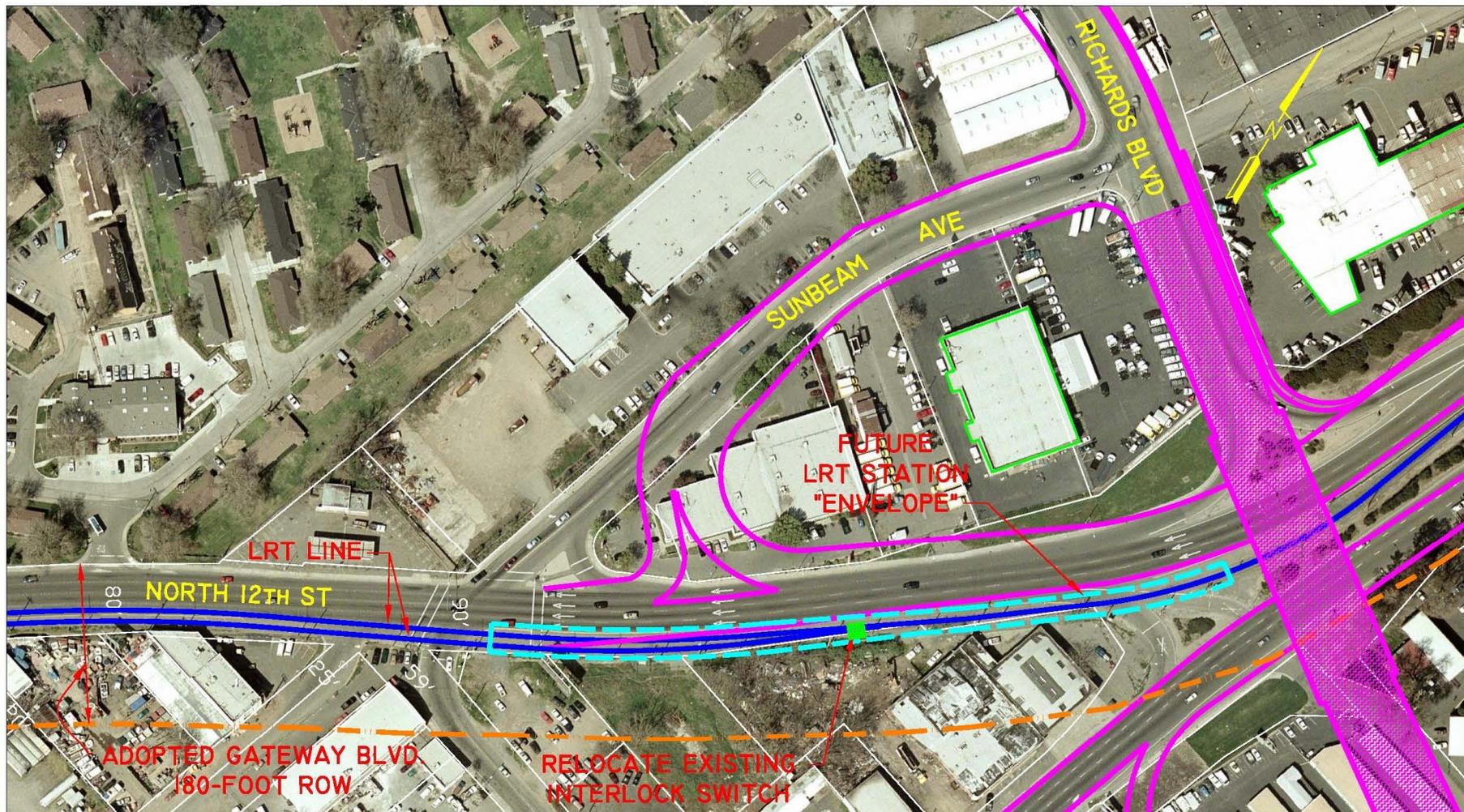
- ✓ A proposed Dos Rios Station could be developed just north of Sproule and south of the Richards Boulevard extension. RT design considerations, relocation of the existing switch to an acceptable location and future construction needs for the Richards Boulevard overpass will guide the precise station location and design.
- ✓ Pedestrian access across North 12<sup>th</sup> Street will need to be controlled. This can be accomplished through the use of fencing to prohibit jay-walking, inclusion of safe and convenient sidewalks and paths that are ADA-compliant for station access, and directing pedestrian pathways to the signalized crossings at Sproule/Sunbeam and North 12<sup>th</sup> Street and/or the (interim) Richards Boulevard extension and new at-grade intersection at North 12<sup>th</sup> Street via an at-grade pathway to the intersection.
- ✓ With the Richards Boulevard interchange concept, an ADA-compliant access concept would be required in the bridge design to transport passengers between the proposed Dos Rios LRT station platform at Site D and the Richards overpass.

Figure 4-1: Dos Rios-Area LRT Station Envelope (Site D) and Richards Boulevard Extension and At-Grade Intersection Plan



DOS RIOS LRT STATION – ENVELOPE  
INTERIM RICHARDS BLVD INTERSECTION

Figure 4-2: Dos Rios-Area LRT Station Envelope (Site D) and Richards Boulevard Interchange Concept



DOS RIOS LRT STATION — ENVELOPE  
 ULTIMATE RICHARDS BLVD INTERCHANGE

## 5 ANTICIPATED IMPACTS AND ISSUES

For the “alternatives analysis” an environmental scan was completed that essentially followed a “CEQA checklist” approach. As a “preferred site” cannot be identified until such time as other transportation issues are addressed, more-detailed analysis cannot be undertaken. Research and professional judgment revealed that there were no apparent “fatal flaw” issues associated with Sites “D” and “E”. However, some potential issues will need to be studied further during a subsequent environmental review phase of work. In summary, the following potential issues have been identified:

- ✓ Aesthetics – Considerations would appear to be low. However, the issue of glare may need to be addressed through design and placement of lighting fixtures. A station design that provides a sense of civic identity and is (potentially) sympathetic to the CIHC would be beneficial.
- ✓ Agriculture Resources – Likely not an issue.



*North 12<sup>th</sup> Street looking north towards American River near Richards Boulevard*

- ✓ Air Quality (AQ) – Likely not an issue. Specifically, since a park & ride lot is not a component of the proposed project. The station will provide AQ benefits if the CIHC is constructed nearby and visitors use the LRT station to gain access to this venue.
- ✓ Biological Resources – Some potential for an issue especially as the station is located further north towards the American River.
- ✓ Construction Impacts – Potential construction impacts (noise and fugitive dust) will need to be addressed, as well as staging area impacts (if any).
- ✓ Cultural Resources – No known cultural sites identified. Locations closer to the American River may have more potential. Future CIHC concept will also require some consideration and the design may provide an opportunity to reflect the budding cultural focus of this area.
- ✓ Environmental Justice – The demographic profile of the Dos Rios study area, as well as any effects associated with Site C on Loaves & Fishes, suggests that further consideration be given to environmental justice issues. This would involve determining that the fair treatment and meaningful involvement of all residents regardless of race, color, national origin or income, from the early stages of planning and investment decision making through construction, operations and maintenance occurs and is documented. Environmental Justice has its origins with Title VI of the Civil Rights Act of 1964. Executive Order 12898 was issued in 1994, which underscored the importance of the Title VI requirements by adding low-income and transit-dependent populations to those protected by the principles of environmental justice.

The ethnic breakdown of the community is comprised of more than 50 percent minorities: 29.8% Black/Afro-American, 19.5% Hispanic/Latino, 10% Asian, 3% Native American and 0.4% Pacific Islander. This area also characterized by its large low-income and transit-dependent population, with 63.2% of residents living below the poverty level. The median family income amounted to \$16,161 annually and the area's per capita income came to \$6,803 (Census 2000).

The three fundamental principles at the core of environmental justice as taken from the FHWA Environmental Justice website are as follows:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process;
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations; and  
Conscious and concrete efforts have been made to reach out to the adjacent community and will need to continue.
- ✓ Geology and Soils – No excessive considerations are anticipated.
- ✓ Hazards and Hazardous Materials – Sources containing information about environmental contamination in and around the study area make little or no mention of toxic sites along the North 12th Street corridor. Most of the toxic waste sites cited are located to the west of the North 12th Street corridor in the UP Railyards site and the Richards Boulevard corridor. A query made to the State of California's Department of Toxic Substances Control website (<http://www.dtsc.ca.gov>) revealed no indication that the parcels in the North 12th Street corridor were subject to deed restrictions. The DTSC's Site Mitigation and Brownfields Reuse Program Database also did not identify any parcels in the corridor other than those located within the UP Railyards site.
- There are sites in the general area that are either identified, under clean-up now or have been cleaned up. None of these sites would appear to affect any potential station location – given the level of study done to date.
- ✓ Hydrology and Water Quality – Generally not an issue. However, overall drainage problems exist in the Gateway Master Plan area that need to be resolved. This project would need to coordinate so that the overall drainage solution is maintained.
- ✓ Land Use and Planning – A station is generally consistent with the planning for the area, although not specifically identified. A new land use plan for the area should acknowledge the LRT station and integrate the station concept into a mixed-use development concept.
- ✓ Mineral Resources – Likely not an issue.
- ✓ Noise – Increased noise exposure to adjacent areas may be a consideration based on a station location. However, the proposed station site(s) have very limited exposure to present uses that are noise sensitive.

- ✓ Population and Housing – A Dos Rios-area station is generally consistent with the community, however it could help spur redevelopment efforts and may need to be addressed further. If a new land use plan is completed that acknowledges the station, the CIHC and other re-development efforts, the station could be growth accommodating, as opposed to growth inducing.

- ✓ Public Services – Given the security concerns expressed to date, public services will need to be assessed further to determine if, and to what extent, they would be affected and/or required for this project.

- ✓ Recreation – Likely not an issue. May provide a long-term point of access to the American River Parkway and (future) California Indian Heritage Center, city regional park and zoo.



Southbound “Meadowview” LRT along North 12<sup>th</sup> Street

- ✓ Transportation/Traffic – Placement and design of a Dos Rios-area station may have a

greater or lesser effect on the transportation systems in the area. Under presently adopted policy, if a station was placed along the existing LRT alignment, it would need to accommodate the existing 180-foot ROW with the use of a (future) transit median concept. The Richards Boulevard interchange concept is not presently adopted policy. The transportation project interface will be evaluated further in subsequent phases of project development.

- ✓ Utilities and Service Systems -- Generally not an issue. However, overall utility and service problems exist in the Gateway Master Plan area that ultimately needs to be resolved. This project would need to coordinate so that overall utility solutions are not adversely affected.
- ✓ Mandatory Findings of Significance – Still to be determined if “the project will have the potential to degrade the quality of the environment”, have “individual or cumulative” impacts, and/or there are any “substantial adverse effects on human beings, either directly or indirectly.” If Site C were selected, its affect on the Loaves & Fishes complex may be significant.

### **Pedestrian & Traffic Considerations**

A concept-level transportation and circulation assessment was conducted for the proposed Dos Rios LRT station. This assessment is intended to identify the key issues and areas where future analyses and design efforts should focus upon resolving conflicts and enhancing the opportunities for future users.

### **Pedestrian/Bicycle Circulation**

Residents of the Dos Rios housing complex, social service clients in the area and a limited number of other pedestrians and cyclists transport in the area. Generally speaking, in the areas on the east side of 12th Street between the American River and

North B Street, the pedestrian environment is of marginal value. Presently, the area lacks not only improved and ADA-compliant sidewalks, but also few and poorly maintained walk paths. Walkways or unpaved paths that do exist are in close proximity to the light rail and, at least partially, unprotected from the LRT. Rail catenary poles, supports for rail catenary cables and power/telephone cables encroach on the existing paved and unpaved walkways.

North of Sproule Avenue, the pedestrian environment is non-existent and pedestrians are prohibited from walking in the active LRT track areas. Bikeways are generally non-existent as well throughout the larger project area.

Alternatively, pedestrian crossings of the major streets are generally adequate with signal-controlled crossings with pedestrian preemption and phasing on the major streets, wheelchair ramps at most corners and striped crosswalks. A “controlled crossing” of North 12th Street presently exists at the Sproule/Sunbeam/North 12th Street intersection.

### **Programmed or Proposed Improvements**

Pedestrian and bicycle improvements proposed for the Dos Rios-area include the extension of Richards Boulevard, the proposed Richards Boulevard Interchange and the Gateway Master Plan. Briefly,

- ✓ As illustrated in Figure 4-1, the extension of Richards Boulevard to 12th and 16th Streets will include a signalized crossing with crosswalks. An added benefit will be to slow down traffic as it crosses over the American River Bridge and approaches the future station site.
- ✓ As illustrated in Figure 4-2, the proposed Richards Boulevard interchange and overpass over 12th and 16th Streets would eliminate this at-grade vehicle traffic crossing. To maintain a similar level of pedestrian access, the interchange project needs to include an ADA-compliant access to the overpass or and at-grade, ped-only signalized crossing with ADA-compliant pathways leading to and from Richards Boulevard.

The overpass configuration could have two additional pedestrian-related negative effects. First, removal of the eastbound-to-northbound turn movement at 12th & Richards Boulevard will remove an important component of “eyes on the street” to help self-police the station area. And second, the overpass configuration could add a negative safety perception for the station being located in or adjacent to “a cave”. These issues should be addressed further in the development of the interchange concept.

- ✓ The **Gateway Master Plan** was completed by the city of Sacramento in 2005. The Plan recognizes the lack of adequate pedestrian facilities and has responded to such. As one example key to the future Dos Rios LRT station, a sidewalk is proposed along the east side North 12th Street from North “B” Street to the Sproule Avenue intersection. At this time, no time frame has been identified for implementation of the projects. Some of the projects may occur with new development/re-development activities.

Additional pedestrian and bicycle improvements are also envisioned as part of the construction of the LRT station.

- ✓ Construction of approximately 750-feet of pedestrian sidewalk that is ADA-compliant and extends on the east side of 12th Street from the (future) Richards Boulevard intersection to the Sproule/Sunbeam/Ahern set of intersections.
- ✓ Provision of bicycle access (bicycle lockers are not recommended for this site).
- ✓ Suitable lighting levels for nighttime safety both on-site and in the immediate approach areas and bus transfer area.

### **Traffic Circulation**

North 12th Street is a one-way street with a configuration of four lanes with the farthest east lane shared with LRT. Travel speeds on North 12th Street from the American River are high (50+ mph) as the street is transitioning from the SR 160 freeway design standard to an arterial street standard. Presently, the first traffic light is located at Sunbeam/Sproule and 12th Street. The posted speed is 55 dropping to 45 northeast of this intersection and 35 south of this intersection.

Table 5-1 illustrates the existing and projected traffic volumes for North 12th Street in the study area vicinity.

The proposed project site is between Sproule Avenue and the American River Bridge, the flow of traffic on Sproule is presently a critical issue. Northbound-oriented traffic from Richards Boulevard circulates through Sunbeam Avenue, Sproule Avenue and North 16th Street to access Del Paso Boulevard and State Route (SR) 160. This circulation adds considerable traffic to the Sunbeam and Sproule Avenue intersection with vehicles queuing on Sproule Avenue several hundred feet to the west of 16th Street.

**Table 5-1: Existing and Projected Traffic Volumes**

	North 12th / Sunbeam	North 12th / North "B"
<b>"Existing" Average Daily Traffic (ADT)</b>	19,250	31,950
<b>AM Peak Volume</b>	2,350	3,350
<b>PM Peak Volume</b>	1,250	2,750
<b>Forecast Year 2025 ADT</b>	35,550	34,850
<b>ADT Capacity Standard for Arterial/High Access Roadways</b>		
<b>2 lanes (1 in each direction)</b>	16,000	
<b>4 lanes (2 lanes in each direction)</b>	32,000	
<b>6 lanes (3 lanes in each direction)</b>	48,000	

Source: City of Sacramento, SACOG SACMET Model; Rounded to nearest 50 vehicles

Ahern Street is also located just southeast of the Sproule/12th Street intersection. While Ahern experiences substantially less traffic than Sproule presently, the complexity

of the intersection results in some conflicts between autos uncertain of where to go and between auto & train and/or auto & pedestrian movements due to confusion.



A secondary issue associated with both Sproule Avenue and Ahern Street is the westbound traffic movements and the potential for conflicts with the light rail trains. Since North 12th Street has a southbound-directed traffic flow, the auto driver tendency is to look to the right. Although there are warning signs and horns activated when trains approach, trains approaching from the south are not intuitively obvious to the driver. Hence, there is an increased likelihood of auto/train conflict occurring if the driver is not aware of the situation.

The present traffic status is reasonably adequate for the needs today. However, the city of Sacramento plans to increase the capacity of select streets and

intersections in the area to meet future demands.

### **Proposed or Programmed Improvements**

A number of programmed or proposed improvements in the project area will affect the traffic flow. Figures 4-1 and 4-2 illustrate these in concept.

The city of Sacramento has a construction project programmed to begin in the summer of 2006 that will extend Richards Boulevard east connecting with a new signalized intersection with 12th and 16th Streets. This project, as previously illustrated in Figure 4-1, will benefit the project site and a future Dos Rios-area LRT station in a number of ways:

- ✓ The project will provide a control point at the north end of the LRT station-area. This will improve both access across North 12th Street, as well as the safety of future users by introducing a new signal and slowing traffic before it is adjacent to the future station site.
- ✓ The project will permit traffic to access 16th Street directly from Richards Boulevard, thus reducing traffic volumes and conflicts at the Sproule/Sunbeam/Ahern & 12th Street intersection. In turn, that will benefit both pedestrians, as well as interfacing bus transit services for the future station.

Improvements proposed in the Gateway Master Plan will improve traffic and pedestrian/bicycle circulation compared to the existing conditions. Improvements to the intersection of North 12th Street and Sunbeam Avenue/Sproule Avenue/Ahern Street are proposed. If these improvements were accomplished, a more appropriate and realigned alignment of Sunbeam and Ahern Street would be implemented. Other improvements in terms of implementing a standard street design, proper drainage and additional on-street parking would also indirectly benefit the Dos Rios-area LRT station.

Longer-term, two projects are proposed which may affect the Dos Rios-area LRT station from a circulation and access perspective. The proposed Richards Boulevard Interchange as illustrated in Figure 4-2 is envisioned as necessary to accommodate the long-term east-west traffic flows. Construction activities associated with the overpass

may or may not affect the LRT Station. As an example, if the actual overpass alignment were to be constructed while the existing intersection of Richards and 12th/16th Streets remains in service, the overpass alignment may need to swing to the south or north of the existing street. This may affect the LRT station depending upon where it is placed.

The second long-term project in this area that may be critical to the ultimate success or failure of the LRT Station is the city-adopted policy to widen North 12th Street. As the Gateway Boulevard concept to serve a re-developed Union Pacific Railyards, this concept would widen to a right-of-way of 180-feet – more than doubling the existing right-of-way. If this 180-foot ROW concept is retained into the future, three negatives may occur.

As proposed, this concept would locate the light rail tracks in a “transit median” separated by three or more travel lanes on either side. The “transit median” is illustrated as a 16-foot median that is less than necessary for adequate pedestrian flows (particularly with the California Indian Heritage Center estimated patronage). If a Dos Rios LRT Station were located in this transit median, at a minimum an approximate 20-foot median would be more appropriate.

Under this “transit median” concept, the LRT Station becomes disconnected from the surrounding land uses and sits, essentially, on an island. This is a much less than optimum design concept for an LRT Station and may encourage anti-social behaviors as there is no “ownership” of the station. In turn, this may discourage ridership. A more appropriate design would be to have a side-running concept as exists today and integrate a new station into a redevelopment project.

And third, the 180-foot ROW leaves a residual parcel in the 12th/Sproule/16th/extended Richards Boulevard triangle that appears to be un-developable in any type of transit-oriented development concept. This would represent a lost transit oriented development opportunity in an area where the potential is high.

### **Key Issues and Future Focus Areas**

Future design and analysis efforts should focus on the following areas at a minimum:

1. Implementation of the future Dos Rios LRT station will need to address walkways and paths both on-site and off-site so that adequate and ADA-compliant access is provided. While not necessarily all of these improvements should be the borne by the LRT Station development, the station is the catalyst project to accomplish other pedestrian improvements discussed herein and/or identified in the Gateway Master Plan. On-site improvements will be the responsibility of the LRT Station development.
2. The extension of Richards Boulevard to provide a signalized intersection at North 12th & North 16th Streets is a benefit to the future LRT Station at Site D. The signalized intersection provides both a controlled crossing of North 12th Street in particular, as well as slows down traffic adjacent to the future station site. This extension and the associated pedestrian improvements will be completed in 2006.
3. The Gateway Master Plan identifies a number of vehicular, bicycle and pedestrian improvements that need to be constructed to bring this area up to a level of street design commensurate with other areas in the city. Most critical to the future LRT

Station is providing ADA-complaint pedestrian pathways along the east side of North 12th Street and the re-alignment of the Sunbeam/Sproule/Ahern & North 12th Street intersection to provide an improvement design. These improvements need to be in-place at the time of the Dos Rios LRT Station completion.

4. The concept evaluation and design of any future Richards Boulevard interchange must assess the impact on the future Dos Rios LRT Station. At a minimum replacing the east-west pedestrian access along Richards Boulevard at North 12th and North 16th Streets would entail the overpass project providing ADA compliant access to the top of the Richards Boulevard overhead structure and access along the top of the new Richards Boulevard extension.

A second issue associated with the proposed overpass that needs to be addressed will be to assess the effect the overpass will have on security at the LRT station including both actual security issues, as well as perceived security issues.

The 180-foot right-of-way that has been adopted by the city of Sacramento for transforming North 12th Street into “Gateway Boulevard” to serve the future Union Pacific Railyards is another key issue that should be studied further. An ideal concept would be to locate the Dos Rios LRT station in close proximity to and as part of a transit oriented development project. Locating an LRT Station in a “transit median” separated by 3+ travel lanes is less than ideal. The opportunity exists with the recent proposal for a new Railyards development concept to re-assess this and possibly develop an alternate transportation concept that preserves the opportunity for a multi-use TOD and integrated LRT station.

## 6 FINANCIAL FEASIBILITY

The feasibility of financially constructing and maintaining an LRT Station in the Dos Rios area is a function of the cost to construct, the sources of funding, as well as the ability to pay for its continued operation over the long-term. This section addresses these considerations.

### Capital Cost & Background Assumptions

Table 6-1 illustrates the estimated cost for constructing a Dos Rios-area LRT station between Sproule & Ahern streets and the future (2006) Richards Boulevard extension to North 12th and North 16th Streets (Site D). The following assumptions guided the preparation of this estimate:

1. The station would be a generally standardized Regional Transit LRT station consisting of a two-sided platform, 400-feet in length with “typical” amenities including shelter(s), seating, ticket vending, landscaping and public art.
2. As illustrated in Table 6 for Site D, the station would include sufficient pedestrian pathways and sidewalks to serve pedestrians between the Richards Boulevard extension on the north and Sproule Avenue on the south (along the east side of North 12th Street).
3. Relocation of the existing interlock switch that transitions the single-track crossing of the American River on the north to the double track configuration on the south is required. The differential in the cost estimates reflects this unknown. Relocating the interlock to the north side of Richards Boulevard has additional costs for relocating the gates and traffic controls at the new Richards & North 12<sup>th</sup>/North 16<sup>th</sup> Street intersection as compared to relocating the interlock to just south of the intersection. The exact location for the interlock switch will be determined based on the final placement of the LRT station in this area.
4. As illustrated in Table 6 for Site D, the cost estimate assumes a design concept that relocates an approximate 1200-feet of track to meet Regional Transit’s “preferred criteria”. Depending upon the ultimate location selected, this may change. The concept assumes relocating the northbound track to the east by approximately 20 feet. The concept also assumes that the tracks are transitioned back to their existing alignment south of Ahern at a point that does not affect the existing building on the southeast corner of North 12th Street & Ahern Street.
5. Unit prices are based on either recent RT costs or estimated DNA costs. Quantities are gross estimates reflecting the uncertainty of where the LRT station would be located between Richards Boulevard and Sproule Avenue.
6. As illustrated in Table 6 for Site D, “full-takes” are assumed for the ROW on the triangular set of parcels bounded by North 12th Street, Sproule Avenue, North 16th Street and (new) Richards Boulevard extension.
7. The project would be responsible for only its own on-site designs and resulting construction costs.

8. Contingencies consistent with the Downtown-Natomas-Airport Alternatives Analysis (DNA) presently underway for Sacramento Regional Transit have been used. The contingencies include a “Damage Contingency” of 20%, a “Negotiation Contingency” of 20%, and a “Relocation Contingency” of 3% on the right-of-way; and a “Construction Contingency” of 40% for the low-end and 55% for the high-end on the environmental clearance, design and construction of the project itself.

Based on the assumptions noted above, the following table presents a range of capital (construction) cost estimates for a Dos Rios-area Station for Site D only. More detailed assessment of costs will be prepared in subsequent phases of project development.

**Table 6-1: Order of Magnitude Cost Estimate for a Dos Rios-Area LRT Station  
(For Site D)  
(2006 \$)**

		<b>Low</b>	<b>High</b>
A. Environmental		\$250,000	\$250,000
B. Design		500,000	500,000
C. Construction		2,009,000	2,629,000
D. Mobilization (10%)		200,900	262,900
D. Construction Contingencies (40%)		803,600	1,051,600
E. Project Admin/Construction Management		350,000	350,000
<b>Total Estimated Project Cost Without Right-of-Way</b>		<b>\$4,113,500</b>	<b>\$5,043,500</b>
	<b>Say...</b>	<b>\$4.1 Million</b>	<b>\$5.0 Million</b>
<b>Estimated Right-of-Way (Full Takes)</b>		<b>\$3.3 Million</b>	<b>\$3.3 Million</b>
<b>Total Estimated Project Cost With Right-of-Way</b>	<b>Say...</b>	<b>\$7.4 Million</b>	<b>\$8.3 Million</b>

Source: Parsons Brinckerhoff, March 2006

### Operating Costs & Background Assumptions

In addition to capital construction costs, a Dos Rios-area station will have on-going operation & maintenance (O&M) costs associated with it. The O&M costs consist of general security and maintenance and repair. Based on information provided by RT, an estimate has been prepared for the O&M costs estimated to be incurred based on the following assumptions.

1. There will not be a Park and Ride facility at a Dos Rios Station.
2. The station will not feature amenities such as public restrooms or bicycle lockers.
3. The station will not be a staffed facility (but would



*RT LRT Ticket Dispensing Machine*

have a security guard).

Thus, based on data provided by Regional Transit, the Dos Rios-area LRT station is estimated to have a projected O&M cost of \$140,000 per year.

### **Comparison of Costs to RT Revenues**

Sacramento Regional Transit has had a number of “Financial Assessments” prepared for other projects. A Financial Capacity Assessment of the Sacramento Regional Transit District – Amtrak/Folsom Corridor, June 2004, and the FY 2006 New Starts Financial Assessment, November 2004 were reviewed. Some of the key conclusions drawn from these studies are:

- ✓ The renewal in November 2004 of the Measure A sales tax and increase in percentage going to Sacramento RT (from 33.33% to 38.25% or from 1/6 of one cent to 1/5 of one cent) adds a significant level of capacity to RT’s financial capability.
- ✓ At the same time, RT has a number of capital projects underway and the reports conclude that RT has the ability to complete these capital improvements with a reasonable level of certainty.
- ✓ From an operational perspective, the reports conclude that if RT realizes the growth patterns in funding, RT will “report annual operating surpluses, which will be used to fund capital programs and increase RT’s cash balance.”
- ✓ At the same time, it is also noted in the reports that “RT operates with minimal financial flexibility” and has “minimal room to maneuver”.
- ✓ Sacramento RT is under increasing pressure to operate services while maintaining cash flow and is considering fare increases and/or service reductions to meet the financial goals.

The Dos Rios-area LRT station (at Site D) is estimated to cost between \$4.1 and \$5.0 million to construct (excluding right-of-way), plus an additional \$3.3 Million for full-takes of ROW. To operate and maintain (assuming one on-site security) the station is estimated to be \$140,000 per year. Given these long-term conclusions and the costs associated with a potential Dos Rios-area station, the consultant team concludes the following:

- ✓ Constructing a Dos Rios-area station by RT alone would place additional pressure on RT’s capital requirements at a time when other projects are underway and may have higher priorities.
- ✓ Operating a Dos Rios-area station would place additional pressure on RT’s O&M requirements at a time when other efforts may have higher priorities.
- ✓ If a decision is made to develop a Dos Rios-area station, RT should consider “partnering” with its transportation partners to develop and operate the Dos Rios-area station. In particular, the “180-foot right-of-way” adopted plan for North 12th Street will limit the opportunities for joint development and RT and the city should work together to develop a transportation solution that does not adversely affect RT.
- ✓ If a decision is made to develop a Dos Rios-area station, RT should consider “partnering” with land owners/developers to jointly develop the Dos Rios-area station as part of an overall redevelopment effort and strategy for the area.

- ✓ It is assumed that this station will have on-site security similar to other stations. RT should also consider “partnering” in a public/private effort to operate and provide security for a Dos Rios-area station that might include, but not be limited to, a model whereby an entity such as Loaves & Fishes could assist in the O&M of the station and jointly provide job training for its clients. This model has been used successfully for the nearby Quinn Cottages.

## 7 NEXT STEPS

The next steps would include further project development activities for Site D and the proposed concept, including environmental review, preliminary engineering and final design and construction. The \_\_\_ study concludes the following:

1. Staff and consultant conclusion is that Site D is the superior site for the Dos Rios-area station and this report should be “received and filed” by the Sacramento Regional Transit Board
2. Working with the city of Sacramento staff on resolving the planning and design issues associated with the adopted 180-foot right-of-way on North 12th Street and the future Richards Boulevard interchange (not to be confused with the imminent Richards Boulevard at-grade extension that will benefit a future LRT station in this area) at North 12th & North 16th Streets concept is required before Site D can be specifically designed.
3. Continue to work with city staff in developing a vision and the tools and means to implement that vision for this area. Elements of a vision identified during the conduct of the Dos Rios alternatives analysis effort might include:
  - ✓ The development of a transit-oriented mixed-use project that integrates the future Dos Rios LRT station as one component;
  - ✓ The redevelopment and potential reuse of the warehouse areas;
  - ✓ A mixed-use concept for developing future land uses in the Dos Rios area;
  - ✓ An assessment of social service entities in this area and alternative strategies that might be applied;
  - ✓ Integration of the land use analysis with the transportation concepts discussed herein, as well as the long-term plans for the American River preservation and/or redevelopment; and
  - ✓ Integration of the California Indian Heritage Center, as well as potentially the eastern segment of Richards Boulevard, and the Basler/Dreher neighborhood; and
  - ✓ The preservation of the brick facades.
4. Ultimately, accept the concept of a Dos Rios-area LRT Station. The LRT Station would be a component of the long-range plan for the LRT system, recognizing that it may not be the highest priority or accomplished in the near-term.

Accomplishing these tasks will move the Dos Rios LRT Station along while enhancing the Dos Rios community as a whole.

# **APPENDIX A**

## **Architectural Program Statement**



**APPENDIX A**

**ARCHITECTURAL PROGRAM STATEMENT**

**for a**

**Future Light Rail Station**

**in the**

**Dos Rios Area**

**March 31, 2006**



## ***Architectural Program Statement for the Dos Rios LRT Station Concept***

### **Introduction**

This Architectural Program Statement (APS) for the proposed Dos Rios-area Light Rail Transit (LRT) Station. The APS is intended to provide a general guidance to interested and involved parties on the architectural design for the development of an LRT station in the Dos Rios area. A number of sources have been used to develop this APS. These sources include:

- Sacramento Regional Transit District design guidance;
- Because of the “unique nature” of this area, various Crime Prevention Through Environmental Design (CPTED) sources have been used; and
- Because of the potential for the California Indian Heritage Center (CIHC) to be located within the Dos Rios area and its potential ridership draw for LRT, additional information is presented herein as well.

This document presents some general background information of the Dos Rios project and follows with an identification of the physical transport needs for the station. The document then discusses the functional amenities required for the station site and concludes with the CPTED responses.

### **Background**

The Sacramento Regional Transit District (SRTD) is preparing a feasibility study for a potential new light rail station in the Dos Rios area. The functional feasibility of a Dos Rios-area LRT station was determined to be acceptable in Phase 1. On July 25, 2005, the SRTD Board of Directors directed staff to continue with the feasibility study to identify a preferred site for a potential station, as well as the conceptual design of such a station were it to be approved and constructed.

No commitment was or has been made by SRTD approve a station concept or to construct a station in a location in the Dos Rios area. The feasibility effort now underway will assess the potential station sites and recommend a preferred site, as well as develop a concept for the preferred station site.

This document sets the design parameters that will help to guide the concept of a preferred station site once it has been identified and accepted by the SRTD Board of Directors.

### **Physical Transport Needs**

The potential Dos Rios-area LRT Station will need to accommodate multiple modes. Each mode has its own “typical” design criteria that need to be accommodated. The key guiding criteria are presented in Table 1 for each mode

**Architectural Program Statement  
for the Dos Rios LRT Station Concept**

**Table 1  
Key Design Guidance by Mode for the Dos Rios LRT Station**

Mode	Key Design Guidance	Comments
Light Rail Transit	<ul style="list-style-type: none"> <li>✓ Minimum clearance envelope (Track only) – 40-feet wide by 25-feet high.</li> <li>✓ Minimum clearance envelope (Track + Station) – 60-feet wide by 25-feet high.</li> <li>✓ Minimum distance between centerlines of main track – 14' 0" if center poles are present; 12' 0" if center poles are not present (page 3-1)t</li> <li>✓ Minimum length of tangent preceding a point of switch – 45-feet desirable; 26-feet minimum; 10-feet absolute minimum (page 4-3)</li> <li>✓ Lateral clearances for walkways in ROW (for passenger evacuation) – 2'-6".</li> <li>✓ Minimum Station Platform – 360 feet to 400 feet by 10-feet in width (page 8-4).</li> <li>✓ Tangent section extending beyond the platform in each direction – 75-feet desirable; 60-feet minimum; 25-feet absolute minimum (page 4-3)</li> <li>✓ Two-side platforms (preferred) or center platform.</li> <li>✓ Typical station concept (see Figure 1).</li> <li>✓ Station location on tangent LRT track section preferred; minimum 1500-foot radius curve section; reverse curve section unacceptable.</li> <li>✓ Ridership at the Dos Rios Station could be significant depending upon the site selection and outcome of the CA Indian Heritage Museum site selection. Ridership is discussed further following Table 1.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Source: SRTD Light Rail Design Criteria; May, 1993</li> </ul>
Bus Transit	<p>It is assumed that bus stop(s) could be located on 12<sup>th</sup> Street and/or off-street and will be determined based on the preferred site selection based on safety and design considerations.</p> <ul style="list-style-type: none"> <li>✓ If on-street, bus turnout is preferred design; length 130-feet minimum by 12 feet wide. Assume standard 40-foot bus.</li> <li>✓ If off-street, "sawtooth" pattern preferred with 65-feet horizontal spacing; in-line (parallel) pattern is alternate with 102-feet spacing; to be determined by preferred location constraints. Assume standard 40-foot bus.</li> <li>✓ If off street and a bus turnaround design is determine to be optimum based on constraints, a 90-foot by 115-feet envelope with a 21-foot bus travelway on a 29-foot radius is required.</li> <li>✓ No park &amp; ride facilities would be provided at a Dos Rios LRT station.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Source: SRTD Design Guidelines for Bus and Light Rail Facilities, October, 1987</li> <li>✓ Assumed</li> </ul>

**Architectural Program Statement  
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<b>Mode</b>	<b>Key Design Guidance</b>	<b>Comments</b>
Kiss & Ride (KNR) or Taxi	<ul style="list-style-type: none"> <li>✓ Preferred location is off-street; on-street to be considered depending upon selected site characteristics.</li> <li>✓ Ingress/egress to be from street other than 12<sup>th</sup> Street; no vehicular crossing of the LRT alignment (at the station) to be considered.</li> <li>✓ Driveway location to be coordinated with City of Sacramento; driveway width 15-feet minimum for one-way and 25-feet for two-way travel.</li> <li>✓ No more than two KNR spaces to be provided.</li> </ul>	
Bicycle	<p>Bicycle interface with the LRT is encouraged.</p> <ul style="list-style-type: none"> <li>✓ Bicycle pathways designed to connect with adopted City and County bikeways (as applicable).</li> <li>✓ Bicycle access to be from street other than 12<sup>th</sup> Street; no bicycle access/crossing of tracks (at the station) from 12<sup>th</sup> Street.</li> <li>✓ Bicycle racks to be located on hard pad in highly visible location(s).</li> <li>✓ Bicycle racks to be “Class 3” design; a maximum of two; and each requires a minimum 9.5-feet for maneuvering plus an additional 4-feet on either side of the bicycle rack.</li> <li>✓ No bicycle lockers to be provided at the station.</li> </ul>	
Walk/ Pedestrian	<p>It is envisioned that the “walk/pedestrian” mode will be the vast majority of a potential Dos Rios-area LRT Station.</p> <ul style="list-style-type: none"> <li>✓ Pedestrian walkways will be fully compliant Americans with Disabilities Act (ADA) requirements.</li> <li>✓ Pathways to connect with adjacent development and street system.</li> <li>✓ Design of a “solid” barrier to prohibit pedestrians from crossing 12<sup>th</sup> Street directly onto station platform (forcing pedestrians to a controlled crossing at a nearby intersection or crossing point).</li> <li>✓ Design of a “focused” pedestrian flow to Loaves &amp; Fishes and the CIHC site to channel patrons to these discrete destinations.</li> </ul>	

**Architectural Program Statement  
for the Dos Rios LRT Station Concept**

The design guidance presented in Table 1 provides the overall guidance. The functional details associated with the architectural program are discussed in Table 3.

**Ridership Potential**

Another key determinant for the program statement is the level of ridership anticipated. In the case of a Dos Rios-area station, the level of anticipated ridership is speculative and variable based on the ultimate site selection, as well as the outcome of the California Indian Heritage Center (CIHC) siting process. The technical report, *Ridership Forecast for a Potential Dos Rios LRT Station*, dated April 19, 2005, was prepared for this project and estimated ridership given the assumptions known at that time. Subsequent to the preparation of that document, the CIHC selected the Dos Rios-area as the preferred location for siting the facility. A detailed environmental study of sites is now underway for that project. Should the CIHC come to fruition and should the Dos Rios-area station be sited in proximity to the CIHC, the level of ridership may increase substantially over that which was originally estimated. Table 2 presents a range of ridership estimates for the Dos Rios Station. Consideration of ridership in the Program Statement is important because significant passenger loads could alter the physical design concept and character of the station.

**Table 2  
Potential Dos Rios-Area LRT Station Ridership**

<b>Estimated LRT Ridership w/o CIHC</b>					
<b>Year</b>	<b>Social Service (SS)</b>	<b>Non - SS</b>	<b>Total</b>		
<b>“Today”</b>	475	175	650		
<b>2025</b>	875	625	1,500		
<b>Estimated Ridership from CIHC (Estimated Annual Visitors by CA Parks: 500,000 to 900,000)</b>					
<b>Estimated “Average Day” and “Peak Day” Visitors and Potential LRT Users (Based on various percentages for transit)</b>					
<b>Scenario</b>	<b>Total Visitors</b>	<b>At 2%</b>	<b>At 5%</b>	<b>At 10%</b>	<b>At 20%</b>
Low Average Day	1,400	30	70	140	280
Medium Average Day	2,000	40	100	200	400
High Average Day	2,500	50	125	250	500
Low Peak Day	14,000	300	700	1,400	2,800
Medium Peak Day	20,000	400	1,000	2,000	4,000
High Peak Day	25,000	500	1,250	2,500	5,000

Source: Parsons Brinckerhoff

Note: “Average Day” assumes annual visitors divided by 360 days. “Peak Day” assumes 10 times “average day” use. Low assumes 500,000 annual visitors; Medium assumes 700,000 annual visitors; and High assumes 900,000 annual visitors. (All numbers are rounded)

**Crime Prevention and Security**

## ***Architectural Program Statement for the Dos Rios LRT Station Concept***

A key concern for selecting and siting a Dos Rios-area station is crime prevention and security. Crime and security issues can be responded to through both station siting and station design. From an *urban form perspective*, siting a station near certain land uses (liquor stores, adult book stores, vacant buildings, vacant lots, etc.) can have a detrimental affect (perceived or otherwise) on the station security. (This is responded to in the “site selection” analysis and screening effort.) From a *design perspective*, there are a number of strategies that can be employed to minimize the perception and reality of the station security – assuming the station is properly sited. These design strategies are generally referred to as Crime Prevention through Environmental Design (CPTED).

There are four overlapping CPTED strategies that are typically employed and need to be employed for a Dos Rios-area station:

1. Natural Surveillance -- A design concept directed primarily at keeping potential “targets” (passengers) and potential offenders easily observable. Promoted by features that maximize visibility of people, drop-off/parking areas and approaches, pedestrian-friendly sidewalks and streets, and adequate nighttime lighting. Surveillance would be from on-site cameras and pass-by traffic and police patrol. If applicable to the Dos Rios-area station with redevelopment, doors and windows of new development that look out on to streets and pathways and parking/drop-off areas would be an element as well.
2. Territorial Reinforcement -- Physical design can create or extend a sphere of influence. Users then develop a sense of territorial control while potential offenders, perceiving this control, are discouraged. Promoted by features that define property lines and distinguish private spaces from public spaces using landscape plantings, pavement designs, gateway treatments, and “CPTED” fences and other features.
3. Natural Access Control -- A design concept directed primarily at decreasing crime opportunity by denying access to crime targets and creating in offenders a perception of risk. Gained by designing streets, sidewalks, and neighborhood gateways to clearly indicate public routes and discouraging access to private areas with structural elements (overpasses, dark buildings, enclosed areas, etc.).
4. Target Hardening – This generally assumes features that prohibit entry or access. In the case of a potential Dos Rios-area transit center, this could include controlled access, night-time “closure” of the facility, and/or 24-hour on-site security. Strategies, such as these, need to be considered in the development of the station you can apply to reduce the fear and incidence of crime and improve the quality of life.

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**Functional Amenities**

There are a number of amenities that have been discussed and pertain to the function of a potential LRT Station in the Dos Rios area. Table 3 identifies these and the recommended disposition of each. It is acknowledged that additional amenities may be required and some “standard” amenities detailed in Regional Transit’s guidance are not mentioned. The latter are assumed by reference.

**Conclusion**

A Dos Rios-area LRT station is not “just another station in the RT system”. If the design assumes this is not the case, the potential for safety and security issues could be significant. The station requires a number of site specific considerations ranging from the modes to be served, to the specific needs of the user, to the level and type of future user to design efforts to discourage crime and increase security. These issues will be tackled in the design concept development phase of the Dos Rios LRT Station effort, once a site has been selected by the Sacramento Regional Transit Board of Directors for further study.

The information presented herein is intended to begin to focus the team on the key issues and design guidance and will help develop a station that is an amenity to both the community and the RT system. No doubt about it, given the existing land uses in the area, developing an asset station in the Dos Rios area will be a challenge. But, it is a challenge that can be overcome with careful design

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**Table 3  
Functional Amenities**

<b>Suggested Functional Amenity</b>	<b>Rationale/Purpose</b>	<b>Recommended Disposition and Rationale</b>
<b>Adjacent Co- or Re-Development</b>	✓ Providing for and/or encouraging redevelopment in the project area would benefit the station (when compared to existing uses).	<ul style="list-style-type: none"> <li>✓ While not part of the Dos Rios-area LRT Station project, consideration of opportunities for co-development or adjacent redevelopment should continue.</li> <li>✓ No actions should be taken to preclude adjacent development opportunities if possible.</li> </ul>
<b>Concession development on-site</b>	✓ Opportunities may exist for a concession to be successful if/when the CIHC is developed and/or the area re-develops.	✓ Consideration of space reservation for concessions in the planning process should occur.
<b>Driver Restrooms or Break Room</b>	✓ Design guidance suggests “should be considered...”	<ul style="list-style-type: none"> <li>✓ No driver restrooms or break room.</li> <li>✓ Location does not lend itself to a layover stop as RT system is presently configured.</li> </ul>
<b>Landscaping</b>	✓ Landscaping is an integral component of the station design and serves multiple functions.	<ul style="list-style-type: none"> <li>✓ Develop landscaping concepts which:               <ol style="list-style-type: none"> <li>1. Help enhance the station and are consistent with RT guidelines.</li> <li>2. Do not reduce site lines or provide opportunities for hiding or sleeping.</li> <li>3. Are low maintenance and vandal-resistant.</li> </ol> </li> </ul>
<b>Lighting</b>	✓ Lighting for security is integral to the long-term success of the station and its approaches and paths and their design.	✓ Lighting levels need to balance security and nearby community impact from spillover lighting.

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<b>Suggested Functional Amenity</b>	<b>Rationale/Purpose</b>	<b>Recommended Disposition and Rationale</b>
<b>Pedestrian Control</b>	<ul style="list-style-type: none"> <li>✓ At least three specific areas of “pedestrian control and upgrade” are required:               <ol style="list-style-type: none"> <li>1. For safety reasons, pedestrians should be discouraged and prohibited from crossing 12<sup>th</sup> Street at non-controlled locations to directly access the LRT platform.</li> <li>2. Pedestrians destined to Loaves &amp; Fishes (as well as other social service providers in that area) should be “guided” away from the LRT platform towards the L&amp;F facility.</li> <li>3. The pedestrian pathway along 12<sup>th</sup> Street is substandard and needs to be upgraded.</li> </ol> </li> <li>✓ A fourth area of pedestrian connection has to do with access to the CIHC and/or the American River.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Implement positive pedestrian control measures into the conceptual design and responsive to the specific site selected.</li> <li>✓ Upgrade of 12<sup>th</sup> Street sidewalk frontage is well beyond the scope of RT’s project and should be an element of the Gateway Master Plan project accomplished early.</li> <li>✓ Depending upon site location, the access to the CIHC and/or the American River is more or less of an issue. This needs to be addressed (by others) in concert with the City’s larger vision for this area and the waterfront.</li> </ul>
<b>Police Substation</b>	<ul style="list-style-type: none"> <li>✓ Suggested by some in the community with a “police presence” perceived as a deterrent</li> </ul>	<ul style="list-style-type: none"> <li>✓ While a police presence would be a deterrent, a “police substation” is not likely to provide that deterrence since the goal is to have the police “on patrol”, not at a substation. Not recommended.</li> </ul>
<b>Public Art</b>	<ul style="list-style-type: none"> <li>✓ Public art has become an integral component of the SRTD Station development and should continue to be so.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Incorporate art into the station final design concept.</li> <li>✓ Consider using community resources from the Dos Rios Complex and/or Dos Rios Elementary School to develop art concepts.</li> </ul>

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<b>Suggested Functional Amenity</b>	<b>Rationale/Purpose</b>	<b>Recommended Disposition and Rationale</b>
<b>Public Lockers</b>	✓ “Public lockers would allow ‘homeless’ to store belongings...”	<ul style="list-style-type: none"> <li>✓ No public lockers</li> <li>✓ Public lockers would be functionally unmanageable and create a security risk for users and RT staff.</li> </ul>
<b>Public Restrooms</b>	✓ Public restrooms “would ‘solve’ a broader Dos Rios nuisance issue...”	<ul style="list-style-type: none"> <li>✓ No public restrooms at this site</li> <li>✓ Public restrooms would become a nuisance use and could attract/encourage certain inappropriate behaviors</li> <li>✓ If there is a desire on the part of SRTD to have public restrooms, a model example similar to San Francisco Market Street would be explored further</li> </ul>
<b>Public Telephone</b>	✓ Public telephones (if desired by SRTD) have both positives and potential negatives.	✓ If desired by SRTD, continue the practice of a “call out only” public telephone arrangement.
<b>Seating</b>	✓ Station seating should be responsive to the unique character of the Dos Rios Station	<ul style="list-style-type: none"> <li>✓ Seating should be limited and designed to not allow sleeping.</li> <li>✓ Standing rails and bars should be the preferred design element (as compared to seating).</li> </ul>
<b>Station Security</b>	✓ Station security is crucial to the success of this station. In Phase 1, it was assumed that two security personnel “24/7” would be required and was costed as a ‘worst case’. Alternate approaches should be explored further and SRTD Police should be integral to the discussion.	✓ Security can occur in a number of ways responding to

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<b>Suggested Functional Amenity</b>	<b>Rationale/Purpose</b>	<b>Recommended Disposition and Rationale</b>
<b>Station Signing and System Map</b>	✓ Standard SRTD requirements	✓ Standard requirement positioned to maximize user interface.
<b>Social Service Agency “Security” and/or “Guides”</b>	✓ It has been suggested that the social service entities assist in station security and “guides”.	✓ While an opportunity exists and should be studied (by others) further, an actual program would require sufficient cooperative agreements, funding, and institutional acceptance to be developed. This should be pursued by 3 <sup>rd</sup> parties to fruition; however, the station design should not be compromised in any way based on the assumption this type of program will happen.
<b>Ticket Vending Machines</b>	✓ SRTD will need to include ticket vending machines at the Dos Rios-area station.	✓ Not unlike other stations, ticket vending machines will need to be positioned in highly-visible locations. ✓ The nature of the Dos Rios area may make the machines relatively more susceptible to vandalism.
<b>Water Fountain(s)</b>	✓ Water fountains are generally considered for every station.	✓ At least one water fountain is to be provided in a secure and highly visible location.
<b>Wayfinding</b>	✓ Two possible opportunities for “wayfinding” have been identified – the potential California Indian Heritage Center and a future enhanced American River Park.	✓ While both projects are very early in the planning phases, wayfinding should recognize and integrate the potential needs into the design concept.

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