Santa Ana-Garden Grove Fixed Guideway Corridor

Appendix D

Section 4(f) Evaluation

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List of Abbreviations

APE	Area of Potential Effect
BRT	Bus Rapid Transit
CFR	Code of Federal Regulation
EA	Environmental Assessment
DEIR	Draft Environmental Impact Report
DOI	Department of Interior
FTA	Federal Transit Administration
IOS	Initial Operable Segment
L&WCF	Land and Water Conservation Fund
LOSSAN	Los Angeles-San Diego-San Luis Obispo
LPA	Local Preferred Alternative
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	U.S. National Park Service
NRHP	National Register of Historic Places
O & M	Operations and Maintenance Facility
OCTA	Orange County Transportation Authority
PE ROW	Pacific Electric Right-of-Way
PPV	Peak Particle Velocity
ROW	Right-of-Way
SA-GG	Santa Ana-Garden Grove
SARTC	Santa Ana Regional Transportation Center
SHPO	State Historic Preservation Officer
TSM	Transportation System Management
U.S.C.	United States Code
YMCA	Young Men's Christian Association

Executive Summary

The Section 4(f) Evaluation presents information pertaining to the Santa Ana–Garden Grove (SA-GG) Fixed Guideway Project. The Orange County Transportation Agency (OCTA) and the City of Santa Ana are the project proponents. The Federal Transit Administration (FTA) is the federal lead agency pursuant to the National Environmental Policy Act (NEPA).

Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly-owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- There is no prudent and feasible alternative to using that land; and
- The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

If there is no prudent and feasible alternative to avoid harm to the Section 4(f) property, then only the alternative that causes the least overall harm, in the light of the preservation purposes of Section 4(f), can be chosen.

The proposed project would cause a *de minimis* use of one Section 4(f) resource, the Old Pacific Electric Santa Ana River Bridge. The final Section 4(f) finding will be presented in the Final Section 4(f) Evaluation after further consultation and concurrence by the State Historic Preservation Office (SHPO).

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Chapter 1 Introduction

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (U.S.C.) 303 (including 23 U.S.C. 138, and 23 CFR 774) declares that "…It is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly-owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- There is no prudent and feasible alternative to using that land; and
- The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Departments of Agriculture and Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with SHPO is also needed.

Section 4(f) properties include:

- Publicly-Owned Parks open to the entire public during its hours of operation
- Publicly-Owned Recreational Areas open to the entire public during its hours of operation
- Publicly-Owned Wildlife or Waterfowl Refuges
- Historic sites on or eligible for the National Register of Historic Places (NRHP)
- Archaeological sites on or eligible for the NRHP and which warrant preservation in place

Section 4(f) also applies to historic properties and archeological resources only when the resource is included on, or is eligible for, the NRHP.

As defined in 23 Code of Federal Regulations (CFR) Section 774.17, the "use" of a protected Section 4(f) resource occurs when any of the following conditions are met:

- When land is permanently incorporated into a transportation facility (direct use);
- When there is a temporary occupancy of land that is adverse in terms of the statute's preservation purposes, as determined by the criteria in Section 774.13(d) (temporary use); or
- When there is a constructive use of a Section 4(f) property as determined by the criteria in Section 774.15 (constructive use).

Direct Use. A direct use of a Section 4(f) resource takes place when the property is permanently incorporated into a proposed transportation facility/project (23 CFR Section 771.17). This may occur as a result of partial or full acquisition of a property, permanent easements, or temporary easements that exceed regulatory limits (23 CFR Section 771.135[p][7]).

The requirements of Section 4(f) would be considered satisfied if it is determined that a transportation project would have only a *de minimis* impact on the Section 4(f) resource (direct use). The provision allows avoidance, minimization, mitigation, and enhancement measures to be considered in making the *de minimis* determination. The agencies with jurisdiction must concur in writing with the determination. *De minimis* impact is defined in 23 CFR 774.17 as follows:

- For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that would not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f); and
- For historic sites, *de minimis* impact means that the FTA has determined, in accordance with 36 CFR Part 800, that no historic property is affected by the project or the project would have "no adverse effect" on the property in question.

Temporary Use. A temporary use of a Section 4(f) resource occurs when there is a temporary occupancy of property that is considered adverse in terms of the preservationist purposes of the Section 4(f) statute. Under 23 CFR Section 774.13[b], a temporary occupancy of property does not constitute a use of a Section 4(f) resource when the following conditions are satisfied:

- The occupancy must be of temporary duration (i.e., shorter than the period of construction) and not involve a change in ownership of the property;
- The scope of work must be minor, with only minimal changes to the protected resource;
- There are no permanent adverse physical effects on the protected resource, and there will be no temporary or permanent interference with the activities or purpose of the resource;
- The property being used must be fully restored to a condition that is at least as good as that which existed prior to the project; and/or
- There must be documented agreement of the appropriate officials having jurisdiction over the resource regarding the foregoing requirements.

Constructive Use. A constructive use of a Section 4(f) resource happens when a transportation project does not permanently incorporate land from the resource, but the proximity of the project results in effects (i.e., noise, vibration, visual, access, and/or ecological) so severe that the protected activities, features, or attributes that qualify the resource for protection under Section 4(f) are substantially impaired (23 CFR Section 774.15). Substantial impairment occurs only if the protected activities, features, or attributes of the resource are substantially diminished. This determination is made through the following practices:

- Identification of the current activities, features, or attributes of the resource that may be sensitive to proximity effects;
- Analysis of the potential proximity effects on the resource; and
- Consultation with the appropriate officials having jurisdiction over the resource (23 CFR Section 774.5).

Historic sites are listed on or eligible for the NRHP for their architectural significance and/or their associations with broad historical patterns. The features and attributes that qualify them for the NRHP are not typically affected by proximity impacts, because those features and attributes remain in place after project implementation. This is in contrast to publicly-owned parks, recreation areas, and wildlife refuges, which more typically have "activities" that could be substantially impaired by proximity impacts.

FTA Construction Vibration Criteria Used for Constructive Use Evaluation of Sensitive Structures on Section 4(f) Resources

The FTA has identified construction and operational vibration standards in the Transit Noise and Vibration Impact Assessment guidance document.

Construction. Constructive use could occur when vibration during construction of a project would permanently damage a structure that is a Section 4(f) resource. Ground-borne vibration would be generated by general construction activity. The Environmental Assessment/Draft Environmental Impact Report (EA/DEIR) used the FTA construction vibration damage criteria of 0.3 inches per second peak particle velocity (PPV) for non engineered timber and masonry buildings. Often, historic buildings are susceptible to vibration because of their age and composition. The FTA has published construction vibration damage criteria of 0.12 inches per second PPV in inches per second for buildings extremely susceptible to building damage. This threshold was used for the construction use evaluation of Section 4(f) resources. Per project design features, pile driving would not be used within the proximity of any identified sensitive structures during construction of the proposed project. Construction activity typically generates a vibration level of 0.089 inches per second PPV at 25 feet. This reference level would result in a vibration level of 0.12 inches per second PPV at 21 feet. Resources that are located beyond 21 feet would not result in adverse vibration levels during general construction activity.

Operation. Regarding transit operational activity, a vibration level of 65 VdB for Category 1 land uses would interfere with operation activity. Category 1 land uses include the most sensitive land uses, such as concert halls and recording studios.

Section 6(f) - The applicability of Section 6(f) was also considered for the SA-GG Fixed Guideway Project. State and local governments often obtain grants through the Land and Water Conservation Fund (L&WCF) Act to acquire or make improvements to parks and recreational areas. Section 6(f) prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of Department of

Interior's (DOI) U.S. National Park Service (NPS). Section 6(f) directs DOI to assure that replacement lands of equal value, location and usefulness are provided as conditions to such conversions. Consequently, where conversions of Section 6(f) lands are proposed for transportation projects, replacements will be necessary.

If L&WCF funds were utilized for acquisition or improvement, the following prerequisites must be met:

- All practical alternatives to the proposed conversion must be evaluated;
- The fair market value of the property to be converted must be established;
- The replacement property must be of at least equal value;
- The replacement property must be of reasonably equivalent usefulness and location to that be converted; and
- The property proposed for substitution meets the eligibility requirements for L&WCF assisted acquisition

In order to convert Section 6(f) properties to non-recreation uses, the conversion must meet the prerequisites above and be approved by the appropriate NPS Regional Director in writing. The authority with the jurisdiction over the 6(f) property must agree to the conversion and acceptability of the replacement property and seek NPS approval of the conversion and proposed acquisition of replacement property.

Section 6(f) does not apply as there are no parks or recreational properties funded with L&WCF funds which would be acquired or improved. Within the immediate vicinity of the Study Area, only Birch Park and Flower Street Park have been approved for L&WCF funds[1]; however, neither full nor partial acquisition would occur for these parks. Section 6(f) does not apply; therefore, this report focuses on Section 4(f) only.

[1] United States National Park Service, accessed at http://www.parks.ca.gov/?page_id=21360.

Chapter 2 Project Description

The alternatives addressed in this EA/DEIR consist of a No Build Alternative, which is used as a basis for comparing the costs and benefits of the three alternatives, TSM, Streetcar 1 and Streetcar 2, each of which responds to purpose and need, study goals, and community input. Additional details are provided below.

2.1 Project Location

The Study Area is located in the Cities of Santa Ana and Garden Grove, in Orange County, California. The transit corridor is regionally located in central Orange County, California and directly accesses both the Los Angeles-San Diego (LOSSAN) rail corridor and the Pacific Electric Right-of-Way (PE ROW) rail corridor. The Study Area is generally bounded by Harbor Boulevard to the west, 17th Street/Westminster Avenue to the north, Grand Avenue to the east, and 1st Street to the south. The approximate foul-mile transit corridor extends from the Harbor Boulevard/Westminster Avenue intersection in the City of Garden Grove at its western terminus to the Santa Ana Regional Transportation Center (SARTC) in the City of Santa Ana at its eastern terminus. **Figures 2-1** and **2-2** provide the Regional Location and Study Area maps, respectively

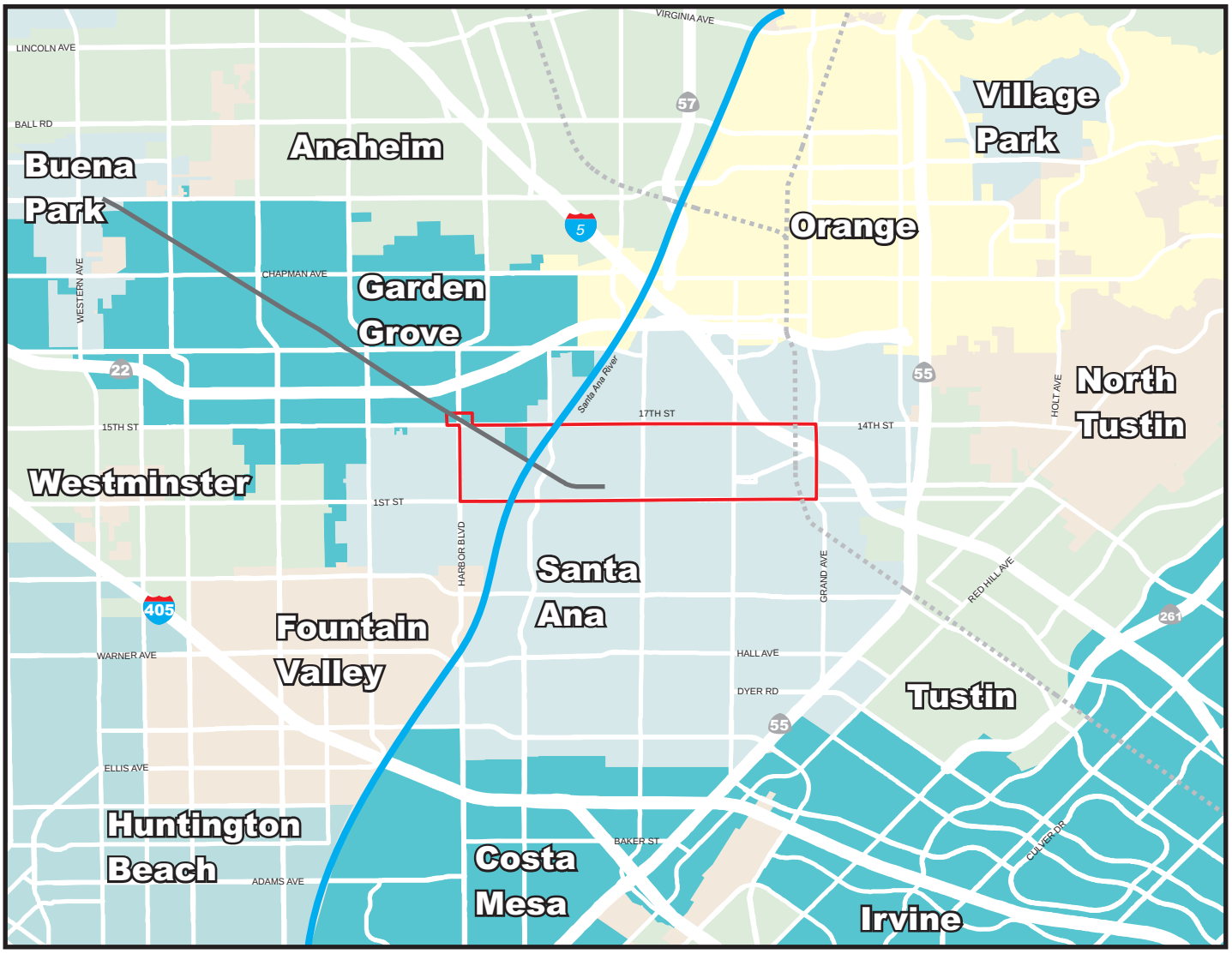
2.2 No Build Alternative

The No Build Alternative includes existing conditions, as well as conditions that would be reasonably expected to occur in the foreseeable future without implementation of any of the build alternatives. The No Build Alternative provides the basis for comparing future conditions resulting from other alternatives. Conditions in the foreseeable future (through planning horizon year 2035) include projects that (1) have environmental analysis approved by an implementing agency and (2) have a funding source identified for implementation.

Other projects in the foreseeable future include:

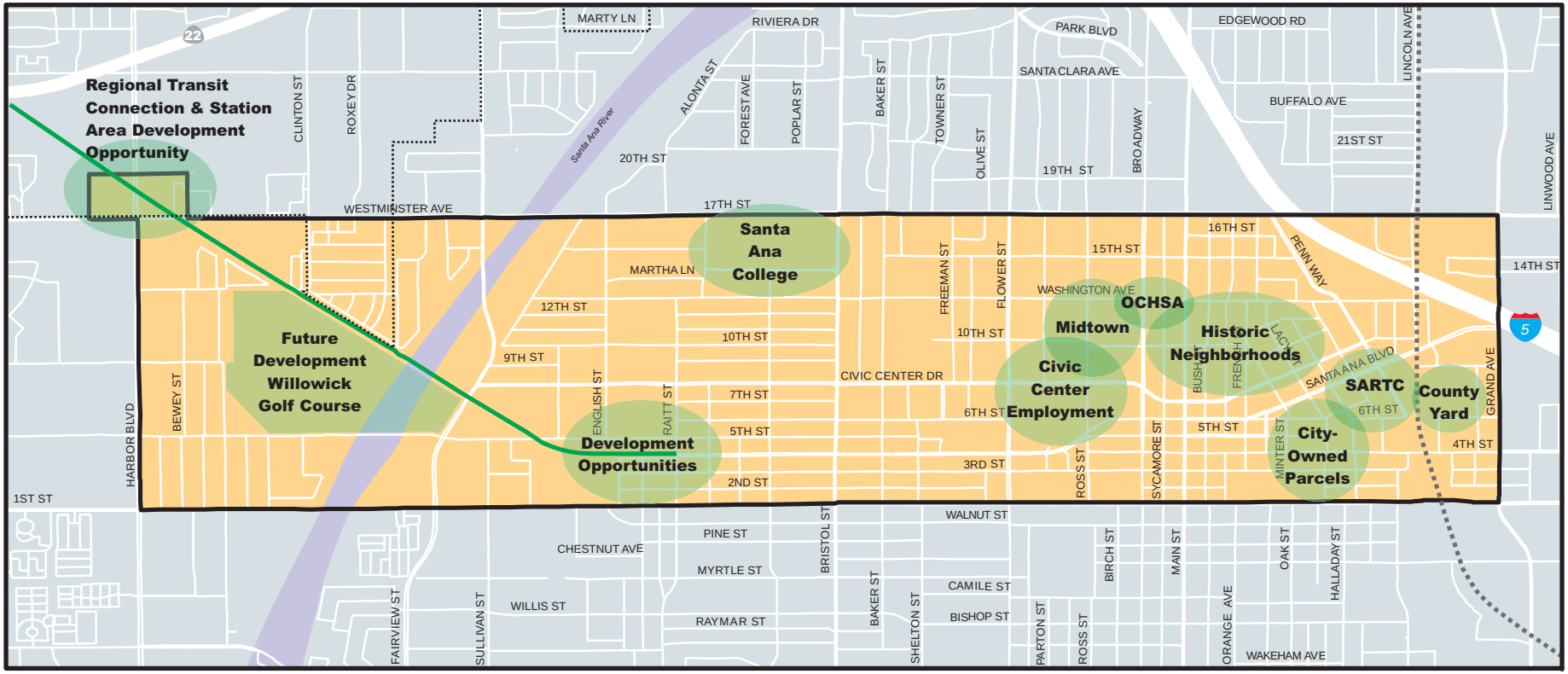
- Implementation of the Transit Zoning Code (SD 84A and SD 84B), both project-level and program-level components, that are anticipated for build-out by 2028
- Implementation of the Station District Development Projects, which consist of a variety of residential develop projects, community open space and some limited neighborhood-serving commercial development
- Transit improvements including modest adjustments to existing local bus routes; and expanded Metrolink service
- Three, new bus rapid transit routes: (1) Harbor Boulevard Bus Rapid Transit Corridor [Costa Mesa to Fullerton, 10-minute headways, peak period]; (2) Westminster/17th Street Bus Rapid Transit Corridor [Santa Ana to Long Beach, 10-minute headways, peak period]; and (3) Bristol Street Bus Rapid Transit Corridor [Irvine Transportation Center to Brea Mall, 10-minute headways, peak period]
- Roadway improvements including the Bristol Street Widening project, which will widen Bristol Street from four to six lanes between Warner Avenue and Memory Lane, and the

Location Map



Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012; updated by Terry A. Hayes Associates Inc., August 2012.

Study Area



LEGEND:

- Study Area
- Activity Center
- PE ROW
- Metrolink/Amtrak Rail Line
- Boundary of City of Garden Grove

NORTH

0 1500 3000 FEET

Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012; updated by Terry A. Hayes Associates Inc., August 2012.

- Grand Avenue Widening project, which will widen Grand Avenue from four to six lanes between 1st Street and 17th Street

2.3 TSM Alternative

The TSM Alternative enhances the mobility of existing transportation facilities and transit network without construction of major new transportation facilities or significantly, costly physical capacity improvements. Consistent with FTA guidelines, the TSM Alternative emphasizes low cost (i.e., small physical) improvements and operational efficiencies such as focused traffic engineering actions, expanded bus service, and improved access to transit services. Included within the TSM Alternative are modifications and enhancements to selected bus routes in the Study Area including:

- Skip-stop overlay service on 1st Street (Route 64) which includes access to SARTC
- A new route between SARTC and Harbor Boulevard/Westminster Avenue via Civic Center Drive, Bristol Street and 17th Street/Westminster Avenue, providing 10-minute peak and 20-minute off-peak service
- Expanded service span for StationLink service (Route 462) between SARTC and the Civic Center, providing 15-minute service during both peak and off-peak hours.

Figure 2-3 is a map of the proposed routes for the TSM bus network enhancements.

In addition, the following system operational improvements are included in the TSM Alternative:

- Traffic signal timing improvements at select congested locations along Santa Ana Boulevard and Civic Center Drive to provide for enhanced east-west bus flow, potential including but not limited to:
    - Main Street at Civic Center Drive
    - Broadway at Civic Center Drive
    - Flower Street at Civic Center Drive
    - Fairview Street at Civic Center Drive
    - Santa Ana Boulevard at Santiago Street
    - Santa Ana Boulevard at Lacy Street (install traffic signal)
- Real-time bus schedule information at high-volume transit stops (e.g., Flower Street and 6th Street, Santa Ana Boulevard and Main Street)
- Improvements to transit stop amenities (benches, shelters, kiosks, sidewalk connections, etc.) along the Santa Ana Boulevard and Main Street corridors
- Improvements to bicycle and pedestrian circulation to promote safe, convenient and attractive connectivity between the transit system and surrounding neighborhoods and activity centers , including accommodating bicycles on all buses, providing real time bus arrival information via internet and mobile devices, installing bicycle storage facilities at SARTC and the Harbor/Westminster stop, and providing study area maps/walking guides on all buses

Transportation Systems Management (TSM) Alternative

Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012; updated by Terry A. Hayes Associates Inc., August 2012.

2.4 Streetcar Alternative 1

Streetcar Alternative 1 would utilize the PE ROW through the western half of its alignment and generally operate along Santa Ana Boulevard and 4th Street on the way to SARTC. The 4.1-mile alignment for Streetcar Alternative 1 would include 12 stations. It is anticipated that the streetcar system would operate seven days a week with 10-minute headways during peak periods and 15-minute headways during off-peak periods. The streetcars would be electrically powered using an overhead contact system and a series of TPSS located intermittently along the alignment. Although the specific vehicle has not been selected at this preliminary stage, streetcars generally have a capacity of 30 to 40 seated passengers and 80 to 90 standing passengers for a total of 120 to 130 passengers. **Table 2-1** provides a summary description of the key physical and operational attributes of Streetcar Alternative 1 (PE ROW with Santa Ana Boulevard and 4th Street Couplet). **Figure 2-4** provides a conceptual illustration of the alignment for Streetcar Alternative 1 relative to the existing street network within the Study Area.

2.4.1 Sasscer Park Alignment

In Streetcar Alternative 1, the Downtown Santa Ana segment features couplet operations with the westbound streetcar alignment on Santa Ana Boulevard and the eastbound streetcar alignment on 4th Street. For the eastbound transition from Santa Ana Boulevard to 4th Street, a direct route from Santa Ana Boulevard along a public easement on the southern edge of Sasscer Park to 4th Street has been identified in **Figure 2-5**.

2.5 Streetcar Alternative 2

Streetcar Alternative 2 would utilize the PE ROW through the western half of its alignment and substantially operate along Santa Ana Boulevard, Civic Center Drive, and 5th Street along the eastern half of the alignment to SARTC. The operational characteristic of this alternative are identical to Streetcar Alternative 1. The differences between the two streetcar alternatives are the alignment and the fact that Streetcar 2 would have one additional station for a total of 13. **Table 2-2** provides a summary description of the key physical and operational attributes of Streetcar Alternative 2 (PE ROW with Santa Ana Boulevard and 5th Street/Civic Center Drive Couplet). This table also includes station locations for comparison to station locations for Streetcar Alternative 1 shown in Table 2-1, above. **Figure 2-6** provides a conceptual illustration of the alignment for Streetcar Alternative 2 relative to the existing street network within the Study Area.

2.5.1 Civic Center Bike Lane

The Streetcar Alternative 2 alignment travels westbound through the Civic Center along Civic Center Drive between Spurgeon and Flower Streets. As part of the City of Santa Ana's Complete Streets Program, and not as part of the SA-GG Fixed Guideway, the City plans to construct bicycle lanes are along Civic Center Drive. Streetcar Alternative 2 would acquire additional ROW (**Figure 2-7**) in order not to preclude the westbound bike lane.

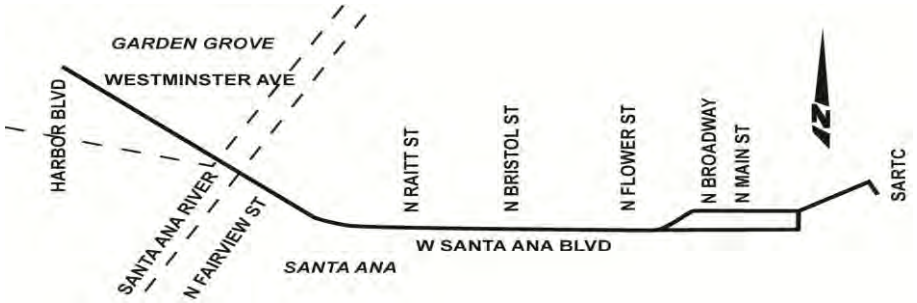
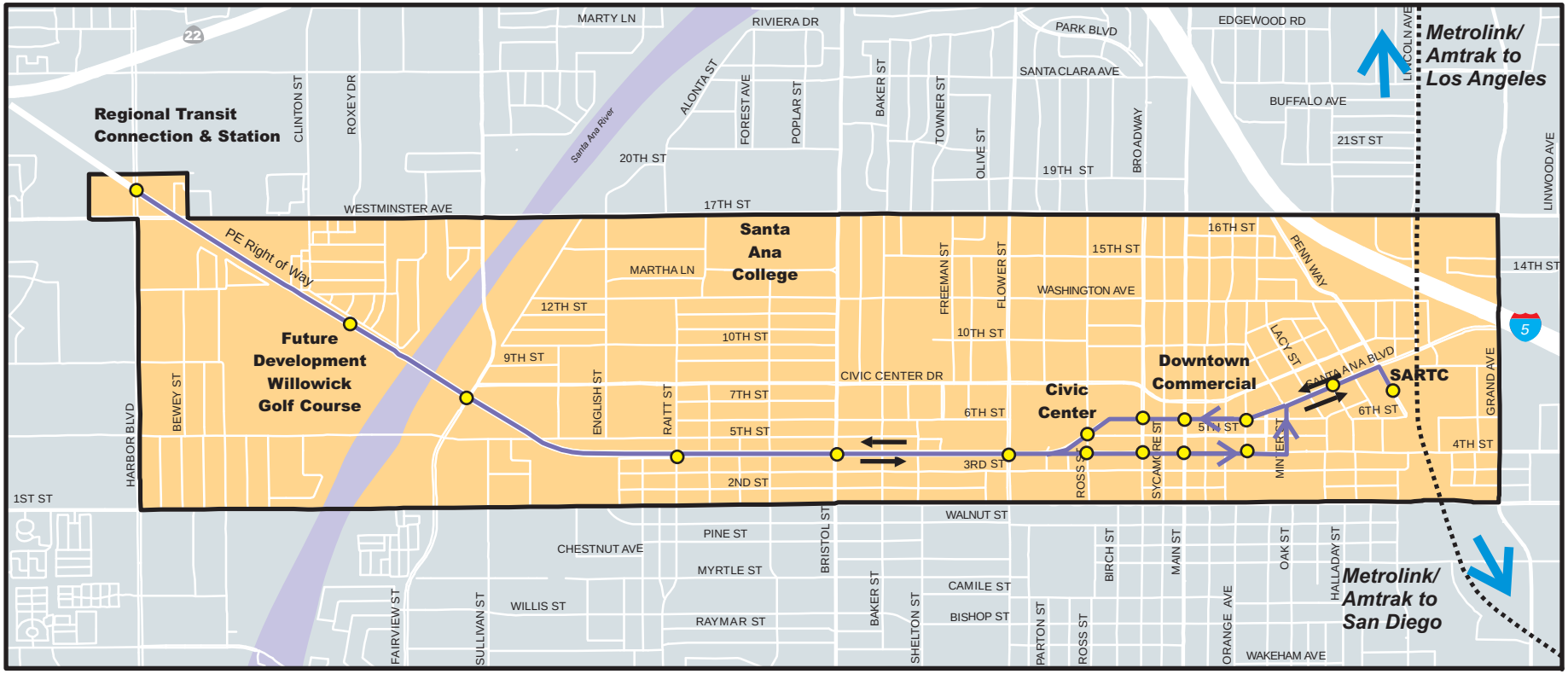
<table>
<tr><th colspan="3">TABLE 2-1: KEY PHYSICAL AND OPERATIONAL ATTRIBUTES OF STREETCAR ALTERNATIVE 1</th></tr>
<tr><th>Key Attributes</th><th colspan="2">Descriptions</th></tr>
<tr><td>Transmit Mode</td><td colspan="2">Streetcar</td></tr>
<tr><td>Termini</td><td colspan="2">Western Terminus: Harbor Blvd.
Eastern Terminus: SARTC</td></tr>
<tr><td>Alignment Description</td><td colspan="2"><u>Routing by Segment:</u>
• PE ROW, from Harbor Blvd. to Raitt St.: streetcars operate at-grade, bi-directionally, in exclusive ROW.
• Santa Ana Blvd., from Raitt St. to Ross St.: streetcars operate in the street, at-grade, bi-directionally, along with mixed-flow traffic.
• 4th St./Santa Ana Blvd. Couplet, from Ross St. to Mortimer St.: streetcars operate in the street, at-grade, one-way, along with mixed-flow traffic.
• Santa Ana Blvd., from Mortimer St. to SARTC: streetcars operate in the street, at-grade, bi-directionally, along with mixed-flow traffic.
 
</td></tr>
<tr><td>Length of Alignment</td><td colspan="2">4.1 miles (Harbor Blvd. to SARTC)</td></tr>
<tr><td>Stations
(12 Stations)</td><td colspan="2"><u>Station Locations:</u>
1. Harbor Blvd. and Westminster Ave.
2. Willowick
3. Fairview St. and PE ROW
4. Raitt St. and Santa Ana Blvd.
5. Bristol St. and Santa Ana Blvd.
6. Flower St. and Santa Ana Blvd.</td></tr>
<tr><td></td><td>Couplet Section (Eastbound)
7E. Sasscer Park
8E. Broadway and 4th St.
9E. Main St. and 4th St.
10E. French St. and 4th St.</td><td>Couplet Section (Westbound)
7W. Ross St. and Santa Ana Blvd.
8W. Broadway and Santa Ana Blvd.
9W. Main St. and Santa Ana Blvd.
10W. French St. and Santa Ana Blvd.</td></tr>
<tr><td></td><td colspan="2">11. Lacy St. and Santa Ana Blvd.
12. SARTC</td></tr>
</table>

TABLE 2-1: KEY PHYSICAL AND OPERATIONAL ATTRIBUTES OF STREETCAR ALTERNATIVE 1	
Key Attributes	**Descriptions**
Design Options Carried Forward	Santa Ana River Crossing: • Adjacent Single Track Bridge Option
	4th Street Parking Scenarios: • Scenario A: South side parallel • Scenario B: South side removal • Scenario C: South side and north side removal
Headways	Peak: 10 minutes (6:00 a.m. to 6:00 p.m.) Off-Peak: 15 minutes (after 6:00 p.m.)
Hours of Operation (in revenue service)	Monday – Thursday: 6:00 a.m. to 11:00 p.m. (17 hours) Friday and Saturday: 6:00 a.m. to 1:00 a.m. (19 hours) Sunday: 7:00 a.m. to 10:00 p.m. (15 hours)
Transit Vehicle	Streetcar – Vehicle type selection has yet to be determined. The two classifications under consideration include: • Classic Modern Streetcar (e.g., Portland, Oregon) • CPUC Compliant Streetcar (e.g., San Diego, California)
Power Source	Electric, Overhead Contact System, Traction Power Substations (TPSS) TPSS Locations: a. Northwest of Harbor Boulevard and Westminster Avenue b. Along PE ROW, west of Susan Street c. Along PE ROW, east of Santa Ana River d. North on Santa Ana Boulevard. East of Bristol Street e. North of 5th Street, east of Main Street
Operations and Maintenance Facility Sites	Two Candidate Sites: • Site A: South of SARTC, bordered by 4th St., 6th St., Poinsettia St., and Metrolink tracks. • Site B: West of Raitt St., between the PE ROW and 5th Street
Major Bicycle and Pedestrian Features	• Sidewalk and pedestrian improvements in the vicinity of proposed station platforms. • 4th St.: In conjunction with on-street parking modifications, widen sidewalks on 4th St. between Ross St. and French St.: – Scenario A: On south side by 8 ft. for a total width of 20 ft. – Scenario B: On south side by 16 ft. for a total width of 28 ft. – Scenario C: On both sides by 16 ft. for a total width of 28 ft.

Source: Cordoba Corporation, Conceptual Design Plan Set, August 2011.

Figure 2-4

Streetcar Alternative 1 Alignment



LEGEND:

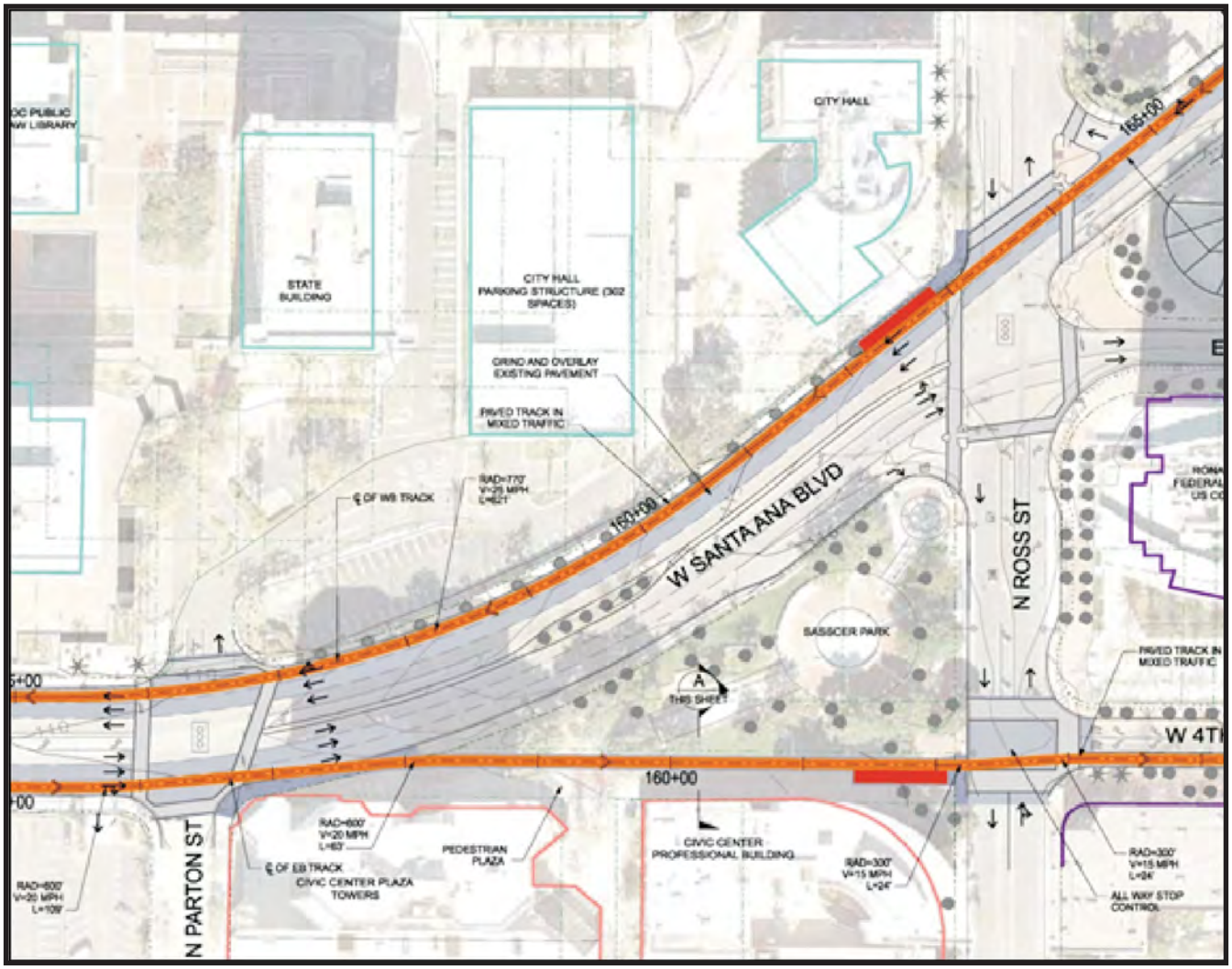
- Study Area
- Proposed Stop
- Streetcar Alternative 1

0 1500 3000 FEET

NORTH

Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study*, July 11, 2012; updated by Terry A. Hayes Associates Inc., August 2012.

Note: Termini for Initial Operable Segment 1 (IOS-1) are located at Raitt Street and SARTC.



Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.

TABLE 2-2: KEY PHYSICAL AND OPERATIONAL ATTRIBUTES OF STREETCAR ALTERNATIVE 2

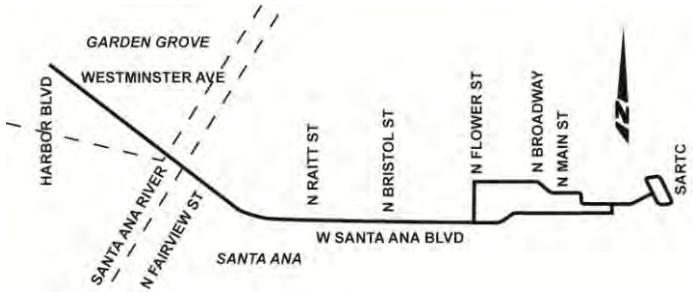
Key Attributes	Descriptions
Transit Mode	Streetcar
Termini	Western Terminus: Harbor Blvd. Eastern Terminus: SARTC
Alignment Description	<u>Routing by Segment:</u> • PE ROW, from Harbor Blvd. to Raitt St.: streetcars operate at-grade, bi-directionally, in exclusive ROW. • Santa Ana Blvd., from Raitt St. to Flower St.: streetcars operate in the street, at grade, bi-directionally, along with mixed-flow traffic. • Santa Ana Blvd./5th St. and Civic Center Dr. Couplet, from Flower St. to Minter St.: streetcars operate in the street, at-grade, one-way, along with mixed-flow traffic. • 6th St./Brown St., from Minter St. to Poinsettia St.: streetcars operate in the street, at-grade, bi-directionally, along with mixed-flow traffic. • Poinsettia St./Santa Ana Blvd./Santiago St./6th St. (SARTC Loop): streetcars operate in a one-way loop, in the street, at-grade, along with mixed-flow traffic. 
Length of Alignment	4.5 miles (Harbor Boulevard to SARTC)
Stations(13 Stations)	<u>Station Locations:</u> 1. Harbor Blvd. and Westminster Ave. 2. Willowick 3. Fairview St. and PE ROW 4. Raitt St. and Santa Ana Blvd. 5. Bristol St. and Santa Ana Blvd.
	Couplet Section(Eastbound) 6E. Flower St. and Santa Ana Blvd. 7E. ---------- 8E. Ross St. and Santa Ana Blvd. 9E. Broadway and 5th St. 10E. Main St. and 5th St. 11E. French St. and 5th St.
	Couplet Section(Westbound) 6W. Flower St. and 6th St. 7W. Flower St. and Civic Center Dr. 8W. Van Ness Ave. and Civic Center Dr. 9W. Broadway and Civic Center Dr. 10W. Main St. and Civic Center Dr. 11W. French St. and Santa Ana Blvd.
	12. Brown St. and Lacy St.

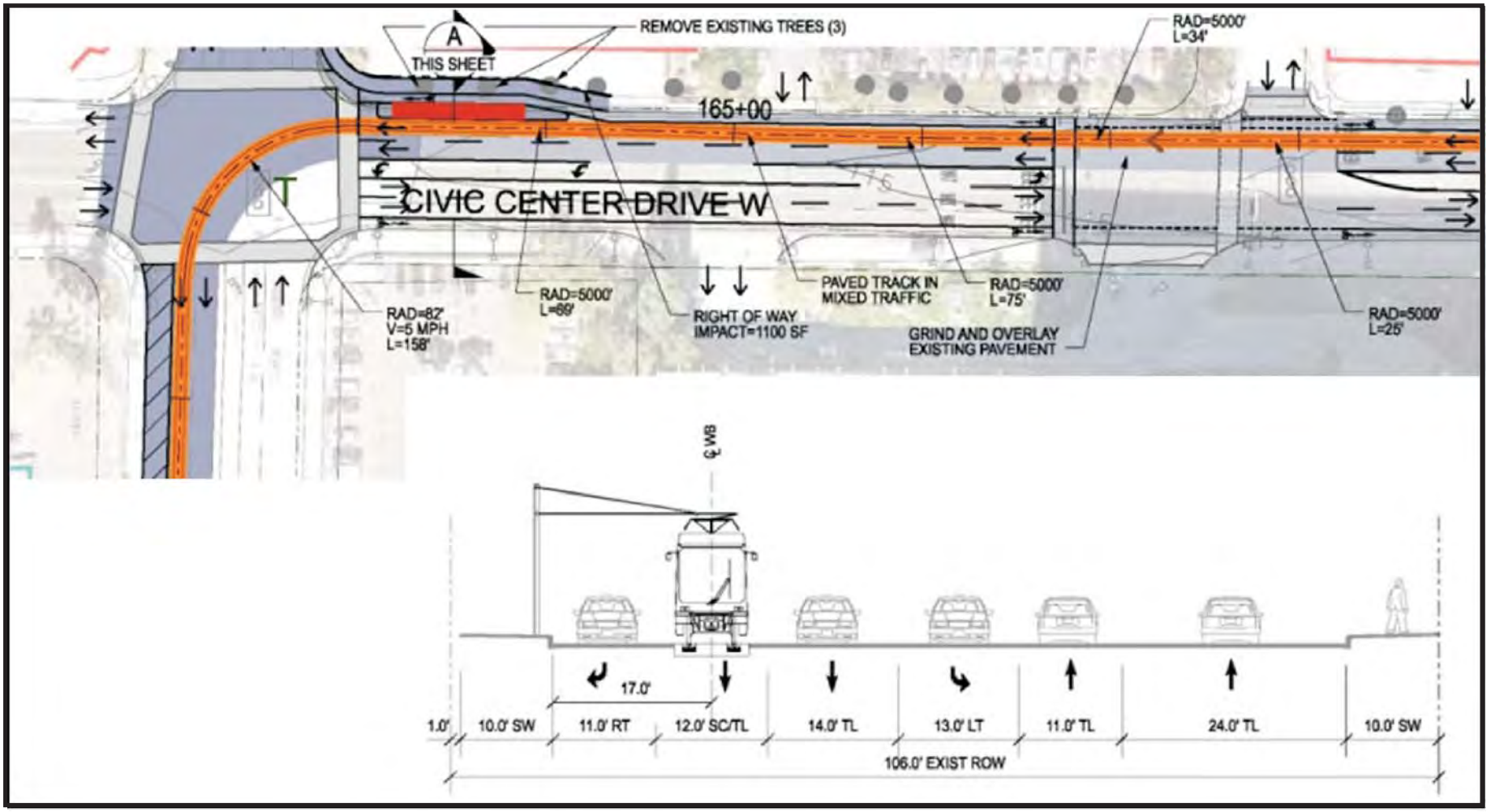
TABLE 2-2: KEY PHYSICAL AND OPERATIONAL ATTRIBUTES OF STREETCAR ALTERNATIVE 2	
Key Attributes	**Descriptions**
	13. SARTC
Design Options Carried Forward	Santa Ana River Crossing: Adjacent Single Track Bridge
Headways	Peak: 10 minutes (6:00 a.m. to 6:00 p.m.) Off-Peak: 15 minutes (after 6:00 p.m.)
Hours of Operation (in revenue service)	Monday – Thursday: 6:00 a.m. to 11:00 p.m. (17 hours) Friday and Saturday: 6:00 a.m. to 1:00 a.m. (19 hours) Sunday: 7:00 a.m. to 10:00 p.m. (15 hours)
Transit Vehicle	Streetcar – Vehicle type selection has yet to be determined. The two classifications under consideration include: • Classic Modern Streetcar (e.g., Portland, Oregon) • CPUC Compliant Streetcar (e.g., an Diego, California)
Power Source	Electric, Overhead Contact System, Traction Power Substations(TPSS) TPSS Locations: a. Northwest of Harbor Boulevard and Westminster Avenue b. Along PE ROW, west of Susan Street c. Along PE ROW, east of Santa Ana River d. North on Santa Ana Boulevard, east of Bristol Street e. North of 5th Street, east of Main Street
Operations and Maintenance Facility Sites	Two Candidate Sites: • Site A: South of SARTC, bordered by 4th St., 6th St., Poinsettia St., and the Metrolink tracks. • Site B: West of Raitt St., between the PE ROW and 5th St.
Major Bicycle and Pedestrian Features	• Sidewalk and pedestrian improvements in the vicinity of proposed station platforms. • Civic Center Drive: Provide sufficient street width on Civic Center Drive between Flower Street and Spurgeon Street to support the City's planned development of a striped bike lane on each side of the street.

Source: Cordoba Corporation, Conceptual Design Plan Set, August 2011.

Streetcar Alternative 2 Alignment

Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012*;* updated by Terry A. Hayes Associates Inc., August 2012.
Note: Termini for Initial Operable Segment 2 (IOS-2) are located at Raitt Street and SARTC.

Civic Center Drive Bike Lane



Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.

2.6 Streetcar Alternatives Initial Operable Segments

In response to funding and phasing issues raised by fiscal constraints identified during OCTA's long-range transportation planning process, IOSs which are shorter segments of Streetcar Alternatives 1 and 2 were developed for the SA-GG Fixed Guideway Project. The intent of the IOSs was to identify starter segments that could be constructed and operated until funding is assembled to complete the projects. Both IOS-1 and IOS-2 would terminate at Raitt Station (Raitt Street and Santa Ana Boulevard) rather than Harbor Station (Harbor Boulevard and Westminster Avenue). Both would include the same project features and design options as their respective full alignment build alternatives between Raitt Street and SARTC. These tracks would extend another hundred feet west within the PE ROW to reach the O & M Facility Site B should this site ultimately be selected for either IOS-1 or IOS-2.

The configuration of Raitt as an interim terminus station is the same for IOS-1 and IOS-2. Just over 50 spaces would be provided for station parking at Raitt within the PE ROW on an interim basis to be replaced by parking at Harbor Station upon completion of the full Project. Vehicular access to Raitt Station parking would be via Daisy Avenue.

IOS-1 (Santa Ana Boulevard and 4th Street Couplet). IOS-1 follows the same alignment as Streetcar Alternative 1, but terminates at Raitt Station rather than extending to Harbor Station (**Figures 2-8** through **2-10**). The IOS-1 streetcar alignment is about 2.2 miles in length. IOS-1 includes the same project features, design options, and parking scenarios as Streetcar Alternative 1 between Raitt Street and SARTC (**Table 2-3**).

IOS-2 (Santa Ana Boulevard/5th Street and Civic Center Drive Couplet). IOS-2 follows the same alignment as Streetcar Alternative 2, but terminates at Raitt Station rather than extending to Harbor Station (**Figures 2-8** through **2-10**). The IOS-2 streetcar alignment is about 2.6 miles in length. IOS-2 includes the same project features and design options as Streetcar Alternative 2 between Raitt Street and SARTC (**Table 2-3**).

2.7 Key Attributes

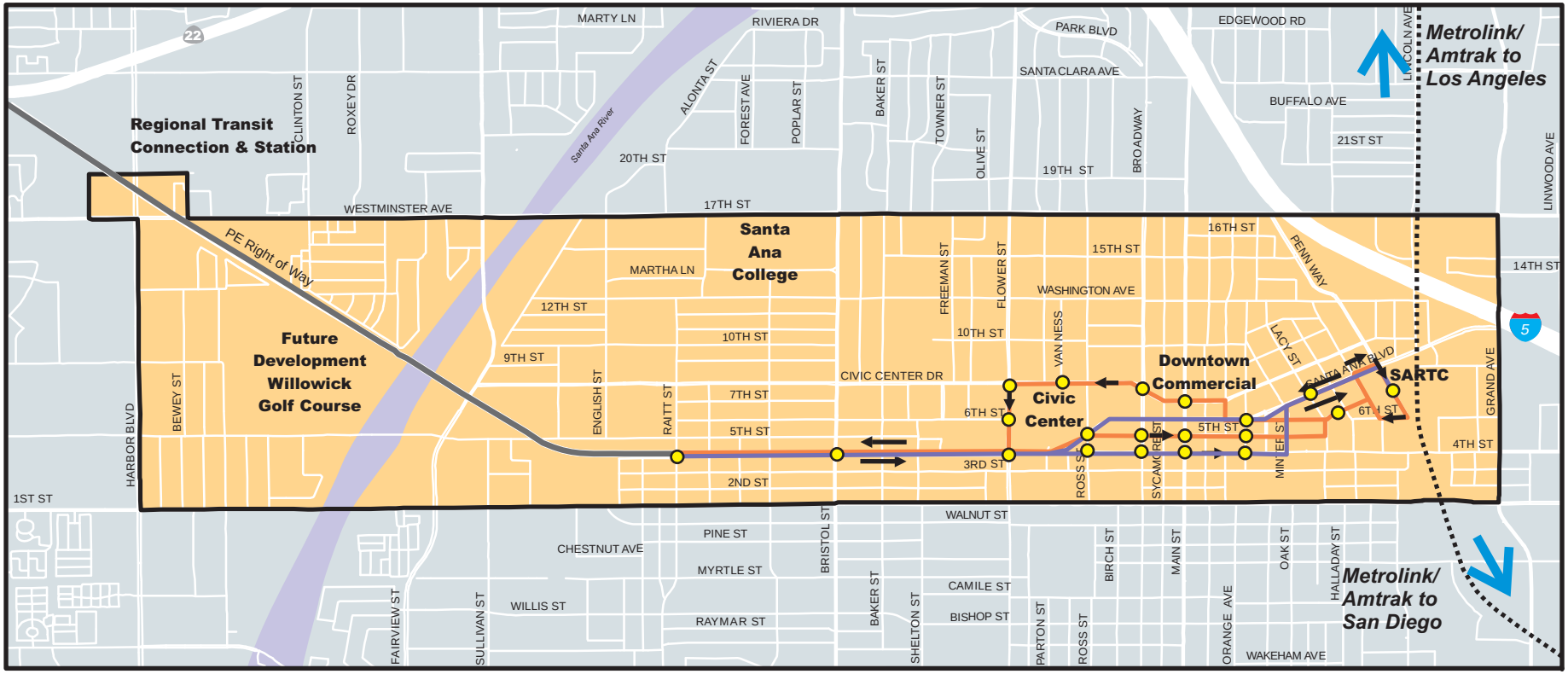
2.7.1 Western Terminus Elevated Crossing

The western terminus for both of the streetcar alternatives is located at the northeast corner of Harbor Boulevard and Westminster Avenue; the transition from the PE ROW to the western terminus site will include an elevated crossing. This crossing is illustrated in **Figure 2-11**.

2.7.2 Streetcar Stations

The stations for each streetcar alternative alignment are located curbside adjacent to the platforms within the public ROW. They will consist of a shelter constructed substantially of transparent materials. In addition to seating, the stations will provide traveler information such as estimates of next train arrival time. The two terminus stations will include parking (approximately 52 spaces at the western terminus station; shared-use of SARTC parking for the eastern terminus station). The terminus stations and one inline station in the Downtown

IOS-1 and IOS-2 Alignments



LEGEND:

- Study Area
- Proposed Stop
- Streetcar Alternative 1
- Streetcar Alternative 2

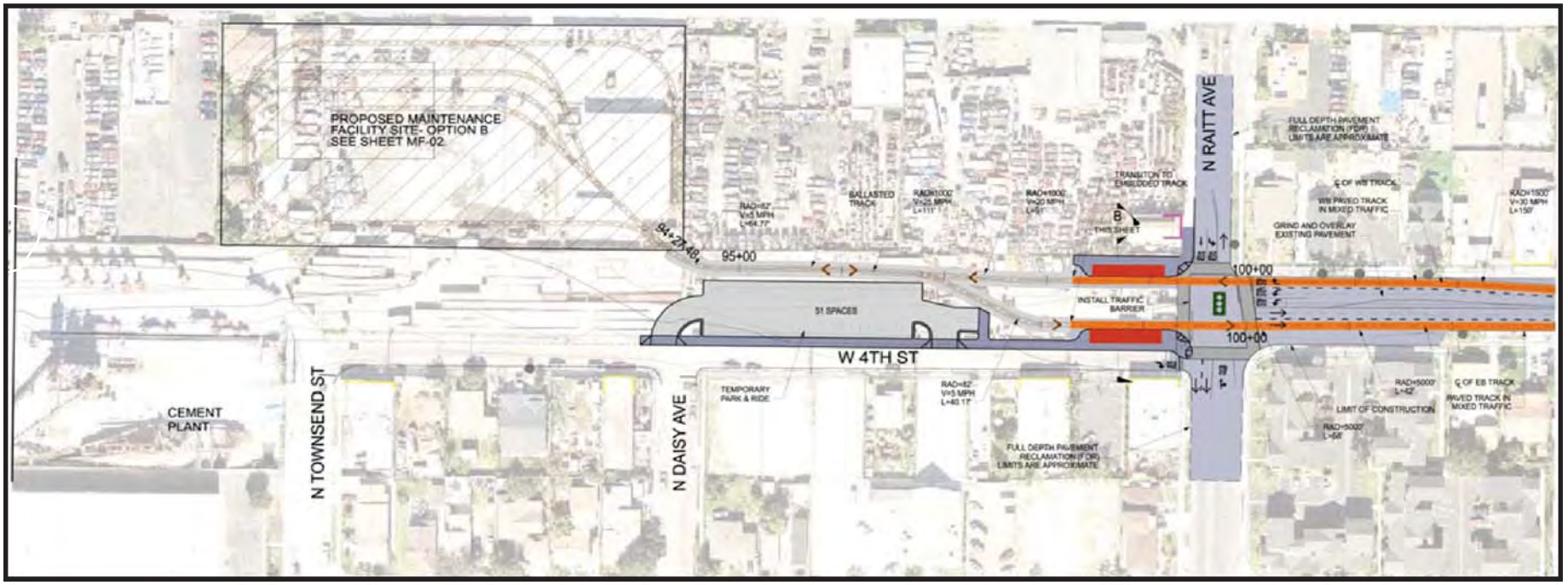
0 1500 3000 FEET

NORTH

Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012*;* updated by Terry A. Hayes Associates Inc., August 2012.

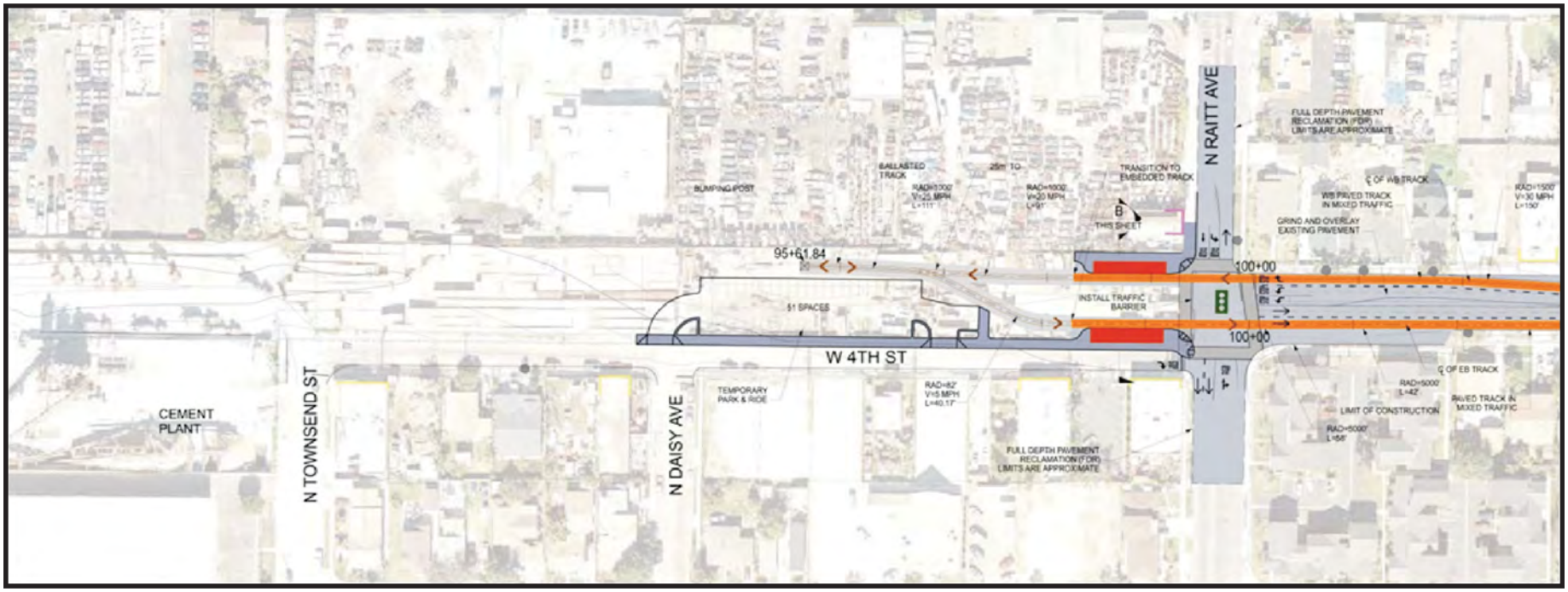
Figure 2-9

IOS-1 and IOS-2 Raitt Street Terminus Configuration with O & M Facility

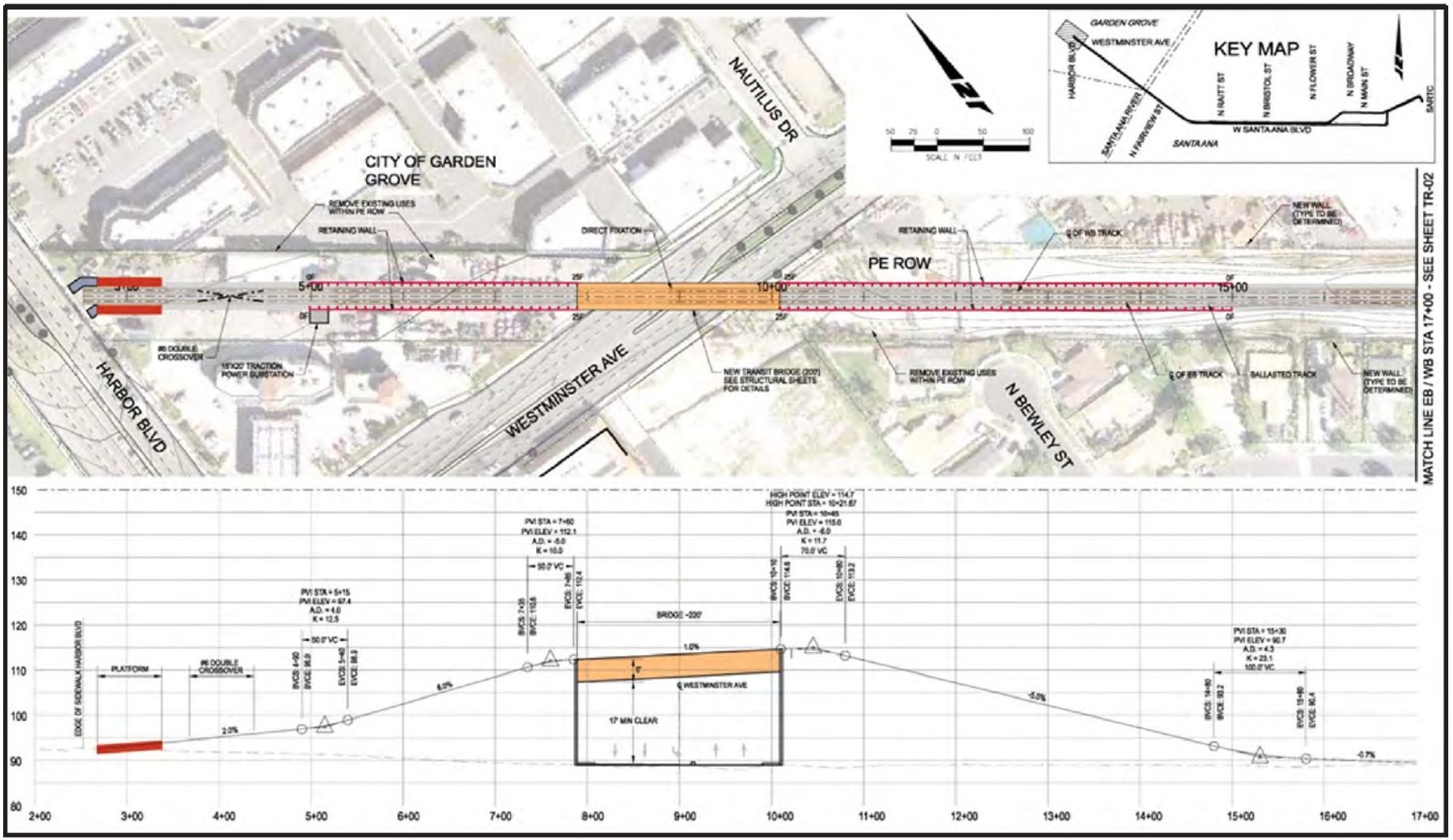


Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.

IOS-1 and IOS-2 - Raitt Street Terminus Configuration without O & M Facility



Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.



Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.

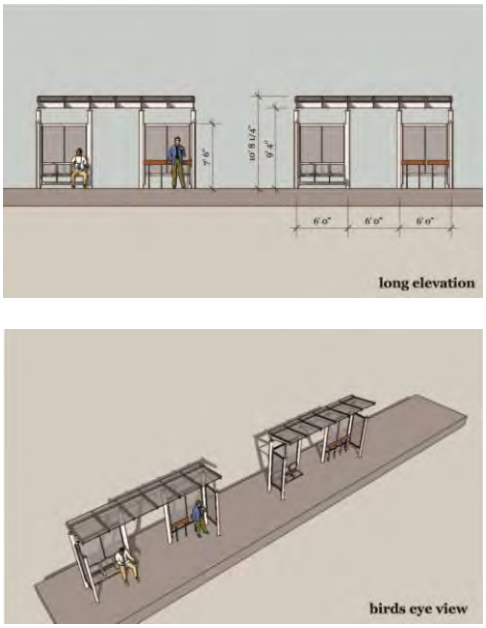
TABLE 2-3: KEY PHYSICAL AND OPERATIONAL ATTRIBUTES OF STREETCAR IOS-1 AND IOS-2

Key Attributes	IOS-1	IOS-2
Termini	Western Terminus: Raitt St. Eastern Terminus: SARTC	
Alignment Description	Routing by Segment: • Santa Ana Blvd., from Raitt St. to Ross St.: streetcars operate in the street, at grade, bi-directionally, along with mixed-flow traffic. • 4th St./Santa Ana Blvd. Couplet, from Ross St. to Mortimer St.: streetcars operate in the street, at grade, one-way, along with mixed-flow traffic. • Santa Ana Blvd., from Mortimer St. to SARTC: streetcars operate in the street, at grade, bi-directionally, along with mixed-flow traffic.	Routing by Segment: • Santa Ana Blvd., from Raitt St. to Flower St.: streetcars operate in the street, at grade, bi-directionally, along with mixed-flow traffic. • Santa Ana Blvd./5th St. and Civic Center Dr. Couplet, from Flower St. to Minter St.: streetcars operate in the street, at-grade, one-way, along with mixed-flow traffic. • 6th St./Brown Street, from Minter St. to Poinsettia St.: streetcars operate in the street, at-grade, bi-directionally, along with mixed-flow traffic. • Poinsettia St./Santa Ana Blvd./Santiago St./6th St. (SARTC Loop): streetcars operate in a one-way loop, in the street, at-grade, along with mixed-flow traffic.
Length of Alignment	2.2 miles (Raitt St. to SARTC)	2.6 miles (Raitt St. to SARTC)
Stations	Station Locations: 4. Raitt St. and Santa Ana Blvd. 5. Bristol St. and Santa Ana Blvd. 6. Flower St. and Santa Ana Blvd.	Station Locations: 4. Raitt St. and Santa Ana Blvd. 5. Bristol St. and Santa Ana Blvd.
	Couplet Section (Eastbound) 7E. Sasscer Park 8E. Broadway and 4th St. 9E. Main St. and 4th St. 10E. French St. and 4th St.	*Couplet Section (Westbound)* 7W. Ross St. and Santa Ana Blvd. 8W. Broadway and Santa Ana Blvd. 9W. Main St. and Santa Ana Blvd. 10W. French St. and Santa Ana Blvd.	*Couplet Section (Eastbound)* 6E. Flower St. and Santa Ana Blvd. 7E. ---------- 8E. Ross St. and Santa Ana Blvd. 9E. Broadway and 5th St. 10E. Main St. and 5th St. 11E. French St. and 5th St.	*Couplet Section (Westbound)* 6W. Flower St. and 6th St. 7W. Flower St. and Civic Center Dr. 8W. Van Ness Ave.* and Civic Center Dr. 9W. Broadway and Civic Center Dr. 10W. Main St. and Civic Center Dr. 11W. French St. and Santa Ana Blvd.
	11. Lacy St. and Santa Ana Blvd. 12. SARTC	12. Lacy St. and Santa Ana Blvd. 13. SARTC
Headways	Peak: 10 minutes (6:00 a.m. to 6:00 p.m.) Off-Peak: 15 minutes (after 6:00 p.m.)	
Hours of Operation (in revenue service)	Monday – Thursday: 6:00 a.m. to 11:00 p.m. (17 hours) Friday and Saturday: 6:00 a.m. to 1:00 a.m. (19 hours) Sunday: 7:00 a.m. to 10:00 p.m. (16 hours)	
Power Source	Electric, Overhead Contact System, Traction Power Substations (TPSS) TPSS Locations: d. North on Santa Ana Boulevard. East of Bristol Street e. North of 5th Street, east of Main	
Operations and Maintenance Facility Sites	Two Candidate Sites: • Site A: South of SARTC, bordered by 4th St., 6th St., Poinsettia St. and Metrolink tracks. • Site B: West of Raitt St., between the PE ROW and 5th St.	

Source: Cordoba Corporation, Conceptual Design Plan Set, August 2011.

area will also include ticketing machines for the convenience of passengers who may want an alternative to the on-vehicle ticketing during busy peak periods.

Streetcar Alternative 1 includes 12 stations along its 4.1-mile long alignment. Streetcar Alternative 2 includes 13 stations along its 4.5-mile long alignment. An additional station is included in Streetcar Alternative 2 compared to Streetcar Alternative 1. It is located at Flower Street and 6th Street for the westbound streetcar couplet. This is because of the distance between the directional Flower Street stations in Streetcar Alternative 2, with the eastbound stop at Santa Ana Boulevard and the corresponding westbound stop at Civic Center Drive. Additionally, Flower Street, at 6th Street, is a gateway to the Civic Center Plaza with City, County, State and federal offices, as well as the Orange County Sheriff's Department and jail, and the Santa Ana Police Department.



Views of typical streetcar station structure and platform.

Source: Cordoba Corporation

Streetcar Vehicles

Views of typical streetcar vehicles.

Source: Cordoba Corporation

Two types of streetcar vehicles have been identified for use: classic European style streetcar, and the CPUC-compliant vehicle. The former would be similar to the vehicles currently in service in Portland, Oregon and Tucson, Arizona, manufactured by Oregon Ironworks. Neither the Portland vehicle nor the Tucson vehicle meet all CPUC structural requirements, and would therefore require either a waiver from the CPUC or a revision of the CPUC regulations that specifically acknowledge streetcars operating in mixed flow traffic at lower speed. The CPUC-compliant vehicle is derived from a light rail vehicle design. Light rail vehicles are typically CPUC-compliant and do not require CPUC waivers. The Siemens built "S70 short" is a CPUC-compliant vehicle. Both the Oregon Ironworks vehicle and the Siemens vehicle comply with Section 165: "Buy America" provisions of the Surface Transportation Assistance Act of 1982.

Santa Ana River Crossing

Both streetcar alternatives would utilize the PE ROW and cross over the Santa Ana River. This alignment was once used for the Pacific Electric Railway red car system and the Old

Pacific Electric Santa Ana River Bridge still remains. However, it has long been closed for use and not utilized by vehicles or pedestrians since 1950. The historic bridge is inadequate to accommodate the proposed project due to its age, size, (it was constructed as a single-track bridge), disrepair, undetermined structural integrity (both superstructure and foundation) and non-compliance with current building and safety requirements. Four design options were developed for Streetcar Alternatives 1 and 2 at the Santa Ana River Crossing.

These design options were evaluated against identified criteria (cost, feasibility, and potential impacts) to determine which were to be carried forward for evaluation in the EA/DEIR. As detailed in the Section 4(f) Resources Technical Report, Appendix D, and Bridge Design Options Technical Memorandum, Appendix N, four design options were developed for Streetcar Alternatives 1 and 2 at the Santa Ana River Crossing. One was determined feasible for carrying forward for analysis in the EA/DEIR, as illustrated in **Figure 2-12**.

The existing bridge would remain in its current location and condition. A new single-track bridge would be constructed immediately south of the existing bridge for the fixed guideway. Through the use of gates and signaling, the single-track bridge would accommodate bi-directional fixed guideway traffic.

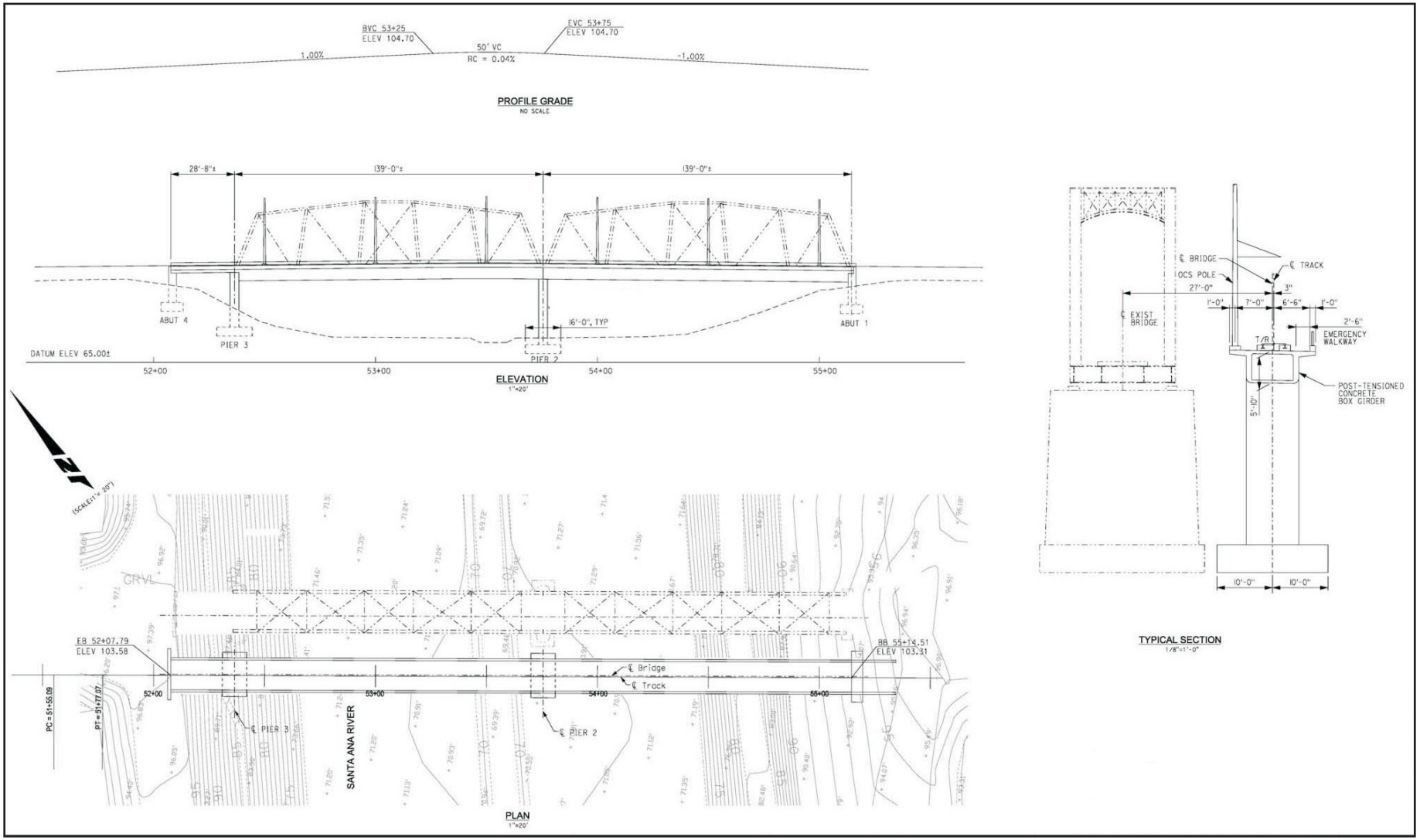
2.8 Design Options

During detailed evaluation, design options were developed to avoid identified constraints or to take advantage of specific opportunities presented along the alignments. In most cases the design options are the same for Streetcar Alternatives 1 and 2. However, where the design option is unique to a specific alternative, it is identified in the discussion. The full results of the analysis of the design options are provided in the Detailed Evaluation of Alternatives Technical Report, March 2012. Based on this technical report, the design options that have been carried into the environmental assessment are described below:

2.8.1 Operations and Maintenance (O & M) Facility Site Options

Both Streetcar Alternatives 1 and 2 would require the construction of an O & M Facility for streetcar operations. An O & M Facility is a stand-alone building which would meet the maintenance, repair, operational and storage needs of the proposed streetcar system. The O & M Facility accommodates daily and routine vehicle inspections, interior/exterior cleaning of the streetcars, preventative (scheduled) maintenance, unscheduled maintenance, and component change-outs. The proposed facility would also provide a venue for parking vehicles that are not in use and for rebuilding components.

The site for the O & M Facility would need to accommodate a building that houses both maintenance and administrative functions; provides for off-street employee parking; and provides for various functions such as outside storage of system components, vehicle washing, and local requirements for landscaping and screening. Currently, two candidates O & M Facility sites have been identified for either Streetcar Alternative 1 or 2. See **Figure 2-13** for the approximate locations of these sites.



Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.

O & M Facility Site A (near SARTC). O & M Facility Site A is an irregularly shaped parcel slightly larger than 2.2 acres, and bordered by 6th Street to the north, 4th Street to the south, the Metrolink tracks to the east, and various industrial and commercial businesses to the west. Currently used as a waste transfer and recycling center, this site contains one primary structure with the remainder of the site used for receiving and sorting recycling materials, and parking. **Figure 2-14** shows the proposed location of Site A and **Figure 2-15** shows a conceptual layout of Site A. This site connects to either Streetcar Alternative 1 or 2 via a nonrevenue extension of track on Santiago Street for the equivalent of approximately two city blocks.

O & M Facility Site B (near Raitt Street). O & M Facility Site B is a rectangular site slightly larger than 2.4 acres. It is located west of Raitt Street and is bordered by 5th Street to the north and the PE ROW to the south. Located in an area zoned for industrial and commercial uses, this site is comprised of three parcels, two of which contain existing businesses and a combination of industrial buildings. The third parcel contains several residences. **Figure 2-16** shows the proposed location of Site B and **Figure 2-17** shows a conceptual layout of Site B. This site connects to the streetcar alignment for Streetcar Alternative 1 or 2 from the PE ROW. Motor vehicle access to the site would be to and from 5th Street.

2.8.2 Fourth Street Parking Scenarios

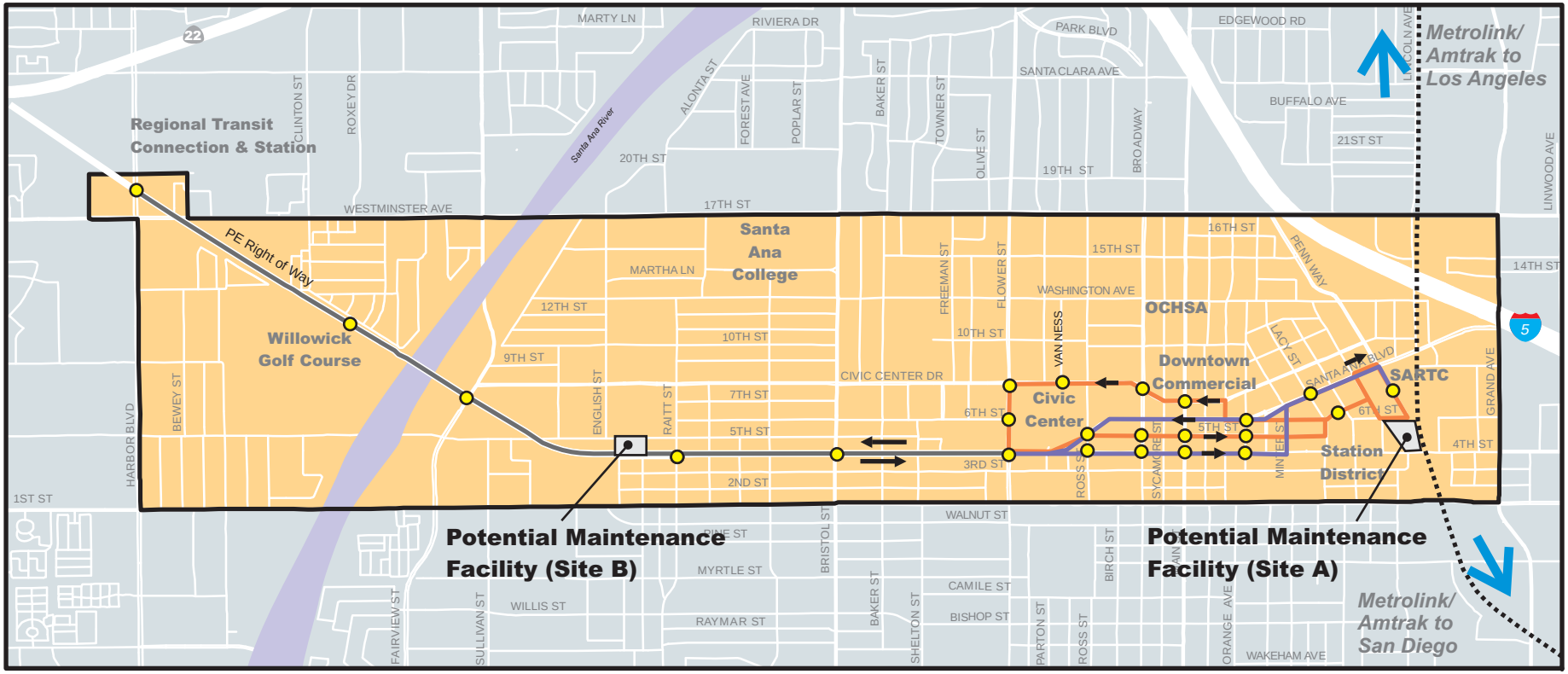
The Streetcar Alternative 1 alignment would utilize 4th Street between Ross Street and Mortimer Street in the westbound direction. From east of Ross Street to French Street, 4th Street has one travel lane in each direction with head-in diagonal parking along each side of the roadway. The diagonal parking, with vehicles exiting parking spaces by backing into the travel lane, is incompatible with reliable streetcar operations. Three design scenarios were identified to address the diagonal parking on 4th Street as described below and shown on **Figure 2-18**.

Scenario A: Convert the diagonal parking along the south side of 4th Street, between Ross Street and French Street, to parallel parking and widen the sidewalk along the south side from 12 feet to 20 feet, and replace streetlights and landscaping. A total of 26 on-street parking spaces would be removed under this scenario.

Scenario B: Remove the diagonal parking along the south side of 4th Street, between Ross Street and French Street, and widen the sidewalk along the south side from 12 feet to 28 feet, and replace streetlights and landscaping. A total of 77 on-street parking spaces would be removed under this scenario.

Figure 2-13

Candidate Sites of Operations and Maintenance Facilities



LEGEND:

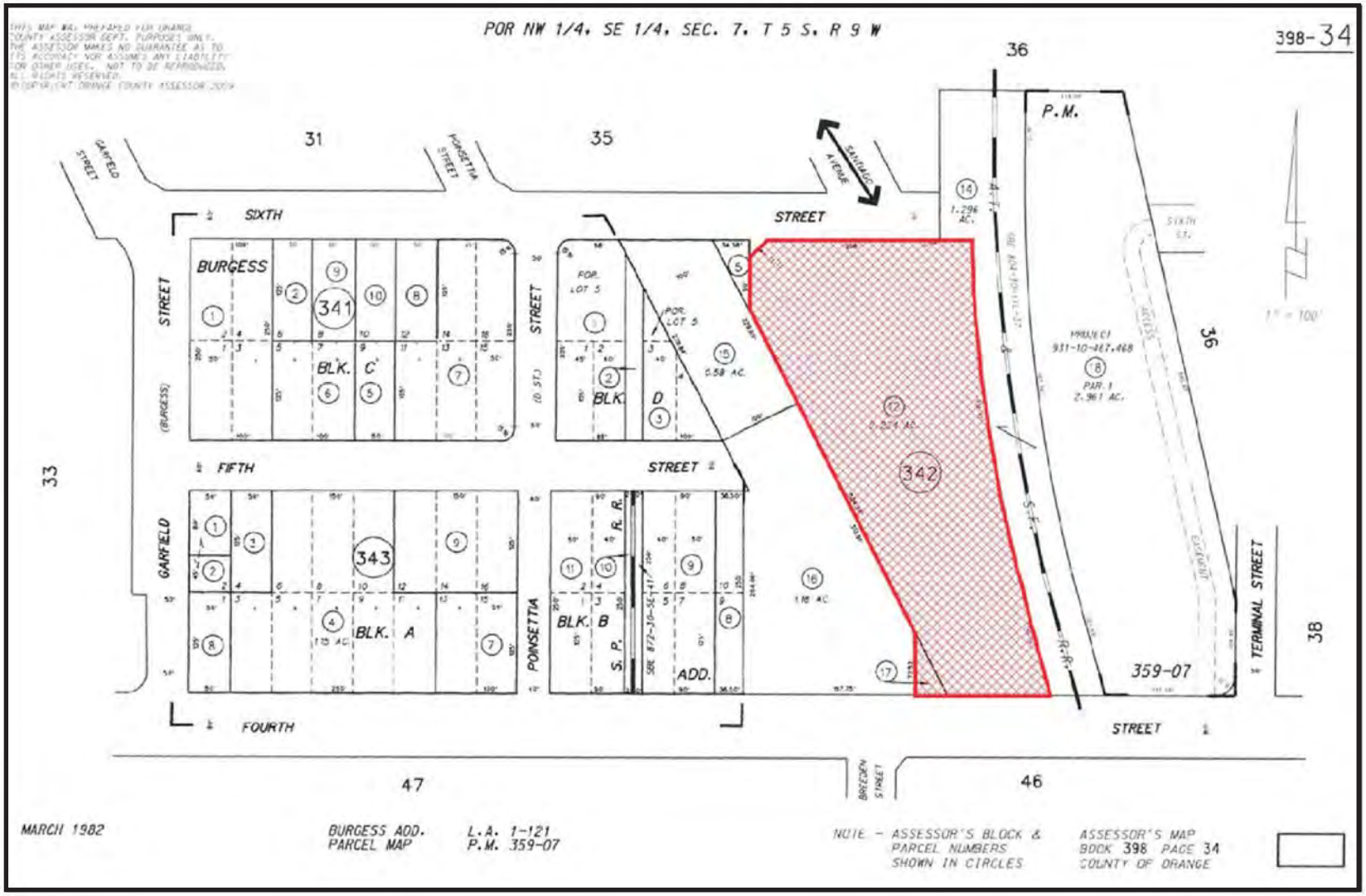
- Study Area
- Streetcar Alternatives 1 and 2
- Streetcar Alternative 1
- Streetcar Alternative 2
- Proposed Stop
- Potential Maintenance Facility Site

0 1500 3000 FEET

NORTH

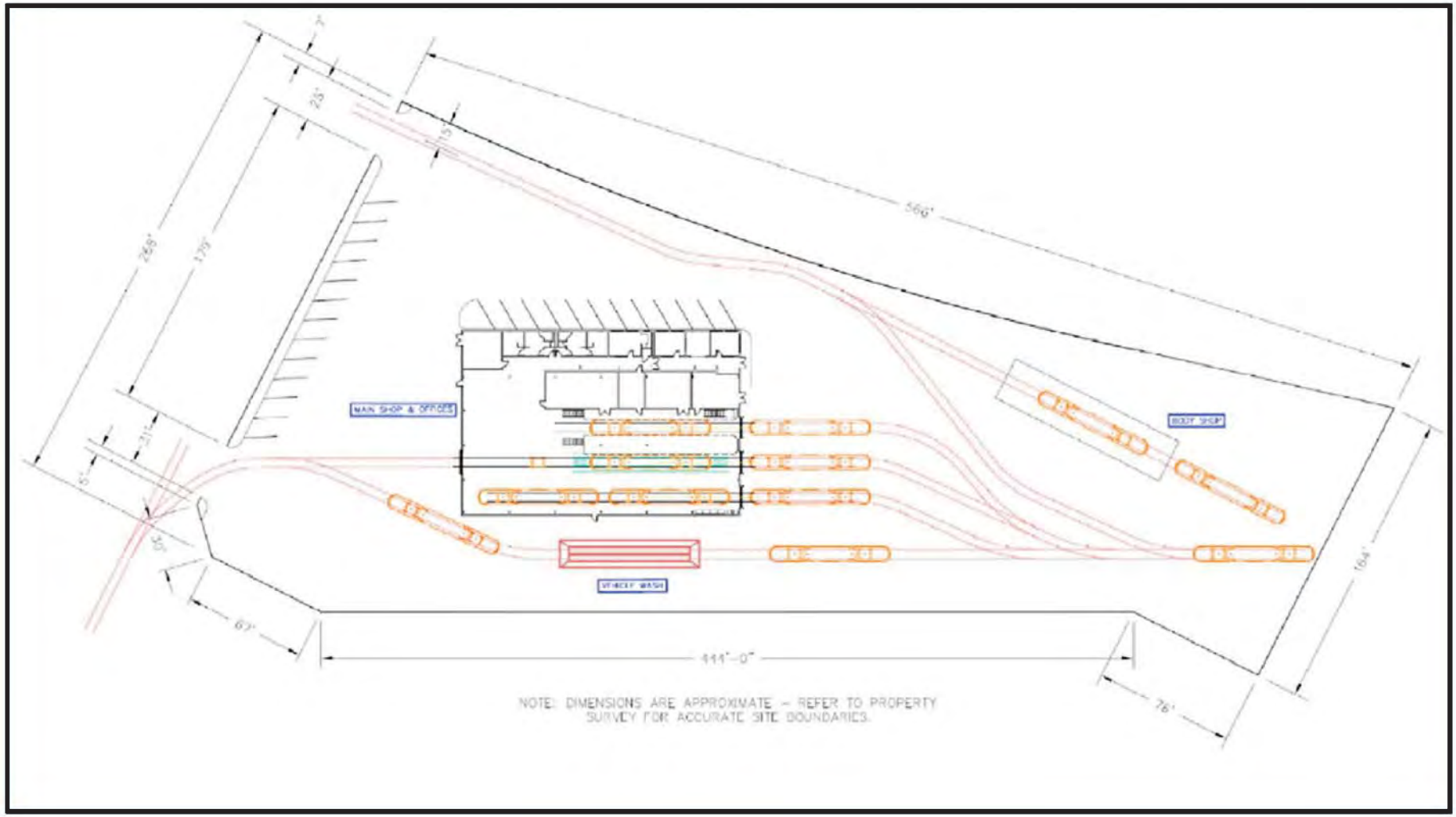
Source: Cordoba Corporation, Draft Conceptual Design Technical Report, March 2011, updated by Terry A. Hayes Associates Inc. August 2012.

Operations and Maintenance Facility Site A - Location and Configuration



Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.

Operations and Maintenance Facility Site A - Conceptual Layout

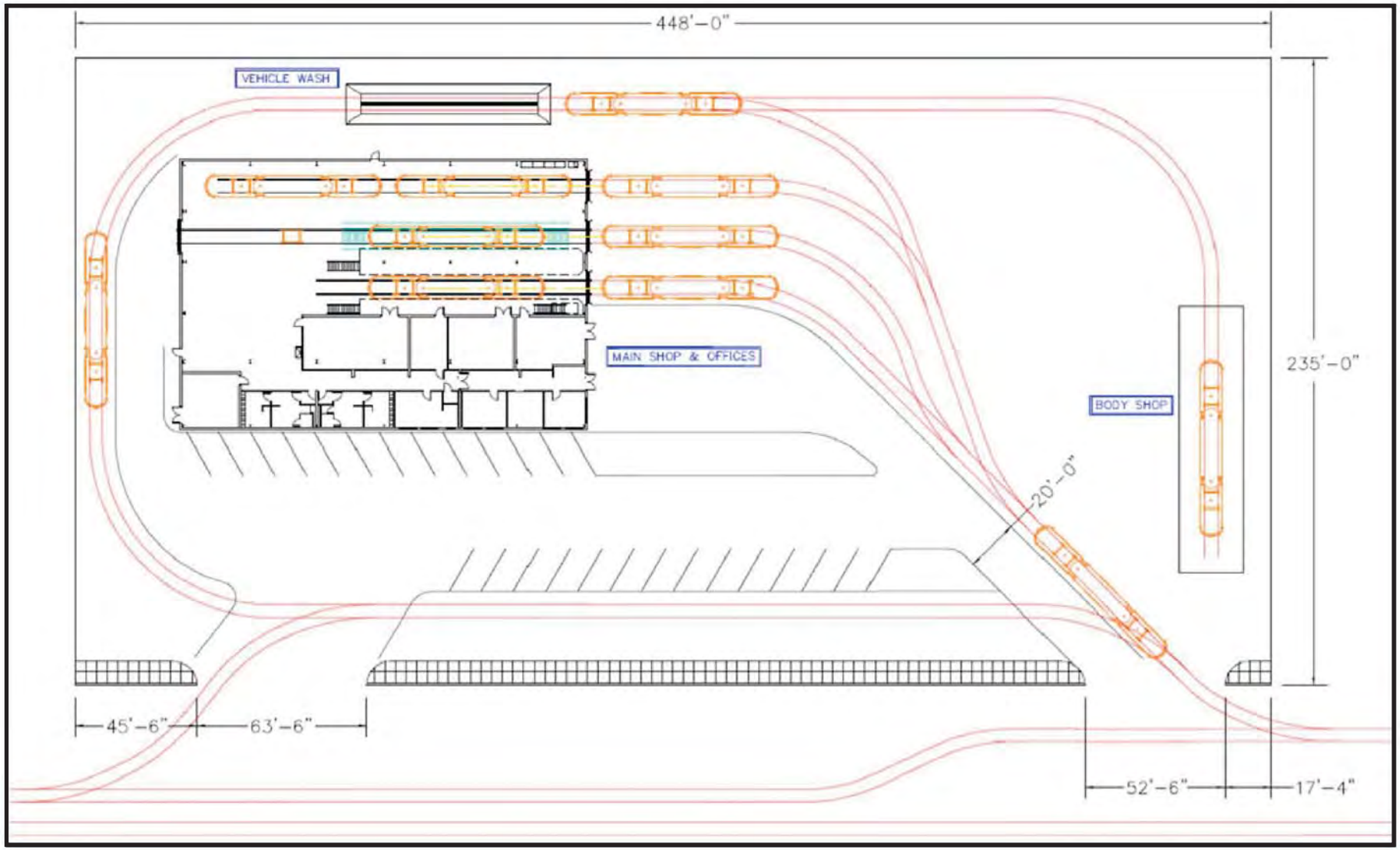


Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.

Operations and Maintenance Facility Site B - Location and Configuration

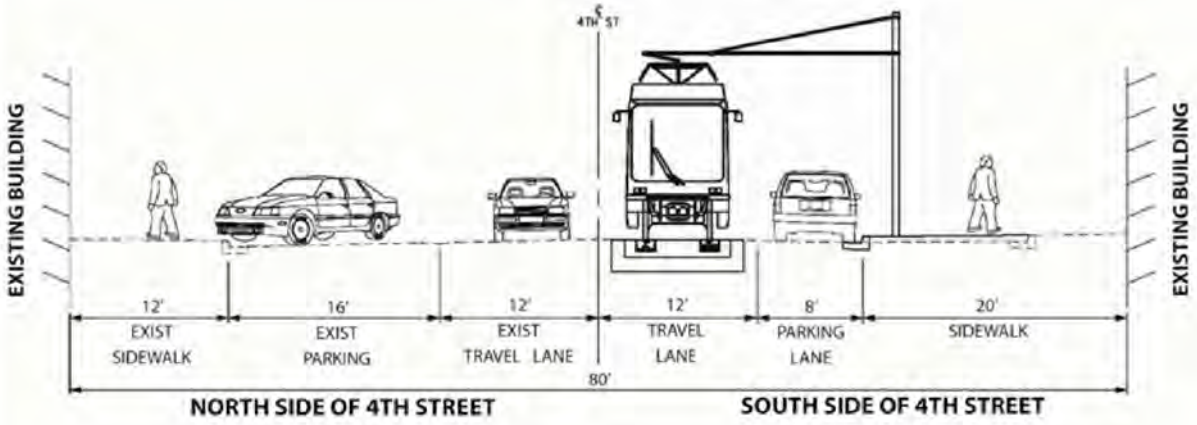
Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.

Operations and Maintenance Facility Site B - Concept Layout

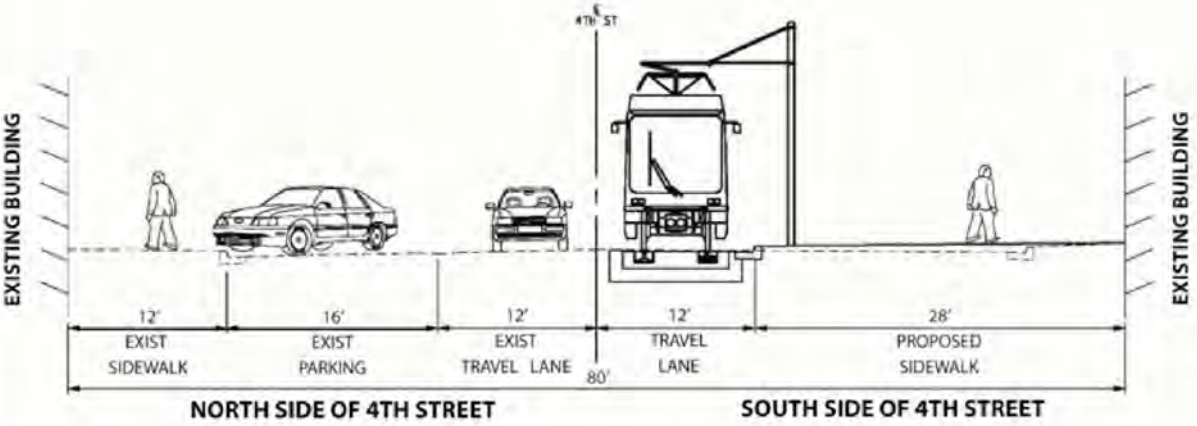


Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.

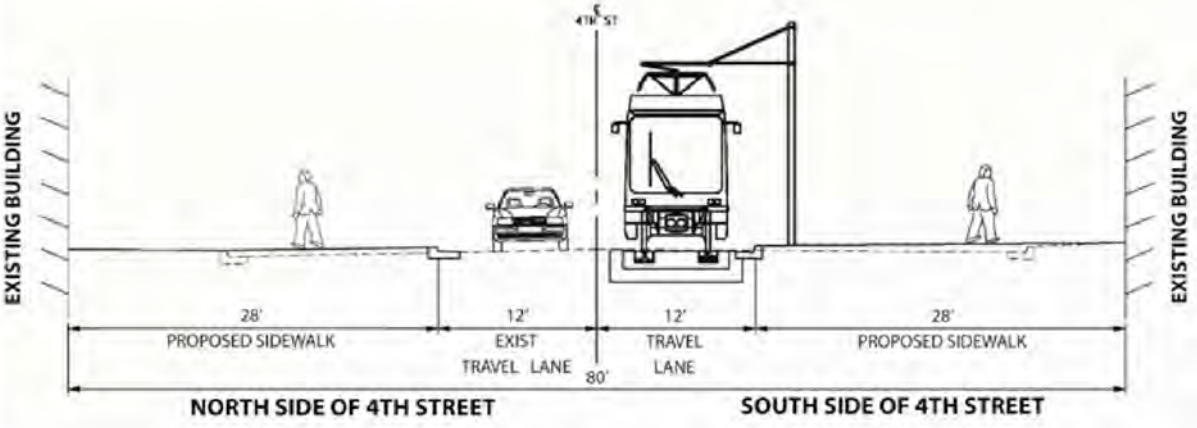
4th Street Parking Scenarios



4th Street Parking Scenario A: Convert Parking along South Side to Parallel and Widen Sidewalks to 20 Feet



4th Street Parking Scenario B: Remove Parking along South Side to and Widen Sidewalks to 28 Feet



4th Street Parking Scenario C: Remove Parking along South Side and North Side and Widen Sidewalks to 28 Feet

Source: Cordoba Corporation, *Draft Alternatives Analysis Report for the Santa Ana-Garden Grove Fixed Guideway Corridor Study,* July 11, 2012.

Scenario C: Remove the diagonal parking along both sides of 4th Street, between Ross Street and French Street, widen the sidewalks along both sides from 12 feet to 28 feet. In this scenario, only the parking removal and sidewalk widening along the south side would be included in the cost of the project. The City of Santa Ana would pursue alternative funding to construct the improvements to the north side.

2.9 Construction

Construction of either Streetcar Alternative 1 or 2 would take place on a segment-by-segment basis along the streetcar alignment, with the exception of the bridge structures and the O & M Facility. The duration of concentrated construction activities would be no more than six months at one location along the alignment. The construction approach would be the same for Streetcar Alternatives 1 and 2. Construction activities would include, but would not be limited to, site preparation, bridge structure construction, roadway and sidewalk reconstruction, laying streetcar track and embedded trackwork, and construction of an O & M Facility.

Construction hours would generally occur between 7:00 a.m. and 6:00 p.m., Monday through Friday. There are some exceptions, such as nighttime construction, where temporary street lane closures and utility work would be required. Project construction would follow the applicable local, State, and federal laws for building and safety. In addition, standard conditions would be included in project construction contracts to ensure consistency with applicable laws for traffic, noise, vibration, and dust control.

The following description summarizes the construction approach and methods that have been defined for the project at this preliminary stage of conceptual design:

- In general, all construction of tracks would be within the existing PE ROW, existing streets, or proposed future streets;
- Construction of the O & M Facility would be within one of the designated sites along the alignment, as defined in the project description as O & M Facility Sites A and B;
- The construction period is anticipated to be approximately 30 months, with major activities to be completed within the first 24-month period;
- It is anticipated that the construction activities would be staged and sequenced based on location and types of construction. The likely staging of the proposed project would include four to five segments to allow for construction crews to work in sequence, moving one team to a new location, while the next team takes over the next set of activities; and
- Two potential areas are identified as construction staging and track laydown areas:
  - The east end of the PE ROW at Raitt Street would be used as a temporary construction and welding plant and material storage sites. This location would serve as the midpoint of distribution to both east and west directions of the alignment. The welding plant would be a combined operation of flash butt welding and laydown storage to produce designated length of rail ribbons to be dragged or truck-hauled into position for embedment or attachment to ties; and

- The second area is identified as land owned by the City of Santa Ana, located at the corner of 6th and Santiago Streets. Some special trackwork and pre-curved rails could be stored at this location;

- Construction of the proposed project would require the relocation of one catch basin under Alternative 2 at Flower Street and Civic Center Drive in addition to the installations of approximately 50 new catch basins to improve drainage along the alignment.

Construction Scenario

The project would use conventional construction techniques and equipment typical to the Southern California region and follow all applicable federal, State, and local laws for building and safety. Working hours would be varied to meet special circumstances and restrictions. Customary local practices consistent with all applicable laws would be used to control traffic, noise, vibration, erosion, and dust during construction. Design and construction would include mitigation commitments. Generally, construction would be divided into a series of often overlapping activities to minimize the construction duration and associated impacts. **Table 2-4** depicts a typical construction activities sequencing for an LRT project of similar scope and complexity.

TABLE 2-4: TYPICAL CONSTRUCTION SEQUENCE AND AVERAGE CONSTRUCTION TIME

Activity/a/	Tasks	Average Time Required (months)
Preconstruction	Locate utilities; establish right-of-way and project control points and centerlines; establish and relocate survey monuments	2 – 4
Site Preparation	Establish environmental controls and install soil and erosion-control measures; relocate utilities and clear and grub right-of-way (demolition); establish detours and haul routes; erect safety devices and mobilize special construction equipment; prepare construction equipment yards, and stockpile materials	3 – 6
Heavy Construction	Construct aerial structure, retaining walls, trackbed drainage, at-grade guideway, soil stabilization, pile caps/foundations, abutments, bents, and dispose of excess material	12 – 16
Medium Construction	Lay track, construct stations, install off-site drainage, and construct elevated station enclosures	6 – 12
Light Construction	Finish work, install systems elements (electrical, signals, and communication), street lighting where applicable, traffic signals, signing and striping, landscaping, close/remove detours, and clean up and test system	3 – 9
Pre-Revenue Service	Test vehicles, power, communication, signaling, train operators and maintenance personnel	1 – 3

/a/ Some of these activities would be conducted in parallel.
Source: Terry A. Hayes Associates Inc., 2012.

- Some profile grade leveling, clearing, and grubbing of the PE ROW would take place during the early stages to establish grade for the ballast track sections. The duration of this activity would be two to three months;

Construction equipment would include graders, bulldozers, cranes, drill rigs, excavators, concrete-batching equipment, pumping equipment, concrete trucks, flat bed trucks, dump trucks, and rail-mounted equipment. While the final construction approach, including methods, staging, and sequencing coordination, will be determined in detail with the construction contractor, who has yet to be selected, the following describes the likely sequencing of the major construction activities. It should be noted that most of these activities overlap.

- Early work activities would include relocation of some of the private and public underground utilities identified as being in conflict with the track alignment;
- Work on the new bridge structure at Westminster Avenue and for the new Santa Ana River bridge structure would also begin early in the construction period;
- Demolition and clearing of the selected O & M Facility site would begin in the early phase of construction in order to be available for receipt and testing of the vehicles. Construction of the maintenance facility yard would also likely commence at this time;
-
- Prior to initiating work on the ballast track, overhead contact wire pole foundations and station foundations would be constructed to grade level. In addition, structure approach slabs, underground utilities, or subsurface structures would be constructed prior to the laying of the ballasted sections;
- Track construction would begin next for the in-street and the non-structure ballasted sections of the streetcar trackway. The steps would involve setting up the reinforcement for the concrete slab, placing the rail, boots, and ties and finally pouring track slab concrete. The following construction activities would also occur during the same 24-month timeframe as track construction:
  - Preparation for substation sites and installation of conduits, grounding mats, and substation foundations.
  - Track construction activity, including installation of special trackwork, field welds, installation of insulated joints and other special trackwork material.
  - Sidewalk improvements, platforms, pavement grading and resurfacing to the limits of the project between Raitt Street and SARTC.
  - Foundation work for new traffic signal, lighting, and overhead contact wire poles.
  - Roadway grinding and overlay operations beginning at Raitt Street and advancing eastward along the alignment; and
- The final steps of the construction work would include pavement striping, reestablishing ROW temporarily impacted by construction, landscaping, system testing, lining and surfacing of the ballasted track, and other miscellaneous finishing.

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Chapter 3 Discussion of Properties

This chapter provides a discussion of Section 4(f) properties affected by the Build Alternatives. Additional detail regarding properties not requiring analysis can be found in Chapter 5.

Use of Potential Section 4(f) Properties

Resources subject to Section 4(f) consideration include publicly-owned lands consisting of a public park/recreational areas; public wildlife and waterfowl refuges of national, State, or local significance; or historic sites of national, State, or local significance, whether publicly or privately owned. There are no wildlife or waterfowl refuges within the Study Area. However, there are publicly-owned parks/recreational areas and significant historic sites (on or eligible for listing in the NHRP) in the vicinity of the Study Area that are considered to be Section 4(f) resources.

To create a comprehensive list of resources that could potentially be subject to analysis under Section 4(f), aerials and field reviews were conducted to identify potential resources. The Section 4(f) resources within the vicinity of the Study Area are shown in **Table 3-1**. Locations are shown on **Figure 3-1**. The Build Alternatives would result in the direct use of one property eligible for the NHRP; the Old Pacific Electric Santa Ana River Bridge.

Following the field reconnaissance to develop this list, the listed properties were researched to determine if they met the criteria for eligibility as Section 4(f) properties. **Table 3-1** shows parks, recreational facilities, wildlife refuges and historic properties found within the project vicinity, and provides information with respect to (1) public ownership, (2) public access, (3) individual eligible historic properties within the proposed project's Section 106 Area of Potential Effects, (4) permanent use of the resource and analysis of the use, and (5) analysis of proximity effects. Properties were also inspected to confirm their location with reference to the Study Area and project alignment. Human health and environmental impacts from the project, such as air quality, noise, and visual effects, primarily would be concentrated within 500 feet of the project alignment. Indirect effects, such as transit service, could occur up to ½ mile from the project alignment. Due to the significance of proximity for the various environmental effects, properties outside 1/2 mile were not included in the analysis.

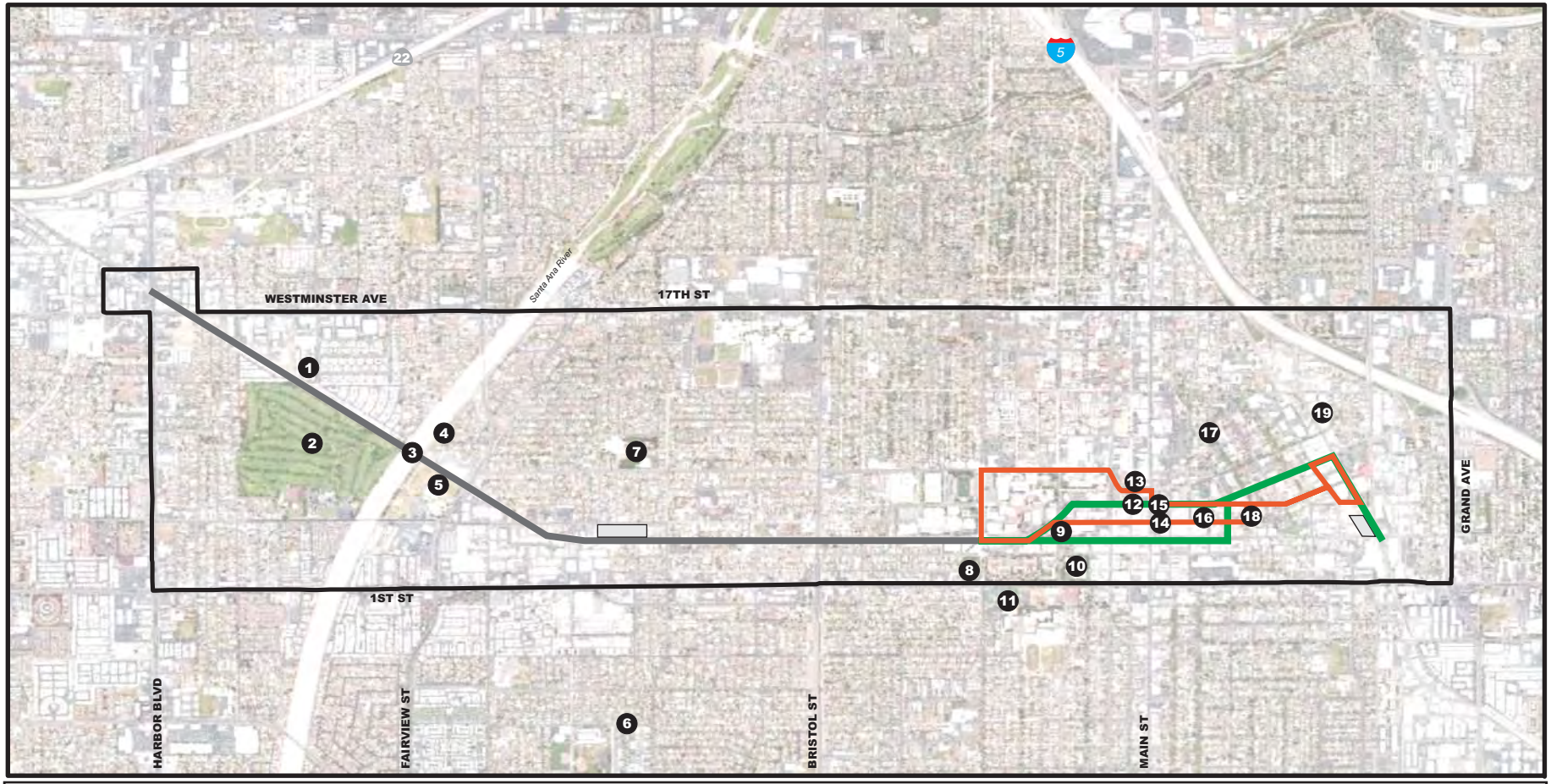
Table 3-1. Section 4(f) Resources

Resource Name	Location	Build Alts	Use	Distance/Criteria
1. Quonset Huts (Cultural Report Map Reference 2) /a/	1424 N. Susan Street	1, 2	No	National Register-Eligible Adjacent to project No adverse effects
2. Willowick Municipal Golf Course /b/	South of PE ROW	1,2	No	Publically owned Adjacent Fees charged for use
3. Old Pacific Electric Santa Ana River Bridge (Cultural Report Map Reference 3) /a/	On PE ROW	1,2	Yes	National Register-Eligible Within Alignment Finding of No Adverse Effect
4. Santa Ana River Trail /b/	Crosses PE ROW	1,2	No	Publically owned Temporary effect
5. Spurgeon Intermediate School Joint-Use Recreational Area	South and west of Spurgeon Intermediate School	1,2	No	Publically owned No adverse effects
6. Friendship Park	Myrtle and Shelley Streets	1,2	No	Publically owned Beyond 500 feet
7. El Salvador Park	Civic Center Drive and Raitt Street	1,2	No	Publically owned Beyond 500 feet
8. Angels Community Park	3rd and Flower Streets	1,2	No	Publically owned Beyond 500 feet
9. Sasscer Park /b/	Santa Ana Boulevard and Ross Street	1	No	Publically owned Adjacent No adverse effects
10. Birch Park	3rd and Ross Streets	1	No	Publically owned Beyond 500 feet
11. Neal Manchander Tennis Center	1st and Flower Streets	1	No	Publically owned Beyond 500 feet
12. Orange County's Original Courthouse /a/	211 W. Santa Ana Boulevard	1	No	National Register-Eligible Adjacent to project No adverse effects
13. Young Men's Christian Association (YMCA) – Santa Ana-Tustin Chapter /a/	203 and 205 W. Civic Center Drive	2	No	National Register-Eligible Adjacent to project No adverse effects
14. First Presbyterian Church (Cultural Report Map Reference 34) /a/	600 N. Main Street	1	No	National Register-Eligible Adjacent to project No adverse effects
15. Howe-Waffle House and Carriage House /a/	702 Bush Street and 105 E. 7th Street	2	No	National Register-Eligible Adjacent to project No adverse effects
16. First United Methodist Church (Cultural Report Map Reference 64) /a/	624 French Street	2	No	National Register-Eligible Adjacent to project No adverse effects
17. French Park	10th and French Streets	2	No	Publically owned Beyond 500 feet
18. Folk Victorian-Style Duplex Cottage (Cultural Report Map Reference 58) /a/	507 N. Minter Street	1	No	National Register-Eligible Adjacent to project No adverse effects
19. Chepa's	Stafford and Custer Streets	2	No	Publically owned Beyond 500 feet

SOURCE: URS Corporation, July 2011 Map and Field Review

/a/ Coordination with "Official with Jurisdiction" occurs with the SHPO as part of the National Historic Preservation Action Section 106 Process.
/b/ Coordination with "Official with Jurisdiction" occurs directly with the owner/manager of the resource.

Section 4(f) Resources



LEGEND:
- (#) Section 4(f) Resource
- Study Area
- Streetcar Alternatives 1 & 2
- Streetcar Alternative 1
- Streetcar Alternative 2

0 1500 3000 FEET

N

1. Quonset Huts (Cultural Report Map Reference 2)
2. Willowick Municipal Golf Course
3. Old Pacific Electric Santa Ana River Bridge (Cultural Report Map Reference 3)
4. Santa Ana River Trail
5. Spurgeon Joint Use Recreational Area
6. Friendship Park
7. El Salvador Park
8. Angels Community Park
9. Sasscer Park
10. Brich Park
11. Neal Machander Tennis Center
12. Orange County's Original Courthouse
13. Young Men's Christian Association (YMCA) - Santa Ana-Tustin Chapter
14. First Presbyterian Church (Cultural Report Map Reference 34)
15. Howe-Waffle Houseand Carriage House
16. First United Methodist Church (Cultural Report Map Reference 24)
17. French Park
18. Folk Victorian-style duplex cottage (Cultural Report Map Reference 58)
19. Chepa's Park

Source: Terry A. Hayes Associates Inc., August 2012.

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3.1 Parklands/Recreational Resources

3.1.1 Santa Ana River Trail

The Santa Ana River Trail (**Figure 3-2**) is owned and maintained by the County of Orange Public Facilities and Resources Department. It is an existing Class I trail and is fully grade-separated from cross traffic for its entire length within Orange County. The trail extends from the Pacific Ocean at Huntington Beach to the Orange/Riverside County line. It is paved approximately 12-feet wide, and divided into two lanes. The Santa Ana River Trail crosses under the Old Pacific Electric Santa Ana River Bridge but would not be incorporated into the Build Alternatives. Where the trail crosses the PE ROW, bicycle, pedestrian and equestrian uses are separated. The bike trail is on the eastern side of the river and the pedestrian and equestrian trail is on the western side of the river.

Figure 3-2: Santa Ana River Trail

Direct Use

Santa Ana River Trail is not located within the footprint of any of the Build Alternatives, nor would it be incorporated into the alternatives through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

Temporary closures may occur to the trail during construction. However, a detour route would be provided so that access and use of the trail would not be affected. The scope of work would be minor and the duration of the temporary closure would be minimal. No adverse physical impacts would occur to the trail and construction would not interfere with the activities along the trail. After construction, the trail would be fully restored to the same

condition prior to construction. Written concurrence from the County of Orange Public Facilities and Resources Department will also be included as part of the Final EA/DEIR. Therefore, the temporary occupancy of this resource through the temporary closure would be so minimal as to not constitute a use within the meaning of Section 4(f).

Constructive Use

The trail is not classified as a noise-sensitive resource since it consists of active recreational amenities, which do not depend on a quiet setting. There are no sensitive structures which could be affected by vibration. It is not anticipated that the trail would experience indirect noise increases or visual effects severe enough to substantially impair the protected activities, features, or attributes of the recreational site. The trail would be grade-separated from the Build Alternatives and access would not be affected. Therefore, the Build Alternatives would not cause a constructive use of the trail.

3.1.2 Willowick Golf Course

Willowick Golf Course (**Figure 3-3**) is a publicly-owned, 18-hole golf course located between Santa Ana Boulevard and the PE ROW, directly adjacent to the Santa Ana River. A meeting facility is open to the public although a fee is charged for its use.

Figure 3-3: Willowick Golf Course

Direct Use

Willowick Municipal Golf Course is not located within the footprint of any of the Build Alternatives, nor would it be incorporated into the alternatives, through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource and the provisions of Section 4(f) would not be triggered.

Constructive Use

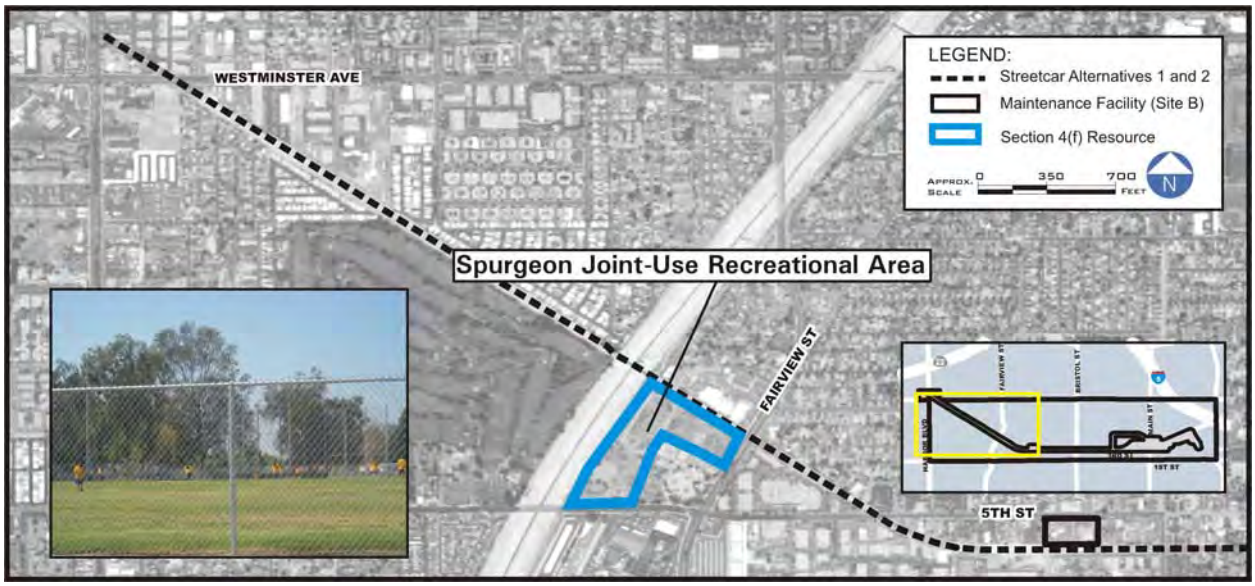
Although this recreational facility is adjacent to the alignment, it is not considered a noise-sensitive resource since it consists of active recreational amenities which do not depend on a quiet setting. There are no sensitive structures which could be affected by vibration. Access would not be restricted, and all remaining potential effects of construction (e.g., fugitive dust, noise, and traffic) would be temporary and would not substantially impair this resource.

Operation of the Build Alternatives would not restrict access, generate localized pollutant emissions, or create a visual impairment to the golf course. No substantial impairment of the use of the golf course features would occur. Therefore, the Build Alternatives would not cause a constructive use of the Willowick Golf Course.

3.1.3 Spurgeon Joint-Use Recreational Area

The Spurgeon Joint-Use Recreational Area (**Figure 3-4**) is located west and south of Spurgeon Intermediate School. The portion of the joint-use recreational area that includes a picnic area and baseball diamond is located greater than 500 feet from the Build Alternatives; however, an oval running track and basketball courts are located adjacent to the alignment.

Figure 3-4: Spurgeon Joint-Use Recreational Area



Direct Use

The Spurgeon Intermediate School Joint-Use Recreational Area is not located within the footprint of any of the Build Alternatives, nor would it be incorporated into the alternatives through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of Streetcar Alternative 1 or 2 would not result in a use of this 4(f) resource, and the provisions of Section 4(f) would not be triggered.

Constructive Use

Spurgeon Intermediate School Joint-Use Recreational Area is located within 500 feet of the Build Alternatives. However, this park is not classified as a noise-sensitive resource since it consists of active recreational amenities which do not depend on a quiet setting. The recreational amenity closest to the alignment is an oval running track surrounding a grassy area. Although, the Noise and Vibration Report (see Appendix E of this EA/DEIR) indicates there could be a permanent increase in noise due to streetcar horn sounding at the Fairview Avenue at-grade crossing, the track and basketball courts are used for running activities and basketball, activities that are not considered noise sensitive. This site is not expected to experience adverse indirect noise effects or be affected by visual effects that would substantially impair the activities, features, or attributes of the recreational site. There are no sensitive structures which could be affected by vibration. Additionally, access to the recreational area would improve as a result of the Build Alternatives providing additional means of transportation with a proposed station at Fairview Avenue, which is not otherwise available.

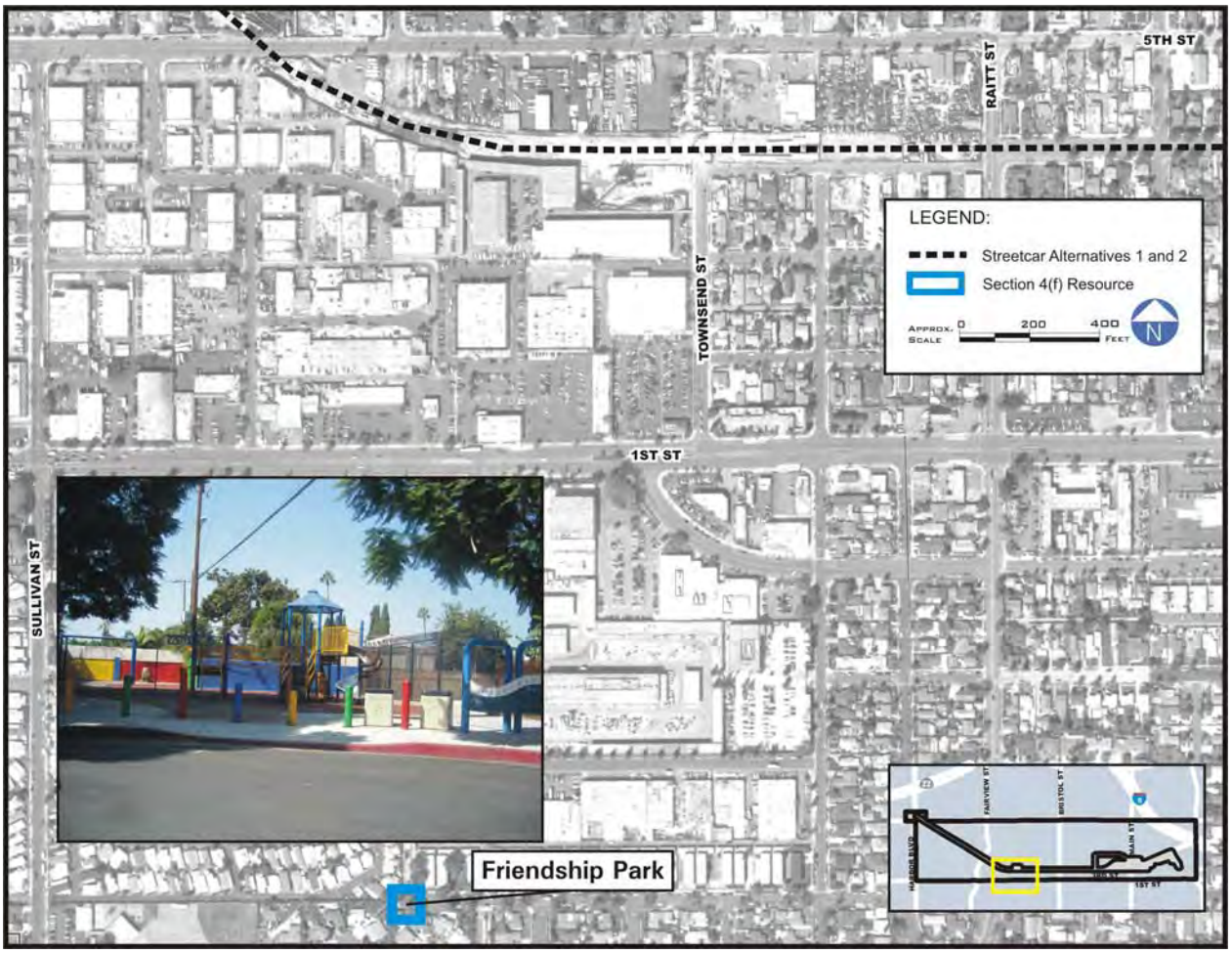
Access would not be restricted, and all remaining potential effects of construction (e.g., fugitive dust, noise, and traffic) would be temporary and would not substantially impair this resource.

Operation of the Build Alternatives would not restrict access, generate localized pollutant emissions, or create a visual impairment to the joint-use recreational area. No substantial impairment of the use of the recreational area features would occur. Therefore, the Build Alternatives would not cause a constructive use of Spurgeon Intermediate School Joint-Use Recreational Area.

3.1.4 Friendship Park

Friendship Park (**Figure 3-5**) is located near the Myrtle/Shelley Streets intersection. Friendship Park includes a playground and picnic area.

Figure 3-5: Friendship Park



Direct Use

Friendship Park is not located within the footprint of any of the Build Alternatives, nor would it be incorporated into its alternatives through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource, and the provisions of Section 4(f) would not be triggered.

Constructive Use

Friendship Park is greater than 500 feet from the Build Alternatives. It is not classified as a noise-sensitive resource since it consists of active recreational amenities which do not depend on a quiet setting. This resource is beyond the 21-foot criteria for vibration damage described previously and no adverse ground-bourne vibration effects from general construction activity

would occur. Access would not be restricted, and all remaining potential effects of construction (e.g., fugitive dust, noise, and traffic) would be temporary and would not substantially impair this resource.

Operation of the Build Alternatives would not restrict access, generate localized pollutant emissions, or create a visual impairment to the park. There is no direct line-of-sight from the park to the alignment. At a distance of more than 500 feet, operational activity would generate a vibration level substantially less than the FTA significance criteria of 65 VdB for the most sensitive land uses. Therefore, operational activity would not result in adverse vibration levels. In addition, intervening buildings would block the line-of-site between the park and streetcar operations along the proposed alignment. These intervening buildings act as barriers and would attenuate streetcar vehicle noise. Moreover, the FTA screening distance for operational noise is 175 feet when considering obstructed views. The park is located outside of the operational noise screening distance, and no further analysis is required. No substantial impairment of the use of the park features would occur. There are no sensitive structures which could be affected by vibration. Additionally, access to the resource would improve as a result of the Build Alternatives providing additional means of transportation. Therefore, the Build Alternatives would not cause a constructive use of Friendship Park.

3.1.5 El Salvador Park

El Salvador Park (**Figure 3-6**) is located near the Civic Center Drive/Raitt Street intersection and is greater than 500 feet from the alignment.

Figure 3-6: El Salvador Park

El Salvador Park includes a swimming pool, ball diamonds, basketball courts, a playground, a picnic area, handball courts, a recreation center, and has 128 parking stalls.

Direct Use

El Salvador Park is not located within the footprint of any of the alternatives, nor would it be incorporated into the alternatives through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource, and the provisions of Section 4(f) would not be triggered.

Constructive Use

El Salvador Park is located greater than 500 feet from the alternatives. It is not classified as a noise-sensitive resource since it consists of active recreational amenities which do not depend on a quiet setting.

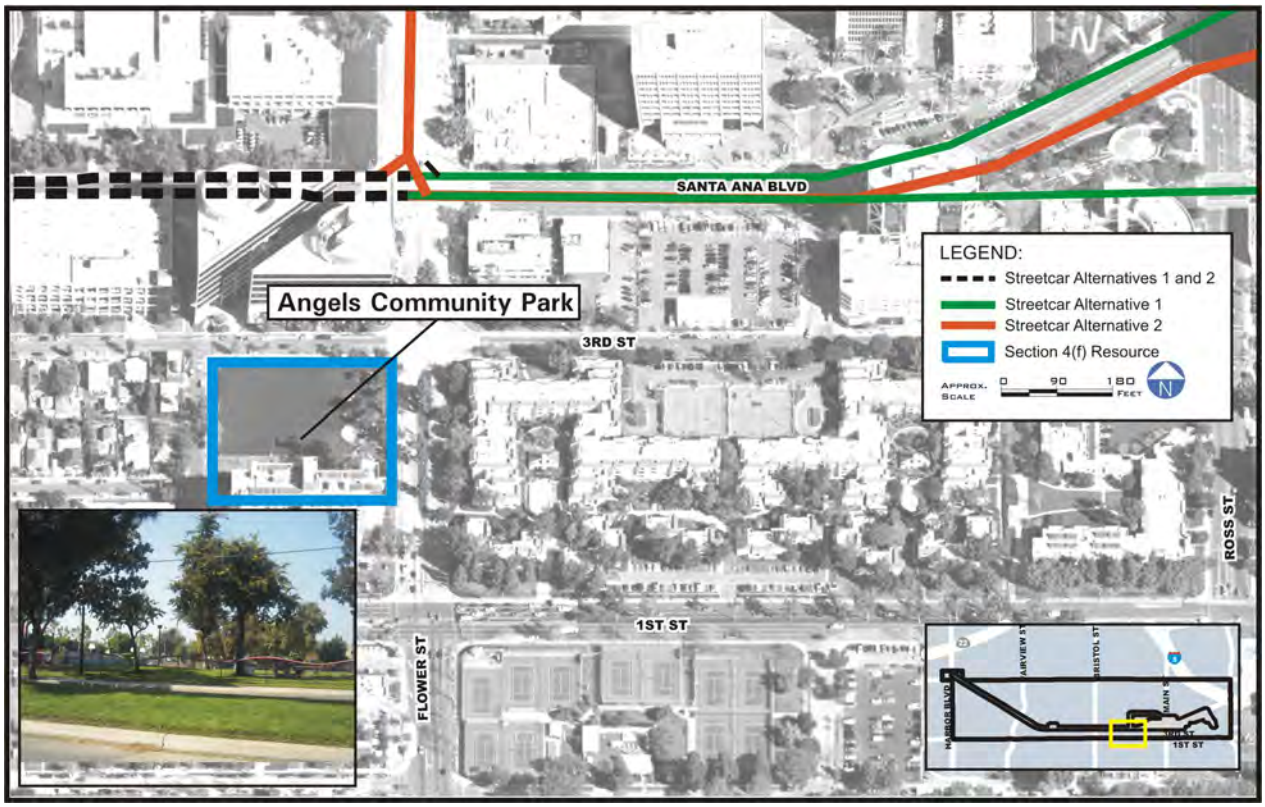
This resource is beyond the 21-foot criteria for vibration damage described previously and no adverse ground-bourne vibration effects from general construction activity would occur. Access would not be restricted, and all remaining potential effects of construction (e.g., fugitive dust, noise, and traffic) would be temporary and would not substantially impair this resource.

Operation of the Build Alternatives would not restrict access, generate localized pollutant emissions, or create a visual impairment to the park. There is no direct line-of-sight from the park to the alignment. At a distance of more than 500 feet, operational activity would generate a vibration level substantially less than the FTA significance criteria of 65 VdB for the most sensitive land uses. Therefore, operational activity would not result in adverse vibration levels. In addition, intervening buildings would block the line-of-site between the park and streetcar operations along the proposed alignment. These intervening buildings act as barriers and would attenuate streetcar vehicle noise. Moreover, the FTA screening distance for operational noise is 175 feet when considering obstructed views. The park is located outside of the operational noise screening distance, and no further analysis is required. No substantial impairment of the use of the park features would occur. There are no sensitive structures which could be affected by vibration. Additionally, access to the resource would improve as a result of the Build Alternatives providing additional means of transportation. Therefore, the Build Alternatives would not result in a constructive use of El Salvador Park.

3.1.6 Angels Community Park

Angels Community Park (**Figure 3-7**) is located near the 3rd/Flower Streets intersection. It includes ball diamonds, basketball courts, a playground, and a picnic area.

Figure 3-7: Angels Community Park



Direct Use

Angels Community Park is not located within the footprint of any of the Build Alternatives, nor would it be incorporated into the alternatives through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource, and the provisions of Section 4(f) would not be triggered.

Constructive Use

Angels Community Park is located greater than 500 feet from the alignment. It is not classified as a noise-sensitive resource since it consists of active recreational amenities which do not depend on a quiet setting.

This resource is beyond the 21-foot criteria for vibration damage described previously and no adverse ground-bourne vibration effects from general construction activity would occur. Access would not be restricted, and all remaining potential effects of construction (e.g., fugitive dust, noise, and traffic) would be temporary and would not substantially impair this resource.

Operation of the Build Alternatives would not restrict access, generate localized pollutant emissions, or create a visual impairment to the park. There is no direct line-of-sight from the park to the alignment. At a distance of more than 500 feet, operational activity would generate a vibration level substantially less than the FTA significance criteria of 65 VdB for the most sensitive land uses. Therefore, operational activity would not result in adverse vibration levels. In addition, intervening buildings would block the line-of-site between the park and streetcar operations along the proposed alignment. These intervening buildings act as barriers and would attenuate streetcar vehicle noise. The FTA screening distance for operational noise is 175 feet when considering obstructed views. The park is located outside of the operational noise screening distance, and no further analysis is required. No substantial impairment of the use of the park features would occur. There are no sensitive structures which could be affected by vibration. Additionally, access to the resource would improve as a result of the Build Alternatives providing additional means of transportation. Therefore, the Build Alternatives would not result in a constructive use of Angels Community Park.

3.1.7 Sasscer Park

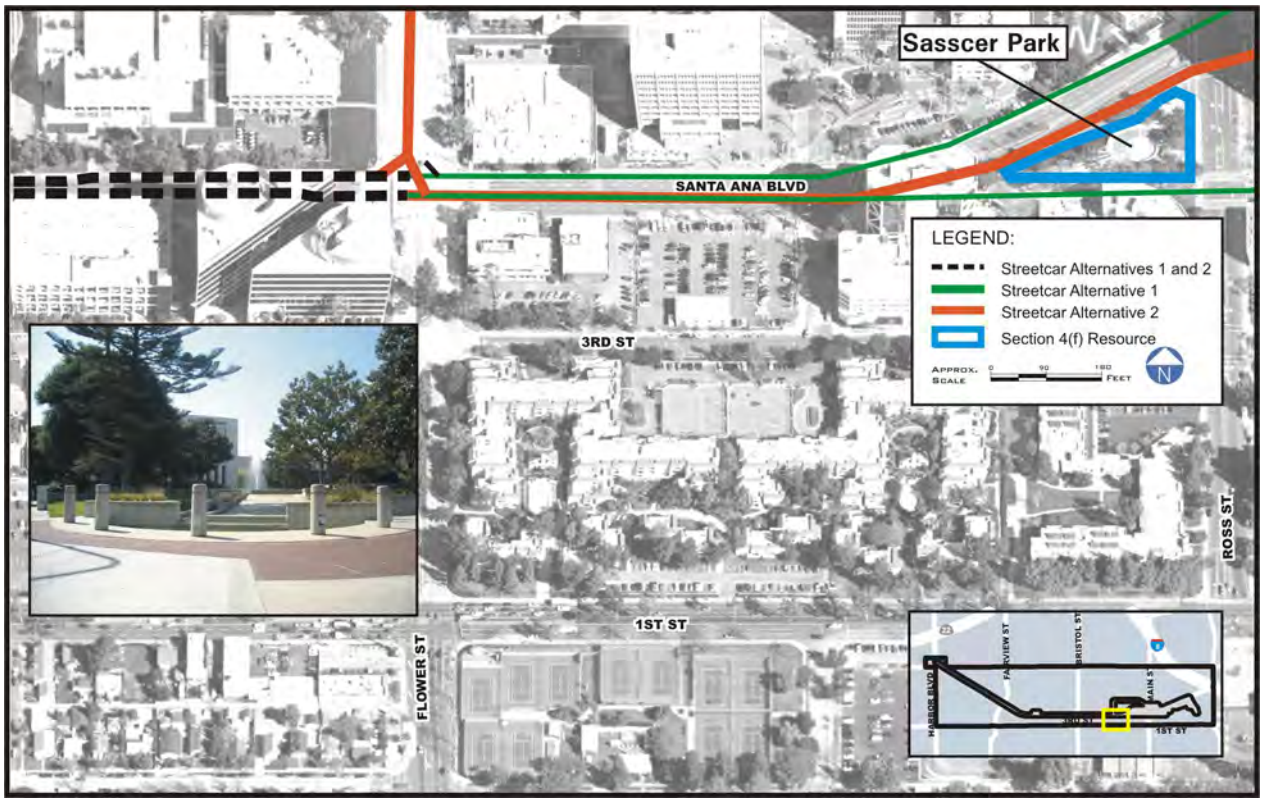
Sasscer Park (**Figure 3-8**) is owned and maintained by the City of Santa Ana. The 0.1-acre park includes a water fountain and is located between Ross Street, 4th Street, and Santa Ana Boulevard.

Direct Use

Streetcar Alternative 1 would leave the Santa Ana Boulevard street ROW, just east of Parton Street, and would head due east on a new alignment skirting the southern boundary of the park on an existing pedestrian plaza outside of the park. Streetcars would re-enter the existing street ROW at the intersection of Ross Street and 4th Street and continue east on 4th Street.

The parcel for the pedestrian plaza is publicly-owned and is not part of the park. Rather, the parcel is abandoned 4th Street ROW that previously functioned as an emergency access lane for the City Fire Department. This resource is not located within the footprint of Streetcar Alternatives 1 and 2 and it would not be incorporated into the alternatives through partial or full acquisition of the property. Therefore, implementation of Streetcar Alternatives 1 and 2 would not result in a direct use of this 4(f) resource and provisions of Section 4(f) are not triggered.

Figure 3-8: Sasscer Park



Temporary Use

Streetcar Alternatives 1 and 2 do not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of Streetcar Alternatives 1 and 2 would not result in a use of this 4(f) resource and the provisions of Section 4(f) would not be triggered.

Constructive Use

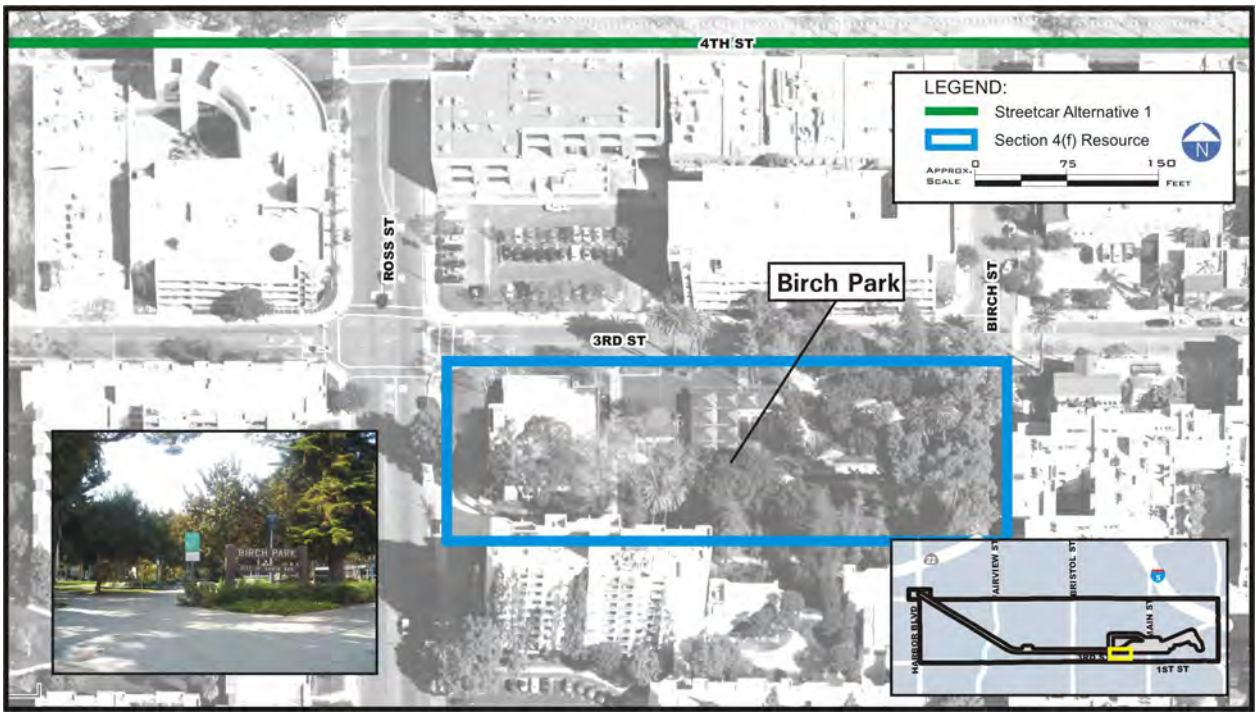
Although this recreational facility is adjacent to the proposed ROW, it is not considered a noise-sensitive resource since it consists of active recreational amenities which do not depend on a quiet setting. As a result of Streetcar Alternatives 1 and 2, this site is not expected to experience intermittent noise increases or visual effects severe enough to substantially impair the protected activities, features, or attributes of the recreational site. There is a fountain in the middle of the park, however, it is located approximately 75 feet from the alignment, beyond the 21-foot vibration threshold previously identified and would not be affected by the construction or operation of Streetcar Alternative 1. Access would not be restricted, and all remaining potential effects of construction (e.g., fugitive dust, noise, and traffic) would be temporary and would not substantially impair this resource. Additionally, access to the resource would improve as a result of Streetcar Alternative 1 providing additional means of transportation.

Operation of Streetcar Alternative 1 would not restrict access, generate localized pollutant emissions, or create a visual impairment to the park. No substantial impairment of the use of the park features would occur. There are no sensitive structures which could be affected by vibration. Therefore, Streetcar Alternative 1 would not cause a constructive use of Sasscer Park.

3.1.8 Birch Park – Streetcar Alternative 1 Only

Birch Park (**Figure 3-9**) is located near the 3rd/Ross Streets intersection and includes a picnic area and a restroom.

Figure 3-9: Birch Park



Direct Use

Birch Park is not located within the footprint of Streetcar Alternatives 1 and 2, and it would not be incorporated into the alternatives through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of Streetcar Alternatives 1 and 2. Therefore, implementation of Streetcar Alternatives 1 and 2 would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

Streetcar Alternatives 1 and 2 do not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of Streetcar Alternatives 1 and 2 would not result in a use of this 4(f) resource, and the provisions of Section 4(f) would not be triggered.

Constructive Use

Birch Park is located greater than 500 feet from the proposed alignment. It is not classified as a noise-sensitive resource since it consists of active recreational amenities which do not depend on a quiet setting. As a result of Streetcar Alternatives 1 and 2, this site is not expected to experience intermittent noise increases or visual effects severe enough to substantially impair the protected activities, features, or attributes of the recreational site.

This resource is beyond the 21-foot criteria for vibration damage described previously and no adverse ground-bourne vibration effects from general construction activity would occur. Access would not be restricted, and all remaining potential effects of construction (e.g., fugitive dust, noise, and traffic) would be temporary and would not substantially impair this resource.

Operation of Streetcar Alternatives 1 and 2 would not restrict access, generate localized pollutant emissions, or create a visual impairment to the park. There is no direct line-of-sight from the park to the alignment. At a distance of more than 500 feet, operational activity would generate a vibration level substantially less than the FTA significance criteria of 65 VdB for the most sensitive land uses. Therefore, operational activity would not result in adverse vibration levels. In addition, intervening buildings would block the line-of-site between the park and streetcar operations along the proposed alignment. These intervening buildings act as barriers and would attenuate streetcar vehicle noise. The FTA screening distance for operational noise is 175 feet when considering obstructed views. The park is located outside of the operational noise screening distance, and no further analysis is required. No substantial impairment of the use of the park features would occur. There are no sensitive structures which could be affected by vibration. Additionally, access to the resource would improve as a result of the streetcar providing additional means of transportation. Therefore, Streetcar Alternatives 1 and 2 would not cause a constructive use of Birch Park.

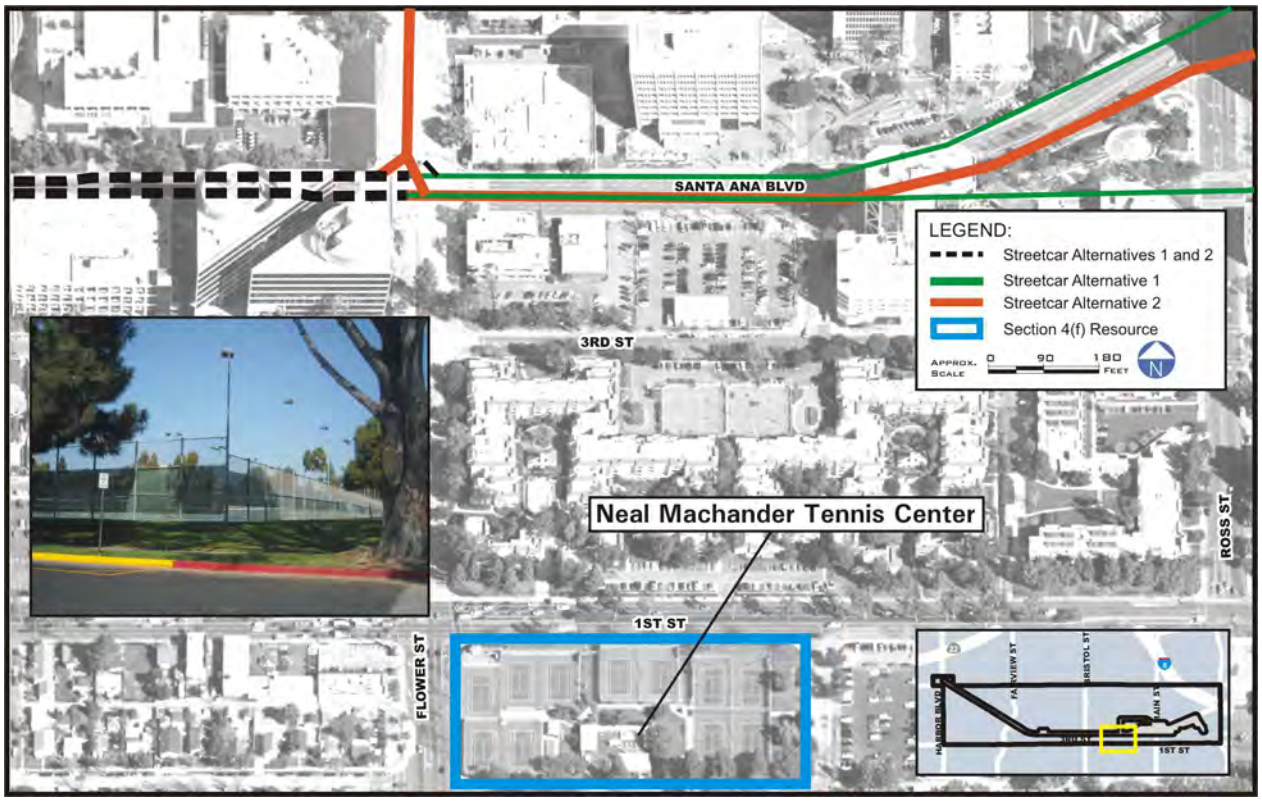
3.1.9 Neal Machander Tennis Center

The Neal Machander Tennis Center **(Figure 3-10)** is located near the 1st/Flower Streets intersection and includes 11 tennis courts. It is greater than 500 feet from the alignment.

Direct Use

The Neal Machander Tennis Center is not located within the footprint of Streetcar Alternatives 1 and 2 and it would not be incorporated into the alternatives through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of Streetcar Alternatives 1 and 2. Therefore, implementation of Streetcar Alternatives 1 and 2 would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Figure 3-10: Neal Machander Tennis Center



Temporary Use

Streetcar Alternative 1 does not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of Streetcar Alternatives 1 and 2 would not result in a use of this 4(f) resource, and the provisions of Section 4(f) would not be triggered.

Constructive Use

The Neal Machander Tennis Center is located greater than 500 feet from the proposed project alternatives. Nevertheless, this park is not classified as a noise-sensitive resource since it consists of active recreational amenities which do not depend on a quiet setting. This resource is beyond the 21-foot criteria for vibration damage described previously and no adverse ground-bourne vibration effects from general construction activity would occur. Access would not be restricted, and all remaining potential effects of construction (e.g., fugitive dust, noise, and traffic) would be temporary and would not substantially impair this resource.

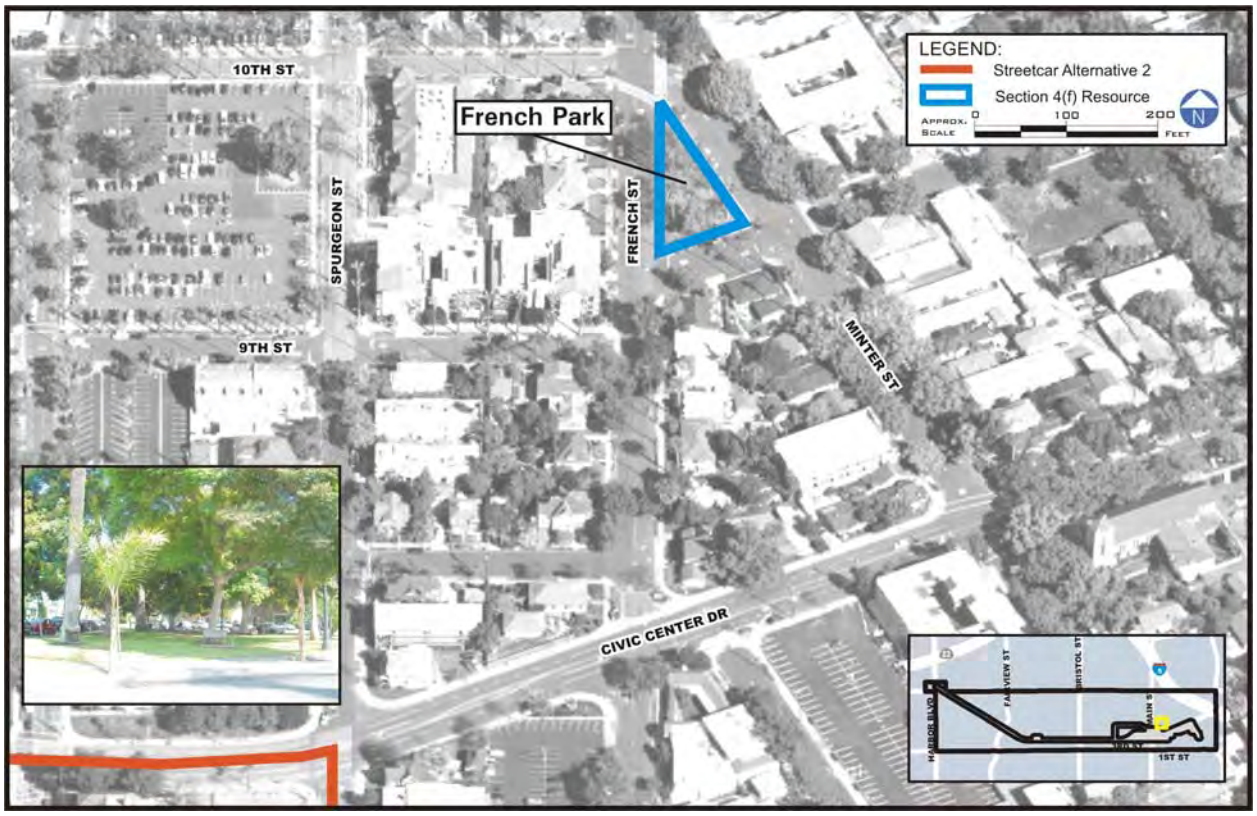
Operation of Streetcar Alternatives 1 and 2 would not restrict access, generate localized pollutant emissions, or create a visual impairment to the facility. There is no direct line-of-sight from the park to the alignment. At a distance of more than 500 feet, operational activity would generate a vibration level substantially less than the FTA significance criteria of 65 VdB for the most sensitive land uses. Therefore, operational activity would not result in

adverse vibration levels. In addition, intervening buildings would block the line-of-site between the park and streetcar operations along the proposed alignment. These intervening buildings act as barriers and would attenuate streetcar vehicle noise. The FTA screening distance for operational noise is 175 feet when considering obstructed views. The park is located outside of the operational noise screening distance, and no further analysis is required. No substantial impairment of the use of the park features would occur. There are no sensitive structures which could be affected by vibration. Additionally, access to the resource would improve as a result of Streetcar Alternatives 1 and 2 providing additional means of transportation. Therefore, Streetcar Alternatives 1 and 2 would not cause a constructive use of Neal Machander Tennis Center.

3.1.10 French Park – Streetcar Alternative 2 Only

French Park (**Figure 3-11**) is located near the 10th/French Streets intersection and includes a picnic area. It is greater than 500 feet from the alignment.

Figure 3-11: French Park



Direct Use

French Park is not located within the footprint for Streetcar Alternative 2 nor would it be incorporated into the alternative through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of Streetcar Alternative 2. Therefore, implementation of Streetcar Alternative 2 would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

Streetcar Alternative 2 does not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of Streetcar Alternative 2 would not result in a use of this 4(f) resource, and the provisions of Section 4(f) would not be triggered.

Constructive Use

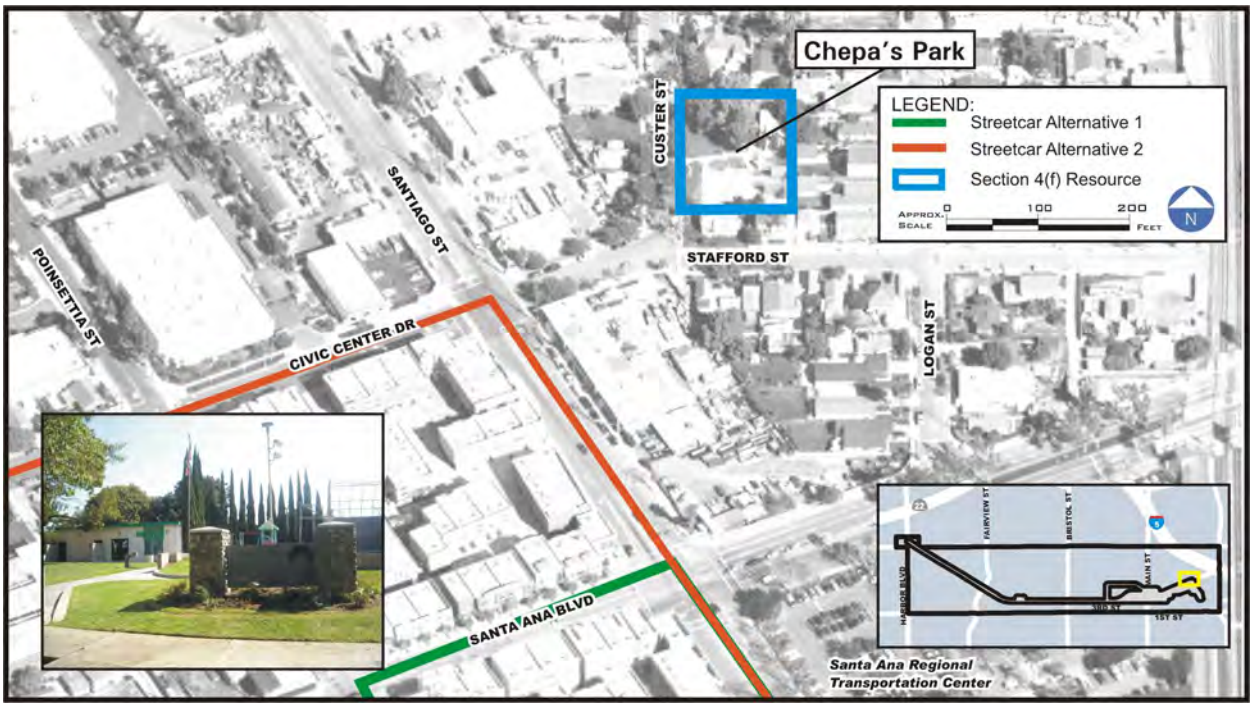
French Park is located greater than 500 feet from the alignment. Nevertheless, this park is not classified as a noise-sensitive resource since it consists of active recreational amenities which do not depend on a quiet setting. This resource is beyond the 21-foot criteria for vibration damage described previously and no adverse ground-bourne vibration effects from general construction activity would occur. Access would not be restricted, and all remaining potential effects of construction (e.g., fugitive dust, noise, and traffic) would be temporary and would not substantially impair this resource.

Operation of the Streetcar Alternatives 1 and 2 would not restrict access, generate localized pollutant emissions, or create a visual impairment to the park. There is no direct line-of-sight from the park to the alignment. At a distance of more than 500 feet, operational activity would generate a vibration level substantially less than the FTA significance criteria of 65 VdB for the most sensitive land uses. Therefore, operational activity would not result in adverse vibration levels. In addition, intervening buildings would block the line-of-site between the park and streetcar operations along the proposed alignment. These intervening buildings act as barriers and would attenuate streetcar vehicle noise. The FTA screening distance for operational noise is 175 feet when considering obstructed views. The park is located outside of the operational noise screening distance, and no further analysis is required. No substantial impairment of the use of the park features would occur. There are no sensitive structures which could be affected by vibration. Additionally, access to the resource would improve as a result of Streetcar Alternatives 1 and 2 providing additional means of transportation. Therefore, Streetcar Alternatives 1 and 2 would not cause a constructive use of French Park.

3.1.11 Chepa's Park

Chepa's Park (**Figure 3-12**) is located at the Stafford/Custer Streets intersection and includes basketball courts, handball courts, and a playground. It is greater than 500 feet from the alignment.

Figure 3-12: Chepa's Park



Direct Use

Chepa's Park is not located within the footprint of Streetcar Alternatives 1 and 2, and it would not be incorporated into the alternative through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of Streetcar Alternatives 1 and 2. Therefore, implementation of Streetcar Alternatives 1 and 2 would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

Streetcar Alternatives 1 and 2 does not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of Streetcar Alternatives 1 and 2 would not result in a use of this 4(f) resource, and the provisions of Section 4(f) would not be triggered.

Constructive Use

Chepa's Park is located greater than 500 feet from the proposed project alternatives. Nevertheless, this park is not classified as a noise-sensitive resource since it consists of active recreational amenities which do not depend on a quiet setting. This park is not classified as a noise-sensitive resource since it consists of active recreational amenities, which do not depend on a quiet setting. This resource is beyond the 21-foot criteria for vibration damage described previously and no adverse ground-bourne vibration effects from general construction activity would occur. Access would not be restricted, and all remaining

potential effects of construction (e.g., fugitive dust, noise, and traffic) would be temporary and would not substantially impair this resource.

Operation of Streetcar Alternatives 1 and 2 would not restrict access, generate localized pollutant emissions, or create a visual impairment to the park. There is no direct line of sight from the park to the alignment. At a distance of more than 500 feet, operational activity would generate a vibration level substantially less than the FTA significance criteria of 65 VdB for the most sensitive land uses. Therefore, operational activity would not result in adverse vibration levels. In addition, intervening buildings would block the line-of-site between the park and streetcar operations along the proposed alignment. These intervening buildings act as barriers and would attenuate streetcar vehicle noise. The FTA screening distance for operational noise is 175 feet when considering obstructed views. The park is located outside of the operational noise screening distance, and no further analysis is required. No substantial impairment of the use of the park features would occur. There are no sensitive structures which could be affected by vibration. Additionally, access to the resource would improve as a result of Streetcar Alternatives 1 and 2 providing additional means of transportation. Therefore, Streetcar Alternatives 1 and 2 would not cause a constructive use of Chepa's Park.

3.2 Wildlife and/or Waterfowl Refuges

There are no wildlife or waterfowl refuges within the Study Area.

3.3 Historical and/or Archaeological Sites

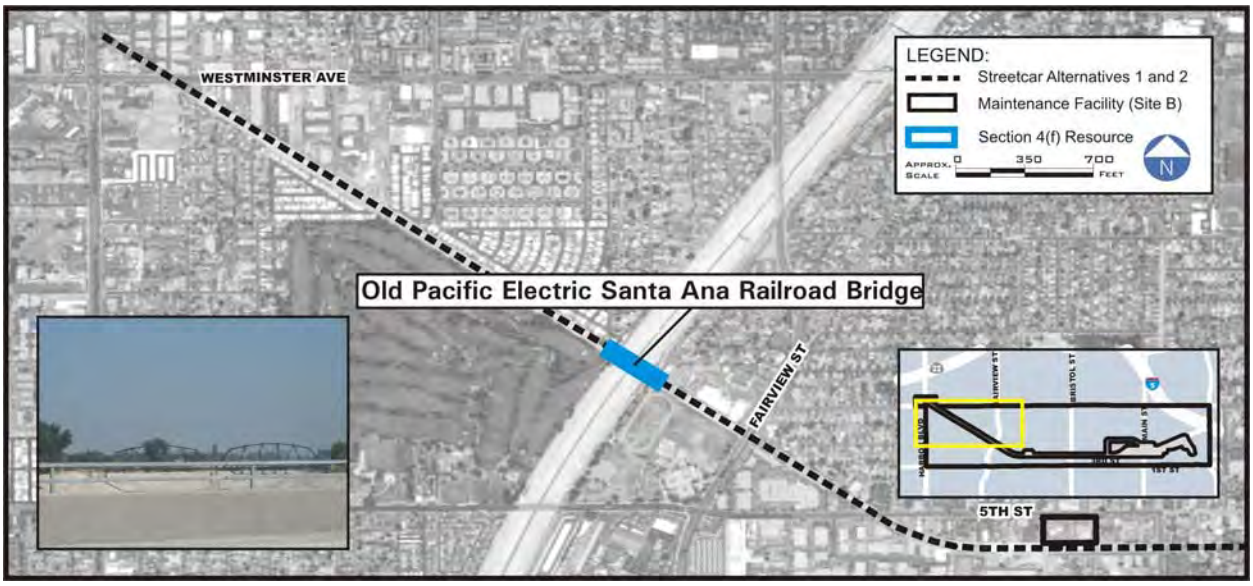
3.3.1 Old Pacific Electric Santa Ana River Bridge

The Old Pacific Electric Santa Ana River Bridge (**Figure 3-13**) was built in 1905 and is located between the eastern terminus of the abandoned PE ROW and approximately 700 feet west of West Civic Center Drive. **Figure 2-11** in Chapter 2 shows a plan view and cross section of the bridge in relationship to the alignment. The bridge extends approximately 400 feet on a northwest to southeast orientation over the Santa Ana River. It is approximately 18 feet wide with the central roadbed portion approximately 10 feet wide and it originally carried a single track measuring eight feet and seven inches in width. The structure consists of two continuous steel truss spans supported by a large single pier in the center of the riverbed and concrete abutments at either end.

The Old Pacific Electric Santa Ana River Bridge appears to possess the requisite significance to be eligible for listing on the NRHP as an unusual example of a bridge building type designed to improve the early infrastructure of southern California. The Old Pacific Electric Santa Ana River Bridge is an example of the "Pegram Truss" type of bridge, which was used throughout the nation from the late 1880s to the early 20th century. In the Pegram Truss design, the upper chords of the truss are all of equal length. Examples of this type of bridge construction are extremely rare in California. This structure is the only known existing use of the Pegram Truss in southern California. The bridge appears to retain sufficient historic integrity of

location, design, workmanship, feeling, and association. The Pegram Truss style, patented in 1885, produced a very distinguishable geometric design, with its posts arranged at increasing angles from the vertical chords as one moves from the center of the truss toward the ends.

Figure 3-13: Old Pacific Electric Santa Ana River Bridge



The bridge was abandoned in 1950. Currently, there is no access to the bridge and both portals to the bridge have been obstructed with non-historic period security fencing. Evidence of vandalism is present on the surfaces of many of the steel supports.

Under the proposed project, the Old Pacific Electric Santa Ana River Bridge would remain in place and a single-track bridge would be constructed immediately to the south. Through the use of gates and signaling, the single-track bridge would accommodate bi-directional fixed guideway traffic. Although adequate for the proposed project, this option would have capacity constraints for future expansion. The design of the new bridge would ensure the preservation of the character-defining features and would avoid damaging or destroying materials, features, or finishes that are important to the property. The existing bridge would remain closed, resulting in continued interference to the primary function of the bridge.

Direct Use

The proposed project would require the alignment to be grade-separated from the Santa Ana River Trail on both the east and west sides of the river. This would require an alteration to the west abutment of the Old Pacific Electric Santa Ana River Bridge to allow the trails to be separated. This would constitute a use of the resource.

An additional alternative to demolish and replace the bridge and an alternative to relocate the bridge 650 feet to the south were analyzed. After consultation with the Santa Ana Historical Preservation Society, it was determined that demolition of the bridge would trigger an unmitigable adverse effect. It was also determined the relocation of bridge would constitute a direct use and remove the resource from its historical context in the PE ROW, which would

change the setting. Mitigation would be required to reduce the adverse effect. Therefore, these alternatives would not result in the least overall harm to the resource and were eliminated from further consideration. It was determined that no other feasible alternatives would avoid the use of this resource, or result in less environmental harm, which satisfy project objectives and address the grade separation requirements of the trail.

The Old Pacific Electric Santa Ana River Bridge would remain in place and a single-track bridge would be constructed immediately to the south. Through the use of gates and signaling, the single-track bridge would accommodate bi-directional fixed guideway traffic. It would require alteration in the western end of the bridge to connect beyond the Santa Ana River Trail which would result in a direct use. The minor alteration to the western bridge abutment would not substantially impair the features or attributes of the resource which qualify it as a National Register-eligible resource. The design of the new bridge would ensure the preservation of the character-defining features and would avoid damaging or destroying materials, features, or finishes that are important to the property. The existing bridge would remain closed and the height and widths would not change; however, the visual elements of the bridge would be affected because the materials used for the new parallel structures would differ from the historic materials. The new bridge would be constructed without the ornamental truss and the overhead wires and poles would partially obscure views from the south to the existing bridge, which is primarily seen by users of the Santa Ana River Trail. The feature that qualifies the bridge as a resource, the Pegram truss, is defined by its features of a distinguishable geometric design, with the posts arranged at increasing angles from the vertical chords from the center of the truss towards the ends. These features are most distinguishable at the top of the bridge span. Because the views of the existing bridge would only be partially obstructed at the base of the bridge and to a limited group of viewers, the adjacent single-track bridge would not substantially impair the bridge's activities, or view of the Pegram truss architecture. It should also be noted that the new bridge would require concrete pier structures to be located within the Santa Ana River floodplain. These additional structures would be required to comply with the requirements of Executive Order 11988 and a specific determination must be made that the additional pier structures would not entail a significant encroachment into the floodplain and adversely affect floodplain values. The SAS-GG Fixed Guideway Cultural Resources Evaluation Report determined that Streetcar Alternatives 1 and 2 would not have an adverse effect on the Old Pacific Electric Santa Ana River Bridge. Therefore, the proposed project would result in a *de minimis* use of the historic bridge. A *de minimis* impact of a historical resource is defined in 23 CFR 774.17 as occurring when no historic property is affected by the project or the project would have "no adverse effect" on the property in question.

Temporary Use

There are no existing facilities on the bridge (bike lanes, trails, or recreational facilities) which would be affected by Streetcar Alternative 1 or 2. Temporary effects to the western connection of the bridge would occur. Therefore, implementation of Streetcar Alternative 1 or 2 would result in the temporary use of this 4(f) resource.

Constructive Use

Constructing the structure south of the existing historic bridge could cause indirect effects, specifically visual and atmospheric intrusions. The new bridge would be constructed without the ornamental truss and the overhead wires and poles would partially obscure views from the south to the existing bridge, which is primarily seen by users of the Santa Ana River Trail. Because the views would only be partially obstructed to a limited group of viewers, the adjacent single-track bridge would not substantially impair the bridge's activities, features or attributes.

Vibration from the new bridge can only be transmitted through points of contact between the new bridge and the existing bridge. The only point of contact between the adjacent bridges would be through the foundation. Vibration from the new concrete bridge would need to travel down the support columns, into the bridge foundation and essentially vibrate the ground and the concrete channel lining. Those vibrations would then need to be transmitted up the existing bridge support/pier to the existing bridge truss. In general, concrete is not good at transmitting vibrations because it generally is in a cracked condition (it is not a homogeneous material like steel) that tends to damp out/mute vibrations. Vibration from a streetcar traveling over the new concrete bridge and causing significant damage to the existing adjacent bridge would be improbable. During final design, a qualified structural engineer would survey the existing foundation and other structural aspects of the Pacific Electric Santa Ana Railroad Bridge and provide measures to protect the historic bridge from potential vibration damage. Therefore, Streetcar Alternatives 1 and 2 would not cause a constructive use of the bridge. In addition, the SA-GG Fixed Guideway Cultural Resources Evaluation Report (see Appendix C of this EA/DEIR report) found that no adverse effects to the bridge would occur. Therefore, Streetcar Alternative 1 or 2 would not cause a constructive use of the bridge.

3.3.2 Quonset Huts

The Quonset Hut was conceived during World War II when the American military needed a prefabricated, lightweight shelter that could be easily shipped and quickly assembled. After the war, the sliced tube of corrugated metal was adapted to non-military uses such as, warehouses, manufacturing facilities, and even residences. The buildings feature cylindrical roof and walls of corrugated metal. Each building has two steel-frame, multi-pane windows with metal screens, located on either side of the main door. The windows are arranged symmetrically. The main entry of each building, which is centered on the primary façade, is filled with a garage-sized door of corrugated metal inset with a single-entry door. The Quonset Huts (**Figure 3-14**) are located within the area of potential effect (APE) at 1424 North Susan Street.

Figure 3-14: Quonset Huts

Direct Use

The Quonset Hut is not located within the footprint for any of the Build Alternatives nor would it be incorporated into the alternatives through partial or full acquisition of the properties. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource and the provisions of Section 4(f) would not be triggered.

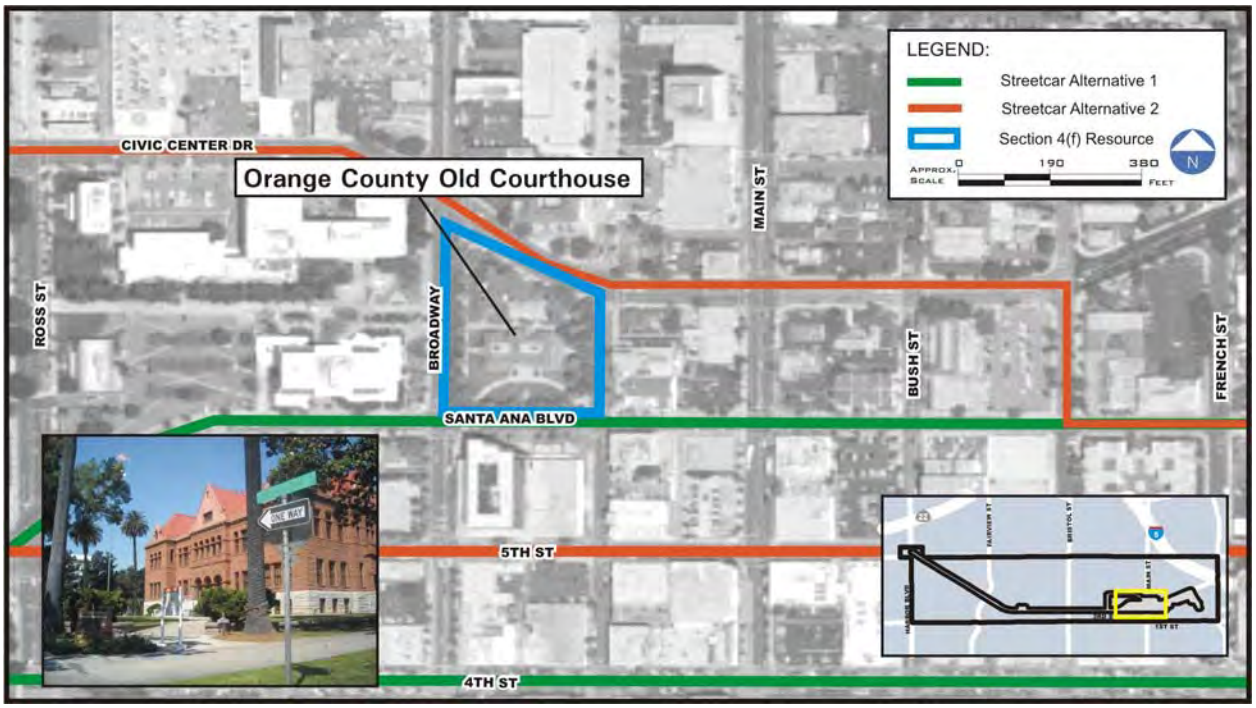
Constructive Use

As discussed earlier, the features and attributes that qualify historic resources for the National Register are not typically affected by proximity impacts, because those features and attributes remain in place after project implementation. This historic resource is not expected to experience indirect noise increases or visual effects severe enough to impair the protected activities, features, or attributes of the historic site. The Quonset Hut is located beyond the 21-foot threshold for vibration effects and would not be affected by construction or operation of the proposed project. In addition, the SA-GG Fixed Guideway Project Cultural Resources Evaluation Report found that no adverse effects to the Quonset Hut would occur. Therefore, the Build Alternatives would not cause a constructive use of the Quonset Hut.

3.3.3 Orange County's Original Courthouse

Orange County's Original Courthouse (Old Orange County Courthouse) (**Figure 3-15**) is the oldest court building in Southern California. The Courthouse was dedicated in 1901 and is on the *NRHP* and is a *State of California Historic Landmark*. The building currently contains the Orange County History Center and various government offices. The courthouse is located within the APE at 211 West Santa Ana Boulevard.

Figure 3-15: Orange County Old Courthouse



Direct Use

Orange County Old Courthouse is not located within the footprint for any of the Build Alternatives nor would it be incorporated into the alternatives through partial or full acquisition of the properties. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource and the provisions of Section 4(f) are not triggered.

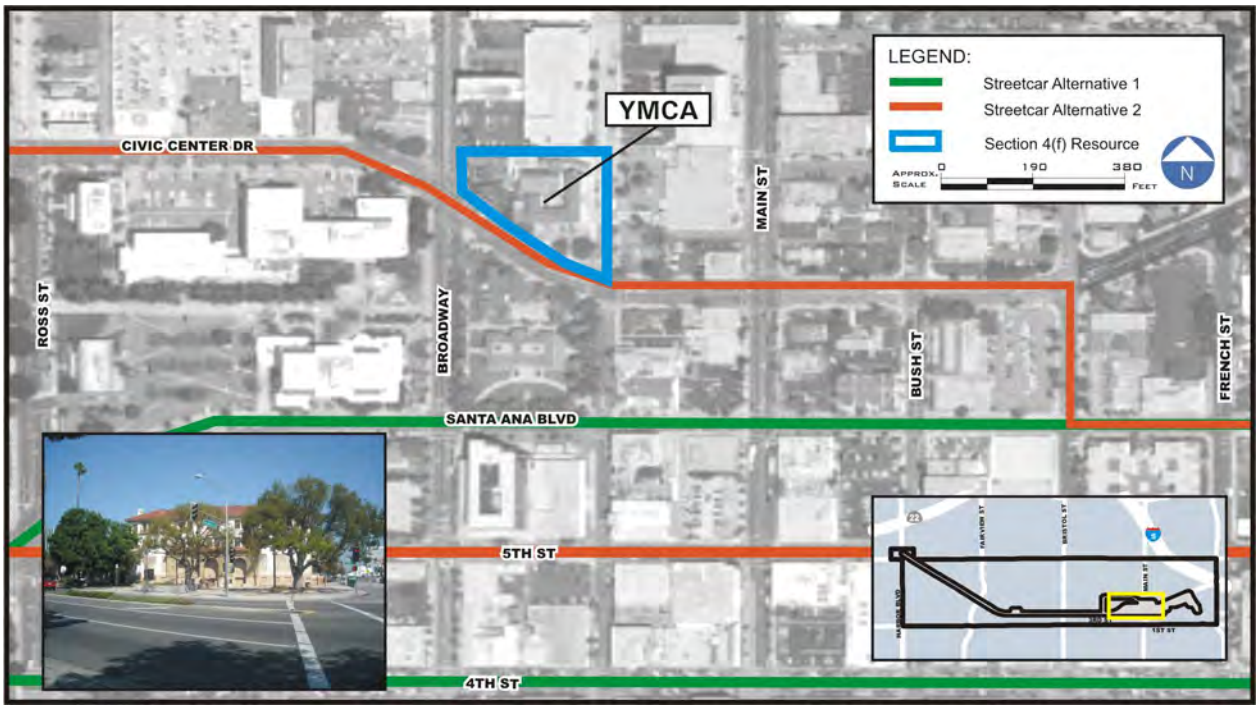
Constructive Use

As discussed earlier, the features and attributes that qualify historic resources for the NRHP are not typically affected by proximity impacts, because those features and attributes remain in place after project implementation. This resource is beyond the 21-foot criteria for vibration damage described previously and no adverse vibration effects would occur. In addition, the SA-GG Fixed Guideway Project Cultural Resources Evaluation Report found that no adverse effects to the Old Orange County Courthouse would occur. Therefore, the Build Alternatives would not cause a constructive use of Orange County's Original Courthouse.

3.3.4 Young Men's Christian Association (YMCA)

The YMCA (**Figure 3-16**) is located within the APE at 203 and 205 West Civic Center Drive. The Spanish Colonial Revival-style community center and social hall was constructed in 1923 and is on the *NRHP* and is a *State of California Historic Landmark*. The building has been categorized as a landmark because of its historical/cultural significance to the City of Santa Ana and its unique architectural significance.

Figure 3-16: YMCA



Direct Use

The YMCA is not located within the footprint for any of the Build Alternatives nor would it be incorporated into the alternatives through partial or full acquisition of the properties. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource and the provisions of Section 4(f) would not be triggered.

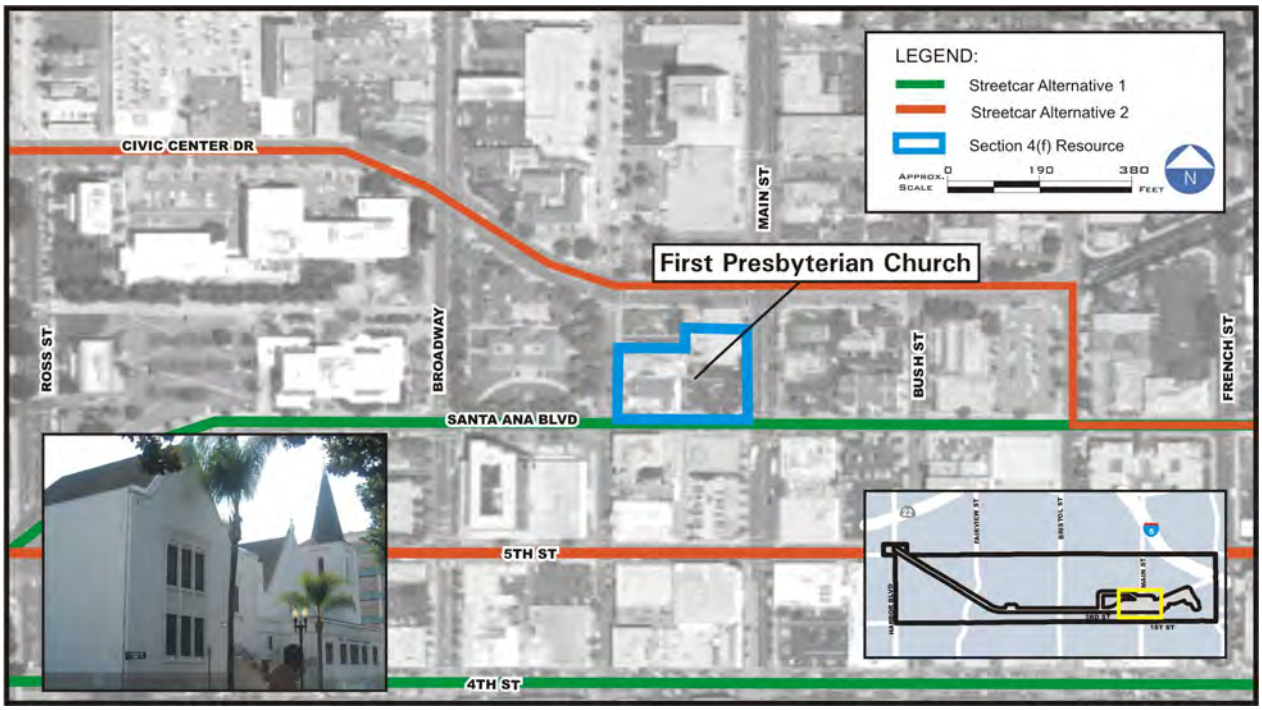
Constructive Use

As discussed earlier, the features and attributes that qualify historic resources for the NRHP are not typically affected by proximity impacts, because those features and attributes remain in place after project implementation. There is a station stop at Broadway which would mean the streetcar would be traveling at a low speed in front of this resource and would not produce adverse vibration effects which could damage the building. In addition, the SA-GG Fixed Guideway Project Cultural Resources Evaluation Report found that no adverse effects to the YMCA would occur. Therefore, the Build Alternatives would not cause a constructive use of the YMCA.

3.3.5 First Presbyterian Church

The First Presbyterian Church (**Figure 3-17**) is located within the APE at 600 North Main Street. The Gothic Revival-style religious building was constructed in 1937 and is on the *NRHP* because it embodies the distinctive characteristics of the Gothic Revival architectural style with its steeple and roof tower, steep-pitched parapeted roofs, arched windows and drip molding.

Figure 3-17: First Presbyterian Church



Direct Use

The First Presbyterian Church is not located within the footprint for any of the Build Alternatives nor would it be incorporated into the alternatives through partial or full acquisition of the properties. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource and the provisions of Section 4(f) would not be triggered.

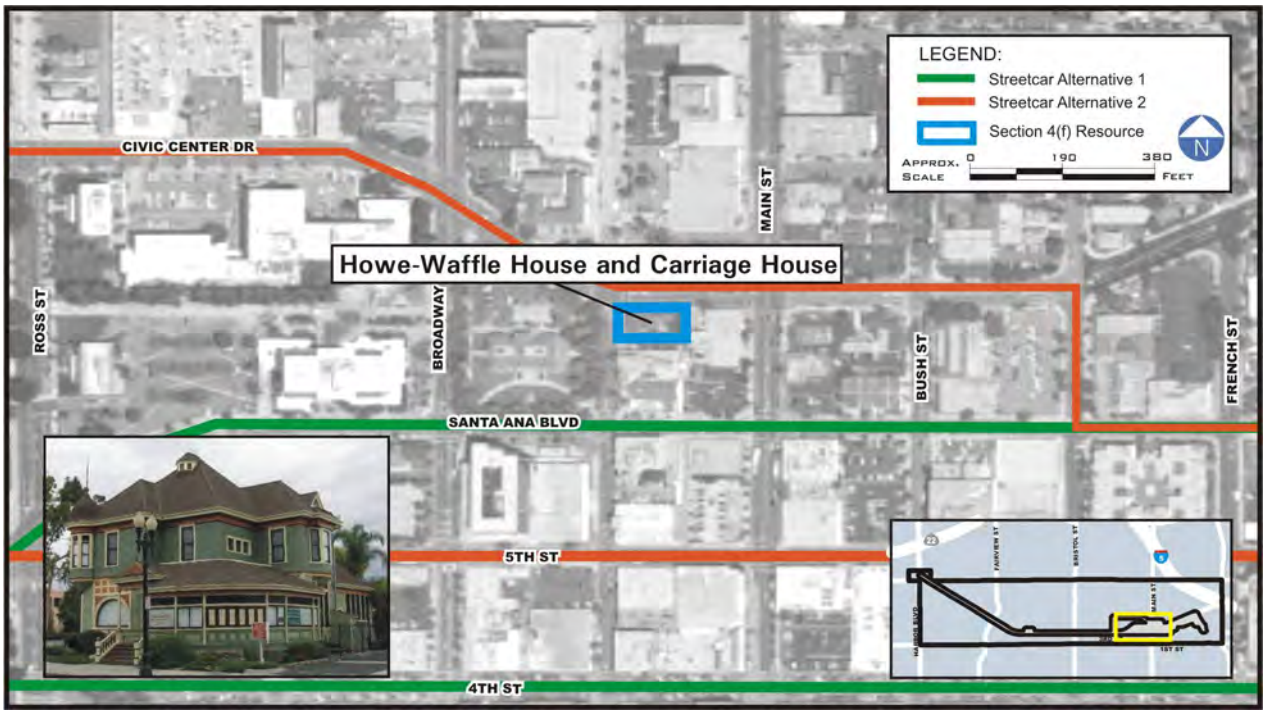
Constructive Use

As discussed earlier, the features and attributes that qualify historic resources for the NRHP are not typically affected by proximity impacts, because those features and attributes remain in place after project implementation. There is a station stop at Main Street which would mean the streetcar would be traveling at a low speed in front of this resource and would not produce adverse vibration effects which could damage the building. In addition, the SA-GG Fixed Guideway Project Cultural Resources Evaluation Report found that no adverse effects to the First Presbyterian Church would occur. Therefore, the Build Alternatives would not cause a constructive use of the First Presbyterian Church.

3.3.6 Howe-Waffle House and Carriage House

The Howe-Waffle House and Carriage House (**Figure 3-18**) is located within the APE at 702 Bush Street and 105 East 7th Street. The building was constructed in 1889 and is a Queen Anne-style single-family residence that has been converted into a museum. The house was moved to its current site in 1973 and is on the *NRHP* and is a *State of California Historic Landmark*. The building has been categorized as a landmark because of its historical/cultural significance to the City of Santa Ana and its unique architectural significance.

Figure 3-18: Howe-Waffle House and Carriage House



Direct Use

The Howe-Waffle House and Carriage House is not located within the footprint for any of the Build Alternatives nor would it be incorporated into the alternatives through partial or full acquisition of the properties. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource and the provisions of Section 4(f) would not be triggered.

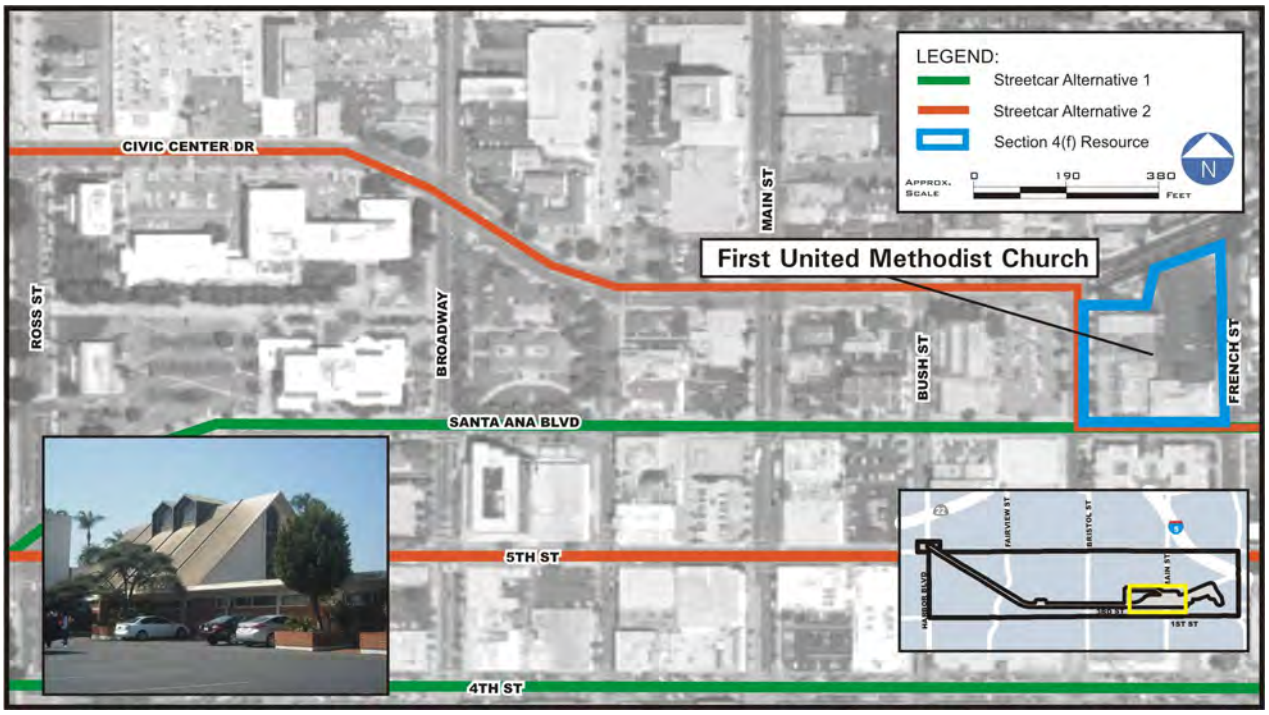
Constructive Use

As discussed earlier, the features and attributes that qualify historic resources for the NRHP are not typically affected by proximity impacts, because those features and attributes remain in place after project implementation. There is a station stop at Main Street which would mean the streetcar would be traveling at a low speed in front of this resource and would not produce adverse vibration effects which could damage the building. In addition, the SA-GG Fixed Guideway Project Cultural Resources Evaluation Report found that no adverse effects to the Howe-Waffle House and Carriage House would occur. Therefore, the Build Alternatives would not cause a constructive use of the Howe-Waffle House and Carriage House.

3.3.7 First United Methodist Church

The First United Methodist Church (**Figure 3-19**) is located within the APE at 624 French Street. The building was constructed in 1906 and is a Tudor Revival-style religious building. The building is on the *NRHP* because it embodies the distinctive characteristics of the Tudor Revival architectural style with its decorative half-timbering, deeply recessed windows with hoods and sills, and arched windows.

Figure 3-19: First United Methodist Church



Direct Use

The First United Methodist Church is not located within the footprint for any of the Build Alternatives nor would it be incorporated into the alternatives through partial or full acquisition of the properties. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource and the provisions of Section 4(f) would not be triggered.

Constructive Use

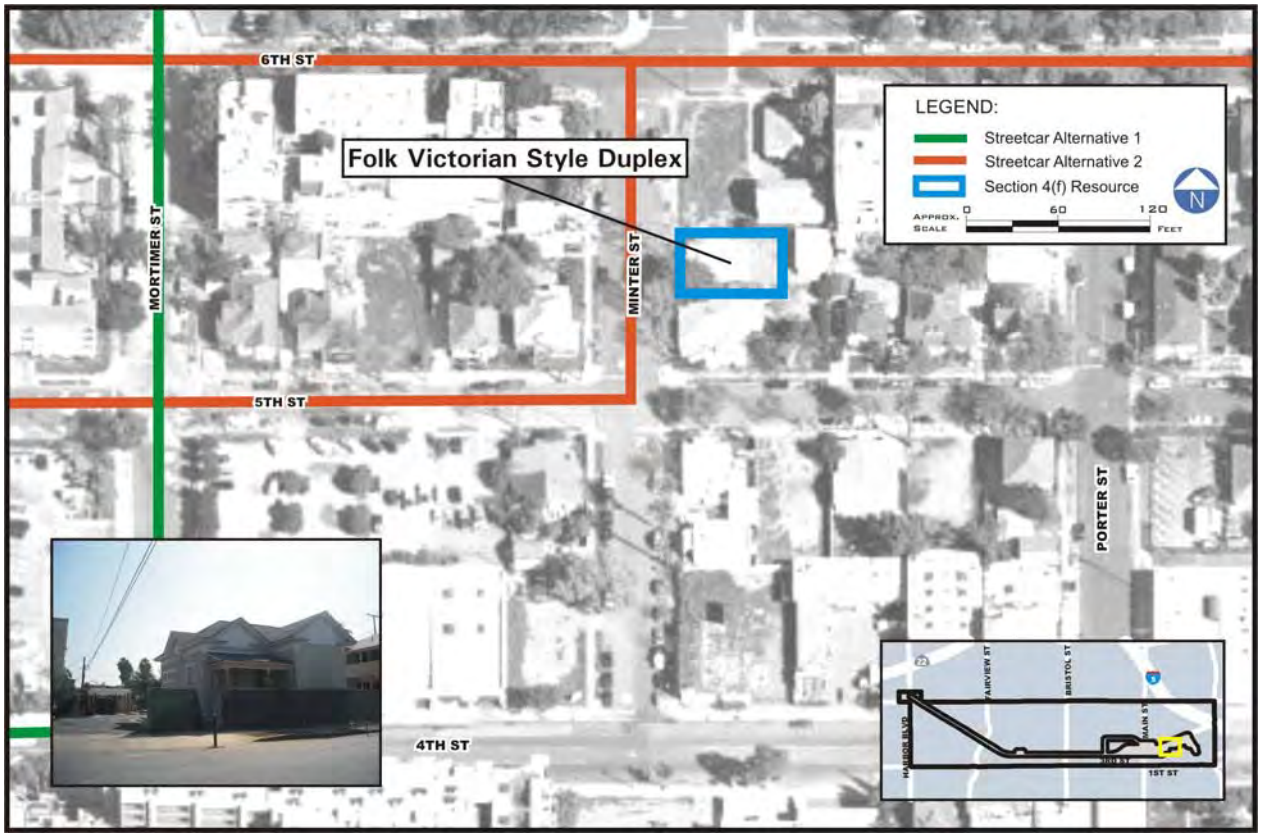
As discussed earlier, the features and attributes that qualify historic resources for the NRHP are not typically affected by proximity impacts, because those features and attributes remain

in place after project implementation. This resource is beyond the 21-foot criteria for vibration damage described previously and no adverse vibration effects would occur. In addition, the SA-GG Fixed Guideway Project Cultural Resources Evaluation Report found that no adverse effects to the First United Methodist Church would occur. Therefore, the Build Alternatives would not cause a constructive use of the First United Methodist Church.

3.3.8 Folk Victorian-Style Duplex Cottage

The Folk Victorian-Style Duplex Cottage (**Figure 3-20**) is located within the APE at 507 N Minter Street. The building was constructed between 1906 and 1949 and is on the *NRHP* because it embodies the distinctive characteristics of the Folk Victorian architectural style with its cross-gables with cornice returns, a recessed porch, and saw-tooth vertical siding.

Figure 3-20: Folk Victorian-Style Duplex Cottage



Direct Use

This resource is not located within the footprint of any of the Build Alternatives, nor would it be incorporated into the alternatives through partial or full acquisition of the property. Additionally, no permanent change to this resource would result as part of the Build Alternatives. Therefore, implementation of the Build Alternatives would not result in a direct use of this 4(f) resource and provisions of Section 4(f) would not be triggered.

Temporary Use

The Build Alternatives do not involve temporary occupancy or a change in property ownership of this 4(f) resource. Therefore, implementation of the Build Alternatives would not result in a use of this 4(f) resource, and the provisions of Section 4(f) would not be triggered.

Constructive Use

As discussed earlier, the features and attributes that qualify historic resources for the NRHP are not typically affected by proximity impacts, because those features and attributes remain in place after project implementation. In the Downtown area, the streetcar would be traveling at an average of 13 miles per hour, a low speed that would not produce adverse vibration effects which could damage the building. In addition, the SA-GG Fixed Guideway Project Cultural Resources Evaluation Report found that no adverse effects to the Folk Victorian-Style Duplex Cottage would occur. Therefore, the Build Alternatives would not cause a constructive use of the Folk Victorian-Style Duplex Cottage.

3.4 Cumulative Effects

Cumulative effects are defined as effects that result from past, present, and reasonably foreseeable future actions, combined with the potential effects of Streetcar Alternative 1 or 2. A list of current and reasonably foreseeable future actions and projects was developed in coordination with the Cities of Santa Ana and Garden Grove. This list is presented in **Table 3-3** and includes known future land use developments as well as transportation projects.

As described in detail in Chapter 1, Section 4(f) analysis is legislated by the Department of Transportation Act of 1966; therefore, it is applicable only to projects proposed by the Secretary of Transportation. Of the projects listed in **Table 3-2**, only projects 12, 14 and A (Bristol Street Widening, Grand Avenue Widening, and First Street Widening, respectively) are federally funded transportation projects. A review of the Study Area and/or environmental analysis prepared for these projects indicate that Section 4(f) resources were not affected; therefore, no cumulative Section 4(f) effects would result due to implementation of the Build Alternatives.

Table 3-2. Santa Ana-Garden Grove Fixed Guideway - Cumulative Projects List

No.	Project	Description/Land Use	No. of units or square feet (sf)	Location	Primary APN
Approved					
1	Alliance Church of Orange	Church addition (gym/classroom), *approved 2009*	21,000 sf	2130 N. Grand Ave.	396-191-44
2	Christ Our Savior Cathedral	Sanctuary (2,800-seat), *approved 2005*		2001 W. McArthur Blvd.	140-061-94
3	Discovery Science Center Ph. II	IMAX theatre (275-seat), *approved 2002*		2032 N. Main St.	399-102-09
4	Lyon Homes	Residential (Condo), *approved 2011*	300 u	100-130 E. McArthur Blvd.	411-081-26
5	Promenade Point	Residential (Condo), *approved 2005*	194 u	200 E. First American Wy.	411-074-03
6	CVS/Sav-On Drug Store	Pharmacy, drive through, *approved 2008*	15,836 sf	115 N. Harbor Blvd.	198-182-22
7	Skyline Phase II	Residential (Condo), *approved 2005*	150 u	10 E. Hutton Ctr.	411-081-28
8	Vista Del Rio	Residential, *approved 2009*	41 u	1600 W. Memory Ln.	101-055-27
9	Xerox Tower II	Office, *approved 2001*	210,000 sf	200 N. Cabrillo Park Dr.	400-071-03
10	YMCA	Recreational Facility, *approved 2007*	32,000 sf	2100 W. Alton Ave.	140-061-91
11	1306 W. Santa Ana Blvd.	Medical/Office Building, *approved 2011*	6,000 sf	1306 W. Santa Ana Blvd.	007-183-08
12	Grand Avenue Widening NOTE: Specifically included in SAFG No Build Description	Roadway Widening		1st St. to 4th St.	Multiple APNS
13	Broadway Reconstruction	Street Reconstruction		Civic Center Dr. to Santa Clara St.	Multiple APNS
14	Bristol Street Widening NOTE: Specifically included in SAFG No Build Description	Street Widening		Warner Ave. to Memory Ln.	Multiple APNS
15	First and Cabrillo Towers	Residential (Condo), *approved 2007*	374 u	1901 E. 1st St.	400-081-08
16	Related Co. Apartments	Residential (Apartments)	74 u	611 E. Minter St.	398-301-07
A	First Street Widening Source: RTIP / RTP. Specifically included in SAFG No Build Description	Roadway widening from 4 to 6 Lanes		Susan St. to Fairview St.	Multiple APNS
B	Transit Zoning Code NOTE: Specifically included in SAFG No Build Description	Land Use/Zoning Overlay, *approved 2010*		eastern third of SAFG Study Area	Multiple APNS
Application Under Review					
17	C & C Affordable Housing Project	Residential (Apartments)	36 u	605 E. Washington Ave.	398-151-12
18	Dayton Commercial Center	Commercial	7,275 sf	W. Edinger Ave.	408-273-11
19	Dr. Bui Medical Building	Medical Office	6,500 sf	202 N. Euclid Ave.	099-223-26
20	Francis Xavier	Residential (Affordable/Special Needs)	12 u	801 E. Santa Ana Blvd.	398-303-04
21	Related Co. Apartments	Residential (Apartments)	13 u	714 E. Santa Ana Blvd.	398-312-18

Table 3-2. Santa Ana-Garden Grove Fixed Guideway - Cumulative Projects List

No.	Project	Description/Land Use	No. of units or square feet (sf)	Location	Primary APN
22	Related Co. Apartments	Residential (Apartments)	12 u	801 E. Brown St.	398-312-09
23	Related Co. Apartments	Residential (Apartments)	12 u	806 E. Santa Ana Blvd.	398-313-02
24	Related Co. Site A	Residential (Rowhouse)	6 u	501-515 E. Fifth St.	398-332-06
25	Related Co. Site B	Residential (Rowhouse)	9 u	606-620 E. Fifth St.	398-228-02
26	Related Co. Site C1 & C2	Residential (Rowhouse and duplex)	6 u	601-607 E. Fifth St.	398-333-01
27	Related Co. Site D	Residential (Rowhouse)	4 u	615-621 E. Fifth St.	398-333-05
28	Related Co. Site E	Residential (Duplex)	2 u	712 E. Fifth St.	398-337-03
29	Santa Ana Blvd. Spec. Plan Area	Mixed-used	600 u	Santa Ana Blvd.	398-311-14
30	The MET at South Coast	Residential (Condo) (five-and six-story over parking)	TBD	200 E. First American Wy.	411-074-03
31	TAVA Homes	Residential (Single Family)	24 u	1584 E. Santa Clara Ave.	396-052-14
32	Town and Country Independent Living	Residential (Condo)	144 u	555 E. Memory Ln.	041-213-04
33	Vista Del Rio	Residential (Apartments/Special needs)	41 u	1600 W. Memory Ln.	101-055-27
34	1100 S. Grand Ave.	McDonald's with drive through	3,838 sf	1100 S. Grand Ave.	011-263-02
35	3312 W. First St.	Office (two-story)	29,000 sf	3312 W. First St.	144-341-07
36	630 S. Hathway St.	Industrial (two-story)	4,100 sf	630 S. Hathaway	011-311-04
C	Santa Ana Blvd. Grade Separation NOTE: PSR / conceptual engineering is in process. City of Santa Ana is lead. Not included in SAFG No Build	Reconstruct Santa Ana Blvd. at Metrolink railroad tracks		north of SARTC	Multiple APNS
D	SARTC Expansion / Redevelopment NOTE: Master Planning Stage - Santa Ana is lead, funded by OCTA Go Local. Not included in SAFG No Build	Intermodal Transportation Center / Land Use Development		SARTC and surrounding parcels including east of existing Metrolink tracks	Multiple APNS
E	PE Major Arterial NOTE: RSTIS completed. OCTA to issue RFQ for PSR phase in 2011. OCTA is lead. Project is listed as part of the MPAH. Not included in SAFG No Build	New four-lane roadway in PE ROW / ramps to SR-22		PE ROW, from SR-22 to Raitt St.	Multiple APNS
F	Class II bike lane on Civic Center Dr. NOTE: City of Santa Ana is lead and planning concept for this bike lane has been identified. Not in SAFG No Build, but design for SAFG Streetcar Alternative 2 accounts	Early planning stages (per Citywide bicycle program)		TBD – on Civic Center Dr.	Multiple APNS

Table 3-2. Santa Ana-Garden Grove Fixed Guideway - Cumulative Projects List

No.	Project	Description/Land Use	No. of units or square feet (sf)	Location	Primary APN
G	Class I bicycle facility on PE ROW NOTE: No work has been completed. Not in SAFG No Build list.	OCTA and County of Orange Bicycle Master Plan only.		Harbor Blvd. to Raitt	Multiple APNS
Under Construction					
37	Alton Court	Residential (Single Family)	38 u	3321 S. Fairview St.	414-171-01
38	Wintersburg Presbyterian Church	Classrooms, Gym, Outreach Center	24,348 sf	2000 N. Fairview St.	101-652-13
39	Audi Dealership	Commercial, addition to showroom	7,700 sf	1425 S. Auto Mall Dr.	402-101-37
40	Courtyard by Marriot Hotel	Hotel (155 rooms)	100,000 sf	8 McArthur Pl.	411-081-28
41	Downtown Artist Lofts III	Artist Live/Work Lofts	16 u	SWC Main/Third St.	398-601-02
42	Dr. Do Medical Office	Office (two-story)	6,000 sf	4718 W. First St.	108-101-45
43	Goodwill Industries	Office/Industrial	12,000 sf	410 N. Fairview St.	405-222-04
44	Latino Health Access	Community Center	3,074 sf	602 E. Fourth St.	398-481-05
45	Santa Ana Express Car Wash	Drive-through car wash		202 E. First St.	398-51-401
46	Olen Properties (Parkcenter)	Office (one and two-story)	29,170 sf	601 N. Park Center Dr.	400-042-04
47	One Broadway Plaza	Office (37-story)	518,000 sf	1109 N. Broadway	398-561-07

Source: City of Santa Ana Planning Department August 2011

Notes:
Unit (u), Not Applicable (N/A)
Projects A - G are reasonably foreseeable, but note that projects C – F are not yet funded and committed.
Projects A and B have been approved. Projects C - F are in various stages of early project development.
Project Number: 12-14 retrieved from City of Santa Ana Capital Improvement Program FY 09-10 by Category (http://www.ci.santaana.ca.us/finance/budget/1011/10-11_proposed_annual_budget.pdf)

Chapter 4 Letters and Other Correspondence

Relevant coordination, including consultation and subsequent agreement with the "Officials with Jurisdiction over the Section 4(f) Resource" is included for the purposes of Section 4(f) compliance. Regardless of the level of Section 4(f) evaluation, coordination with the Officials with Jurisdiction is required to provide concurrence on the effects of the proposed project on the Section 4(f) resource, and/or concurrence on minimization measures proposed for Section 4(f) effects. Copies of letters and correspondence related to the coordination efforts conducted for the Section 4(f) Evaluation will be included as part of the Final EA/DEIR.

4.1 SHPO APE Map Concurrence Letter

Coordination with SHPO and project review is ongoing, following a time table and framework established through mutual agreement with FTA and OCTA. As of this writing, the SA-GG Fixed Guideway Project Cultural Resources Evaluation Report is currently under review by FTA. Upon FTA approval, this document will be transmitted to SHPO. This placeholder for the SHPO APE Map concurrence letter is provided in the event that the APE map is provided to SHPO for concurrence prior to submittal of the full Cultural Resources Evaluation Report to SHPO.

4.2 SHPO Concurrence on No Adverse Effect

Coordination with SHPO and project review is ongoing, following a time table and framework established through mutual agreement with FTA and OCTA. As of this writing, the SA-GG Fixed Guideway Project Cultural Resources Evaluation Report is currently under review by FTA. This report supports findings that the Build Alternatives would have no adverse effects for the properties listed below:

- Pacific Electric Santa Ana River Bridge
- Quonset Huts
- Orange County's Original Courthouse
- Young Men's Christian Association (YMCA) – Santa Ana-Tustin Chapter
- First Presbyterian Church (Cultural Report Map Reference 34)
- Howe-Waffle House and Carriage House
- First United Methodist Church
- Folk Victorian-Style Duplex Cottage

Upon FTA approval, the SA-GG Fixed Guideway Project Cultural Resources Evaluation Report will be transmitted to SHPO. This placeholder for SHPO Concurrence is provided in anticipation of the documentation necessary for the EA/DEIR when this is made available.

4.3 Coordination with Other Officials with Jurisdiction

Beyond cultural and historic resources, other parks, recreational facilities, and/or wildlife refuges within the Study Area were evaluated for applicability of Section 4(f) Requirements. Coordination with other officials did not occur for these additional properties because they are not considered Section 4(f) resources, or a Section 4(f) use is not anticipated. The lack of Section 4(f) use is discussed in further detail in Chapter 5.

Chapter 5 Other Park, Recreational Facilities, Wildlife Refuges, and Historic Properties Evaluated Relative to the Requirements of Section 4(f)

5.1 Related Resources not Protected by Section 4(f)

The properties listed in **Table 5-1** are not subject to the provisions of Section 4(f) because: 1) they are not publicly owned recreational facilities; 2) they are not open to the public, 3) they are not eligible historic properties; and/or 4) they are not publically owned wildlife our waterfowl refuges. Within the City of Garden Grove, there are no potential Section 4(f) resources within 0.25 mile of the Study Area.

5.1.1 Civic Center Drive Bike Lanes (Proposed)

The City of Santa Ana Bikeway Master Plan has also identified Class II bike lanes along Civic Center Drive, between Grand Avenue and the Santa Ana River Trail. Class II bike lanes are on-road bike lanes intended for transportation purposes, not recreational purposes. Therefore, these bike lanes are not protected by the requirements of Section 4(f).

5.1.2 Educational Institutions

The City of Santa Ana General Plan Open Space, Parks, and Recreation Element has identified the need to initiate a program of joint school-community use of school recreational facilities to expand usable public spaces, and also identifies local schools in its Open Space Plan. Santa Ana schools within the Study Area are a part of the Santa Ana Unified School District. The City of Santa Ana has four schools that have recreational facilities available for joint use and are available to the public. Spurgeon Intermediate School is the one school in the Study Area that has a joint-use recreational area available for public use and is considered a Section 4(f) Resource. The other schools near the alignment were not included in the analysis because they are not open to the public outside of school hours.

Table 5-1. Resources Not Protected by Section 4(f)

Resource Name	Location	Type	Notes
Santa Ana Boulevard and Civic Center Drive Bike Lanes	Santa Ana Boulevard and Civic Center Drive	Bike Lanes	Class II on-street bike lanes are intended for transportation purposes and not recreational purposes
Santa Ana Senior Center	424 W. 3rd Street	Senior recreation center	No access
Templo Calvario	2501 W. 5th Street	Church/Daycare	Privately owned
George Washington Carver Elementary School	1401 W. Santa Ana Boulevard	School – playground and fields	No access
Romero-Cruz Elementary School	1512 W. Santa Ana Boulevard	School – playground and fields	No access
Nova Academy Secondary Charter School	2609 W. 5th Street	School	Privately owned
James A. Garfield Elementary School	850 Brown Street	School – playground and fields	No access
Santa Ana High School	520 W. Walnut Street	School – playground and fields	No access
Community Day Intermediate and High School	804 N. Fairview Street	School – playground and fields	No access
Fremont Elementary	1930 W. 10th Street	School – playground and fields	No access
Santa Ana College	17th and Bristol Streets	School – playground and fields	No access
Our Lady of the Pillar School	W. 6th Street and N. Western Avenue	School – playground and fields	Privately owned
K. Irvine Day School	1002 W. 2nd Street	School – playground and fields	No access
Santa Ana Municipal Stadium	Civic Center Drive and Flower Street	Stadium	No access
Martin Heninger Elementary	417 W. Walnut Street	School – playground and fields	No access
Edward B. Cole Sr. Academy	333 E. Walnut Street	School – playground and fields	No access
Fredrick Remington Elementary	1325 E. 4th Street	School – playground and fields	No access
El Sol Science & Arts Academy of Santa Ana	1010 N. Broadway	School – playground and fields	No access
Orange County High School of the Arts	1010 N. Main Street	School – playground and fields	No access

Source: URS Corporation, 2011

Chapter 6 References

City of Garden Grove, 2008. Planning Division. City of Garden Grove General Plan Chapter 9, Parks Recreation and Open Space Element. May. Accessed on June 20, 2011.

City of Santa Ana, 1998. City of Santa Ana General Plan, Open Space, Parks, and Recreation Element. Adopted September 20, 1982, Reformatted January 2010.

Department of Interior, 2011. National Park Service. http://www.nps.gov/nts/nts_trails.html. Accessed July 6.

Orange, County of. Environmental Management Agency (OCEMA). Existing Bikeways Map. January 1992

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State of California, 2011. http://www.parks.ca.gov/trailsearch/. Accessed July 7.

Santa Ana River Trail and Parkway, 2011. http://www.santaanarivertrail.org/aboutus/history.html. Accessed July 6.

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