Chapter 2 - Project Alternatives

2.1 Project Description

This section describes the proposed action and the design alternatives that were developed by a multi-disciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts. The design alternatives were identified in the MIS that was conducted through the *North Coast Transportation Study* and refined with input from the PDT, the NEPA/404 MOU integration process, and public scoping information. This included the goal to provide the full range of transportation modal alternatives that are cost-effective, promote and provide incentives for ridesharing and alternative modes, accommodate regional and interregional freight movements, minimize environmental and community impacts. These alternatives were discussed and subsequently eliminated or identified for further consideration in the PSR (PDS) dated January 2000.

The proposed I-5 *NCC Project* would improve the existing I-5 freeway. The project begins at La Jolla Village Drive in San Diego and extends northward approximately 43 km (27 mi) to Harbor Drive in Oceanside. The main purpose is to maintain or improve the existing and future traffic operations in the I-5 north coastal corridor in order to improve the safe and efficient regional movement of people and goods for the planning design year of 2030. In February 2010, the estimated cost for the project, depending on the alternative, ranges between $3.3 billion and $4.3 billion, which includes right-of-way and utility relocation costs of between $8 million and $16.4 million and construction costs between $2.5 billion and $3.3 billion. Funding for the project comes from the State Transportation Improvement Program (STIP) – Regional Improvement Program (RIP) for Capital Outlay support in the 2008/09 FY.

Most of I-5 within the project area was originally built in the mid 1960s to the early 1970s as an eight-lane mixed-use freeway, which it remains. Local interchanges within the project area exist within the cities of San Diego, Solana Beach, Encinitas, Carlsbad, Oceanside, and within Camp Pendleton. Freeway-to-freeway interchanges within the project area exist at I-5/I-805, I-5/SR-56, I-5/SR-78, and I-5/SR-76. Recent major improvements have been made, such as widening at the I-5/I-805 merge area, adding High Occupancy Vehicle (HOV) lanes between Genesee and Via de la Valle, adding direct connector ramps (DAR) (westbound SR-56 to southbound I-5) at the I-5/SR-56 freeway-to-freeway interchange and other improvements. Construction to reconfigure the interchange at Lomas Santa Fe Drive and extend the existing HOV lanes north to the Manchester Overcrossing and San Elijo River Bridge was completed in the Fall of 2008.

The project alternatives were assessed for ability to meet the objectives of the purpose and need established for the project, with consideration to avoid and minimize impacts on the environment, local streets, and communities adjacent to the project, while adhering to Caltrans design and safety standards. The alternatives eliminated from further consideration are discussed in *Section 2.5 Alternatives Considered but Eliminated from Further Discussion.* The five alternatives are under consideration for this project are; “10+4 with barrier” (a total of ten main lanes with four HOV/Managed lanes contained in the median with barrier), “10+4 with buffer” (a total of ten main lanes with four HOV/managed lanes contained in the median with a painted stripe separation in lieu of a barrier), ”8+4 with buffer” (a total of eight main lanes with four HOV/Managed Lanes contained in the median with a painted stripe separation), “8+4 with barrier” (a total of eight main lanes with four HOV/Managed lanes contained in the median with barrier in lieu of painted stripe buffer), and the “No Build” alternative. The four build alternatives are similar to each other south of Del Mar Heights Road and north of SR-78.

2.2 Alternatives

2.2.1 Common Design Features of the Build Alternatives

A range of alternatives were developed to meet the purpose and need of the project .The build alternatives included and shown in the schematic figures are; 10+4 with Barrier, 10+4 with Buffer, 8+4 with Barrier, and 8+4 with Buffer (*Figures 2-2.6 though 2-2.9, respectively)*.These alternatives are described below and a detailed layout for all four build alternatives are contained in the Draft Project Report (DPR). The typical cross-sections for the alternatives are *Figures 2-2.10* through *2-2.13 and* are located at the end of *Chapter* 2 for each alternative. 10+4 Buffer Alternative was used for the Project Features Map, because the footprint width is an approximate average of the other proposed build alternatives (see *Figures 2.2.14a-ao).* There is a width difference of about 3.7 m (12 ft) in each direction.

Proposed improvements for this project are the same from the beginning of the project near La Jolla Village Drive to Del Mar Heights Road and from SR-78 to the end of the project near Harbor Boulevard with HOV/Managed Lanes separated by from the general-purpose lanes by a varying buffer up to 1.2 m (4 ft) wide. In general the project would:

- Separate HOV/Managed Lanes from general-purpose lanes throughout the project area; just north of La Jolla Village Drive to Harbor Drive /Vandegrift Boulevard.
- Construct one HOV/Managed Lane in each direction from Voigt Drive to just north of Lomas Santa Fe Drive.
- Provide a continuous HOV lane through the I-5/I-805 junction with a freeway-to-freeway connector that would be constructed to flyover the I-5/I-805 merge connecting the proposed HOV/Managed Lanes beginning at Voigt Drive to the existing HOV lanes that begin just north of that merge.
- Construct two HOV/Managed Lanes in each direction from just north of Lomas Santa Fe Drive to Harbor Drive/Vandegrift Boulevard.
- Direct Access Ramps (DARs) would provide new freeway access for HOV/Managed Lanes users at Voigt Drive, Manchester Avenue, Cannon Road and Oceanside Boulevard.
- Construct Intermediate Access Points (IAPs) or at-grade access near La Jolla Village Drive, Carmel Valley Road, Lomas Santa Fe Drive, Birmingham Drive, Poinsettia Lane, SR-78, and Harbor Drive.
- Construct auxiliary lanes at various locations.
- Construct Park & Ride facility at Manchester Avenue.
- Enhance Park & Ride facilities.
- Reconfigure various local interchanges to improve vehicular, pedestrian and bicycle circulation.
- Lengthen I-5 Bridge across San Elijo Lagoon.
- Interpretative elements in an overlook area for the San Elijo Lagoon.
- Construct soundwalls, retaining walls, barriers, guard rails/end treatments, crash cushions, bridge rails, drainage improvements, and signage, installed at specific locations along the I-5 corridor.
- Install ramp metering at various on-ramps.
- Relocate various utilities.
- Construct community enhancements features.

The separation between the HOV/Managed Lanes and the general-purpose lanes would be separated by barrier or buffer. The barrier-separated lanes provide a physical barrier from the mainline lanes by a concrete barrier, while buffer-separated lanes would use painted stripes between the general-purpose lanes. The concrete barriers require emergency shoulder areas on each side of the barrier and would have a larger project area. The painted buffer separation would require less project area.

Through, Intelligent Transportation System (ITS) a broad range of diverse technologies such as information processing, communications, control, and electronics which can help transportation systems in many ways, including congestion management. Specific equipment would be required for the implementation of the Value Pricing Program to ensure that motorists can easily use the proposed HOV/Managed Lanes, in addition to the existing intersection traffic signals, loop detectors, ramp meters, changeable message signs (CMSs), and closed circuit televisions (CCTV). The technology components to manage traffic for related operations and enforcement include HOV/Managed lane related overhead suspended scanner devices (such as gantries), traffic monitoring stations, ramp meters, closed circuit television, and other ITS components outlined in the *Value Pricing Study*. Additional equipment includes CMSs to display the tolls, loop detectors to measure traffic volume and speed, and CCTV to view traffic on the facility and to help manage the traffic.

HOV/Managed Lane Intelligent Transportation Systems

The HOV/Managed Lane ITS would reflect current plans, such as the statewide Transportation Management System Standardization Plan, by incorporating ITS components for the general-purpose and ramp lanes.

The HOV/Managed Lanes have two types of access control. There are intermediate access points (IAPs) that occur at-grade and adjacent to the freeway main lanes. These access points are similar to the existing access for HOV. Typical IAPs are shown in *Figures 2-2.1a and 2-2.1b*. The proposed IAPs are located near the following interchanges:

- La Jolla Village Drive
- Carmel Valley Road
- Lomas Santa Fe Drive
- Birmingham Drive
- Poinsettia Lane
- Tamarack Drive (southbound only)
- SR-78
- Harbor Drive

The other type of access is a Direct Access Ramp (DAR) from a grade separated interchange into the managed lanes that allows direct access to the HOV/Managed Lanes without using the general-purpose lanes. The DARs are compatible with carpools, bus transit, and value pricing. The general-purpose traffic would not access the freeway at these locations. Typical DARs are shown in Figures 2-2.3. The four proposed DARs are located at the following locations:

- Voigt Drive
- Manchester Avenue
- Cannon Road
- Oceanside Boulevard

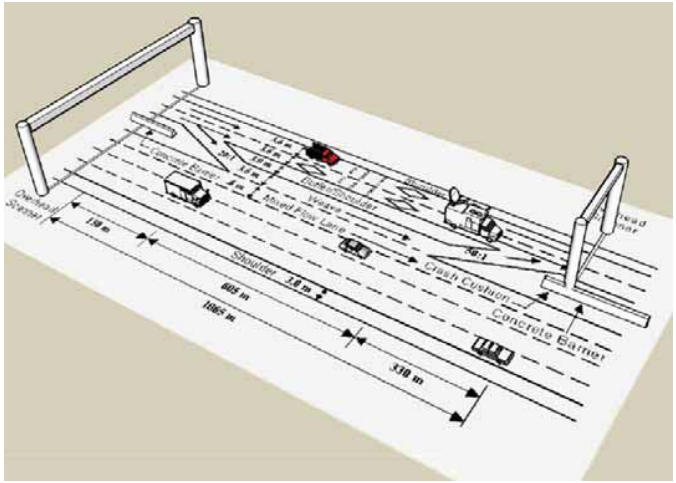

Figure 2-2.1a: Typical IAP Barrier

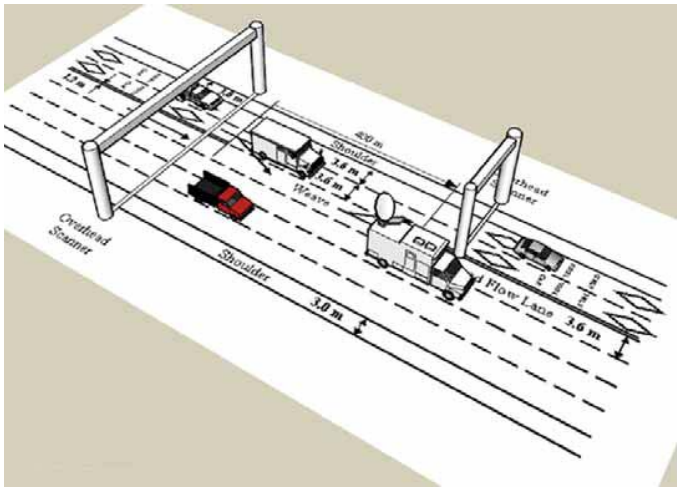

Figure 2-2.1b: Typical IAP Buffer

The existing surface street geometry generally provides flexibility to accommodate potential improvements such as minor modifications, signing and striping reconfiguration, transit preemption, and ability to increase storage capacity at turning lanes. On I-5, access points between the DARs and HOV/Managed Lanes appear to adequately handle merging and weaving operations. The DARs would eliminate the need for HOV/ Managed Lanes users to weave across the general-purpose lanes. These locations would also reduce traffic volumes at nearby interchanges reducing delay.

Voigt Drive DAR

The existing Voigt Drive Overcrossing (OC) structure would be modified to facilitate the addition of Northbound (NB) and Southbound (SB) DARs to the HOV/Managed Lanes from Voigt Drive. These DARs would consist of NB and SB off and on-ramps to and from the I-5 median area. As a target destination, Voigt Drive provides access to the following:

- University of California San Diego
- Hospitals and medical facilities (e.g. UCSD, Scripps, Veterans Administration (VA) hospital)
- Employment centers east of I-5 (Qualcaomm, Science Applications International Corporation (SAIC))
- Shopping
- Hotels
- Coastal Views
- Potential for multimodal connectivity (e.g. Mid-Coast Corridor Light Rail Transit Project)

Manchester Avenue DAR

A new OC structure would be constructed to accommodate NB and SB DARs to the HOV/Managed lanes from Manchester Avenue and a proposed Park-and-Ride facility east of I-5. The DARs would consist of NB and SB off and on-ramps to and from the I-5 median area. Manchester Avenue provides access to the following:

- Proposed Park-and-Ride facility
- Coast
- Supports and facilitates future Bus Rapid Transit (BRT) line along El Camino Real to Oceanside
- Mira Costa College (San Elijo Campus)
- Cardiff by the Sea and Solana Beach Town Centers
- El Camino Real a highly used local road serving east Encinitas

Cannon Road DAR

A new OC structure would be constructed to accommodate NB and SB DARs to the HOV/Managed Lanes from Cannon Road. The DARs would consist of NB and SB off and on-ramps to and from the I-5 median area. Cannon Road provides access to the following:

- Employment Centers
- Regional and Automotive Retail (Carlsbad Premium Outlets, and Car County Carlsbad)
- Visitor Attractions (e.g. Legoland and Flower Fields or Carlsbad) and Hotels
- Residential areas
- Coast
- Potential multimodal connectivity on Palomar Airport Road

Oceanside Boulevard DAR

A new DAR OC structure would be constructed to accommodate NB and SB DARs to the HOV/Managed Lanes from Oceanside Boulevard. The DARs would consist of NB and SB off and on-ramps to and from the I-5 median area. Oceanside Boulevard provides access to the following:

- Oceanside Town Center
- Shopping
- Multimodal connectivity (e.g. Sprinter Line, Coaster, Pacific Surfliner, Bus Routes)
- Residential
- Coast

Figure 2-2.2: **Typical DAR**

Auxiliary Lanes

The project also proposes auxiliary lanes at various areas within the corridor. Auxiliary lanes are lanes that extend from one intersection to the next. These auxiliary lanes would be construction as part of the HOV/Managed Lanes project.

New auxiliary lanes would be added in the following locations.

- La Jolla Village Drive to Genesee Avenue
- Carmel Valley Road to Del Mar Heights Road (NB Only)
- Lomas Santa Fe to Manchester Avenue (NB Only)
- Manchester Avenue to Birmingham Drive
- Birmingham Drive to Santa Fe Drive
- Santa Fe Drive to Encinitas Boulevard (SB Only)
- Encinitas Boulevard to Leucadia Boulevard (NB Only)
- Palomar Airport Road to Cannon Road (SB only)
- Cannon Road to Tamarack Avenue

- Cassidy St. to Oceanside Boulevard (SB only)
- California Street to Oceanside Boulevard (SB only)
- Oceanside Blvd to Mission Avenue
- Mission Avenue to SR-76 (NB Only)
- SR-76 to Harbor Drive (extension SB only)

Interchange/Ramp Reconfiguration

Ramp realignments would be required at several locations to accommodate the additional widening of the proposed project. Some interchanges would have additional improvements as noted in the table below:

Table 2.1: Interchange/Ramp Reconfiguration

Interchange	Ramps	Proposed Lane Geometry Modifications
Genesee Avenue	SB & NB	Adding lanes to SB on-ramp, 1 SOV and 1 HOV, totaling 3 ramp lanes NB Braided onramp 2 SOV, totaling 2 ramp lanes
Roselle Street	SB	Adding lanes to SB ramp, 1 SOV and 1 HOV, totaling 3 ramp lanes to merge with SB I-5. An additional SOV lane would diverge (split) from the SB on-ramp and merge with the SB Braided offramp to Genesee Avenue.
Del Mar Heights Road	SB & NB	SB ramp adjustments to remove free right turn capabilities Convert NB left/through/right lane to a shared through right turn lane, Add a second left turn lane (creating dual right and dual lefts) Adding lane to NB on-ramp and WB to SB on-ramp, 1 HOV, totaling 3 ramp lanes respectively. Adding lane to EB to SB on-ramp, 1 SOV , totaling 3 ramp lanes.
Via de La Valle	SB & NB	Ramp adjustments to remove free right turn capabilities Converting one SOV lane to HOV lane on WB to SB on-ramp, 1 SOV, totaling 2 ramp lanes Adding lane to EB to SB on-ramp, 1 SOV, totaling 3 ramp lanes Converting one SOV lane to HOV lane on EB to NB on-ramp, 1 SOV, totaling 2 ramp lanes
Manchester Avenue	SB	SB ramp adjustments to remove free right turn capabilities. Converting one SOV lane to HOV lane on SB on-ramp. SB on-ramp would remain two lanes wide.
Birmingham Drive	SB & NB	Proposed Roundabouts on the east and west sides of the overcrossing, otherwise there would be standard signalized intersections Adding lane to SB on-ramp, 1 HOV, totaling 3 ramp lanes Adding lanes to NB on-ramp, 1 SOV and 1 HOV, totaling 3 ramp lanes
Santa Fe Drive	SB & NB	Adding lane to SB on-ramp, 1 SOV, totaling 3 ramp lanes Adding lanes to NB on-ramp, 1 SOV and 1 HOV, totaling 3 ramp lanes
Encinitas Boulevard	SB	SB adding an exclusive left turn-lane (creating dual left turn-lane); adding an exclusive right turn-lane (creating dual right turn-lanes) Adding lane to SB on-ramp, 1 SOV, totaling 3 ramp lanes Adding lane to NB on-ramp, 1 HOV, totaling 3 ramp lanes
Leucadia Boulevard	NB	Adding lane to NB on-ramp, 1 SOV, totaling 3 ramp lanes
La Costa Avenue	NB	Adding lane to NB on-ramp, 1 SOV, totaling 3 ramp lanes
Palomar Airport Road	SB	Ramp adjustments to remove free right turn capabilities, Addition of a WB right turn-lane (creating dual right turn lanes)
Tamarack Drive	SB & NB	SB adding a WB left turn-lane (creating dual lefts) NB adding a right turn-lane (creating dual right turn lanes) Adding lane to NB on-ramp, 1 SOV, totaling 2 ramp lanes
Carlsbad Village Drive	SB & NB	Convert the SB shared left/through/right lane to a shared right/though lane, add an exclusive SB left turn lane (creating a single left-turn lane and dual right-turn lanes). NB left turn-lane separated, right turn-lane converted to a shared left/through/right lane Adding lane to NB and SB ramps, 1 HOV, totaling 2 ramp lanes
Oceanside Boulevard	SB	Convert SB through/right turn-lane into two separate lanes Adding lane to SB on-ramp, 1 HOV, totaling 3 ramp lanes
Mission Avenue	SB & NB	Remove EB to SB onramp, add dual EB left turn-lanes, convert southbound through/left to an exclusive left turn-lane (creating dual lefts), convert the exclusive southbound right turn-lane to a shared through right turn-lane Remove NB to EB free right turn-lane, add a second EB left turn lane (creating dual lefts), add SB dual left turn lanes Adding lane to EB to SB ramp, 1 SOV, totaling 3 ramp lanes Adding lane to NB ramp, 1 SOV, totaling 2 ramp lanes
SR-76	SB & NB	NB ramp adjustments to remove free right turn capabilities, addition of a second NB left-turn lane (creating dual lefts) Adding lane to SB and NB ramps, 1 HOV, totaling 3 ramp lanes Remove loop structure (currently closed to traffic) located in the northeast quadrant of the interchange.
Harbor Drive	SB & NB	SB ramp adjustments to remove free right turn capabilities; convert outside westbound through lane into an exclusive through/right-turn lane; convert inside westbound through lane into a shared through/right-turn lane NB re-alignment to WB offramp to align with San Rafael intersection (EB right turn would be controlled by signal and would no longer be a free right turn); convert northbound shared through/right-turn lane into an exclusive through lane, eliminating the northbound right turn movement. Adding lanes to SB on-ramp, 1 SOV and 1 HOV, totaling 3 ramp lanes Adding lane to NB on-ramp, 1 SOV, totaling 2 ramp lanes

Ramp Meters
There are a total of 58 freeway on-ramps along the I-5 corridor within the project limits and 23 of the freeway onramps are metered. Ramp meter delay values for most of the existing metered ramps are less than 5 minutes. In the Year 2030 build scenarios, all the freeway on-ramps would be metered.

Utility Relocations
Utility relocations would be required at several locations that where overhead and underground facilities that convey water, sewer, gas, electricity telephone, and other communications. These relocations would occur within existing utility easements, wherever possible.

Several electrical facilities are greater than 50kV would require relocation. At Genesee, the temporary over-head transmission line would be housed in the new bridge. At Via De La Valle, the transmission pole may be moved 20 m (65.6 ft) to the east, if it can not be protected in place. The transmission pole south of SR-76 would move 20 m (65.6 ft) to the west.

The proposed project would require several design exceptions to avoid relocation of four poles carrying 230 kV - 270 kV electrical transmissions lines. If design exceptions cannot be granted, these poles and associated lines would require relocation to avoid conflicts with the proposed freeway widening. Poles would be relocated just west of their existing locations within the same unpaved graded lot (*Figure 2-2.14ae*). Any relocation activities would be coordinated with San Diego Gas and Electric (SDG&E).

Noise Barriers and Retaining Walls
Noise barriers are proposed on both Caltrans and private right-of-way as described in *Section 3.7*. Retaining walls would be used in numerous locations throughout the project area to reduce property acquisition impacts, stabilize slopes, minimize environmental impacts, and to accommodate engineering structures. Location of the noise barriers and retaining walls are identified on the project features maps *Figure 2-2.14a-ao.*

Drainage
Due to widening that would occur with this project most of the existing culverts would need to be extended, replaced or lined depending on their condition. New drainage facilities would be constructed adjacent to cross roads, including storm drain inlets, storm ditches, rock slope protection, and headwalls. Some of the existing drainage systems would be abandoned and replaced.

Transit Opportunities
The HOV/Managed Lanes provides an opportunity to expand the regional bus system by allowing transit vehicles to enter and exit the HOV/Managed lanes toll free. The regional bus transit in the north coast corridor area is currently servicing local arterial roadways only. Route 101 provides all day local bus service on Coast Highway. Route 309 provides all day local bus service on El Camino Real from Oceanside to Encinitas. Route 310 provides very limited express bus service on I-5 from Oceanside to University Towne Centre in San Diego.

HOV/Managed Lane Enforcement
Any violations of law in regard to the HOV/Managed Lanes would be enforced by CHP, and response and enforcement protocol would need to occur in a cooperative agreement between CHP and Caltrans, /SANDAG. Policy would have to include that a single occupancy vehicle (SOV) traveling in the HOV/Managed Lanes must render a per-trip payment using a valid transponder or other similar technology. HOV users are not required to use a transponder or pay a toll. A gantry mounted indicator light above the two tolling points has been used to indicate when valid transponders are read. Routine enforcement would be performed by the CHP through the use of head counts to verify occupancy. This enforcement takes place in a single enforcement zone which is also the sole tolling point (toll zone) on the facility. Periodic violation rate surveys and manual vehicle occupancy counts on I-15 have reported that initial manual enforcement presence resulted in a decrease in violation rates from approximately 15 percent to as low as five percent, although that number has fluctuated since the FasTrak program began in 1998 and have recently been closer to 15 percent of the total average daily traffic on the I-15 reversible lanes. This evidence seems to support the theory that while heavy enforcement presence may produce positive results in terms of lowered overall violation rates; those results are difficult to sustain in the absence of the enforcement officer or a more automated violation detection and enforcement system.

2.2.1 Build Alternatives

10 + 4 with Barrier (Figures 2-2.1, 2-2.10 and 2-2.12)
The 10+4 with Barrier alternative would construct four HOV/Managed Lanes, two in each direction and add one general-purpose lane in each direction. In addition to the description above, the HOV/Managed Lanes would be separated from general-purpose lanes with a barrier using standard shoulder widths, 3.0 m (10 ft) that would be provided on either side of the barrier from Del Mar Heights Road to SR-78. The general-purpose lane would be constructed in each direction on I-5 from just south of Del Mar Heights Road to SR-78.

10 + 4 with Buffer Alternative (Figures 2-2.2, 2-2.10, and 2-2.12)
The 10+4 with Buffer alternative would construct four HOV/Managed Lanes, two in each direction and add one general-purpose lane in each direction. In addition to the above project description, the 10+4 with Buffer would function similarly to the 10+4 with Barrier alternative but would separate HOV/Managed Lanes from general-purpose lanes with a 1.2-m (4-ft) and variable buffer width in lieu of the barrier.

8 + 4 with Barrier Alternative (Figures 2-2.3, 2-2.11, and 2-2.13)
The 8+4 with Barrier alternative would construct four HOV/Managed Lanes, two in each direction and add one general-purpose lane in each direction. In addition to the project description above, the HOV/Managed Lanes would be separated from general-purpose lanes with a barrier using standard shoulder widths, 3.0 m (10 ft) that would be provided on either side of the barrier from Del Mar Heights Road to SR-78.

8 + 4 with Buffer Alternative (Figures 2-2.4, 2-2.11, and 2-2.13)
The 8+4 with Buffer alternative would construct four HOV/Managed Lanes, two in each direction. In addition to the above project description, the 8+4 with Buffer would function similarly to the 8+4 with Barrier alternative but would separate HOV/Managed Lanes from general-purpose lanes with a 1.2-m (4-ft) and variable buffer width in lieu of the barrier.

Table 2.2: Structure Replacements and Widenings

REPLACE I-5 OVERCROSSING & LAGOON BRIDGE	BRIDGE #	10+4 Barrier Alternative	10+4 Buffer Alternative	8+4 Barrier Alternative	8+4 Buffer Alternative	No Build Alternative
La Jolla Village Drive OC	57-0525	Yes	Yes	Yes	Yes	No
Genesee Ave	57-0527	Replace by others to not preclude *I-5 NCC Project* alternatives				
Del Mar Heights Rd OC	57-0487	No	No	No	No	No
Birmingham Dr OC	57-0529	Yes	Yes	Yes	Yes	No
MacKinnon Ave OC	57-0530	Yes	Yes	Yes	Yes	No
Requeza St OC	57-0532	Yes	Yes	Yes	Yes	No
Leucadia Blvd OC	57-0554	Yes	Yes	Yes	Yes	No
La Costa Ave OC	57-0460	Yes	Yes	Yes	No	No
Batiquitos Lagoon	57-0459	Yes	Yes	Yes	Yes	No
Poinsettia Lane OC	57-0555	Yes	Yes	Yes	Yes	No
Palomar Airport Rd OC	57-0556	Yes	No	No	No	No
Aqua Hedionda	57-0282	Yes	Yes	Yes	Yes	No
Chinquapin Ave OC	57-0672	Yes	Yes	Yes	Yes	No
Tamarack Ave OC	57-0276	Yes	Yes	Yes	No	No
Las Flores Dr OC	57-0272	Yes	Yes	Yes	No	No
Jefferson St OC	57-0271	Yes	Yes	Yes	Yes	No
Buena Vista Creek	57-0277	Yes	Yes	Yes	Yes	No
SR-78 / I-5 Separation	57-0270	Yes	Yes	Yes	Yes	No
Cassidy St OC	57-0269	Yes	Yes	Yes	Yes	No
California St OC	57-0268	Yes	Yes	Yes	Yes	No
Brooks St OC	57-0701	Yes	Yes	Yes	Yes	No
Mission Ave OC	57-0266	Yes	Yes	Yes	Yes	No
Fourth St / Bush St OC	57-0702	Yes	Yes	Yes	Yes	No
Neptune Way / 8th St OC	57-0703	Yes	Yes	Yes	Yes	No
WIDENING I-5 UNDERCROSSING	**BRIDGE #**	**10+4 Barrier Alternative**	**10+4 Buffer Alternative**	**8+4 Barrier Alternative**	**8+4 Buffer Alternative**	**No Build Alternative**
I-805 Sorrento Valley	57-0786	Yes (MED, SB)	Yes (MED, SB)	Yes (MED, SB)	Yes (MED, SB)	No
Carmel Valley Creek	57-0390	Yes (SB)	Yes (SB)	Yes (SB)	Yes (SB)	No
Carmel Valley Road	57-0486	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	No
San Dieguito River	57-0488	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	No
Via De La Valle UC	57-0489	Yes (NB, SB)	Yes (NB, SB)	Yes (NB, SB)	Yes (NB, SB)	No
Lomas Santa Fe UC	57-0479	Yes (NB, SB)	Yes (NB, SB)	Yes (NB, SB)	Yes (NB, SB)	No
Manchester Ave UC	57-0458	Yes (NB, MED, SB)	Yes (NB, MED, SB)	Yes (NB, MED, SB)	Yes (NB, MED, SB)	No
Santa Fe Dr UC	57-0531	Yes (NB, MED, SB)	Yes (NB, MED, SB)	Yes (NB, MED, SB)	Yes (NB, MED, SB)	No
Encinitas Blvd UC	57-0533	Yes (NB, MED, SB)	Yes (NB, MED, SB)	Yes (NB, MED, SB)	Yes (NB, MED, SB)	No
Cannon Rd UC	57-0249	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	No
Chestnut Ave UC	57-0275	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	No
Carlsbad Village Dr UC	57-0274	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	No
Loma Alta Creek	57-0125	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	No
Oceanside Blvd OH	57-0124	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	Yes (NB,SB)	No
I-5 / SR-76 Separator	57-0704	Yes (NB, MED)	Yes (NB, MED)	Yes (NB, MED)	Yes (NB, MED)	No
San Luis Rey River	57-0713	Yes (NB, MED,SB)	Yes (NB, MED,SB)	Yes (NB, MED,SB)	Yes (NB, MED,SB)	No
Harbor Drive/Camp Pendleton UC	57-0235	Yes (NB,MED)	Yes (NB,MED)	Yes (NB,MED)	Yes (NB,MED)	No
PROPOSED NEW BRIDGE	**TYPE**	**10+4 Barrier Alternative**	**10+4 Buffer Alternative**	**8+4 Barrier Alternative**	**8+4 Buffer Alternative**	**No Build Alternative**
I-5 HOV Fly over-SDH1		Yes	Yes	Yes	Yes	No
I-5 HOV Fly over-SDH2		Yes	Yes	Yes	Yes	No
Voigt DAR (structure modifications)		Yes	Yes	Yes	Yes	No
Manchester DAR	DAR & Off Ramp	Yes	Yes	Yes	Yes	No
Cannon DAR	DAR & Off Ramp	Yes	Yes	Yes	Yes	No
Oceanside DAR	DAR & Off Ramp	Yes	Yes	Yes	Yes	No
Carmel Valley Creek -SVR		Yes	Yes	Yes	Yes	No
Genesee G1M-nb Off ramp		Yes	Yes	Yes	Yes	No
Genesee G4A- SB Onramp		Yes	Yes	Yes	Yes	No

MED – Median widening (inside widening)
NB – Northbound (outside widening)
SB – Southbound (outside widening)
DAR - Direct Access Ramp

2.3 I-5 North Coast Community Enhancement Projects

The I-5 NCC Project Development Team, along with input from various communities throughout the project corridor, developed a number of possible community enhancement opportunities that would be constructed simultaneously with the *I-5 NCC Project*. Caltrans staff conducted numerous meetings with the general public, city staff, elected officials, and other stakeholder groups, such as the lagoon foundations and community planning groups, etc., to develop and refine enhancement concepts based on site conditions and community needs. These "candidate" projects for consideration would not have additional impacts for the *I-5 NCC Project* and tended to be trails, park and ride enhancements, streetscape enhancements, etc.

Community enhancement opportunities as project features of the *I-5 NCC Project* would occur if the following conditions were met: existing plans with the proposed projects; *I-5 NCC Project* construction segment was at the location of the community enhancement; and future formal cooperative agreements between Caltrans and each city, where Caltrans would build these features and the cities would be responsible for their maintenance. See *Figures 2-2.14a-ao Project Features Maps*.

The Community Enhancements are not minimization measures for the *I-5 NCC Project* and they may not be eligible for Federal funding through this project. Minimization measures are incorporated for the *I-5 NCC Project* and can be found in *Chapter 3* under each resource with the sub-heading, *Avoidance, Minimization, and/or Mitigation Measures.*

For details on the methodology used for developing these enhancement opportunities, please refer to the *I-5 North Coast Community Enhancement Plan (January 2008).* Each enhancement opportunity was developed with the following goals and objectives in mind:

Community Goals:
- Preserve existing community character.
- Provide amenities (trails, overlooks, interpretive facilities).
- Provide consistency with city general plans, community plans, park master plans, lagoon foundation plans, etc.
- Respect historical resources.
- Utilize community input during the project development process.

Environmental Goals:
- Preserve sensitive habitat areas.
- Preserve existing visual resources.

Multi-Modal Circulation Goals:
- Improve pedestrian/bicycle access to transit centers and community destinations.
- Minimize conflicts between vehicles and pedestrians.
- Provide connections between the east and west sides of the freeway.
- Improve pedestrian/bicycle circulation.

Physical/Aesthetic Goals:
- Preserve existing natural character of the project corridor.
- Provide increased public access to scenic resources.
- Buffer views of the freeway from residential and public use areas.

The following community enhancements are considered "candidates for inclusion" in the project's final design and may or may not all be implemented, as this would be dependant on each local agency agreeing to maintain them in perpetuity.

Proposed Community Enhancements

City of San Diego

Los Peñasquitos Creek Trail Connection
This community enhancement opportunity would consist of a trail connection under the freeway structures from Peñasquitos Creek to Sorrento Valley Road to create a better linkage between the Sorrento Valley Coaster Station, the residential and commercial developments near Sorrento Valley Road, and the existing trails at Peñasquitos Creek. The enhancements would include:
- Construction of a new decomposed granite (DG) bicycle/ pedestrian trail under Vista Sorrento Parkway, I-805 and I-5 to the existing sidewalk at the signalized intersection at the Coaster Station on Sorrento Valley Road.
- The trail would be located under the bridge against the south abutment, with soil graded down to provide 2.4-m (8-ft) vertical clearance.
- Construction of sidewalk/trail connections at Vista Sorrento Parkway by adding an accessible concrete paving extension at both sides of the creek, from the existing sidewalk to the trail below.
- Revegetation of disturbed areas with plant species native to the area.
- The trail could also act as a potential wildlife corridor.

Carmel Valley Road
There are two community enhancement opportunities located along Carmel Valley Road and would include:

A Carmel Valley Bicycle/Pedestrian Trail Connection
- Construction of a new paved bicycle/pedestrian trail from the existing Carmel Valley Restoration Enhancement Project (CVREP) trail, under I-5, to the existing Peñasquitos lagoon trail.
- Provision of separate lanes for bicycles and pedestrians to match the CVREP trail.
- Connection of the trail to the sidewalk along Carmel Valley Road.
- Revegetation of disturbed areas with plant species native to the area.

Enhanced Park and Ride at Carmel Valley Road
- Enhanced paving corridor through the park and ride lot leading to the trailhead.
- Enhanced landscaping, including shade trees and thematic accent planting that reflects the natural environment and enhances the visitor experience.
- Planting to create a visual buffer between the trail and the parking area.
- Construction of a trailhead scenic overlook at Peñasquitos Lagoon at the west edge of the Carmel Valley Park and Ride, including enhanced paving, interpretive exhibits, benches, and other site furnishings.

Pedestrian Overpass Connection North of Del Mar Heights Road
A new bicycle/pedestrian bridge enhancement opportunity over I-5, would be constructed north of, Del Mar Heights Road, connecting Lozana and Lower Ridge Road. This bridge would connect adjacent neighborhoods currently divided by the freeway, and allow a safe route to school for students living on opposite sides of the freeway. The bridge would use aesthetic enhancements to improve the visual linkage between the communities, it would and provide the opportunity for a dramatic gateway marking the northern entry to San Diego. The enhancement would include:

- Construction of the pedestrian/bicycle bridge from Lozana to Lower Ridge Road with a concrete surface, pedestrian lighting, safety fencing and enhancements. It would slope up to meet grades on the west side.
- Construction of sidewalk/trail connections at Lozana Road on the west and Lower Ridge Road on the east by adding an accessible concrete paving extension at both ends of the pedestrian over-crossing, from the existing sidewalk to the bridge.
- Revegetation of disturbed areas with plant species appropriate to the neighborhood.

City of Solana Beach

Streetscape Enhancements on Ida Avenue
Streetscape community enhancement opportunity would be constructed along Ida Avenue from Academy Drive to south of Genevieve Street. The enhancements would replace the existing irregular street, and would accommodate a sidewalk on the west side, and travel lanes in both directions. The improvements would provide street curbs to contain vehicles, a sidewalk for pedestrians, landscaping and screen planting between the neighborhood and the freeway. The enhancements would include:

- A consistent minimum 6.7-m (22-ft) street width for Ida Avenue, with curbs, and a concrete sidewalk on the west side.
- Contour grading to cover the lower sections of the freeway retaining wall, making it less visually intrusive.
- Enhanced color and texture of retaining wall surface to reduce scale and impact of wall.
- Street tree planting on both sides of the street.
- Screen planting on the slopes to reduce the visual impact of the proposed retaining wall.
- Detail planting in the parkways where space permits.
- Efficient irrigation to sustain the proposed planting.

Trailhead at Solana Hills Drive
Street improvements enhancements along the northern end of Solana Hills Drive, and construction of a new trailhead at the south entrance to San Elijo Lagoon Ecological Reserve would provide a new amenity to enhance public access to the Reserve. Street trees and landscaping would provide shade, visual relief, and improve the appearance. The enhancements would include:

- Reduced 8.5-m (28-ft) road width to allow accommodation of sidewalk and parking.
- Parallel parking along the east side of Solana Hills Drive for trailhead visitors.
- Accessible, paved pedestrian drop-off zone to facilitate trail access.
- Shade structure, picnic tables, drinking fountain, litter receptacles, pet waste station and other amenities to support trailhead uses.
- Interpretive displays and information board.
- Street trees for shade.
- Planting compatible with the adjacent ecological reserve.
- Screen retaining wall with planting.
- Street/security lighting.

City of Encinitas

Manchester Avenue Pedestrian Bridge and Trail
A new trail and associated sidewalk improvements for this community enhancement opportunity would be constructed under the I-5 bridge structure at Manchester Avenue across San Elijo Lagoon connecting the existing trail segments, currently separated by the lagoon and freeway. The trails, planting and other improvements would be designed to minimize impacts to the lagoon environment. The east/west trail connection would join the existing trails on the shores of the San Elijo Lagoon south of Manchester Avenue. The north/south connection would span the open water of the lagoon connecting to the east/west sidewalk on Manchester Avenue. This structure would be located immediately under the new widened portion of the southbound I-5 resulting in no additional impact to the open water below. The enhancement would include:

- Construction of a pedestrian walkway structure across San Elijo Lagoon, suspended from the west side of the widened freeway bridge.
- Construction of a 2.4-m (8-ft) wide paved trail along the south side of the lagoon. A retaining wall would be constructed to allow the trail to exist in the existing space. Pedestrian guardrails would be provided.
- Construction of a paved trail on the south side of Manchester Avenue north of the lagoon.
- Enhancement of the existing trails on both sides of freeway on the south side of the lagoon.
- Revegetation of disturbed areas with plant species native to the vicinity.
- Installation of enhanced streetscape planting along Manchester Avenue between the freeway ramps, including street trees, and shrubs in a naturalistic layout.
- Lighting is to be provided for the trail along Manchester Avenue and the suspended walkway.

Villa Cardiff Drive Improvements
This community enhancement opportunity would construct sidewalks and trails connecting the Hall Property Park with the east side of the freeway across MacKinnon Bridge, and south along Villa Cardiff Drive. The trail would pass through an enhanced landscape that would provide screening of the freeway, and enhancement of the existing park and ride lot. Enhancement 2 is bounded on the south by Birmingham Drive, and on the northern edge by the intersection of the MacKinnon Bridge with Villa Cardiff Drive. The park and ride lot located at the corner of Birmingham Drive and Villa Cardiff Drive would be retained and enhanced with park-like amenities, new trees and a greater pedestrian connection to the north. The enhancements would include:

- Installation of a combined bike and pedestrian trail on both sides of the MacKinnon Bridge, accenting the bridge with tree and vine planting.
- Construction of a 2.4-m (8-ft) wide bike and pedestrian trail on the east side of the freeway along Villa Cardiff Drive, including enhanced planting, and street crossings.
- Enhancement of the existing park and ride lot at Birmingham Drive with enhanced landscaping.

Hall Property Park Trail Connecting to Santa Fe Drive
This community enhancement opportunity would provide a pedestrian connection between the Hall Property Park, and Santa Fe Drive, allowing pedestrians from the neighborhoods to the east of I-5 to walk more directly to the park through a thematic landscape setting. This linear park connection would be located between the proposed freeway on-ramp, and the parking facilities of the existing commercial lot to the west. Minor redesign of the walkways on the Hall Property plans would be necessary in order to connect the trail as it intersects the park edge. The design of this trail would need to take into account the proximity of car traffic from the southbound on-ramps with guardrails, fencing or the provision of planted berms to provide protection for pedestrians. The enhancement would include:

- Construction of a 2.4-m (8-ft) wide trail from the Santa Fe Drive traffic circle on the west side of I-5, along Caltrans right-of-way, to the edge of the Hall Property Park.
- Installation of way-finding signs to guide pedestrians.
- Planting based on park themes to enhance, and create a visual connection with the park.

Trail Connecting Santa Fe Drive to Requeza Street
This community enhancement opportunity would construct a north/south trail connection on the east side of I-5 between Santa Fe Drive on the southern edge and Requeza Street on the north. The trail connection would be generally located within Caltrans right-of-way, with appropriate planting and grading. This trail connection would allow pedestrians and bike riders to go from Santa Fe Drive to Requeza, thereby creating a connection to the trail improvements of enhancement 3 on the south and enhancement 5 on the north. This would allow residents north of Santa Fe and east of I-5 to readily access the Hall Property Park. The enhancement includes:

- Construction of a 2.4-m (8-ft) wide trail on the east side of the I-5 between Santa Fe Drive and Requeza Street.
- Contour grading, mounding and berms to provide interest and a sense of separation from the freeway.
- Enhanced planting to provide a comfortable walking environment.

Trail Connecting Requeza Street to Encinitas Boulevard
This community enhancement opportunity is for a trail connecting Requeza Street with Encinitas Boulevard. The trail would be located within the space between the freeway and the existing car dealerships and commercial businesses to the east. Impacts to the existing wetlands would be minimized. Where possible, the wetland areas would be enhanced with perimeter planting. Other features include:

- Construction of a 2.4-m (8-ft) wide bicycle/pedestrian trail from Encinitas Boulevard to just south of the automobile dealership, where it would connect with an existing unimproved trail that leads to Requeza Street.
- Enhancement of existing wetland.
- Installation of shade tree planting and groundcover along the trail.

Union Street Pedestrian Overpass and Trail Connection
A new trail along the west side of I-5 is proposed to connect Cottonwood Creek Park to Union Street, and a bridge would be constructed providing pedestrian access across I-5. In addition, a series of parks, wetland restoration and/or enhancement, slope planting restoration, and enhanced landscaping would be implemented. A park would be built where the pedestrian bridge meets grade on the west side of the freeway on a vacant parcel owned by the City of Encinitas. Other features include:

- Construction of a 4.0-m (13-ft) wide pedestrian bridge across I-5 connecting Union Street on both sides of the freeway.
- Construction of a 2.4-m (8-ft) wide trail from Cottonwood Creek Park to Union Street on the west side of I-5.
- Construction of a variable height retaining wall to permit construction of the trail on the sloping terrain.
- Construction of a small parking area on Union Street for park and trail users.
- Construction of sidewalk and pedestrian ramps on Union Street to provide a connection to the trail.
- Construction of a neighborhood park north of Union Street.
- Restoration and/or enhancement of existing wetlands south of Union Street and north of Cottonwood Creek.
- Revegetation of disturbed areas with vegetation native to the area.
- Enhanced planting along the pedestrian bridge ramp to Union Street Park.

City of Carlsbad

Park and Ride Enhancement at La Costa Avenue
This enhancement opportunity features a improvements to an existing nature center, lagoon viewing overlooks, interpretive displays and additional parking to be added to the park and ride lot adjacent to La Costa Avenue on the east side of I-5. The nature center could include gathering spaces, exhibits, a meeting room and an informal dining area. The enhancements would be developed in cooperation with the Batiquitos Lagoon Foundation. The proposed enhancements would include construction of the following:

- Nature Center with interpretive exhibits, a small amphitheater for nature talks, and a dining deck.
- Two shaded overlooks with benches and interpretive exhibits.
- A boardwalk nature trail to allow protected access to the lagoon.
- Concrete trails connecting the nature center with La Costa Avenue.
- A decomposed granite trail connection to the existing Batiquitos lagoon trail.
- Enhanced park and ride facilities with upgraded landscaping and shade trees.
- Landscaping compatible with the lagoon environment.
- An earth berm and landscaped buffer between the freeway and the parking area.
- Lighting for the park and ride, nature center, and trail connectors.

Trail on East Side of I-5 at Batiquitos Lagoon
Located just north of the nature center on Batiquitos Lagoon, this enhancement provides trail connections across Batiquitos Lagoon to the trails on the north side of the lagoon, and to the west side of I-5. The trail improvements would allow hikers to complete the loop trail circuit around the lagoon. Other features include:

- A suspended trail that crosses under I-5 to the lagoon trails on the west side.
- A suspended trail connecting the north and south side of the lagoon trail system.
- 2.4-m (8-ft) wide DG trail connecting the suspended bridge to the existing trails.
- Observation areas with benches and interpretive signage.
- Screen planting between the freeway and the trails.

- Revegetation of disturbed areas with planting compatible with the existing lagoon environment.
- Restoration of the wetland area south of Piovana Court.

Trail on West Side of I-5 at Agua Hedionda Lagoon
Enhancement opportunity 3 is located on the west side of I-5 at Agua Hedionda Lagoon and consists of a new pedestrian bridge to be built beside the existing rail bridge spanning the mouth of the lagoon. This bridge would connect the Rail Trail system currently being developed by the City of Carlsbad. The enhancement would also include a trail crossing from east to west following the southern shore of the lagoon. Switchbacks would ascend to meet the grades of a new trail between the freeway and the power plant. Walls and protective fencing would be required to enhance the safety of pedestrians or cyclists utilizing the trails in areas in close proximity with the rail lines and freeway. The proposed enhancement includes the following:

- A new section of trail from the railroad tracks south of the power plant running east to I-5.
- A new section of trail along the west side of I-5 in the narrow space between the freeway and the power plant fence.
- A switchback trail section near the lagoon, to meet the grade of the trail at the lagoon and connect to the pedestrian trail constructed as part of enhancement #4.
- Walls and protective fencing along the trail adjacent to the freeway.
- A separate pedestrian bridge parallel to the existing rail bridge at the west side of the lagoon.
- A trail extension to the existing trail on the north side of the railroad bridge.
- A planting buffer to provide screening along the power plant perimeter.
- Revegetation of disturbed areas with planting compatible with the lagoon environment.
- Lighting along the length of the trail, and on the pedestrian bridge.
- Way-finding signs to guide trail users.

Trail on East Side of I-5 at Agua Hedionda Lagoon
This enhancement opportunity proposes to connect the existing trail on the southern shore of Agua Hedionda Lagoon, to the north side of the lagoon by means of a suspended trail located on the east side of I-5. A second suspended trail would cross under the freeway connecting the east side trail to the trail on the west side of the lagoon proposed in enhancement opportunity #3. The enhancement includes the following:

- A suspended trail under I-5.
- A suspended trail along the east side of I-5 from the trail on the south side of lagoon to the north side.
- A 2.4-m (8-ft) wide trail on grade to meet the existing trail south of the lagoon.
- A planting buffer to screen the freeway from the trail.
- Revegetation of all disturbed areas with planting compatible with the lagoon environment.
- Way-finding signs, and trail markers.
- Lighting along the suspended trails, and connecting trails.

Streetscape Enhancements on Chestnut Avenue
Enhancements to the existing pedestrian facilities would be implemented along Chestnut Avenue within City and Caltrans right-of-way. These enhancements include widened sidewalks with street trees and planting buffers to protect pedestrians from traffic, enhanced safety lighting for the underpass, and the possibility of incorporating art onto the walls of the underpass for a more interesting experience. Other features include:

- Sidewalks under the freeway on both sides of Chestnut Avenue.
- Creative artwork on the retaining walls under the freeway.
- Street trees shading the sidewalk on Chestnut Avenue.
- Planting in the parkway to separate pedestrians from traffic.
- Widened sidewalks along Chestnut from I-5 to Harding Street.
- Colorful, enhanced street and crosswalk paving in the intersection of Harding and Chestnut.
- Pedestrian scale lighting under the bridge, and west along Chestnut.

City of Oceanside

Pocket Park and Access at California Street
This community enhancement proposes to enhance the existing California Street Bridge to create a comfortable, convenient and safe connection across I-5. The proposed landscape, pocket park, lighting and paving enhancements would implement “safe walk to school” principles and give residents from the Moreno Street neighborhood a much shorter pedestrian route eastward along California Street. A pocket park and other landscaped areas would be reclaimed from land vacated to make room for the I-5 improvements. Other features include:

- Widened and enhanced sidewalk paving across the California Street Bridge.
- Theme tree container planting across the bridge.
- A pocket park between Moreno Way and I-5.
- A walkway connecting Moreno Way with California Street.
- Enhanced theme planting to establish a visual link across the freeway.
- Pedestrian scale lighting across the bridge and through the pocket park.
- Enhanced paving street crossings on Soto Street intersections with California and Valencia Streets.

Oceanside Boulevard Pedestrian Streetscape Enhancement
New sidewalk and landscape improvements are proposed for Oceanside Boulevard under and adjacent to the I-5 overpass. Other features include:

- Improvements to existing sidewalk on the southeast side of Oceanside Boulevard.
- Improved and enhanced fences along the Sprinter tracks.
- Shrubs to help screen and enhance the Sprinter tracks to match proposed landscaping to the east (by City of Oceanside).
- New sidewalk under the I-5 overpass on the southeast side of Oceanside Boulevard.
- Enhanced slope paving of the overpass.
- Potential future art concepts by an artist under the bridge.
- Lighting for pedestrian safety under the overpass.
- Enhanced planting on the northwest side of Oceanside Boulevard.

Enhancements to Division Street Overpass
The Division Street pedestrian overpass would be widened and include enhanced paving, container planting and street trees. A roundabout could be implemented as a traffic-calming device on the east side of the overpass and would also highlight the entrance to Ron Ortega Recreation Park. Streetscape improvements would be extended north along Brooks Street, where new sidewalks and street trees would enhance the image of the street-side businesses, as well as provide mitigation for the narrowing of the southern portion of Brooks Street to allow freeway improvements. Other features include:

- Widening of the Division Street bridge.
- Container tree and shrub planting on the bridge.
- Enhanced pedestrian paving on the bridge and along Division Street.
- Park entry monument on the west side of I-5 at Division Street.
- A landscaped pocket park west of I-5 on Division Street.
- A new roundabout at the intersection of Division Street and Brooks Street.
- Street trees and enhanced planting along Brooks Street.
- Enhanced paving bands across Division Street.
- Pedestrian scale lighting along the bridge and the new sidewalk along Division Street.

Enhanced Pedestrian Overpass Connection on Mission Avenue
The south side of Mission Avenue over I-5 would implement a wider and more direct pedestrian sidewalk amenities would improve the existing pedestrian connection. This community enhancement opportunity would align the freeway ramp at Mission Avenue to be modified to reduce the conflict between students of Oceanside High School crossing the ramps and vehicles accelerating towards the freeway. The new ramp alignment would meet Mission Avenue on the north side rather than connecting on both the north and south sides of Mission Avenue, as in the current configuration. Other features include:

- 4.7-m (15.5-ft) wide sidewalks on the south side of the Mission Avenue overpass.
- Trees in planters located on the south side of the overpass.
- Realignment of the on and offramps to allow signalized pedestrian crossings
- Pedestrian lighting on the south side of Mission Avenue.
- Enhanced planting.
- A potential pedestrian connection on vacated City street south of Mission Avenue to connect with the public park.

Enhanced Pedestrian Overpass Connection on Bush Street
This community enhancement opportunity is primarily linkage, connecting the existing community gardens at Civic Center Drive and Witzel Street across an enhanced overpass and following the freeway alignment as a linear park to Mission Avenue. Other features include:

- Sidewalk and raised planter areas on the south side of the Bush Street bridge.
- Raised community garden plots on the north side of the Bush Street bridge.
- Enhanced pedestrian lighting across the bridge.
- New sidewalk along Witzel Street and Civic Center Drive/Bush Street.
- Additional garden plots on the east and west side of I-5.
- A planting buffer to separate the community gardens from the freeway.
- A paved trail from the east side of the bridge along the on-ramp to Buena Street.
- Reduction of the Buena Street width and construction of wider sidewalks.
- Reduction of Santa Barbara Street width and construction of wider sidewalks.
- Street trees and enhanced planted parkways along Buena Street and Santa Barbara Street.
- Garden plots along Santa Barbara Street adjacent to the northbound on-ramp.
- Screen planting between the northbound on-ramp and the proposed trail and community garden plots.
- Enhanced pedestrian lighting on Civic Center Drive, Witzel Street, Buena Street and Santa Barbara Street and the connector trail.

Community Open Space Park
Two parcels would be acquired for the freeway improvements and would allow for construction of a joint use City park to be used by the Family Recovery Center and the adjacent community. Features of the proposed park could include undulating paths through lush garden plots, the soothing sound of running water, a shade structure and a selection of native plants. This enhancement would provide the neighborhood with a place of beauty and provide for visual contrast with the surrounding urban development. In addition it could provide the Family Recovery Center with external spaces that could help heal. The specific design of this park would be provided at a later date after community input. Other features include:

- A recovery garden with shade structure and meandering paths.
- Detailed planting including color, scents, textures and sounds to appeal to all senses.
- An enhanced noise wall with artwork facing the garden.
- Site integrated art.
- Pedestrian scale lighting.

Parking/Staging Area for recreation at SR-76
Located east of the intersection of I-5 and SR-76, this community enhancement opportunity combines a new parking area, trailhead staging area and other support amenities for the existing San Luis Rey bike path. Sensitive design would preserve the existing eucalyptus trees on the site. The incomplete freeway bridge would be removed and the disturbed grade revegetated. Wetland mitigation could be provided in the area where the bridge currently stands. Other features include:

- An enhanced parking area with approximately 50 parking spaces.
- A plaza area with enhanced paving.
- Lighting for the plaza and parking area.
- Enhanced planting in the park and ride.
- Revegetation of disturbed areas with plants compatible with the natural vegetation.
- Bicycle staging area and trailhead.
- Interpretive exhibits.
- Observation area and lookouts.
- Drinking fountain.
- Realignment and widening of the existing trail.
- Construction of a trail under I-5 above the riverbank.
- Security lighting for the trail under the freeway.

Pedestrian Underpass Improvements at San Luis Rey River
Two community enhancement options would improve the existing pedestrian and bicycle underpass at San Luis Rey Drive. Improvements to the existing underpass would include a widened sidewalk, ramp connections to meet ADA requirements, improved lighting and planting and public art features, and an enhanced pedestrian undercrossing possibly including art. Other features include:

- Security lighting for the pedestrian undercrossing.
- Accessible sidewalks to the undercrossing from the adjacent sidewalks.
- Stairs to provide a shortcut to Riverside Drive.
- Stairs from San Luis Rey Drive to the pedestrian undercrossing.
- Planting to enhance the appearance of the undercrossing entries.

Option A would include the proposed community enhancements, with the addition of:

- A sidewalk along I-5 northbound between San Luis Rey Drive and Monterey Drive.
- Retaining walls to create space for the sidewalk.
- Planting and lighting along the proposed sidewalk.

Option B would include the proposed community enhancements, with the addition of:

- An accessible trail connection from the undercrossing stairs on the east of I-5 to connect to a trail along San Luis Rey River, under the freeway.
- Planting and lighting along the proposed accessible trail.

Regional Gateway Feature at Harbor Drive
This enhancement proposes a regional gateway feature. It would include enhanced paving patterns, evocative landscape elements, and structures to reflect the regional identity and provide an entry for the County as well as Oceanside. Colors, textures and materials could combine to create a striking image in the open area bordered by Harbor Drive and the southbound ramps. The final design would be determined after soliciting input from the community. The proposed community enhancement opportunity could include the construction of:

- A sculptural feature.
- Focal lighting to illuminate the monument.
- Street trees along Harbor Drive.
- Seating elements.
- Enhanced planting to provide a distinctive appearance.
- Enhanced planting on the northwest side of Oceanside Boulevard.

2.2.3 Transportation System Management (TSM), Multi-Modal and Transportation Demand Management (TDM) Alternatives

TSM and Multi-modal Alternatives consist of strategies to maximize efficiency of the existing facility by providing options such as ridesharing, parking, and traffic-signal optimization. TSM options to improve traffic flow typically increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Such strategies include replacing existing stop signs with traffic signals at intersections to improve existing peak hour traffic flow and to reduce queuing of vehicles. TSM also encourages automobile, public and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. Multi-modal alternatives integrate multiple forms of transportation modes, such as pedestrian, bicycle, automobile, rail, and transit.

TDM Alternative focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled, as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation choice in terms of travel method, travel time, travel route, travel costs, and the quality and convenience of the travel experience. Typical activities within this alternative reduce the amount of single occupancy vehicle trips by providing funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases and providing limited rideshare services to employers and individuals. Promoting mass transit, and facilitating non-motorized alternative means of transportation are two such examples, but TDM strategies may also include reducing the need for travel altogether through initiatives such as telecommuting. In some cases, TDM may also involve changing work schedules, with the resultant greater travel flexibility producing a more even pattern of transportation network use, muting the effect of morning and evening rush hours.

Although TSM measures alone could not satisfy the purpose and need of the project, TSM measures have been incorporated into the Build Alternatives for this project.

2.2.4 No Build Alternative

Environmental review must consider the effects of not implementing the proposed project. The "no build" analysis must discuss the existing conditions as well as what other projects would be reasonably expected to occur in the foreseeable future if the proposed project was not approved. The No Build Alternative provides a baseline for comparing the impacts with the other alternatives.

Under the No Build Alternative some projects would move forward separately; however, many of the proposed improvements would not be constructed, including the community enhancements. This alternative would not propose any changes to the existing number of lanes or the configuration of as many intersections along the corridor. With the No Build Alternative, traffic would continue to increase, which would cause longer delays and further congestion. The No Build Alternative would not improve access for bikes and pedestrians. The No Build Alternative would not meet the project's Purpose and Need.

The No Build Alternative offers a basis of comparison with the build alternatives and would include ongoing operations and maintenance. In addition, a number of interchange/operations/adjacent projects would potentially move forward separately from the *I-5 North Coast Project* and would be analyzed within separate environmental documents. The following is a list of those projects:

- I-5/Genesee Avenue Interchange Improvements
- I-5/SR-56 Interchange Improvements
- I-5/SR-78 Interchange Improvements
- I-5 "Mid-Coast" Freeway Improvements (10+2HOV facility from I-8 to I-805)
- I-805 "North" improvements (8+4HOV/Managed Lanes facility from SR-52 to north of Mira Mesa Boulevard in San Diego)
- Sorrento Valley Road/Roselle Street Improvements
- Manchester Avenue Interchange Improvements
- Encinitas Boulevard Interchange Improvements
- Birmingham Drive to Leucadia Boulevard Auxiliary Lanes
- LOSSAN Rail Improvements (double tracking of rail corridor between Los Angeles – San Diego)
- I-805 northbound DARs at Carroll Canyon Road and HOV lanes between Carroll Canyon Road and the I-5/I-805 junction

2.4 Phased Construction

The *I-5 NCC Project* would be constructed in phases described below and shown in *Figures 2-2.3* through *2-2.5*. The current 2030 RTP includes 2 HOV lanes from La Jolla Village Drive to the I-5/I-805 Merge and 4 Managed lanes from I-5/I-805 Merge to Cannon Road to be built by 2014, and 4 Managed lanes from Cannon Road to Vandegrift Blvd. to be built by 2030. The *I-5 NCC Project* phasing will be consistent with 2050, RTP currently scheduled for adoption in 2011. The 2050 RTP will address a 40-year horizon to implement the San Diego region's overall transportation strategy for providing mobility and improving the efficiency and safety of the transportation system. This matches the time extension of the *TransNet* program, a half-cent sales tax to finance transportation improvements that is part of the funding for the region's transportation projects. The proposed phasing is shown below.

Phase 1 2012-2020

Construct two HOV lanes, one in each direction, and noise barriers from Manchester Avenue to La Costa Avenue.

Construct two HOV lanes, one in each direction, and noise barriers from La Costa Avenue to SR-78.

Construct two Managed lanes, one in each direction, from La Jolla Village Drive to I-5 / I-805 merge. Also, construct the freeway-to-freeway connector enabling the two HOV/Managed lanes, one in each direction, to flyover the I-5 and I-805 merge. Construct DAR at Voigt Drive allowing direct access to and from the Managed lanes. Construct two HOV/Managed lanes, one in each direction, and convert the existing HOV lanes to Managed lanes from I-5 and I-805 merge to SR-56, resulting in a total of four Managed lanes, two in each direction through this area.

Construct two new Managed lanes, one in each direction and convert the existing HOV lanes to Managed lanes, from SR-56 to Manchester Avenue, resulting in a total of four Managed lanes. Construct four Managed lanes, two in each direction, across the San Elijo Lagoon through bridge replacement and widening. Construct a DAR at Manchester Avenue allowing direct access to and from the Managed lanes.

Short Term Phase Total Cost: $1.415 Billion

Phase 2 2021-2035

Construct two new Managed lanes, one in each direction and convert the existing HOV lanes to Managed lanes, from Manchester Avenue to Agua Hedionda Lagoon, resulting in a total of four Managed lanes. Construct four Managed lanes, two in each direction, across the Batiquitos and Agua Hedionda Lagoons through bridge replacement, lengthening, and widening. Construct a DAR just north of Cannon Avenue allowing direct access to and from the Managed lanes.

Midterm Phase Total Cost: $1.125 Billion

Phase 3 2036-2050

Construct two new Managed lanes, one in each direction and convert the existing HOV lanes to Managed lanes, from Agua Hedionda Lagoon to SR-78, resulting in a total of four Managed lanes. Construct four Managed lanes, two in each direction, across the Buena Vista Lagoon through bridge replacement and widening.

Construct four Managed lanes, two in each direction, from SR-78 to Harbor Drive. Construct a DAR at Oceanside Boulevard allowing direct access to and from the Managed lanes.

Construct braided ramps from Genesee Avenue to Sorrento Valley Road.

Long Term Phase Total Cost: $0.76 Billion

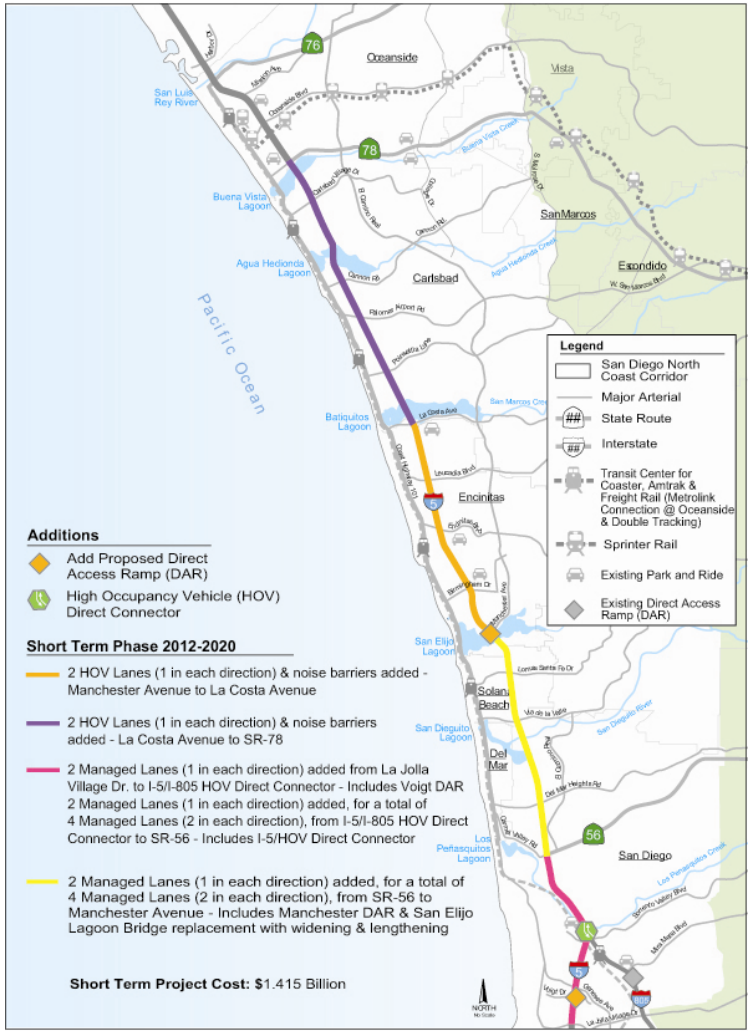

Figure 2-2.3: I-5 North Coast Managed Lanes Construction Phase 1 Map

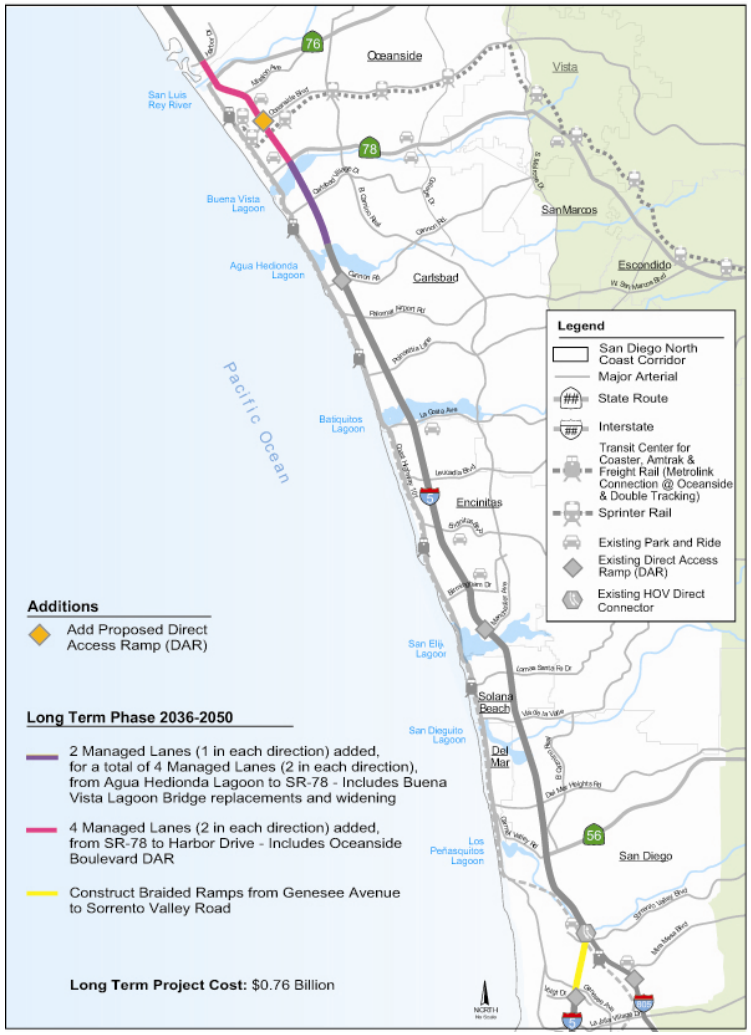

Figure 2-2.4: I-5 North Coast Managed Lanes Construction Phase 2 Map

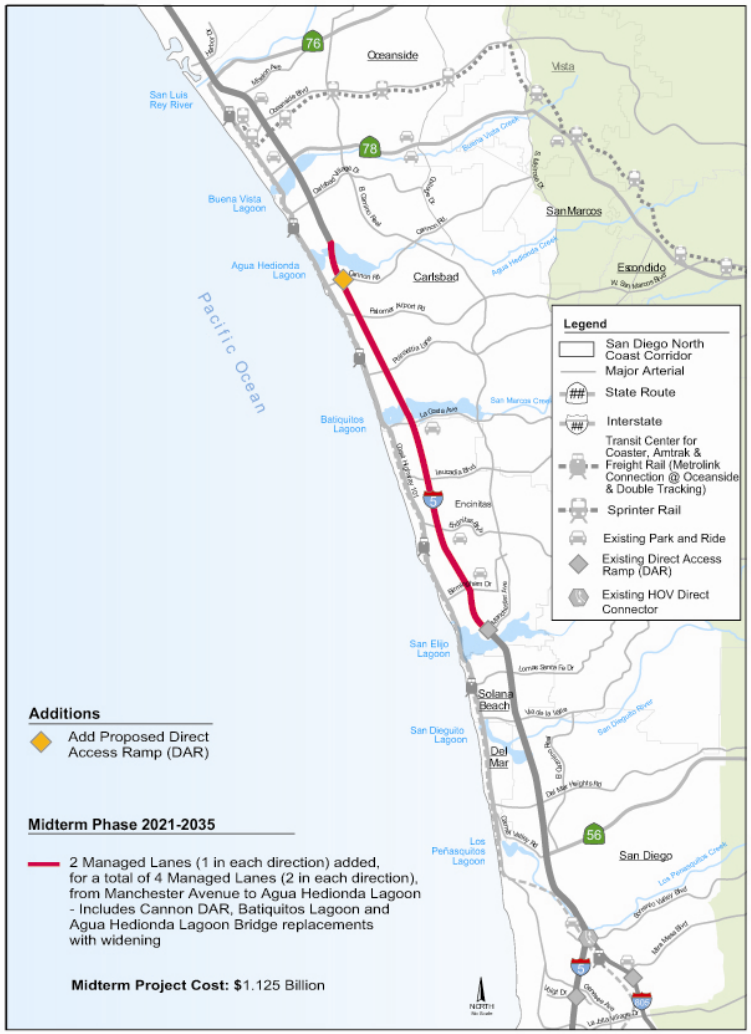

Figure 2-2.5: I-5 North Coast Managed Lanes Construction Phase 3 Map

2.5 Alternatives Considered but Eliminated from Further Discussion

2.5.1 Rejected Build Alternatives

Over the last twenty years, various formal and informal studies have been conducted to identify long-range highway improvements to various portions of I-5 within the project area. The North Coast Transportation Study is the MIS, as discussed in Chapter 1, and provides the most recent analyses of long-range highway improvement concepts on I-5. The PSR (PDS) was developed in parallel with the MIS, in which Caltrans formally evaluated nine build alternatives and rejected eight alternatives from further consideration. Leaving only the "12+2 HOV" (12 general-purpose lanes with 2 HOV lanes) and/or "10+2HOV" (10 general-purpose lanes with 2 HOV lanes) Alternatives for further study, which were included in the 2000 RTP. Subsequently, criteria were developed through the NEPA 404 process that became the project purpose and objectives.

Year 2030 traffic was used to evaluate the nine MIS alternatives. On September 13, 2005, findings from the MIS were presented to the resource agencies. Six of the MIS alternatives showed little improvement in corridor mobility (travel time) and/or congestion relief (reduced lane miles of congestion freeway). The remaining three build alternatives included two "elevated roadway "alternatives and the "2030 8+2HOV" Alternative. Results indicated that HOV demand in the year 2030 exceed the capacity of a two-lane HOV facility, and would not accommodate planned regional transit service.

The following freeway alternatives were rejected due to their inability to provide adequate highway capacity to meet the year 2020 travel demands within the project limits. Therefore, it is anticipated that that these alternatives would not maintain or improve traffic levels of service in the year 2030.

"Freeway/HOV (8 + 2) Alternative"

This alternative proposed the addition of one HOV lane in each direction from Del Mar Heights Road and Vandegrift Boulevard.

Further analysis was requested by the resource agencies in November 2005. Established growth rates and patterns in the San Diego region indicated the "2030 8+2HOV" Alternative would provide only temporary traffic relief in the corridor. Based again on corridor mobility (travel time) and congestion relief (miles of congested freeway), the "2030 8+2HOV" Alternative would improve peak hour travel time in the general-purpose lanes, as well as the HOV lanes, after project completion . However, increased future travel demand would cause the existing freeway to fail corridor-wide. The two-lane HOV facility would operate at steady, yet saturated levels. Travel times and congestion levels on the existing eight-lane freeway would revert back to pre-project conditions approximately five to ten years after project completion.

The inability to provide adequate highway capacity for does not maintain or improve traffic operations in the project corridor by design year 2030, which does not meet the Overall Project Purpose Statement and objects as follows:

- Does not maintain or improve the existing and future traffic operations in the project corridor in order to improve the safe and efficient regional movement of people and goods for the planning design year of 2030.
- Does not maintain or improve future traffic levels of service in 2030 over the existing levels of service.

- Does not maintain or improve travel times within the corridor.
- Does not maintain or improve travel times within the corridor, but rather temporarily provides enough freeway capacity to reduce or maintain travel times on the existing eight-lane freeway for approximately five years. Travel times degrade in ensuing years as travel demand increases.
- Does not provide a facility compatible with future BRT and other modal options.
- Does not provide consistency with the current RTP.
  - Specifically, with one HOV lane operating in each direction and no direct HOV connections, the 8+2 HOV facility cannot accommodate future transit (rapid or otherwise) within the freeway corridor. Peak hour demand for the one HOV lane would have exceeded capacity in various segments in year 2015 and worsens in ensuing years. Any type of freeway transit service would operate with considerable delays in the trunkline portion of the route. Transit and freeway operations would also suffer as transit vehicles cross four to five lanes of traffic to access local interchanges.
  - The addition of two HOV lanes does not provide a flexible freeway corridor able to meet forecasted growth in vehicular travel, and nor does it support future BRT endeavors. The current RTP (located at the SANDAG website, www.sandag.org) provides guidance to expand freeway systems strategically, while managing and operating freeways safely and efficiently.
- Does not maintain the facility as an effective link in the National Strategic Highway Network.
  - The addition of two HOV lanes does not provide enough freeway capacity to address year 2030 travel demand. The movement of people and goods to support military operations during peak periods could be compromised by project delays in the existing eight-lane freeway.
- Does not protect and/or enhance the human and natural environment along the I-5 corridor.
  - This alternative would require additional outside widening to accommodate auxiliary lanes (in addition to the HOV lane, and the separation between the HOV and the general-purpose lanes). Widening would still be required on the lagoon slopes, and the existing bridges spanning the lagoons would still have to be demolished and replaced. This would result in impacts to wetland and upland areas with travel delays associated with the 8+2 HOV Alternative would worsen air quality. Given the minimal right-of-way impacts, the 8+2 HOV Alternative does not address existing and future operational deficiencies, it does not improve community connectivity and access at local interchanges and overcrossings, nor does it enhance or improve the existing human and natural environment along the I-5 corridor.

"Freeway Expansion/HOV (10 + 2HOV) Alternative"

This alternative proposed the addition of one general-purpose lane and one HOV lane in each direction from Del Mar Heights Road and Vandegrift Boulevard.

The inability to provide adequate highway capacity does not maintain or improve traffic operations in the project corridor by design year 2030, which does not meet the Overall Project Purpose Statement and objects as follows:

- Does not maintain or improve the existing and future traffic operations in the project corridor in order to improve the safe and efficient regional movement of people and goods for the planning design year of 2030.
- Does not maintain or improve future traffic levels of service in 2030 over the existing levels of service.
- Does not maintain or improve travel times within the corridor.
- Does not maintain or improve travel times within the corridor, but rather temporarily provides enough freeway capacity to reduce or maintain travel times on the existing eight-lane freeway for approximately five years. Travel times degrade in ensuing years as travel demand increases.
- Does not provide a facility compatible with future BRT and other modal options.
- Does not provide consistency with the current RTP.
  - Specifically, with one HOV lane operating in each direction and no direct HOV connections, the 10+2 HOV facility cannot accommodate future transit (rapid or otherwise) within the freeway corridor. Peak hour demand for the one HOV lane would exceed capacity in various segments in year 2015 and worsens in ensuing years. Any type of freeway transit service would operate with considerable delays in the trunkline portion of the route. Transit and freeway operations would also suffer as transit vehicles cross four to five lanes of traffic to access local interchanges.
- Does not maintain the facility as an effective link in the National Strategic Highway Network.
  - The addition of two HOV lanes does not provide enough freeway capacity to address year 2030 travel demand. The movement of people and goods to support military operations during peak periods may be compromised by project delays in the existing eight-lane freeway.
- Does not protect and/or enhance the human and natural environment along the I-5 corridor.
  - This alternative would require additional outside widening to accommodate auxiliary lanes (in addition to the HOV lane and the separation between the HOV and the general-purpose lanes). Widening would still be required on the lagoon slopes, and the existing bridges spanning the lagoons would still have to be demolished and replaced. This would result in impacts to wetland and upland areas with travel delays associated with the 10+2HOV Alternative would worsen air quality. Given the minimal right-of-way impacts, the 10+2 HOV Alternative does not address existing and future operational deficiencies, it does not improve community connectivity and access at local interchanges and overcrossings, nor does it enhance or improve the existing human and natural environment along the I-5 corridor.

"Freeway Expansion Only (10 + 0) Alternative"

This alternative proposed the addition of one general-purpose lane in each direction from Del Mar Heights Road and Vandegrift Boulevard.

The inability to provide adequate highway capacity does not maintain or improve traffic operations in the project corridor by design year 2030, which does not meet the Overall Project Purpose Statement and objects as follows:

- Does not maintain or improve the existing and future traffic operations in the project corridor in order to improve the safe and efficient regional movement of people and goods for the planning design year of 2030.
- Does not maintain or improve future traffic levels of service in 2030 over the existing levels of service.
- Does not maintain or improve travel times within the corridor.
- Does not maintain or improve travel times within the corridor, but rather temporarily provides enough freeway capacity to reduce or maintain travel times on the existing eight-lane freeway for approximately five years. Travel times degrade in ensuing years as travel demand increases.
- Does not provide a facility compatible with future BRT and other modal options.
- Does not provide consistency with the current RTP.
- Does not maintain the facility as an effective link in the National Strategic Highway Network.

- Does not protect and/or enhance the human and natural environment along the I-5 corridor.
  - This alternative would require additional outside widening to accommodate auxiliary lanes (in addition to the HOV lane, and the separation between the HOV and the general-purpose lanes). Widening would still be required on the lagoon slopes, and the existing bridges spanning the lagoons would still have to be demolished and replaced. This would result in impacts to wetland and upland areas with travel delays associated with the 10+0 Alternative would worsen air quality. Given the minimal right-of-way impacts, the 10+0 Alternative does not address existing and future operational deficiencies, it does not improve community connectivity and access at local interchanges and overcrossings, nor does it enhance or improve the existing human and natural environment along the I-5 corridor.

"Freeway/Managed Lanes (8 + 3 [3+0]) Alternative"

This alternative proposed the addition of three "Managed Lanes" in the median of I-5, with a moveable median barrier that would allow the median lanes to fully reverse travel direction to accommodate peak directional flows.

The inability to provide adequate highway capacity does not maintain or improve traffic operations in the project corridor by design year 2030, which does not meet the Overall Project Purpose Statement and objects as follows:

- Does not maintain or improve the existing and future traffic operations in the project corridor in order to improve the safe and efficient regional movement of people and goods for the planning design year of 2030.
- Does not maintain or improve future traffic levels of service in 2030 over the existing levels of service.
- Does not maintain or improve travel times within the corridor.
- Does not maintain or improve travel times within the corridor, but rather temporarily provides enough freeway capacity to reduce or maintain travel times on the existing eight-lane freeway for approximately five years. Travel times degrade in ensuing years as travel demand increases.
- Does not maintain the facility as an effective link in the National Strategic Highway Network.
- Does not protect and/or enhance the human and natural environment along the I-5 corridor.
  - This alternative would require additional outside widening to accommodate auxiliary lanes widening would still be required on the lagoon slopes, and the existing bridges spanning the lagoons would still have to be demolished and replaced. This would result in impacts to wetland and upland areas with travel delays associated with the 8+3 (3+0) Alternative would worsen air quality. Given the minimal right-of-way impacts, the 8+3 (3+0) Alternative does not address existing and future operational deficiencies, it does not improve community connectivity and access at local interchanges and overcrossings, nor does it enhance or improve the existing human and natural environment along the I-5 corridor.

"Freeway/Managed Lanes (8 + 3 [2 + 1]) Alternative"

This alternative proposed the addition of three "managed lanes" in the median of I-5, with a moveable median barrier that would allow the middle lane to reverse travel direction to accommodate peak directional flows.

The inability to provide adequate highway capacity does not maintain or improve traffic operations in the project corridor by design year 2030, which does not meet the Overall Project Purpose Statement and objects as follows:

- Does not maintain or improve the existing and future traffic operations in the project corridor in order to improve the safe and efficient regional movement of people and goods for the planning design year of 2030.
- Does not maintain or improve future traffic levels of service in 2030 over the existing levels of service.
- Does not maintain or improve travel times within the corridor.
- Does not maintain or improve travel times within the corridor, but rather temporarily provides enough freeway capacity to reduce or maintain travel times on the existing eight-lane freeway for approximately five years. Travel times degrade in ensuing years as travel demand increases.
- Does not protect and/or enhance the human and natural environment along the I-5 corridor.
  - This alternative would require additional outside widening to accommodate auxiliary lanes (in addition to the managed lanes, and the separation between the HOV and the general-purpose lanes). Widening would still be required on the lagoon slopes, and the existing bridges spanning the lagoons would still have to be demolished and replaced. This would result in impacts to wetland and upland with travel delays associated with the 8+3 (2+1) Managed Lanes Alternative would worsen air quality. The 8+3 (2+1) Managed Lanes Alternative does not address existing and future operational deficiencies, it does not improve community connectivity and access at local interchanges and overcrossings, nor does it enhance or improve the existing human and natural environment along the I-5 corridor.

"Freeway/Managed Lanes (8 + 4 [3+1] Alternative)"

This alternative proposed the addition of four "managed lanes" in the median of I-5, with a moveable median barrier that would allow the two center lanes in the median of I-5 to reverse travel direction to accommodate peak directional flows. This lane configuration would allow three lanes to be opened in the peak direction and one lane in the off-peak direction.

The inability to provide adequate highway capacity does not maintain or improve traffic operations in the project corridor by design year 2030, which does not meet the Overall Project Purpose Statement and objects as follows:

- Does not maintain or improve the existing and future traffic operations in the project corridor in order to improve the safe and efficient regional movement of people and goods for the planning design year of 2030.
- Does not maintain or improve future traffic levels of service in 2030 over the existing levels of service.
- Does not maintain or improve travel times within the corridor.
  - Does not maintain or improve travel times within the corridor, but rather temporarily provides enough freeway capacity to reduce or maintain travel times on the existing eight-lane freeway for approximately five years. Travel times degrade in ensuing years as travel demand increases.
  - Does not protect and/or enhance the human and natural environment along the I-5 corridor.
    - This alternative would require additional outside widening to accommodate auxiliary lanes (in addition to the managed lanes, and the separation between the HOV and the general-purpose lanes). Widening would still be required on the lagoon slopes, and the existing bridges spanning the lagoons would still have to be demolished and replaced. This would result in impacts to wetland and upland, with travel delays associated with the

8+4 (3+1) Manage Lane Alternative would worsen air quality. Given the minimal right-of-way impacts, the 8+4 (3+1) Manage Lane Alternative does not address existing and future operational deficiencies, it does not improve community connectivity and access at local interchanges and overcrossings, nor does it enhance or improve the existing human and natural environment along the I-5 corridor.

"Freeway/HOV/Elevated Express Lanes (8+2+4 Elevated) Alternative"

This alternative proposed the addition of two HOV lanes in the median of I-5, along with four elevated express lanes from Del Mar Heights Road to Vandegrift Boulevard. The elevated, limited-access expressway was proposed to operate with either general-purpose or managed lanes.

The 8 + 2 + 4 Elevated Alternative has high cost along with potential for substantial adverse to the community and environmental resources and does not meet the Overall Project Purpose Statement and objects as follows:

- Does not provide consistency with the current Regional Transportation Plan.
- Does not protect and/or enhance the human and natural environment along the I-5 corridor.
    - This alternative would require additional outside widening, including on the lagoon slopes, and the existing bridges spanning the lagoons would still have to be demolished and replaced. This would result in impacts to wetland and upland areas with travel delays associated with the 8+2+4 Elevated Alternative would worsen air quality. Given the minimal right-of-way impacts, the 8+2+4 Elevated Alternative does not address existing and future operational deficiencies, it does not improve community connectivity and access at local interchanges and overcrossings, nor does it enhance or improve the existing human and natural environment along the I-5 corridor.

"Freeway/HOV/Elevated Express Lanes (8 + 2 + 4 Elevated, 10 + 2 HOV) Alternative"

This alternative proposed the addition of two HOV lanes in the median of I-5, along with four elevated express lanes from Del Mar Heights Road to Encinitas Boulevard and two additional general-purpose lanes from Encinitas Boulevard to Vandegrift Boulevard. The elevated, limited-access expressway was proposed to operate with either general-purpose or managed lanes.

The 8+2+4 Elevated, 10+2 HOV Alternative has high cost along with potential for substantial adverse impacts to the community and environmental resources and does not meet the Overall Project Purpose Statement and objects as follows:

- Does not provide consistency with the current RTP.
- Does not protect and/or enhance the human and natural environment along the I-5 corridor.
- This alternative would require additional outside widening, including on the lagoon slopes, and the existing bridges spanning the lagoons would still have to be demolished and replaced. This would result in impacts to wetland and upland areas with travel delays associated with the 8+2+4 Elevated, 10+2 HOV Alternative would worsen air quality. The 8+2+4 Elevated, 10+2 HOV Alternative does not address existing and future operational deficiencies, it does not improve community connectivity and access at local interchanges and overcrossings, nor does it enhance or improve the existing human and natural environment along the I-5 corridor. Does not provide consistency with the current RTP.

2.6 Permits and Approvals Needed

The following permits, reviews, and approvals would be required for project construction:

Table 2.3: Permits and Approvals Needed

Agency	Permit / Approval	Status
U.S. Fish and Wildlife Service & National Oceanic and Atmospheric Administration/National Marine Fisheries Service	Section 7 Consultation for impacts to Threatened and Endangered Species	Pending
U.S. Army Corps of Engineers	Concurrence on LEDPA Section 404 Individual Permit for filling or dredging waters of the U.S. Section 10 of the Rivers and Harbors Act Permit Batiquitos Lagoon Buena Vista Lagoon San Dieguito Lagoon San Elijo Lagoon	Pending
U.S. Coast Guard	Possible Section 9 of the Rivers and Harbors Act Permit Agua Hedionda San Luis Rey	Pending
California Department of Fish and Game	1602 Agreement for Streambed Alteration Section 2080.1 Agreement for Threatened and Endangered Species (State only listed species)	Pending
Regional Water Quality Control Board – Region 9	401 Certification	Pending
California Coastal Commission	Coastal Development Permitting Federal consistency determination	Pending
California Transportation Commission	Funds Appropriation and new freeway access	Pending
National Oceanic and Atmospheric Administration/National Marine Fisheries Service	Essential Fish Habitat Determination and endangered species coordination	Pending
California Public Utilities Commission	Utility Construction Permit Request	Pending
Metropolitan Transit System (MTS)	Construction and Maintenance Agreements for Sorrento Valley Overhead	Pending
North County Transit District (NCTD)	Construction and Maintenance Agreements for Oceanside Overhead	Pending
City of San Diego	Freeway Agreement for Voigt Drive DAR	Pending
City of Encinitas	Freeway Agreement for Manchester Avenue DAR	Pending
City of Carlsbad	Freeway Agreement for Cannon Road DAR	Pending
City of Oceanside	Freeway Agreement for Oceanside Boulevard DAR	Pending

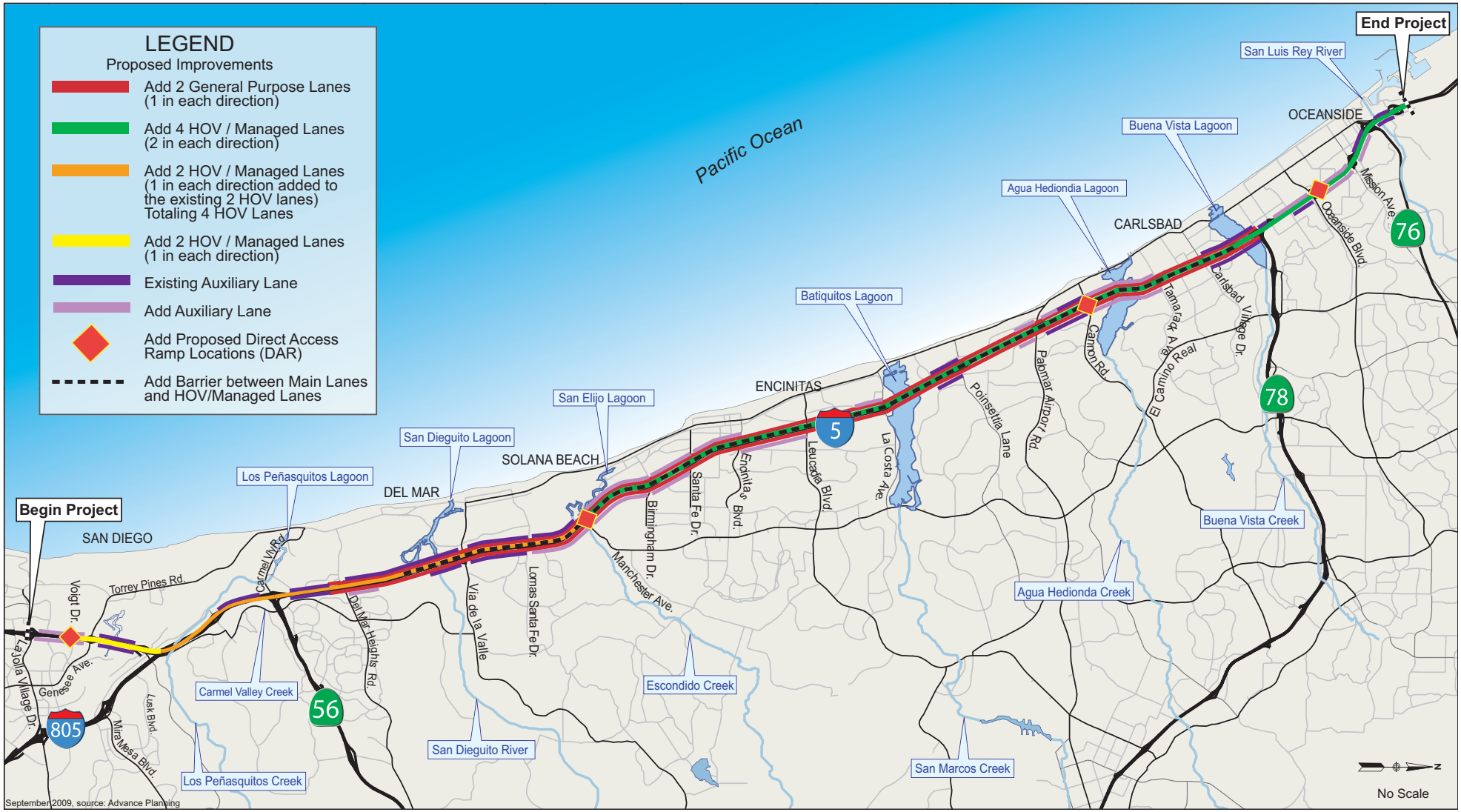

Figure 2-2.6: Schematic for 10+4 Barrier Alternative

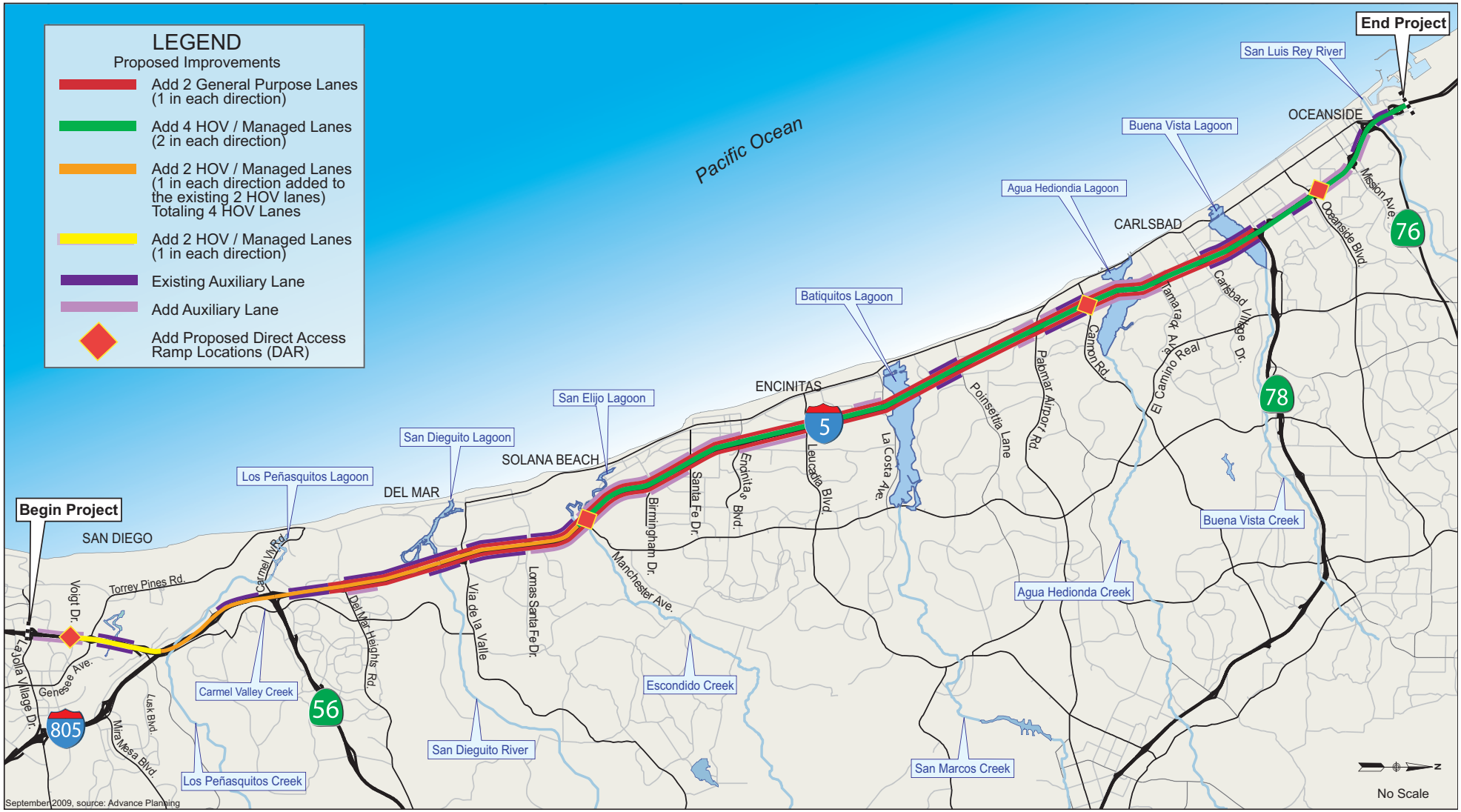

Figure 2-2.7: Schematic for 10+4 Buffer Alternative

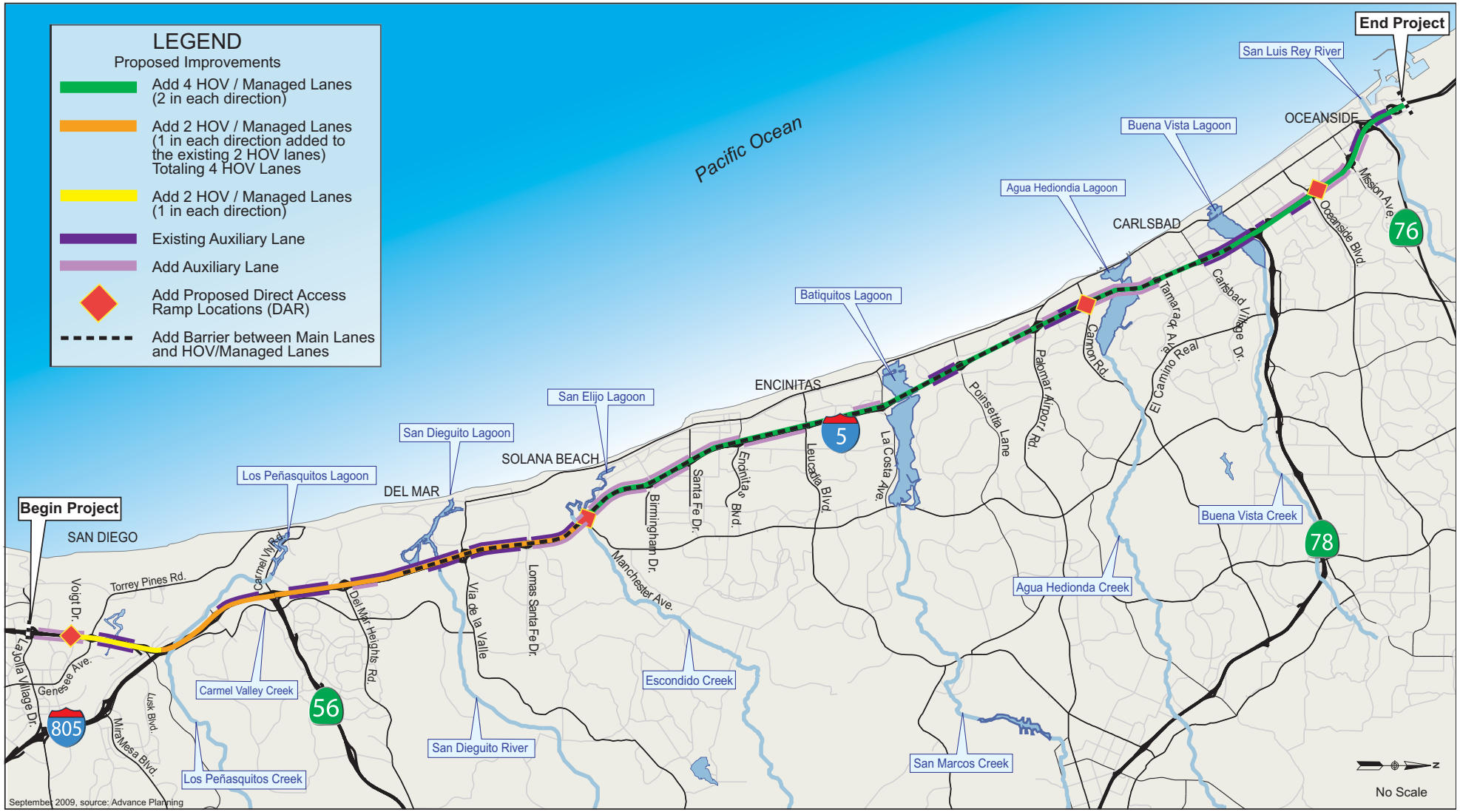

Figure 2-2.8: Schematic for 8+4 Barrier Alternative

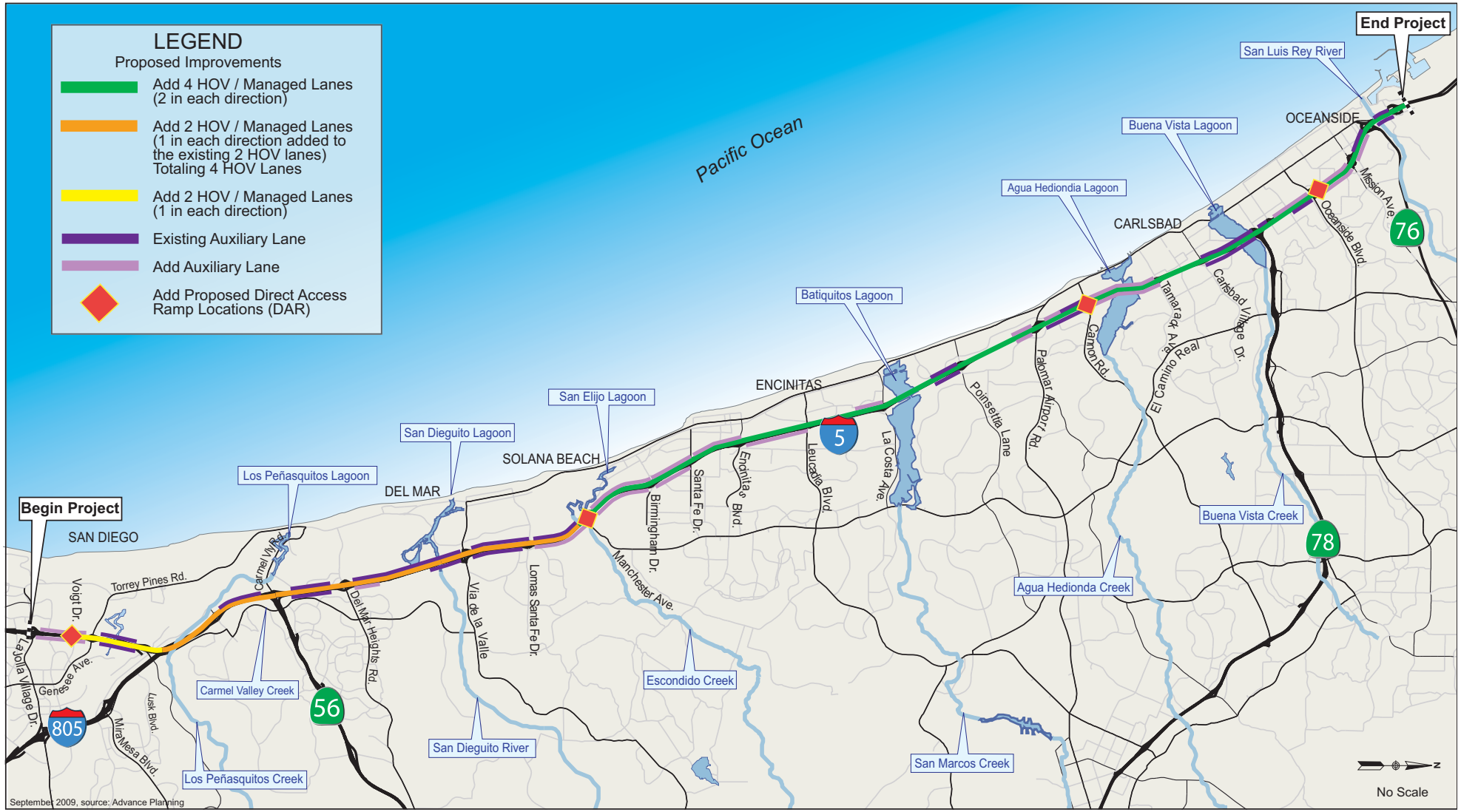

Figure 2-2.9: Schematic for 8+4 Buffer Alternative

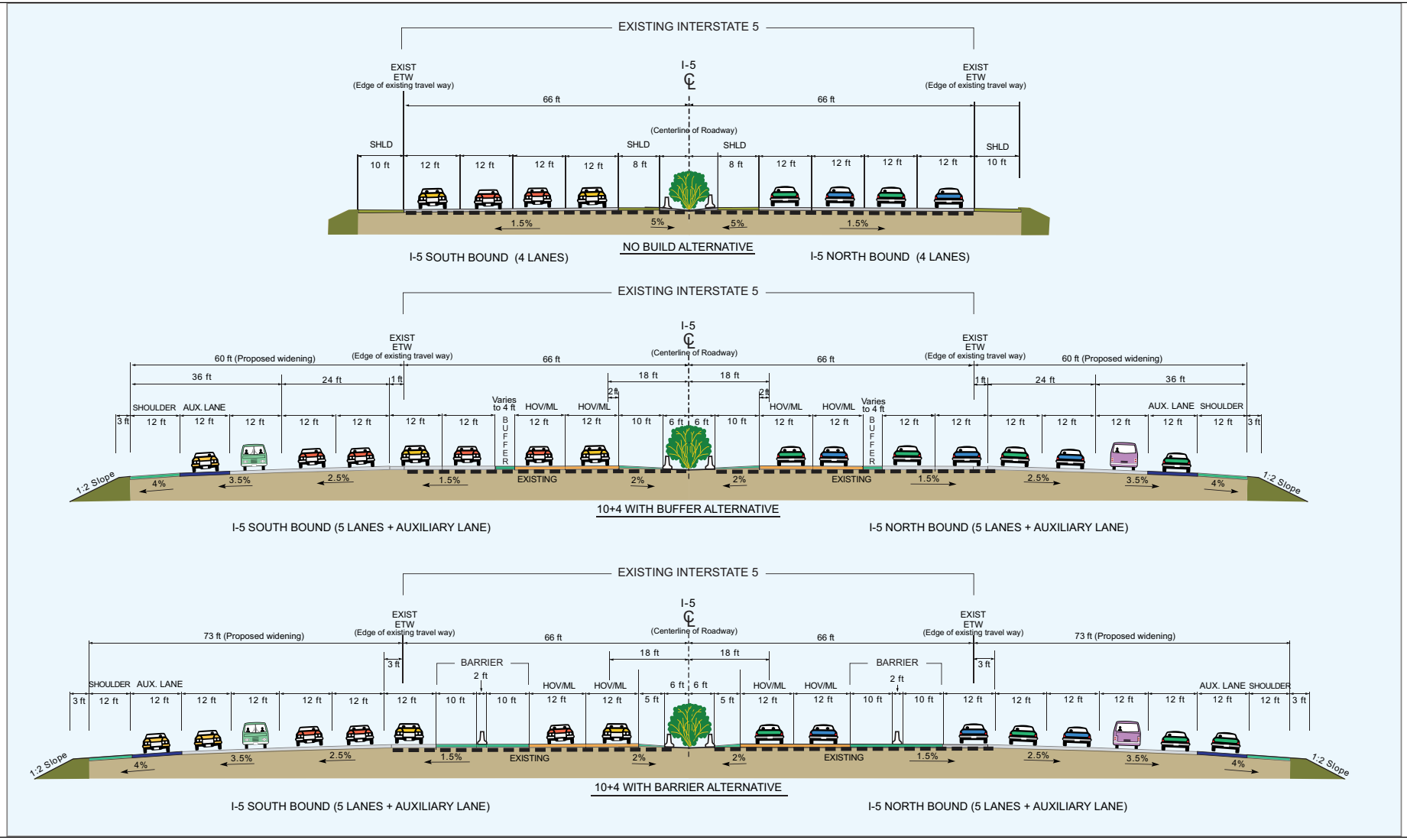

Figure 2-2.10: Typical Cross-section for 10+4 Barrier and Buffer Alternatives

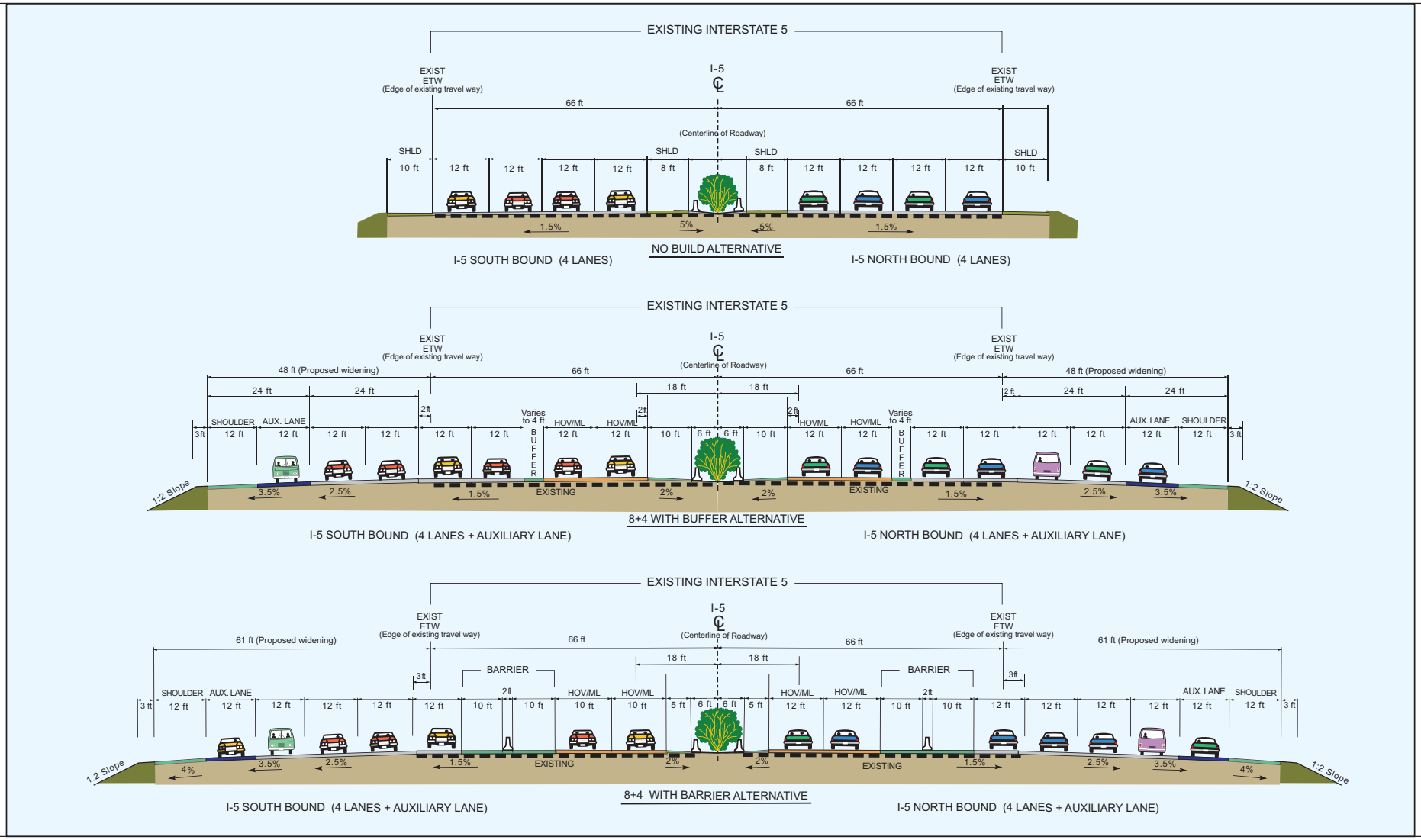

Figure 2-2.11: Typical Cross section for 8+4 Barrier and Buffer Alternatives

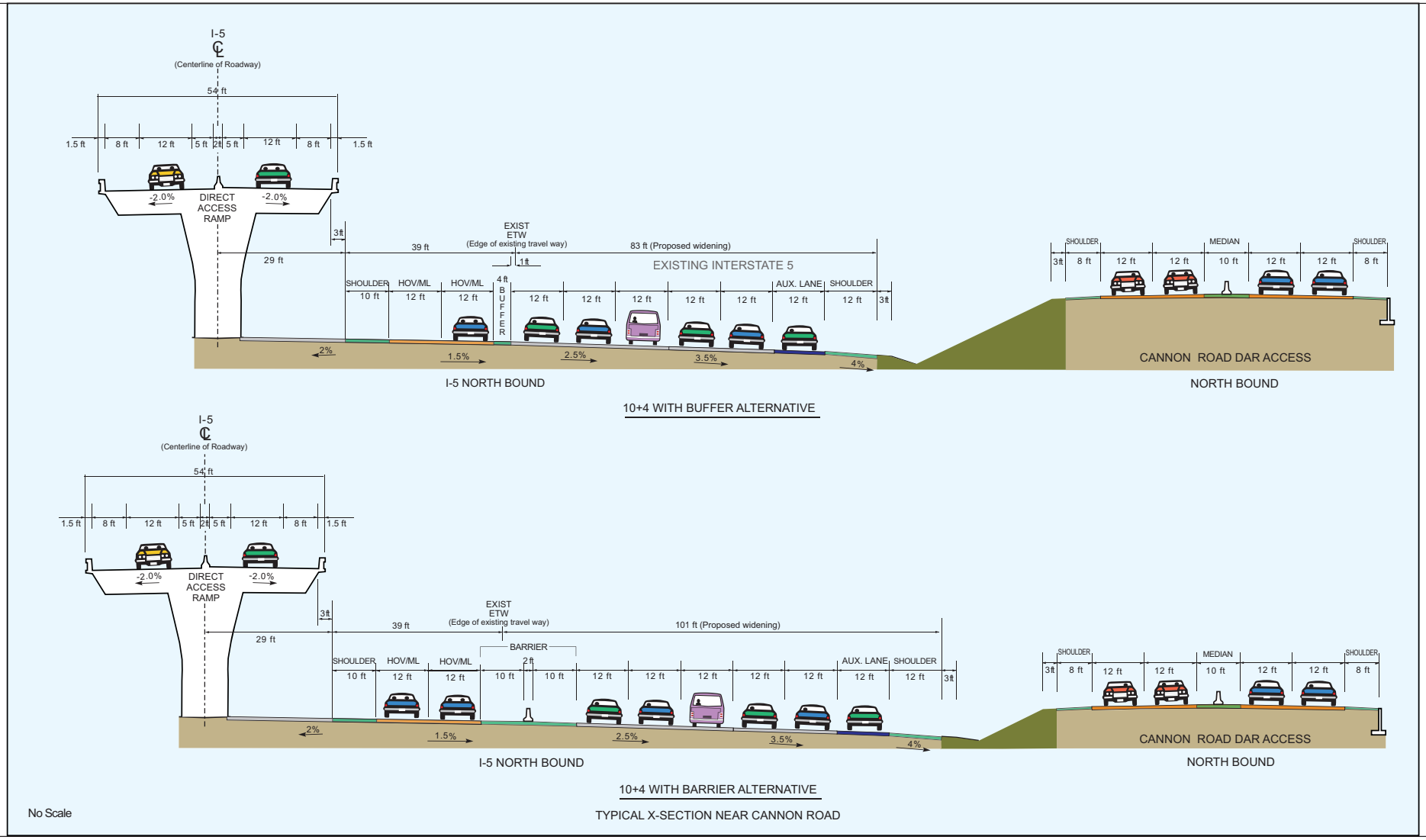

Figure 2-2.12: Typical Cross-section with DAR for 10+4 Barrier and Buffer Alternatives

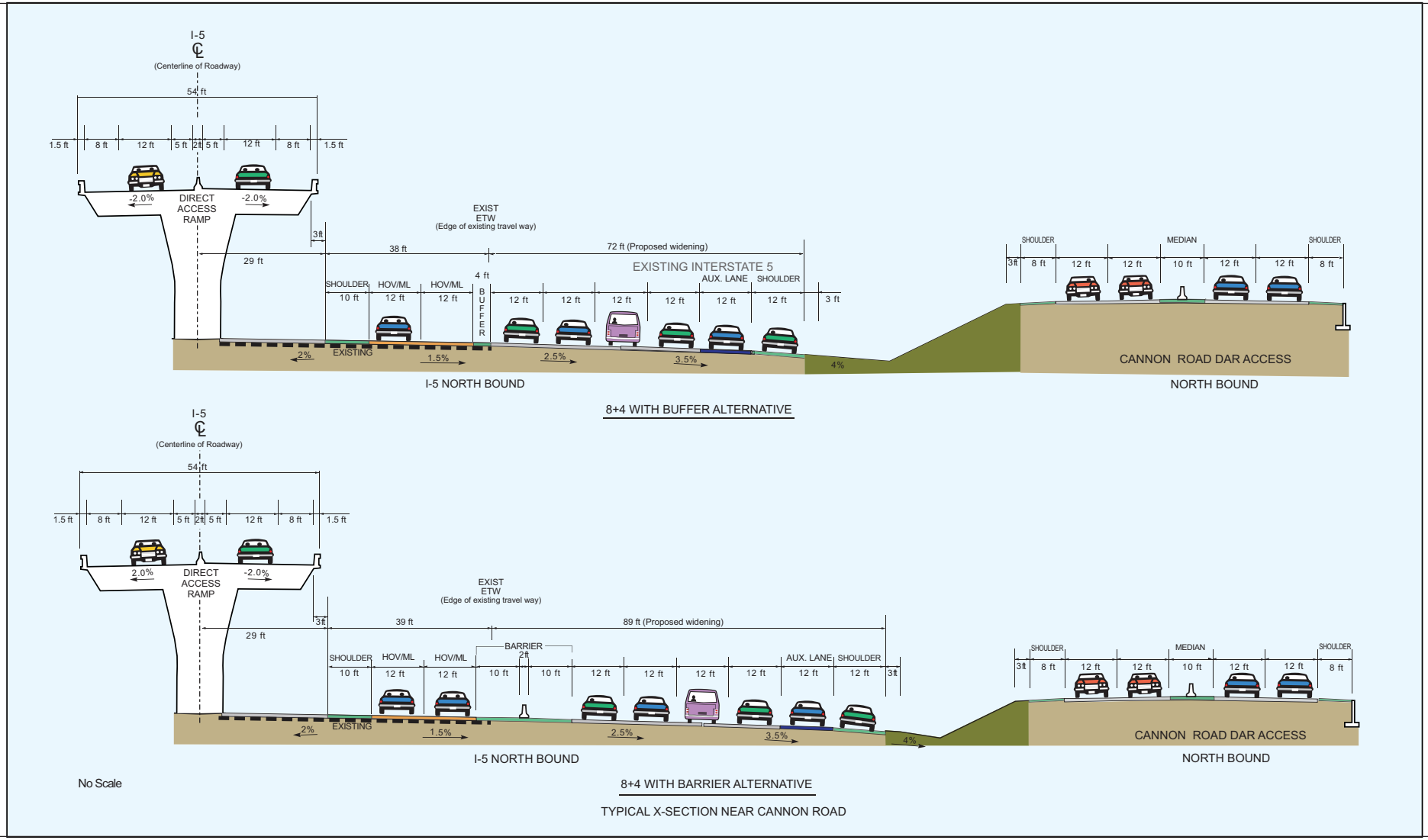

Figure 2-2.13: Typical Cross-section with DAR for 8+4 Barrier and Buffer Alternatives

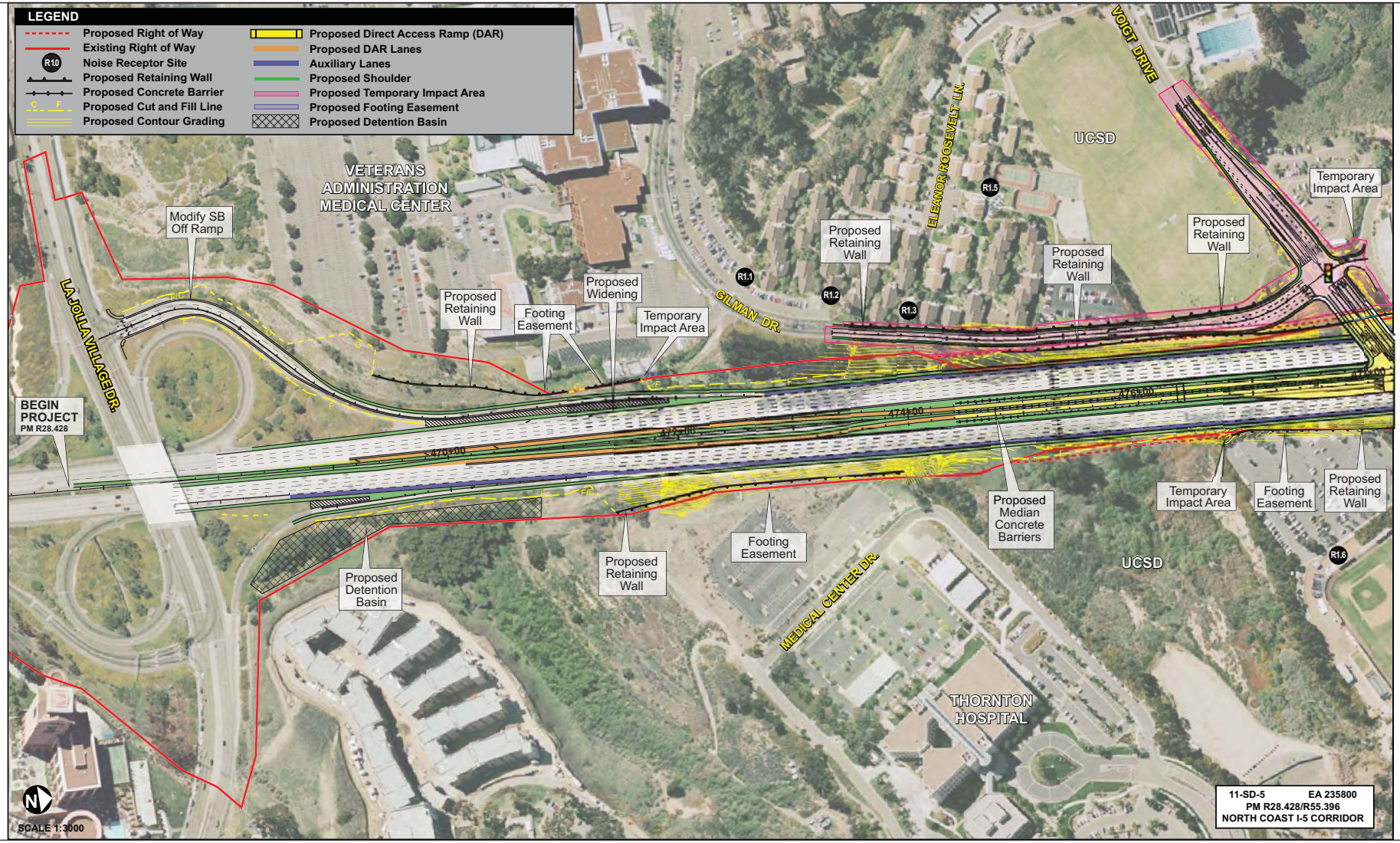

Figure 2-2.14a Project Features Map: 10+4 Buffer Alternative

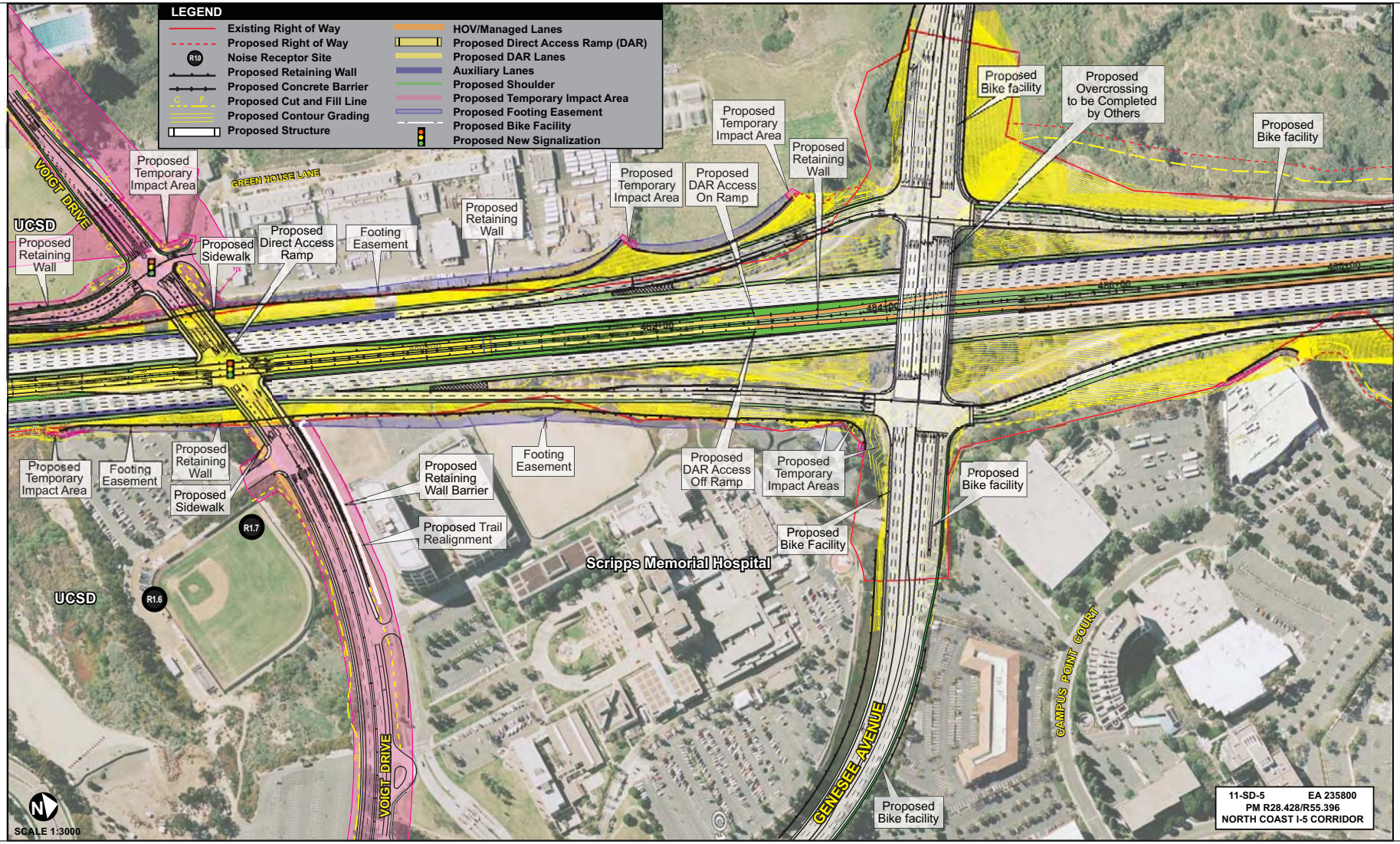

Figure 2-2.14b Project Features Map: 10+4 Buffer Alternative

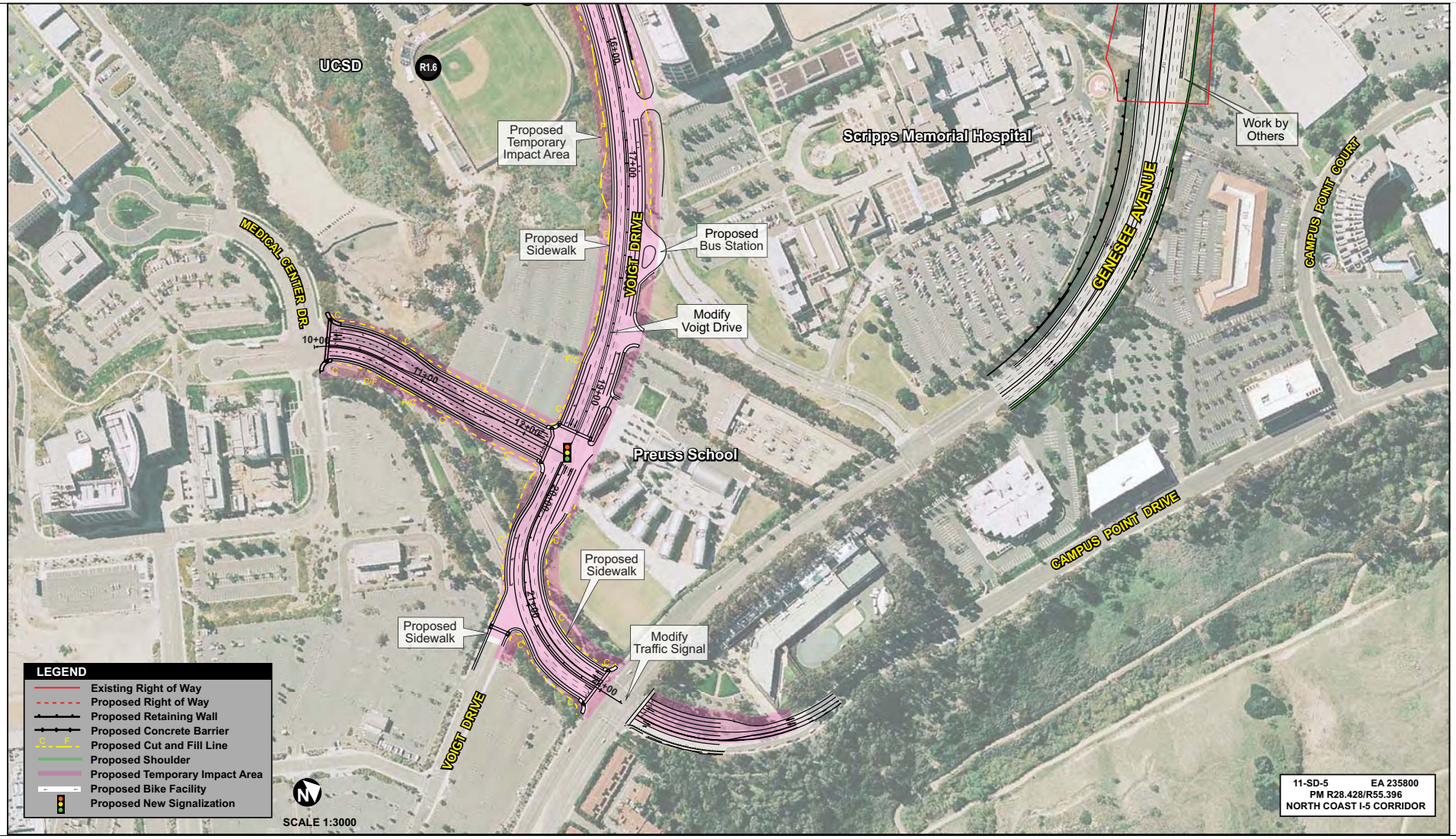

Figure 2-2.14c Project Features Map: 10+4 Buffer Alternative

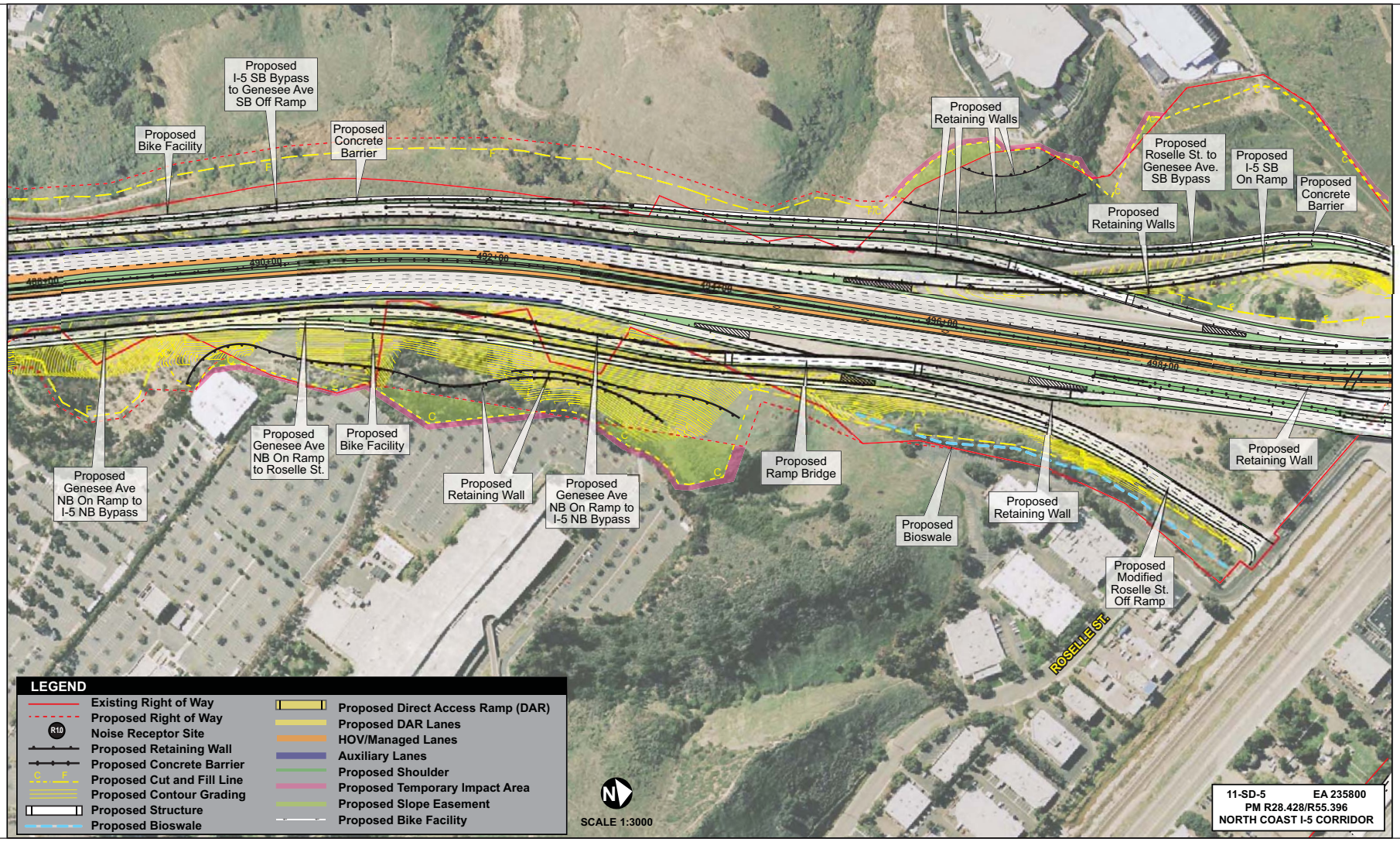

Figure 2-2.14d Project Features Map: 10+4 Buffer Alternative

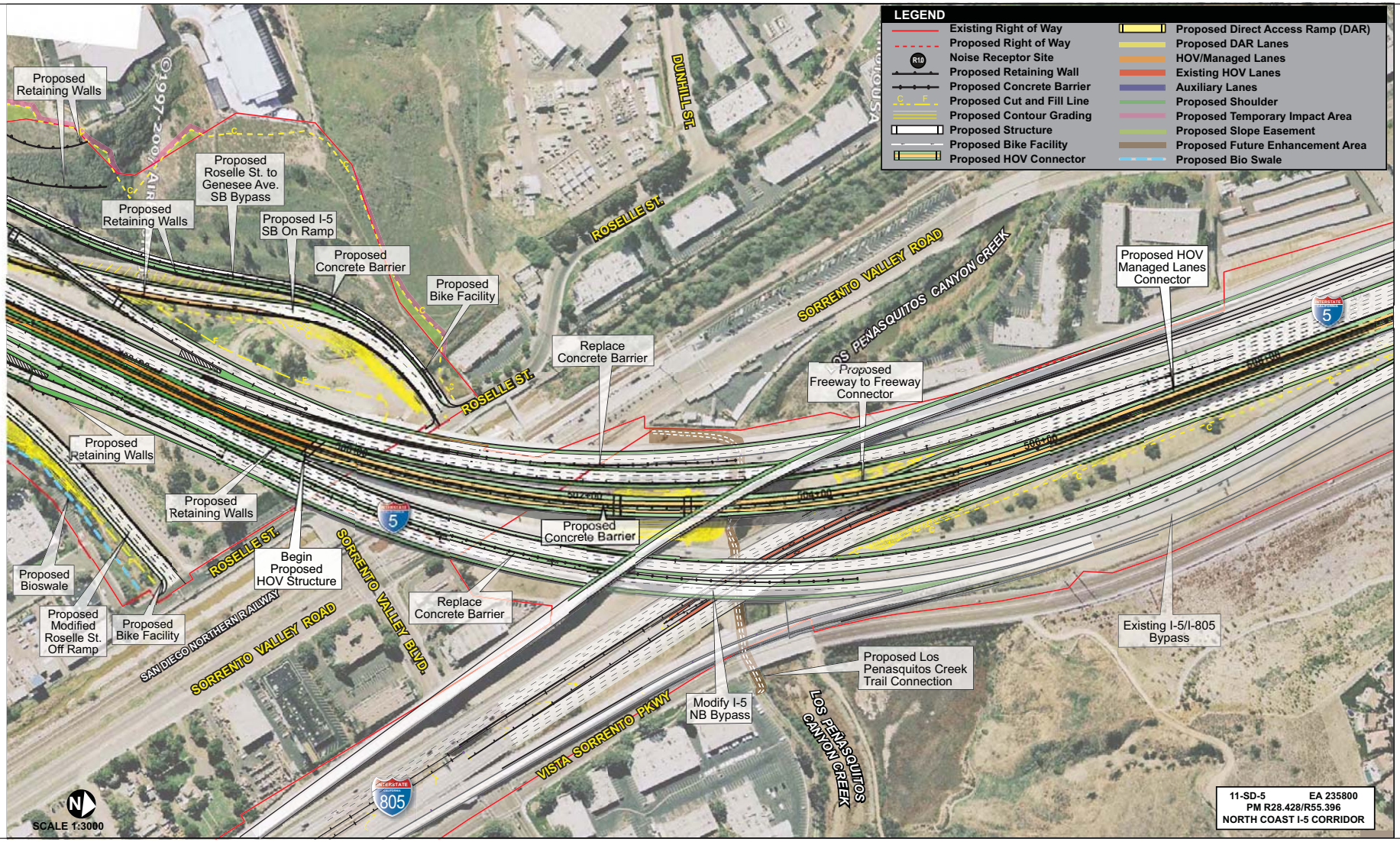

Figure 2-2.14e Project Features Map: 10+4 Buffer Alternative

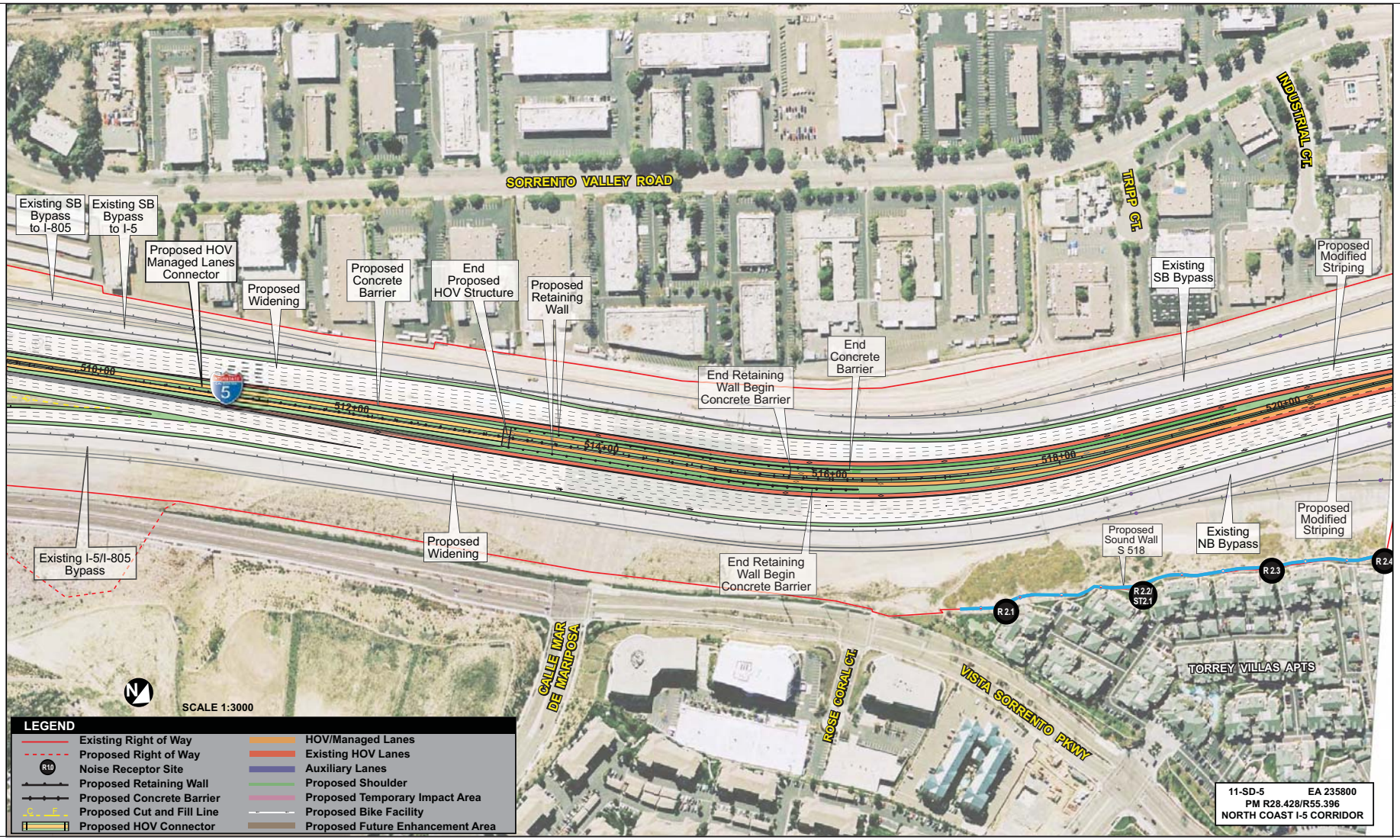

Figure 2-2.14f - Project Features Map - 10+4 Buffer Alternative

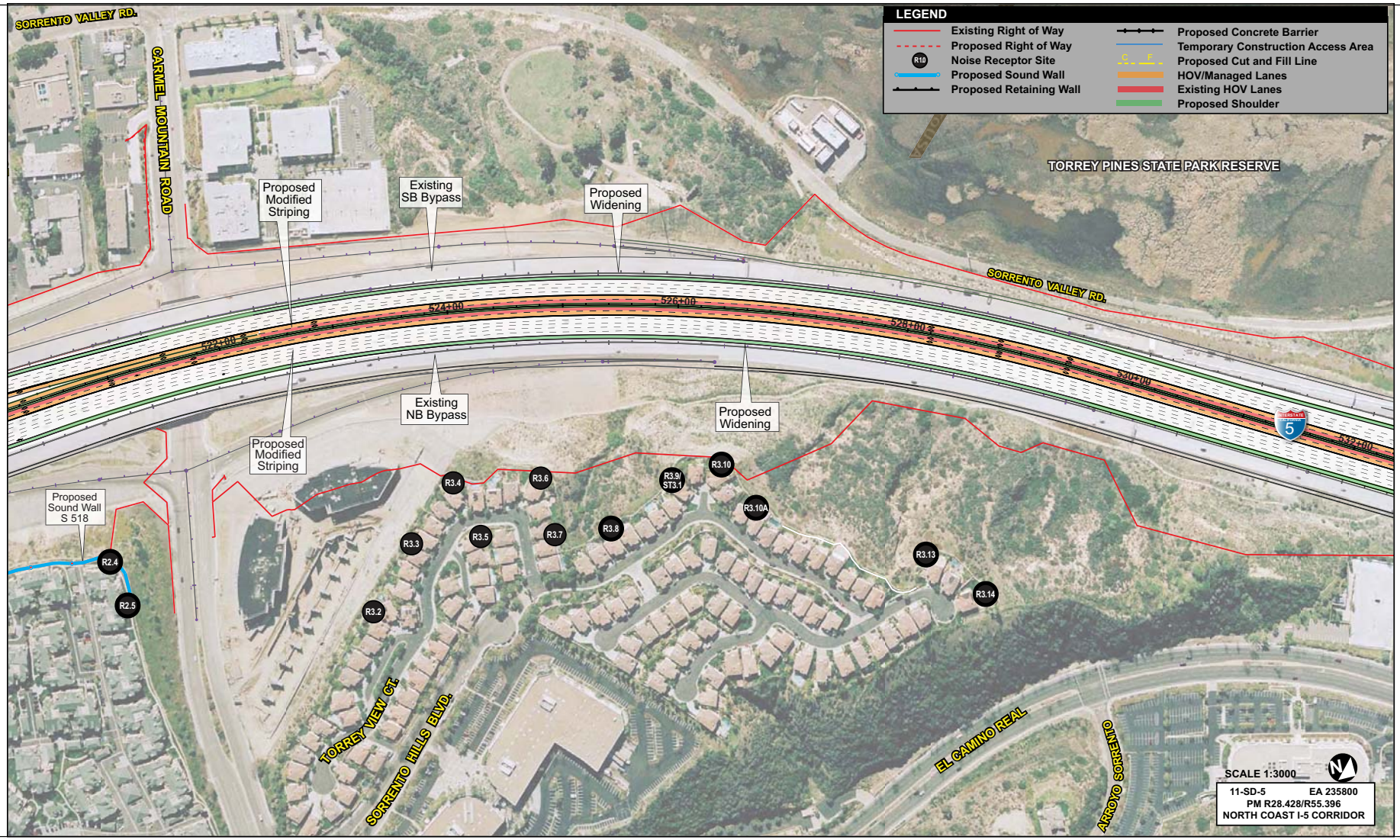

Figure 2-2.14g Project Features Map: 10+4 Buffer Alternative

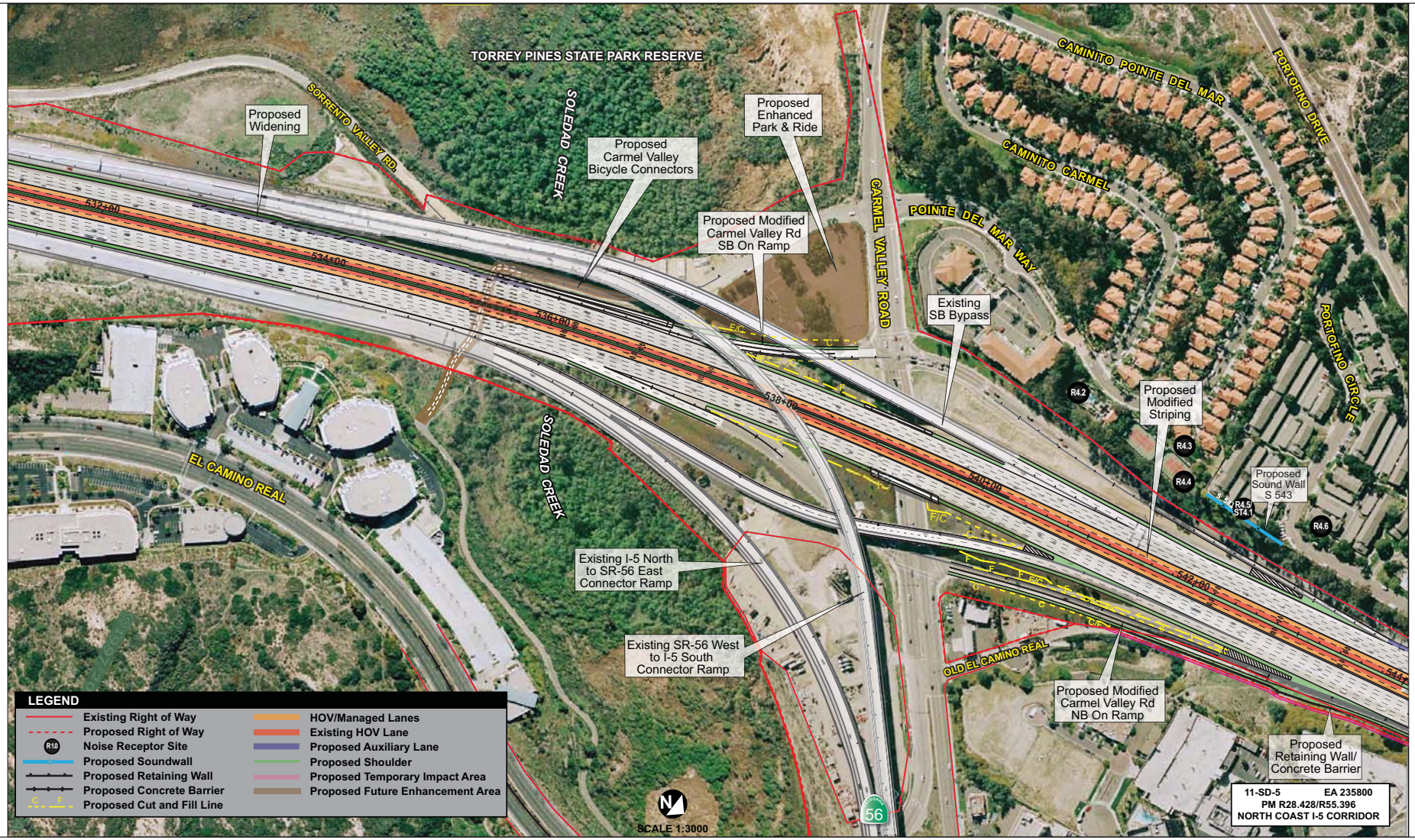

Figure 2-2.14h Project Features Map: 10+4 Buffer Alternative

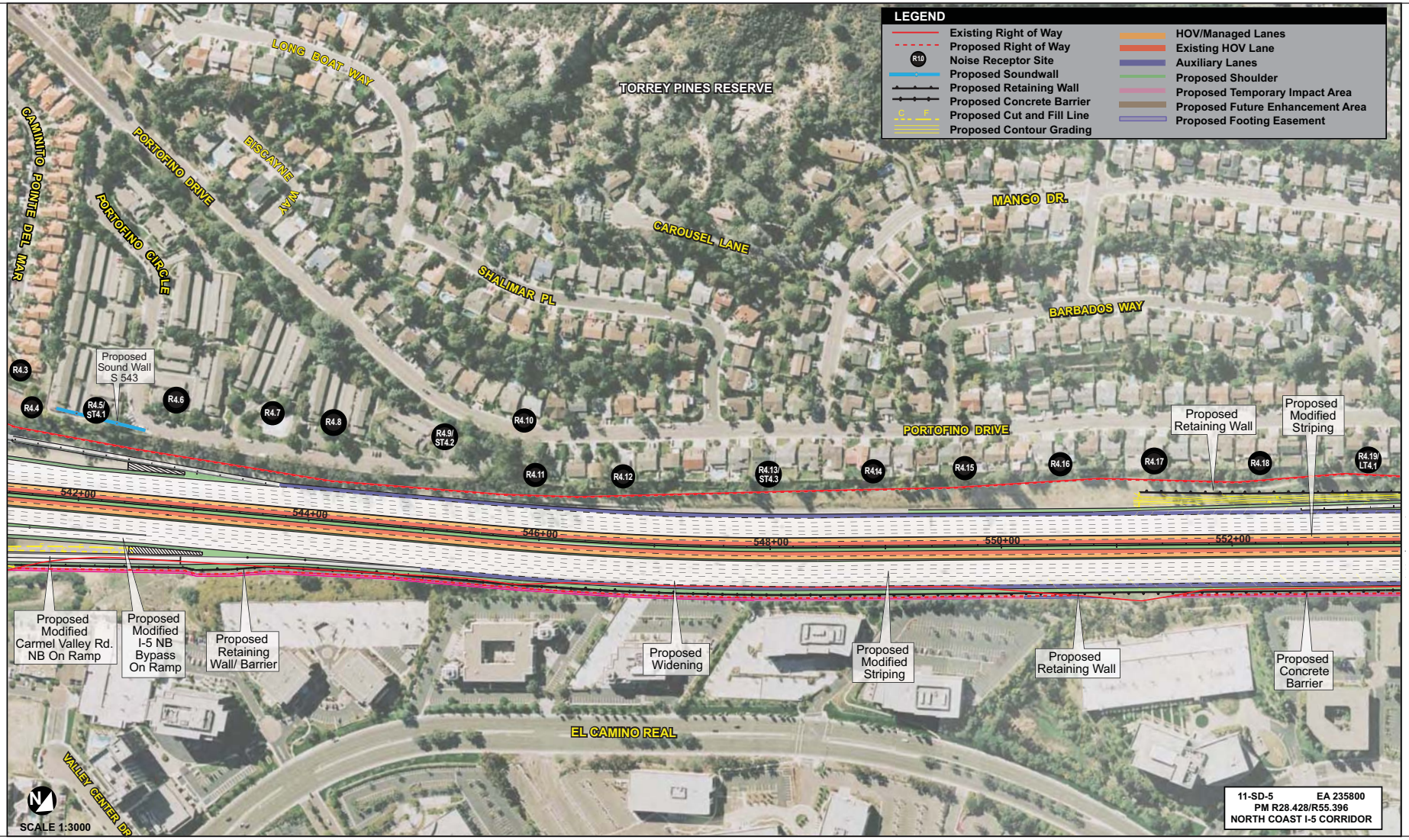

Figure 2-2.14i Project Features Map: 10+4 Buffer Alternative

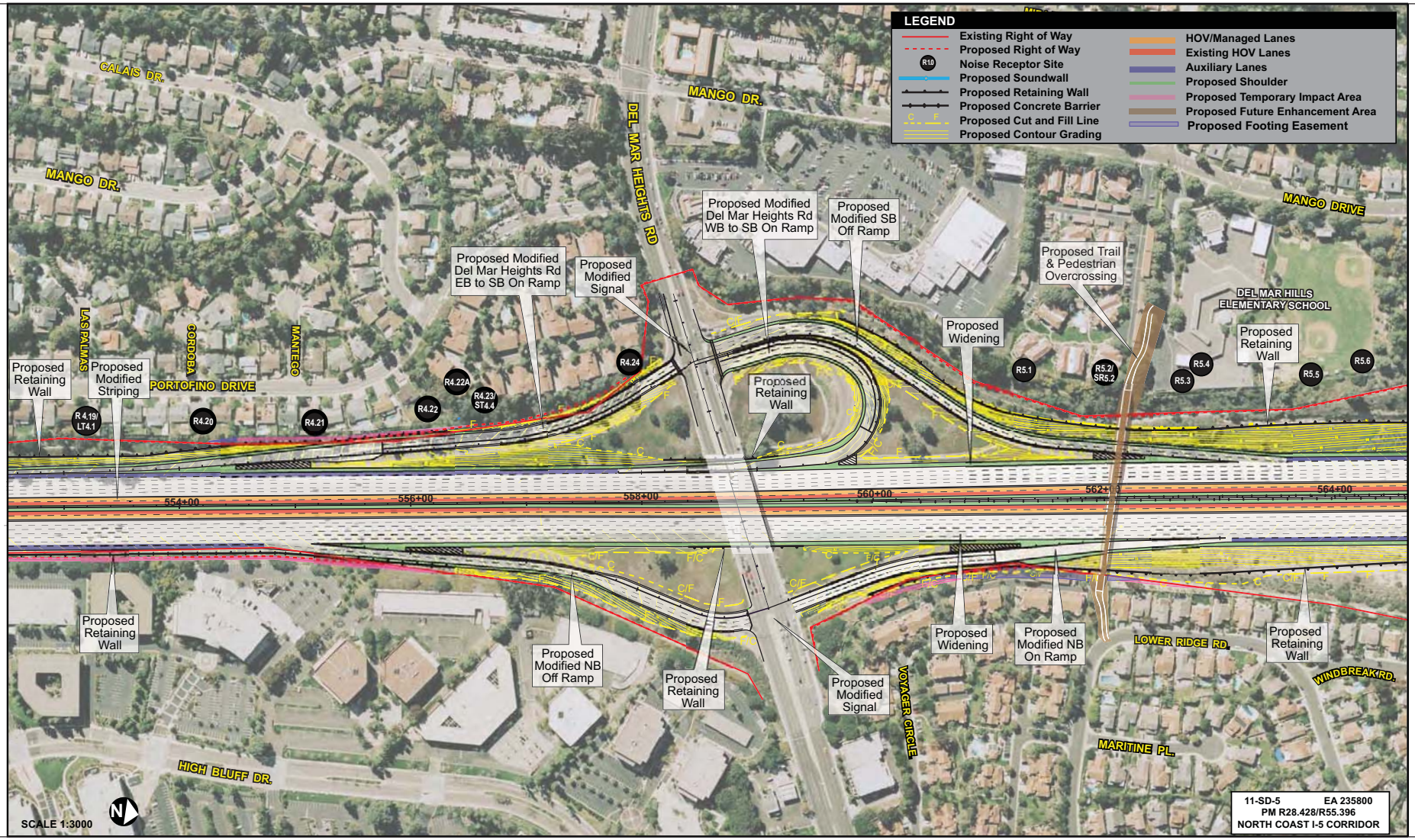

Figure 2-2.14j Project Features Map: 10+4 Buffer Alternative

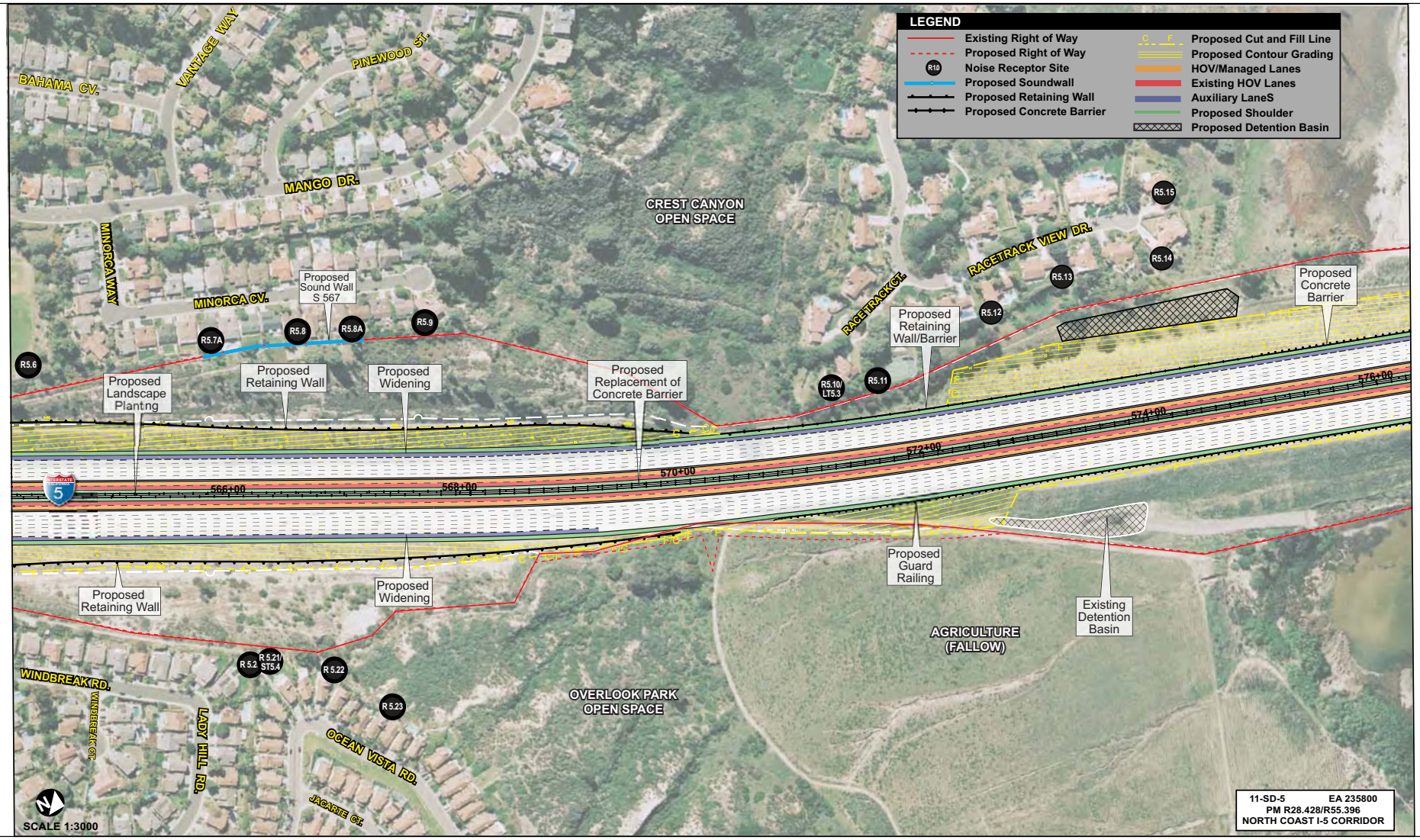

Figure 2-2.14k Project Features Map: 10+4 Buffer Alternative

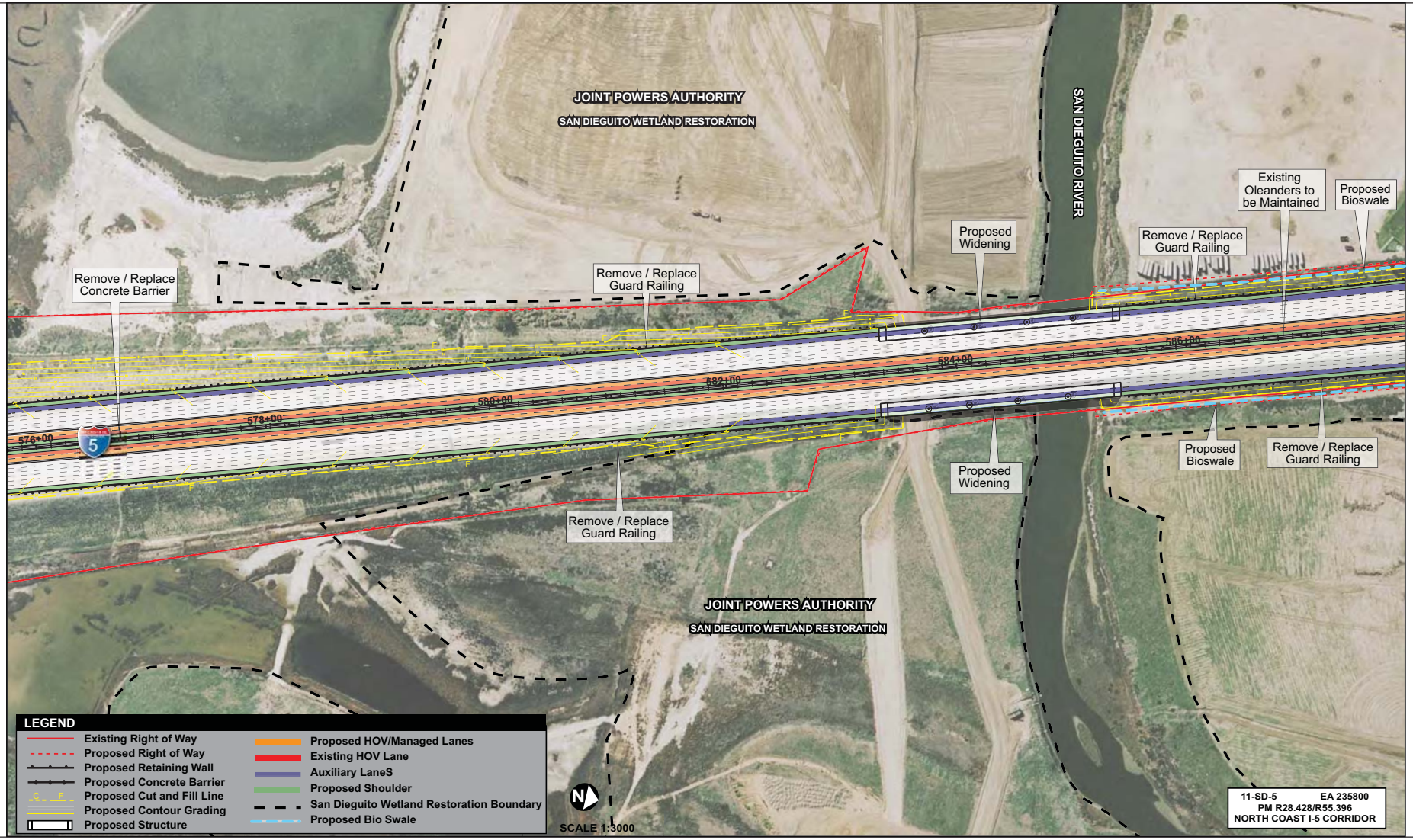

Figure 2-2.14l Project Features Map: 10+4 Buffer Alternative

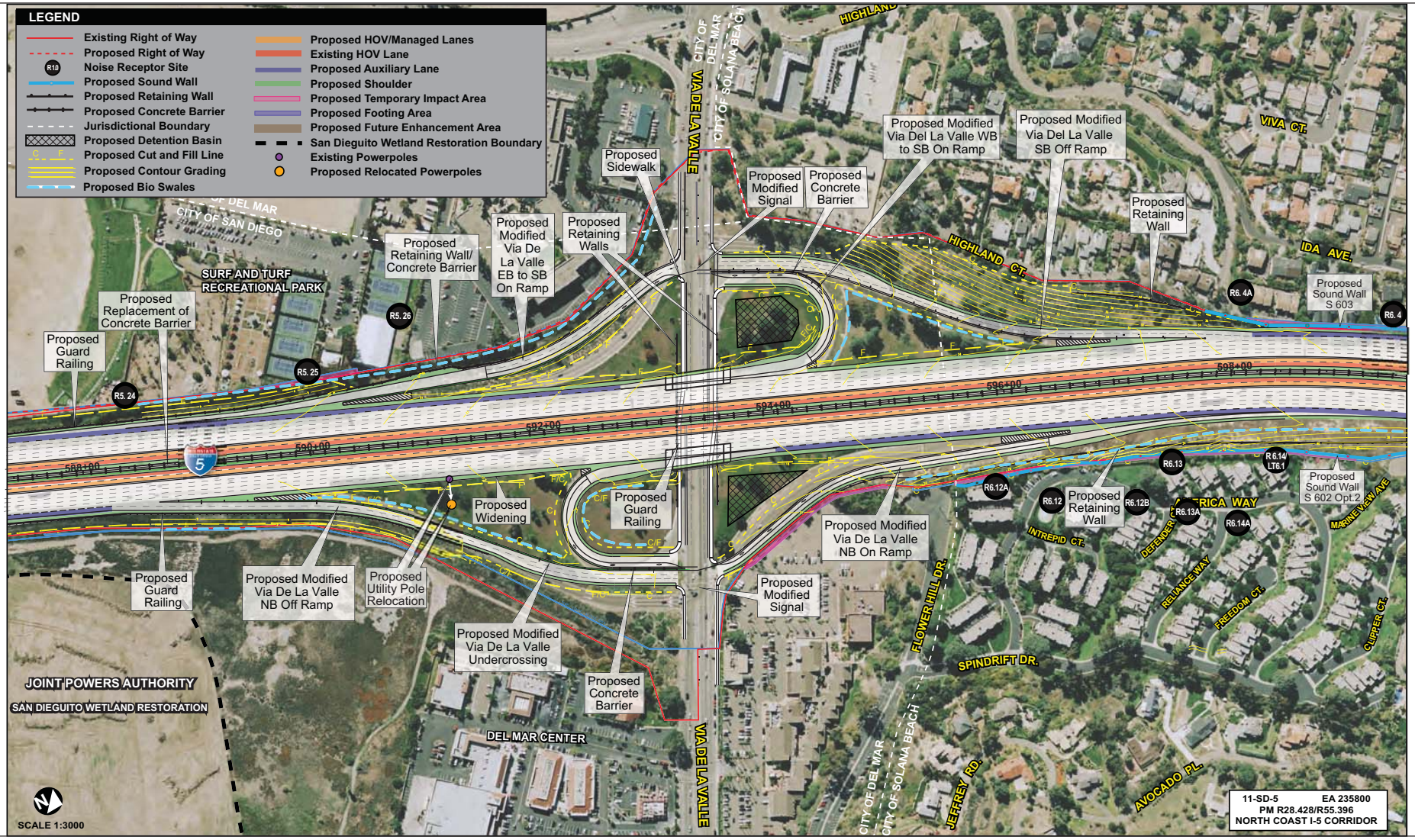

Figure 2-2.14m Project Features Map: 10+4 Buffer Alternative

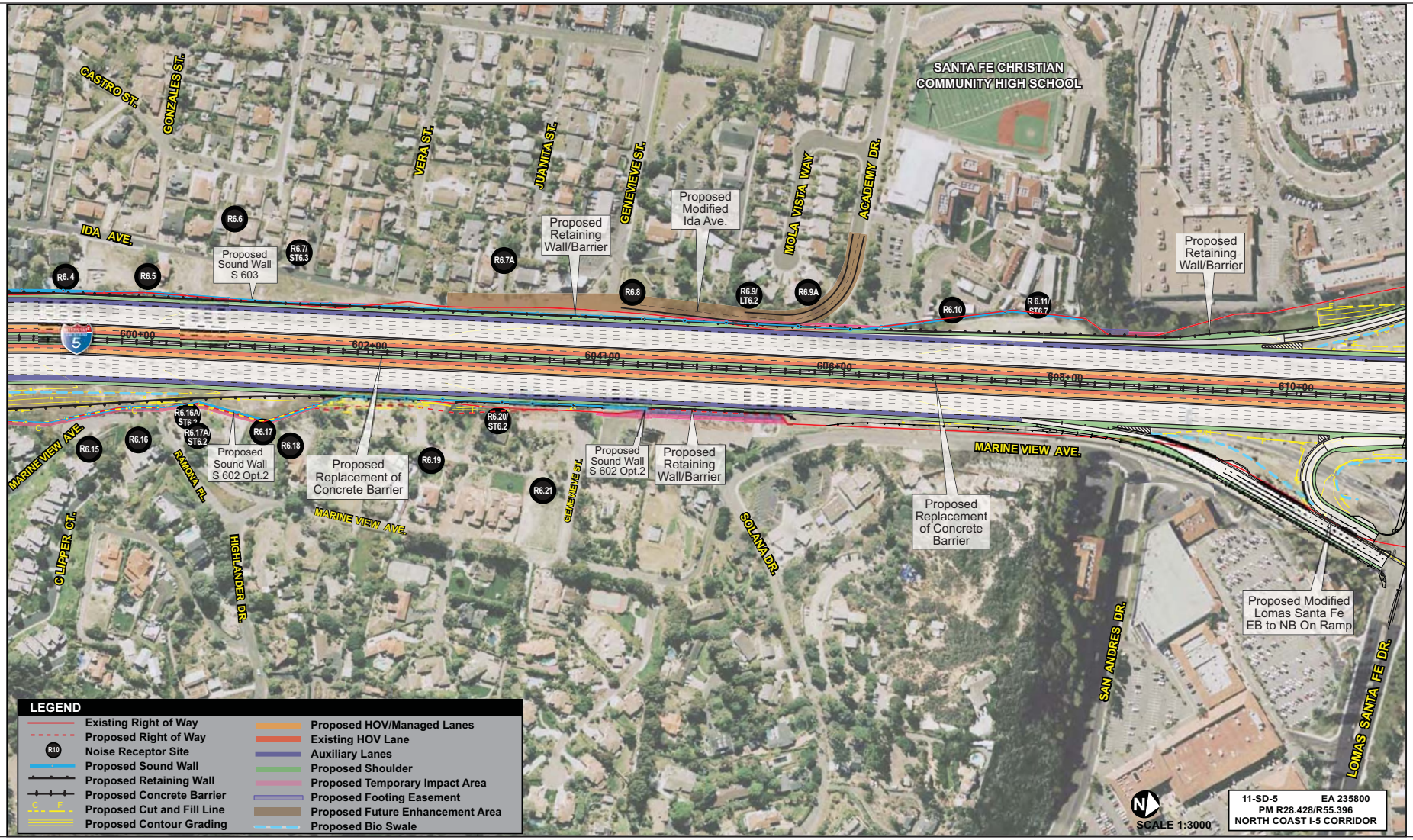

Figure 2-2.14n Project Features Map: 10+4 Buffer Alternative

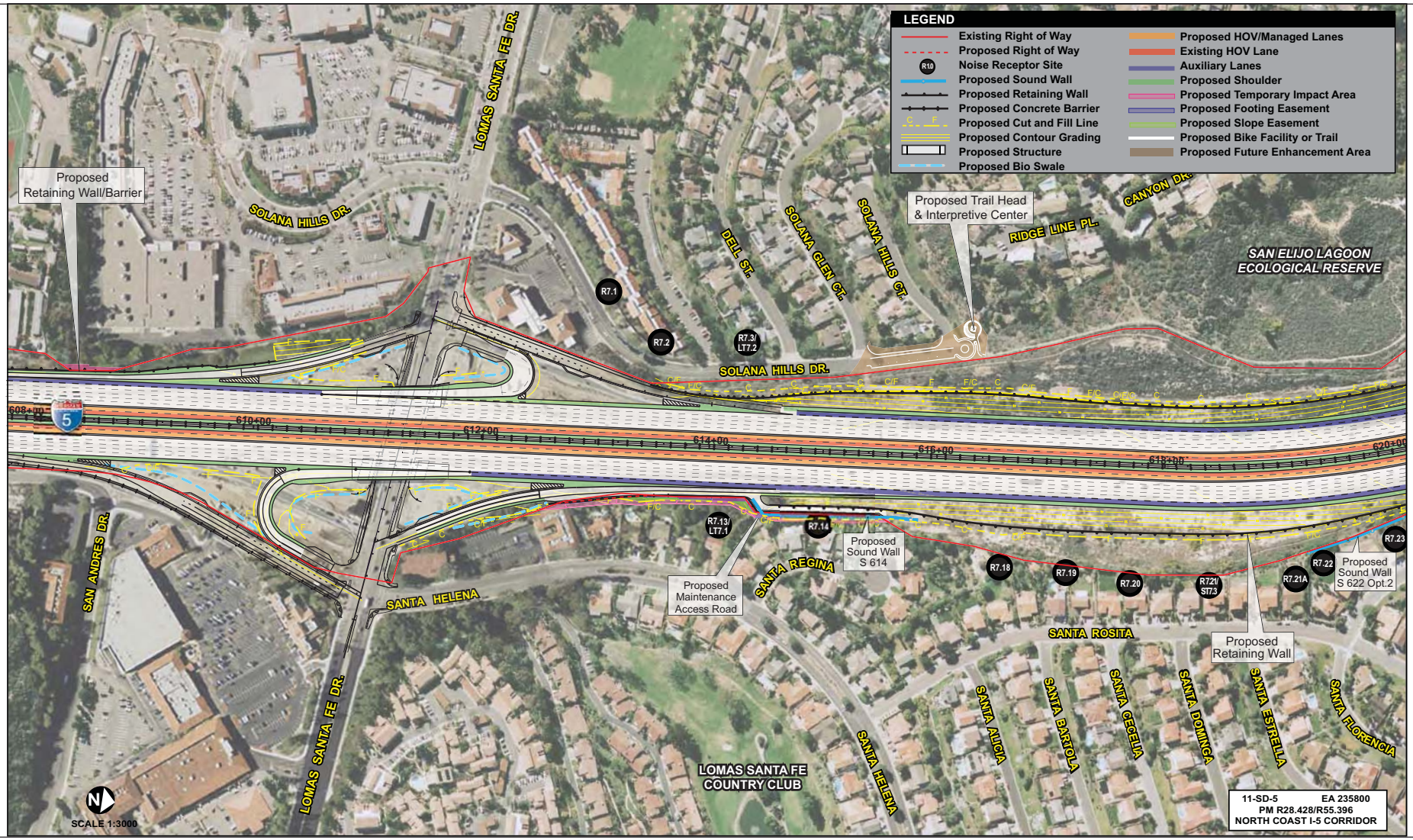

Figure 2-2.14o Project Features Map: 10+4 Buffer Alternative

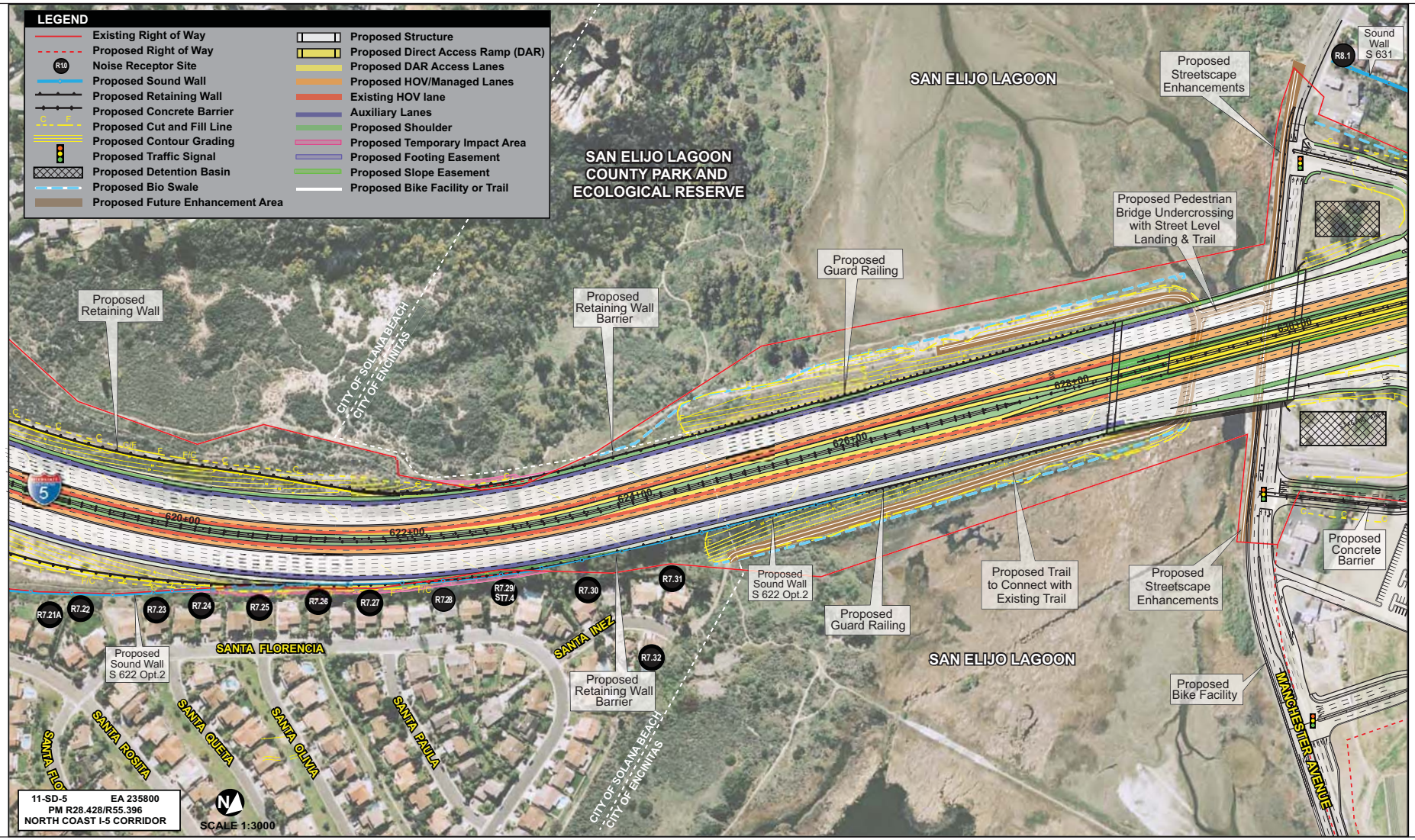

Figure 2-2.14p Project Features Map: 10+4 Buffer Alternative

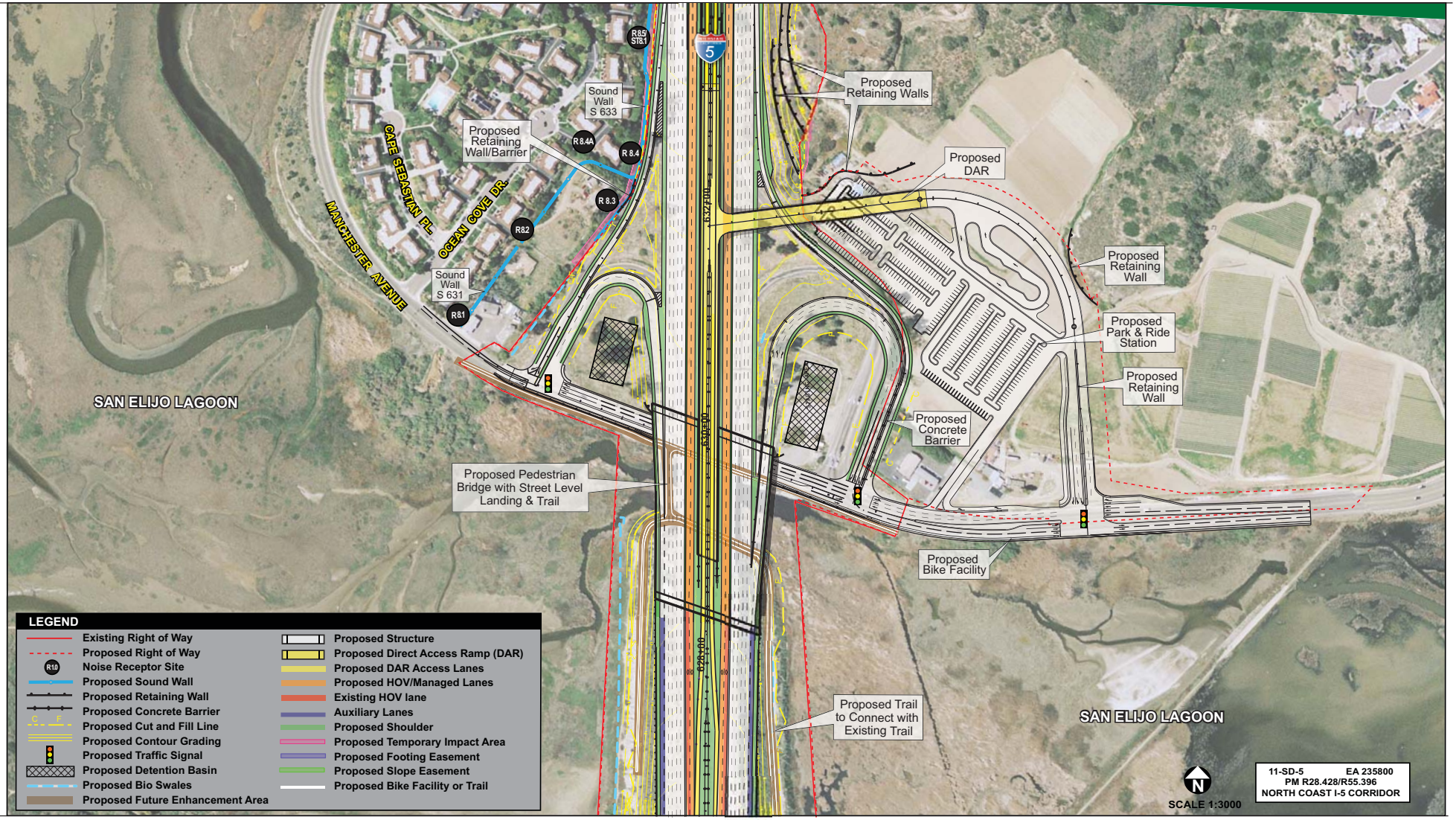

Figure 2-2.14q Project Features Map: 10+4 Buffer Alternative

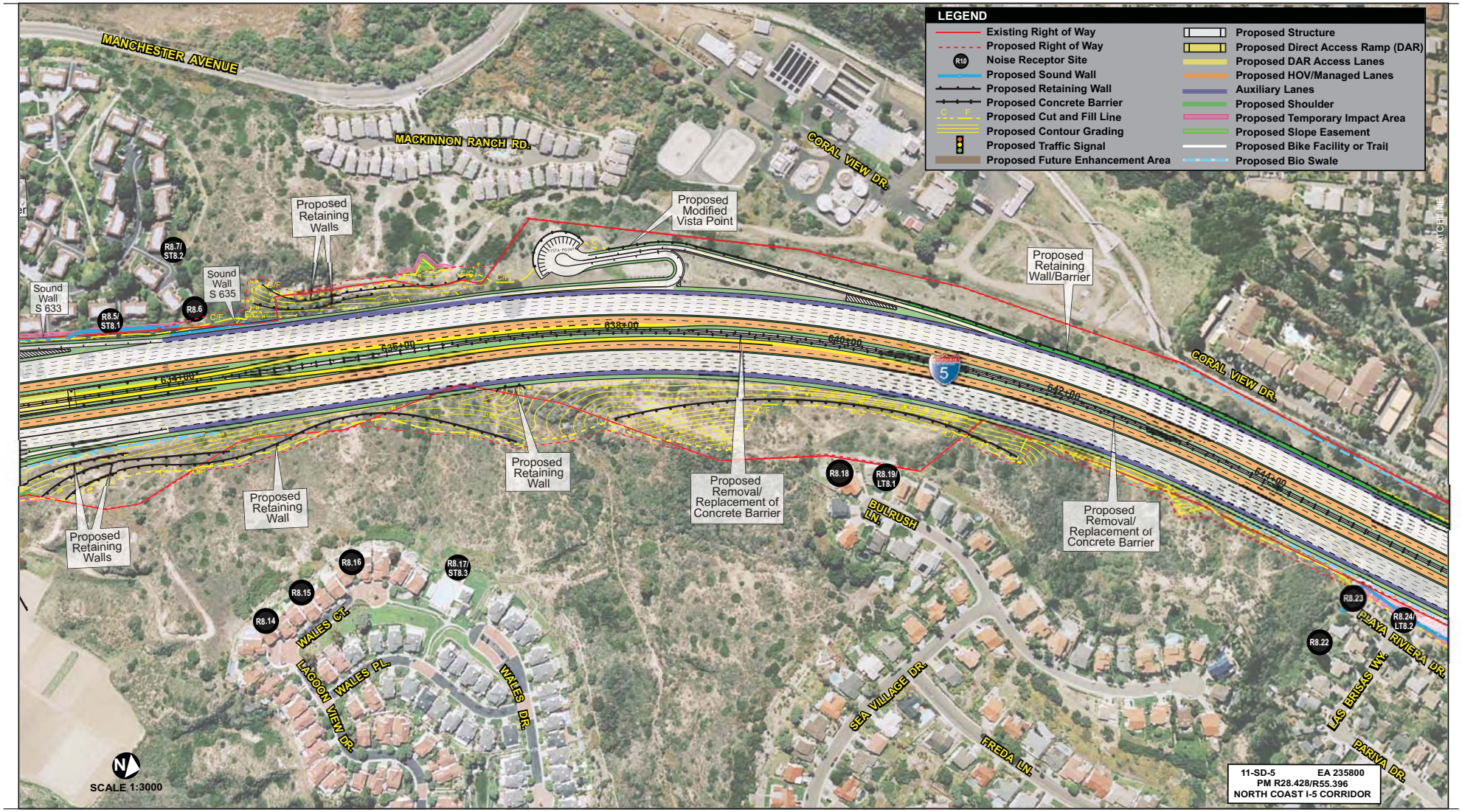

Figure 2-2.14r Project Features Map: 10+4 Buffer Alternative

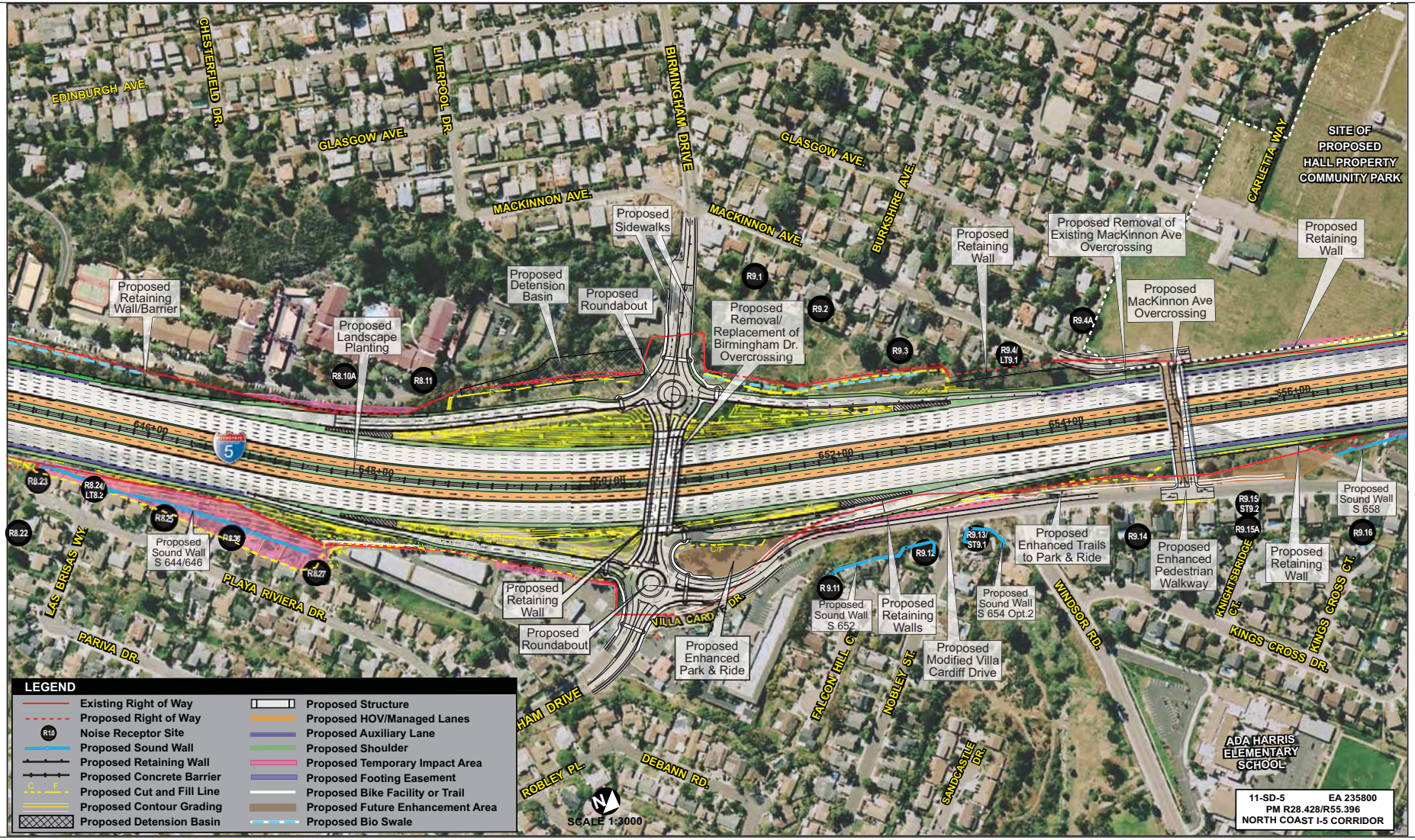

Figure 2-2.14s Option 1 Project Features Map: 10+4 Buffer Alternative

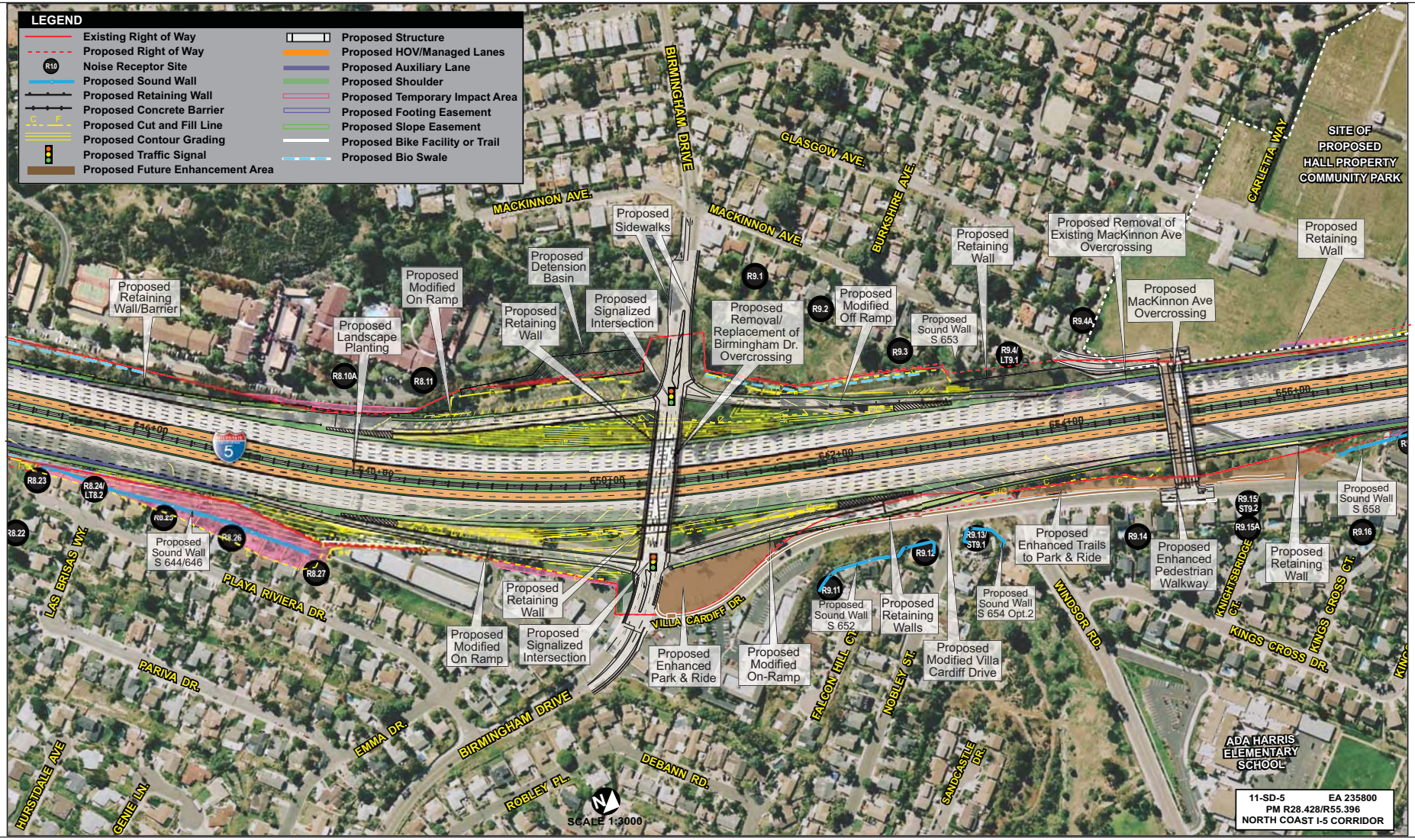

Figure 2-2.14s Option 2 Project Features Map: 10+4 Buffer Alternative

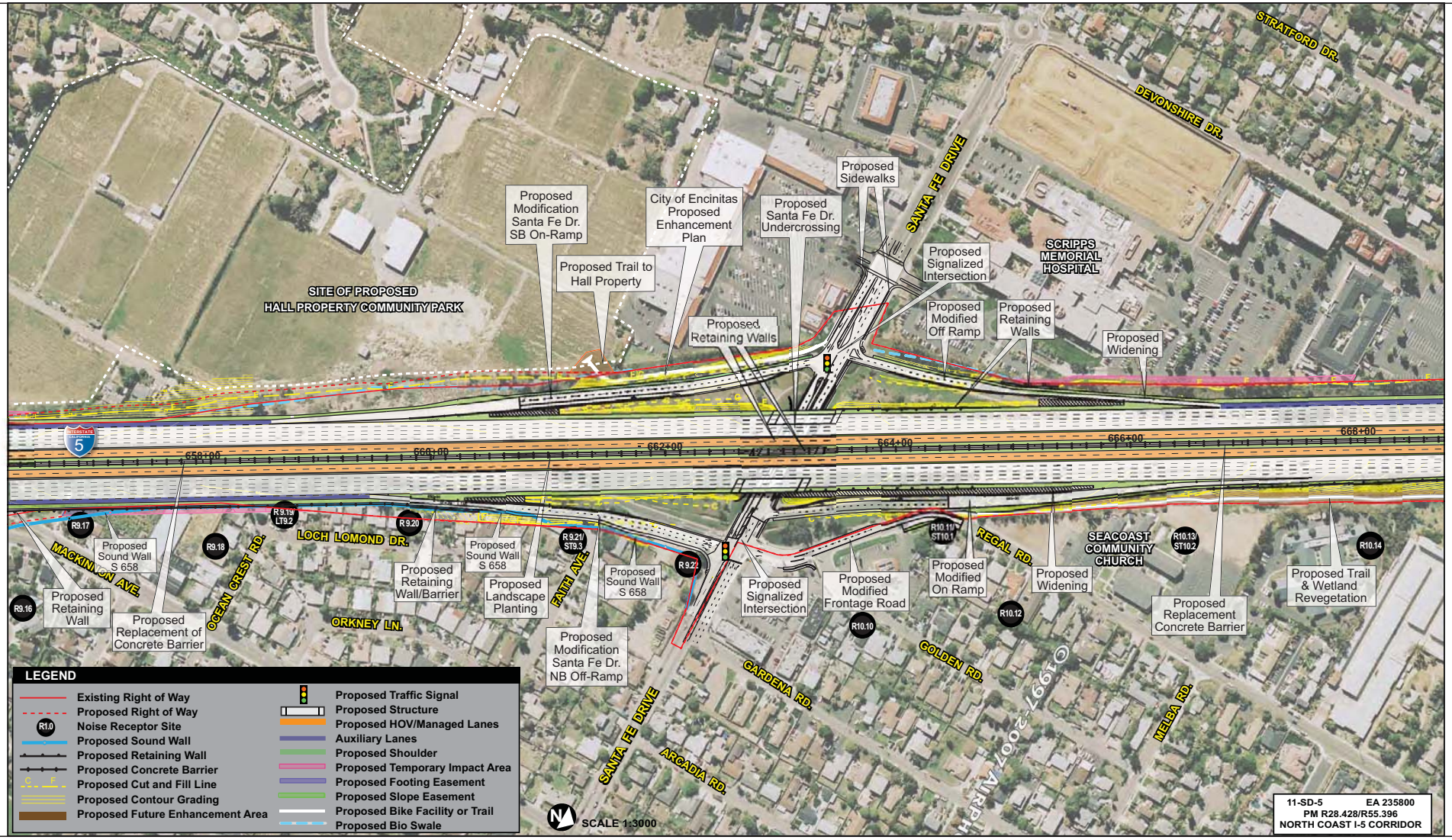

Figure 2-2.14t Project Features Map: 10+4 Buffer Alternative

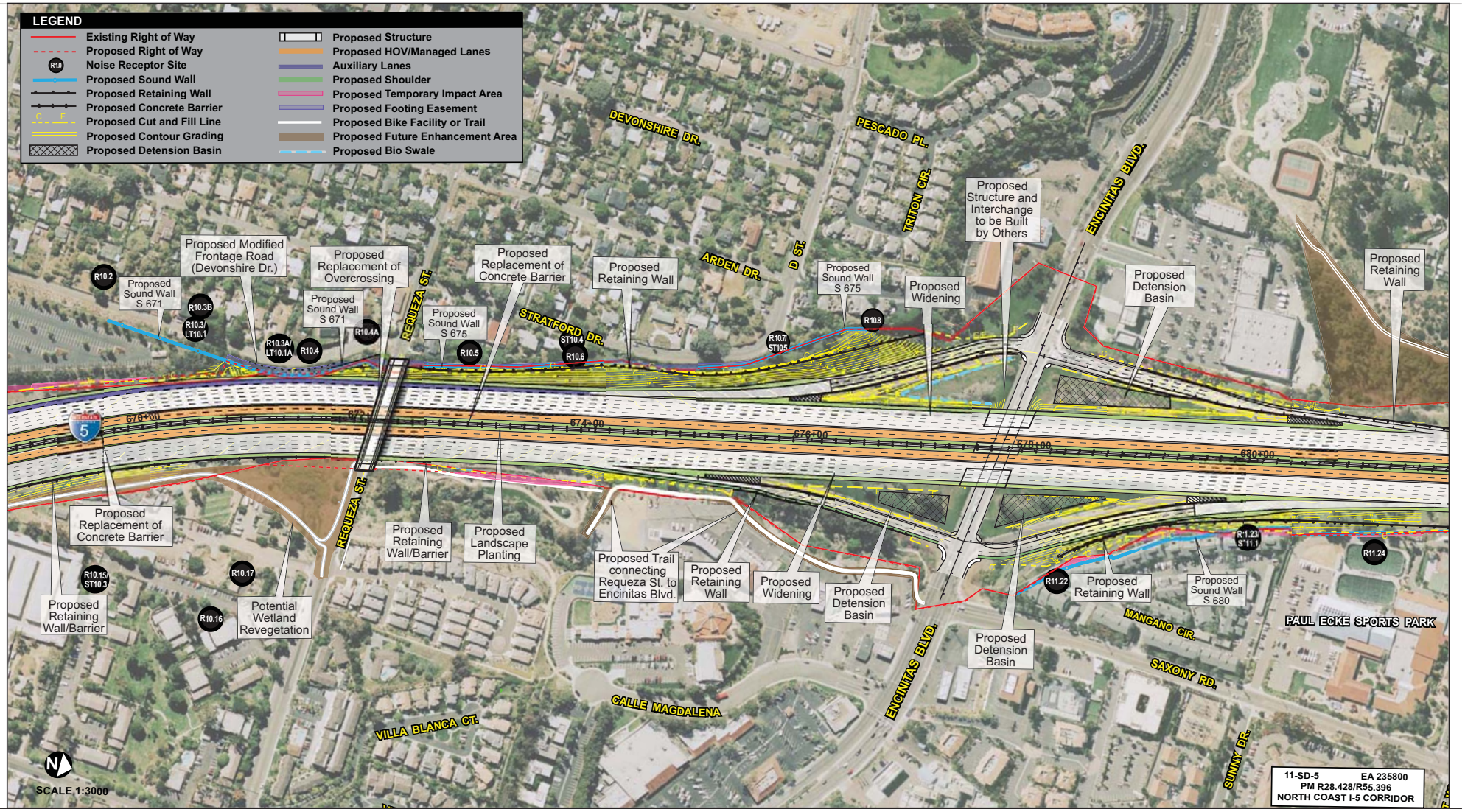

Figure 2-2.14u Project Features Map: 10+4 Buffer Alternative

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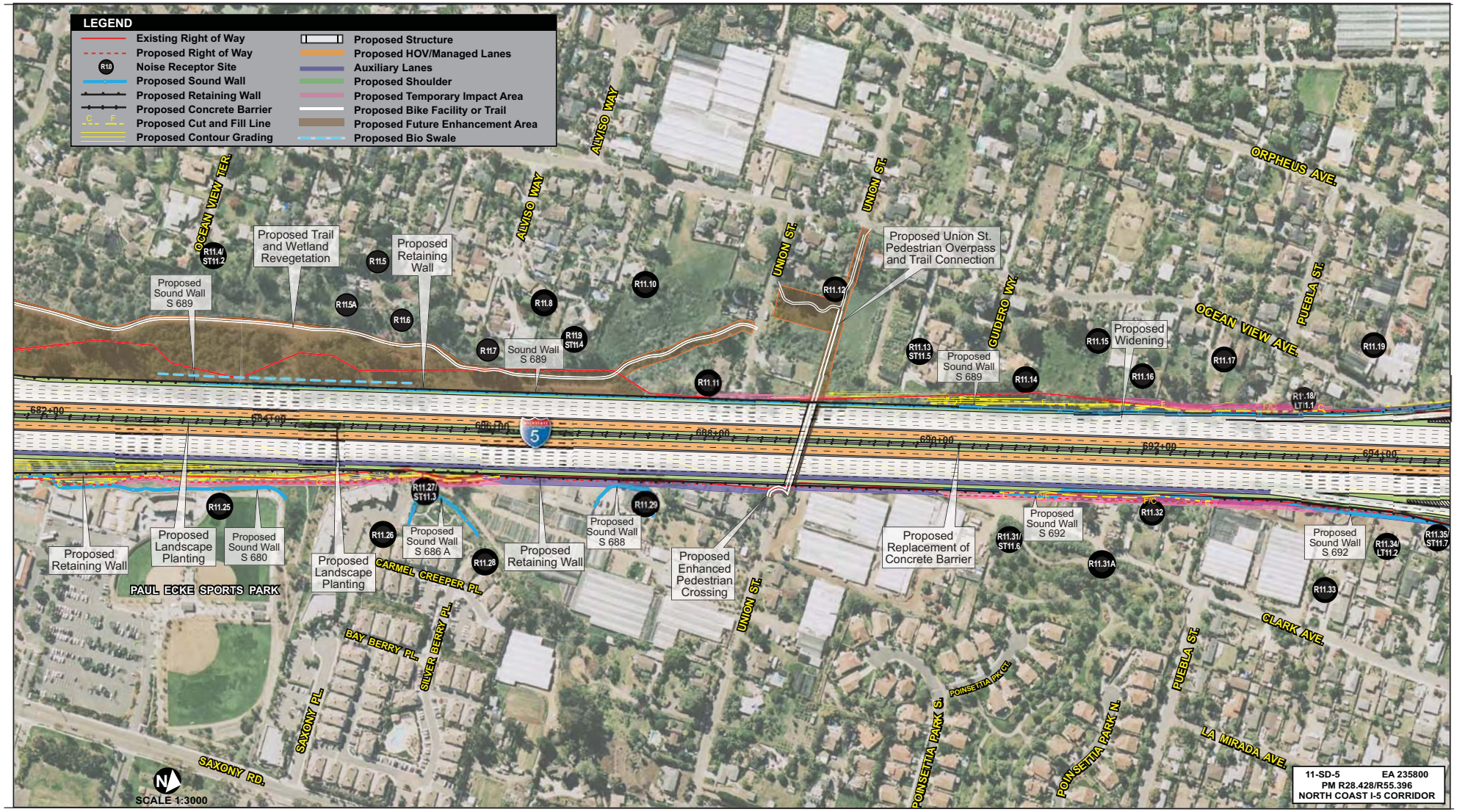

Figure 2-2.14v Project Features Map: 10+4 Buffer Alternative

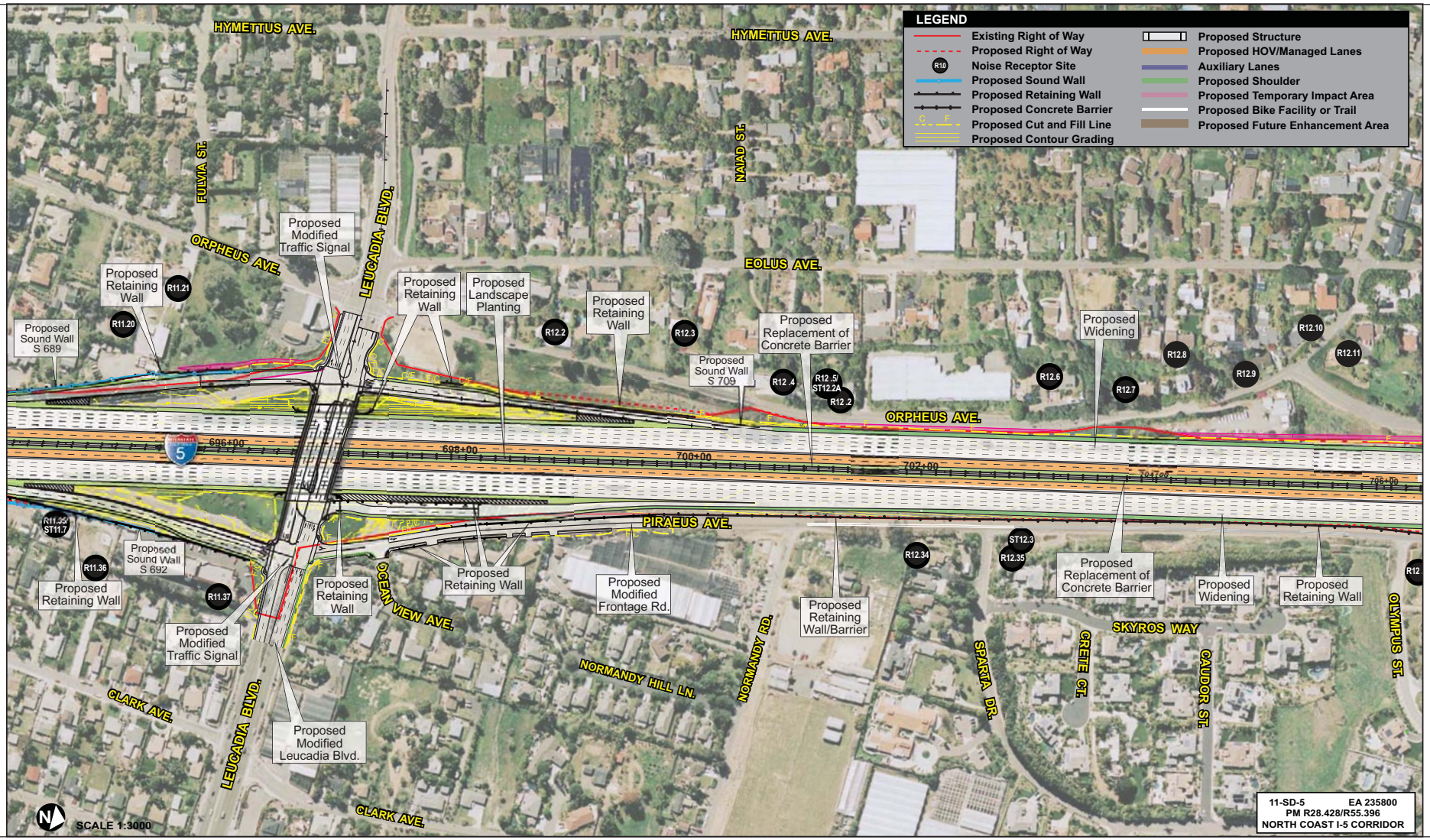

Figure 2-2.14w Project Features Map: 10+4 Buffer Alternative

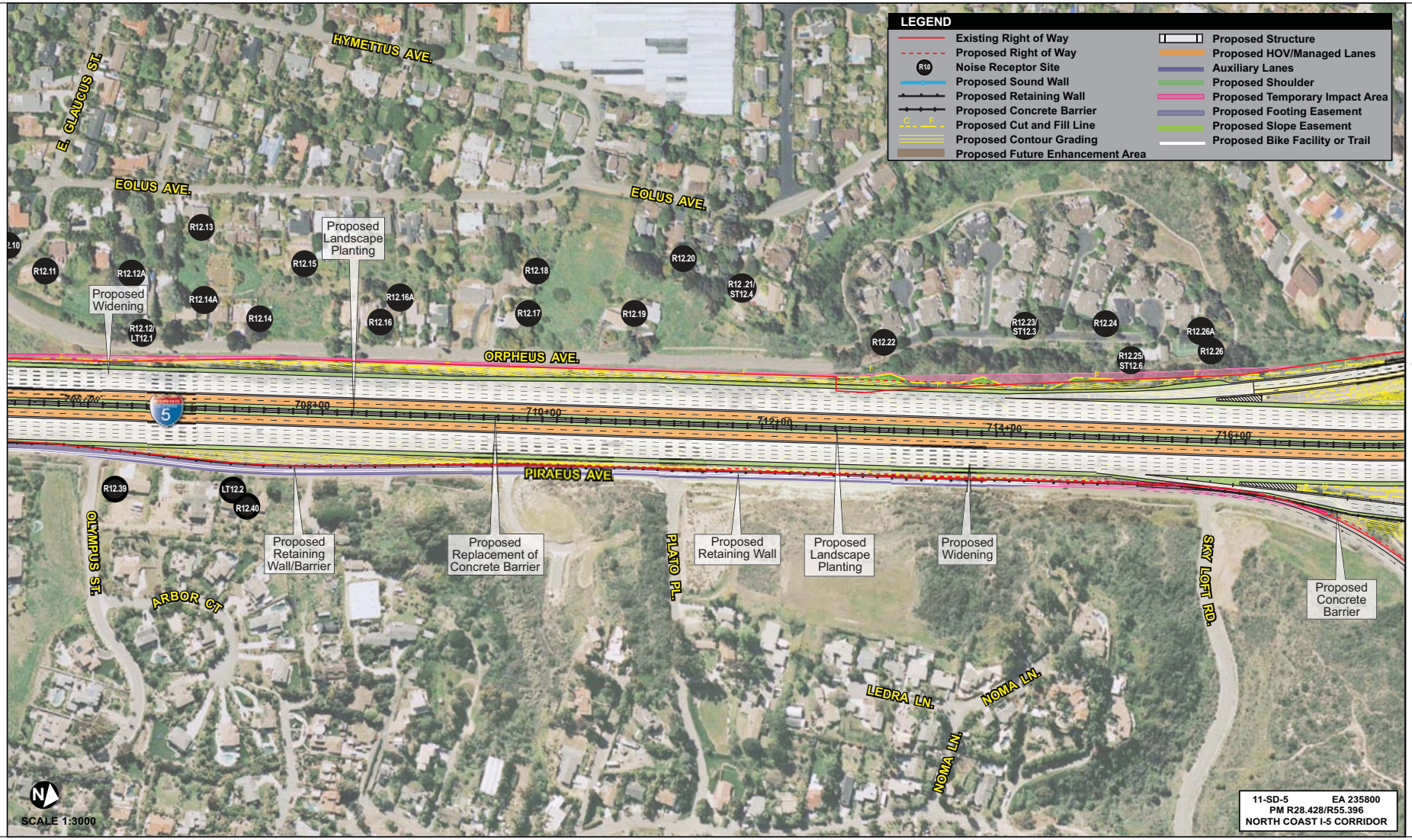

Figure 2-2.14x Project Features Map: 10+4 Buffer Alternative

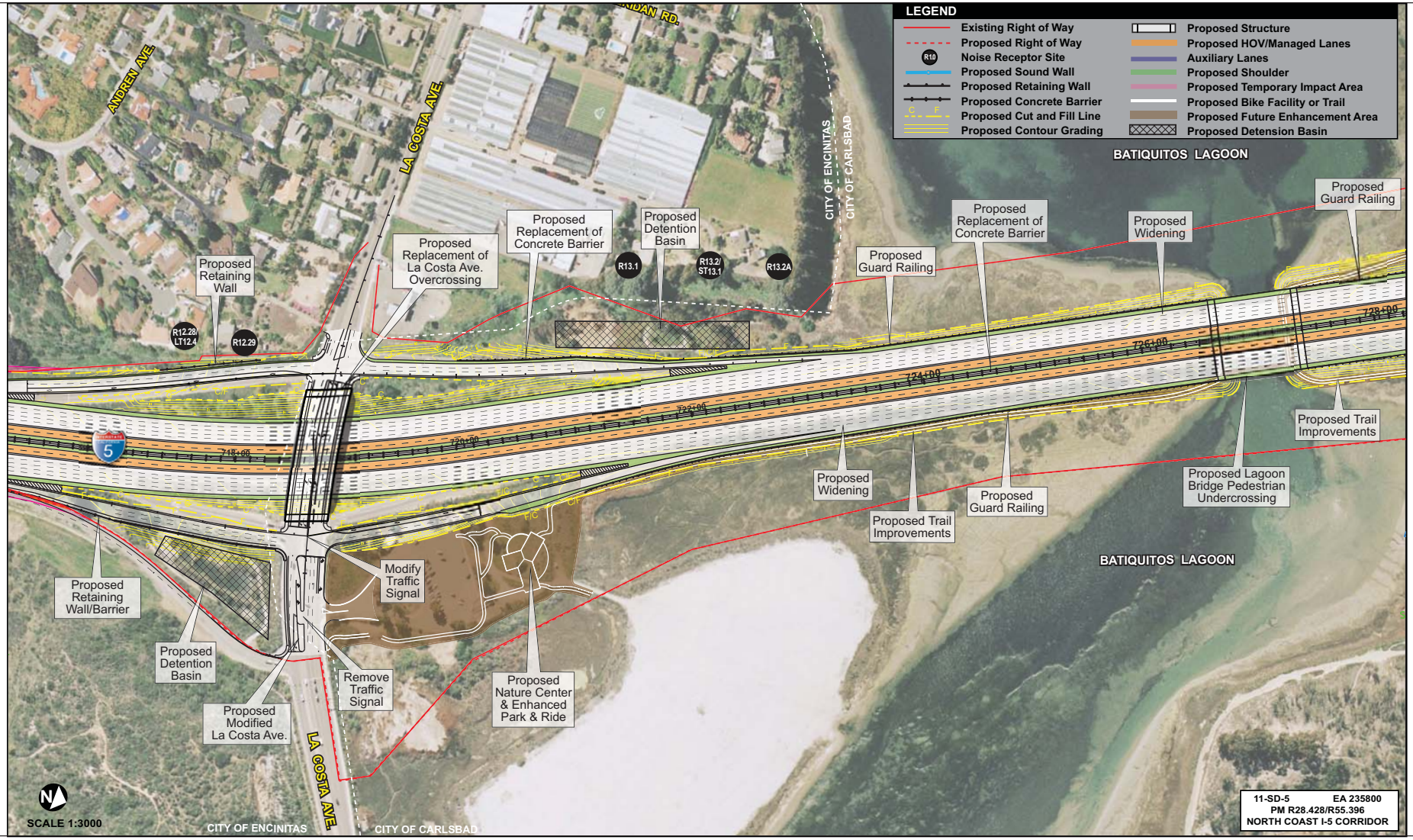

Figure 2-2.14y Project Features Map: 10+4 Buffer Alternative

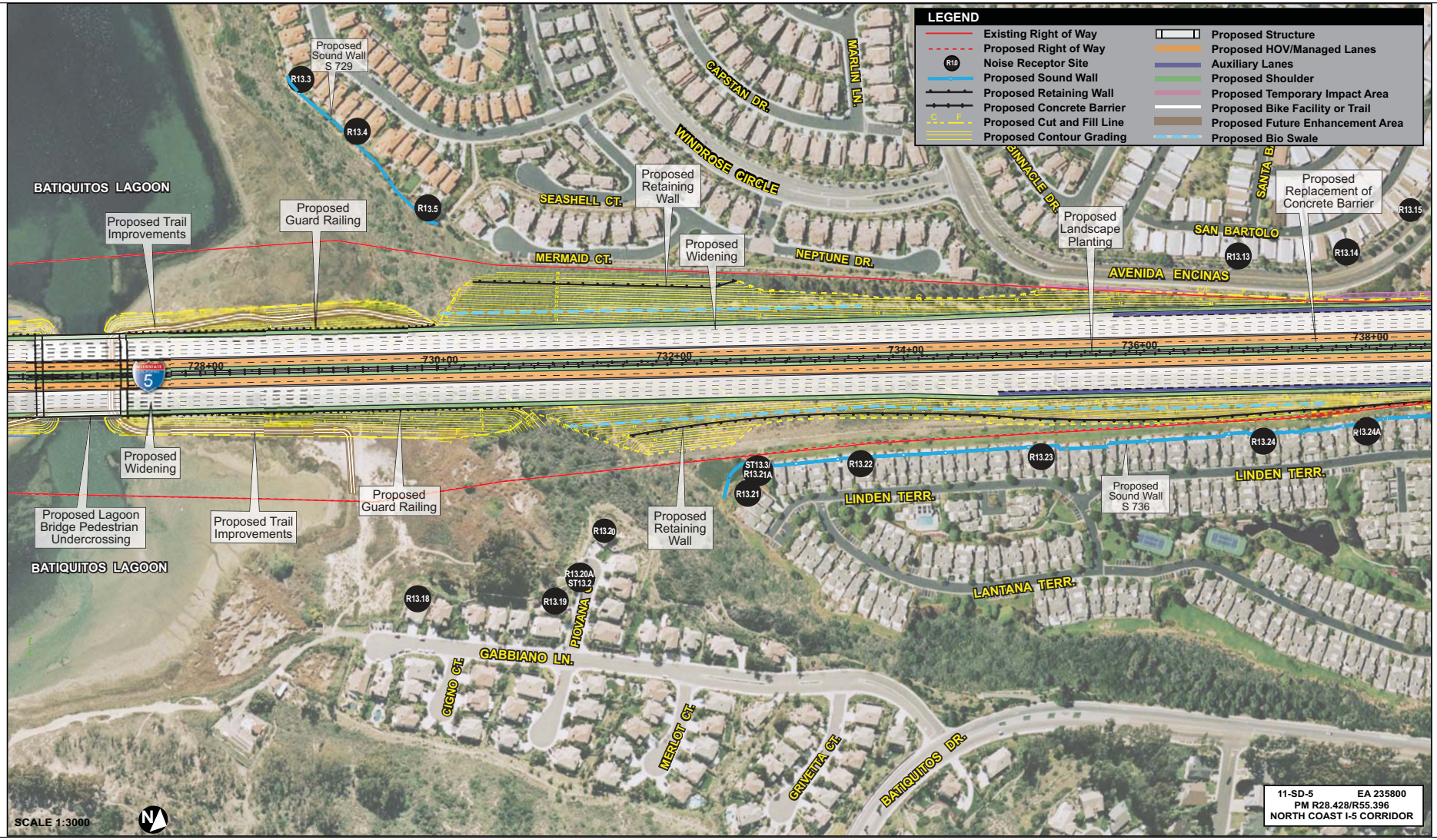

Figure 2-2.14z Project Features Map: 10+4 Buffer Alternative

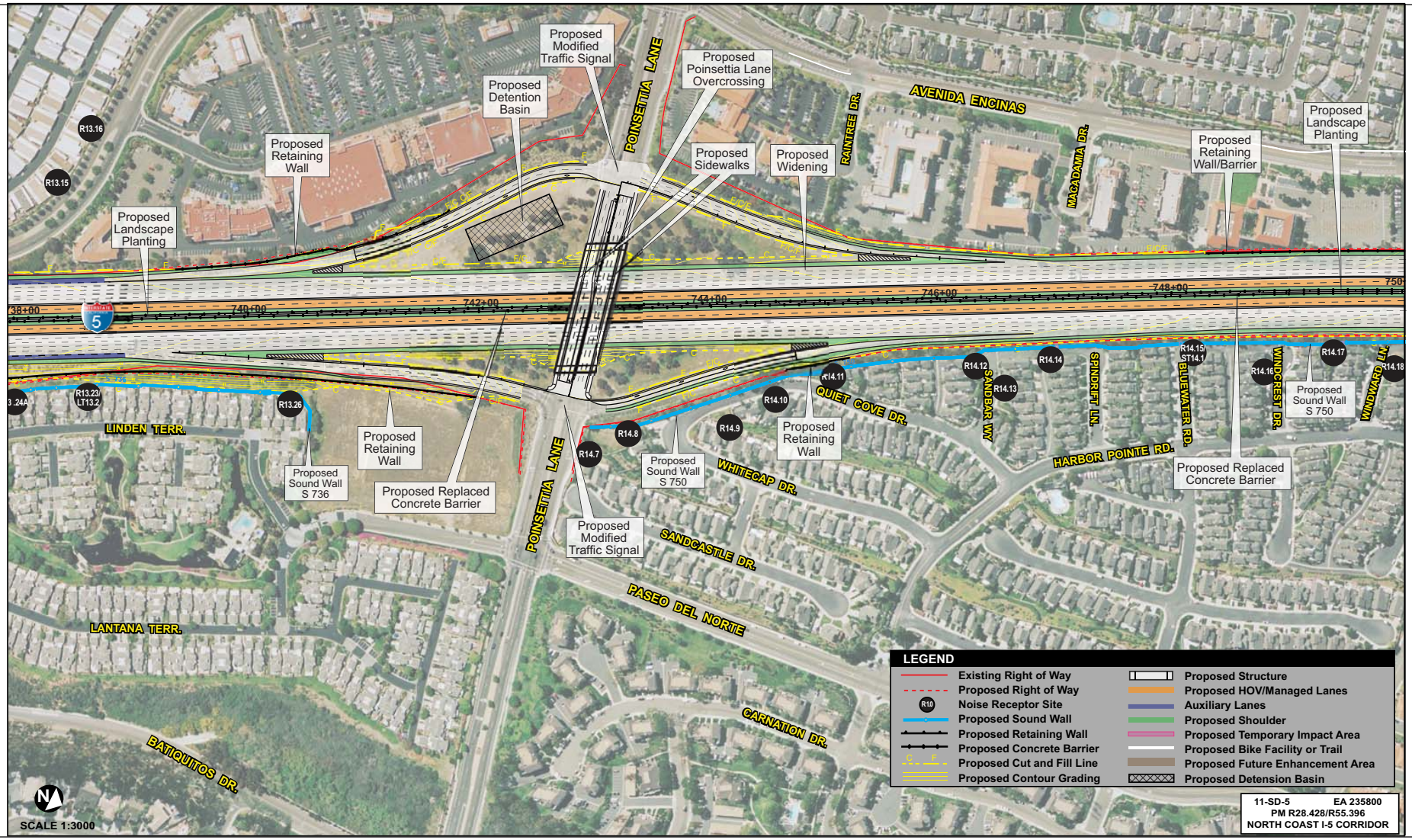

Figure 2-2.14aa Project Features Map: 10+4 Buffer Alternative

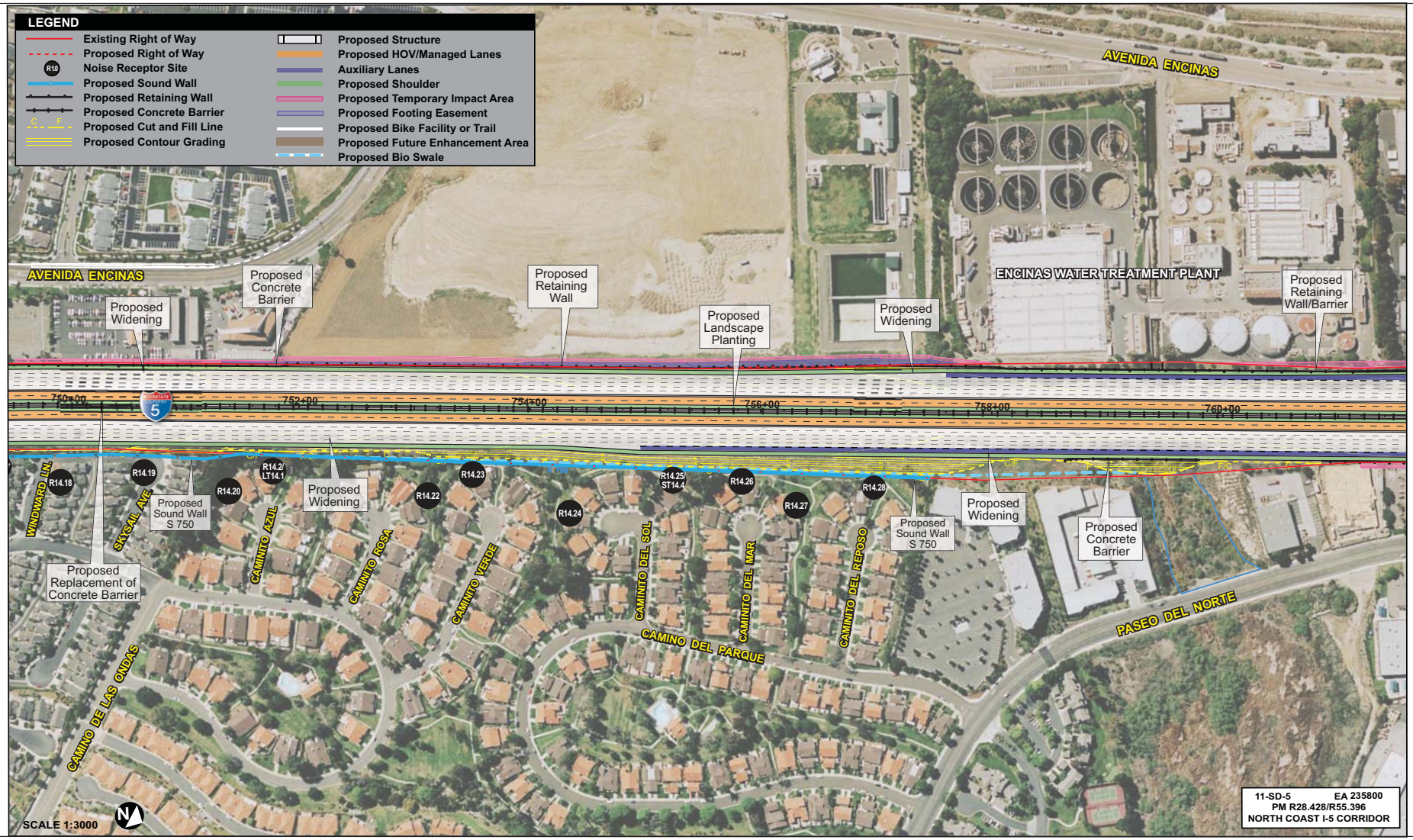

Figure 2-2.14ab Project Features Map: 10+4 Buffer Alternative

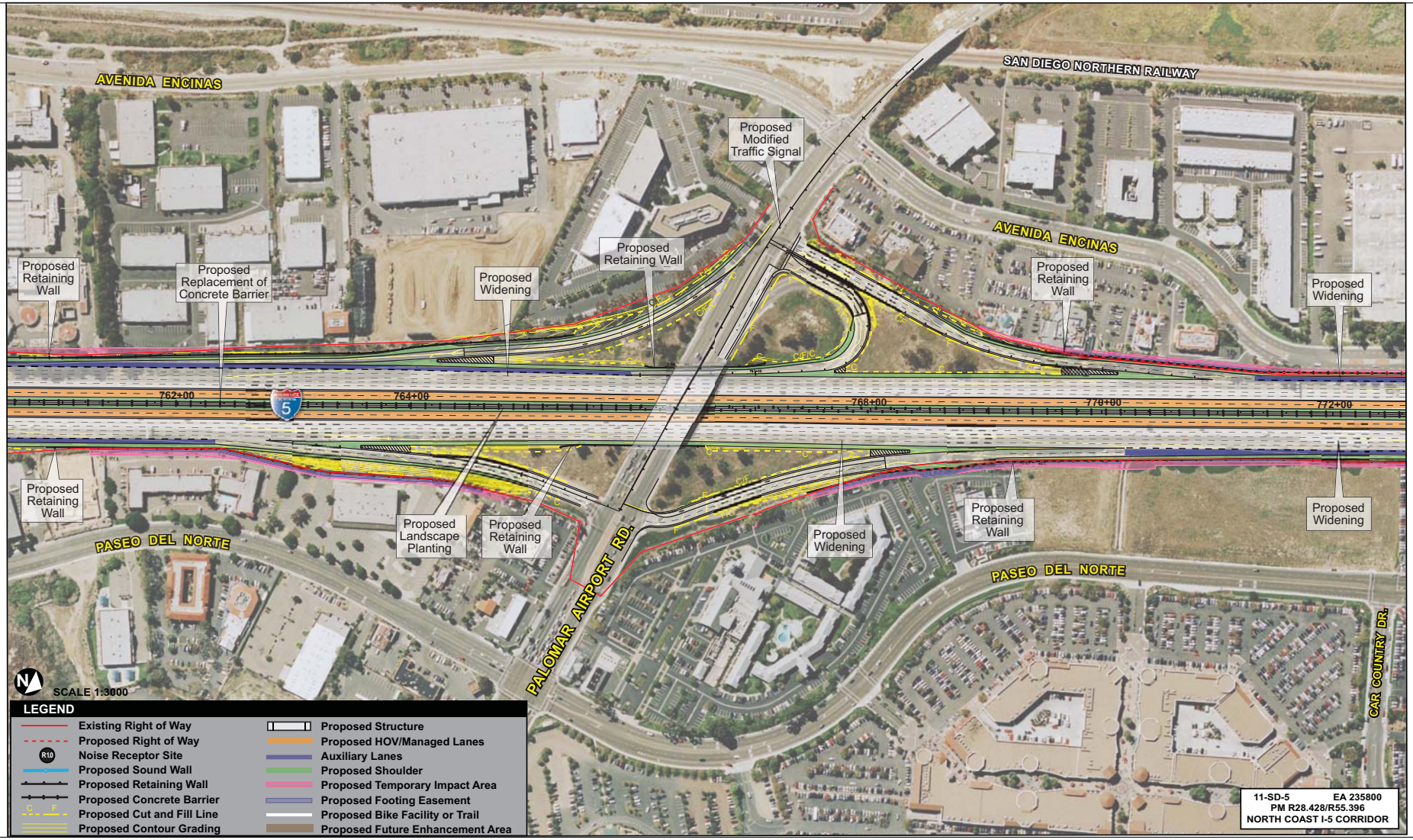

Figure 2-2.14ac Project Features Map: 10+4 Buffer Alternative

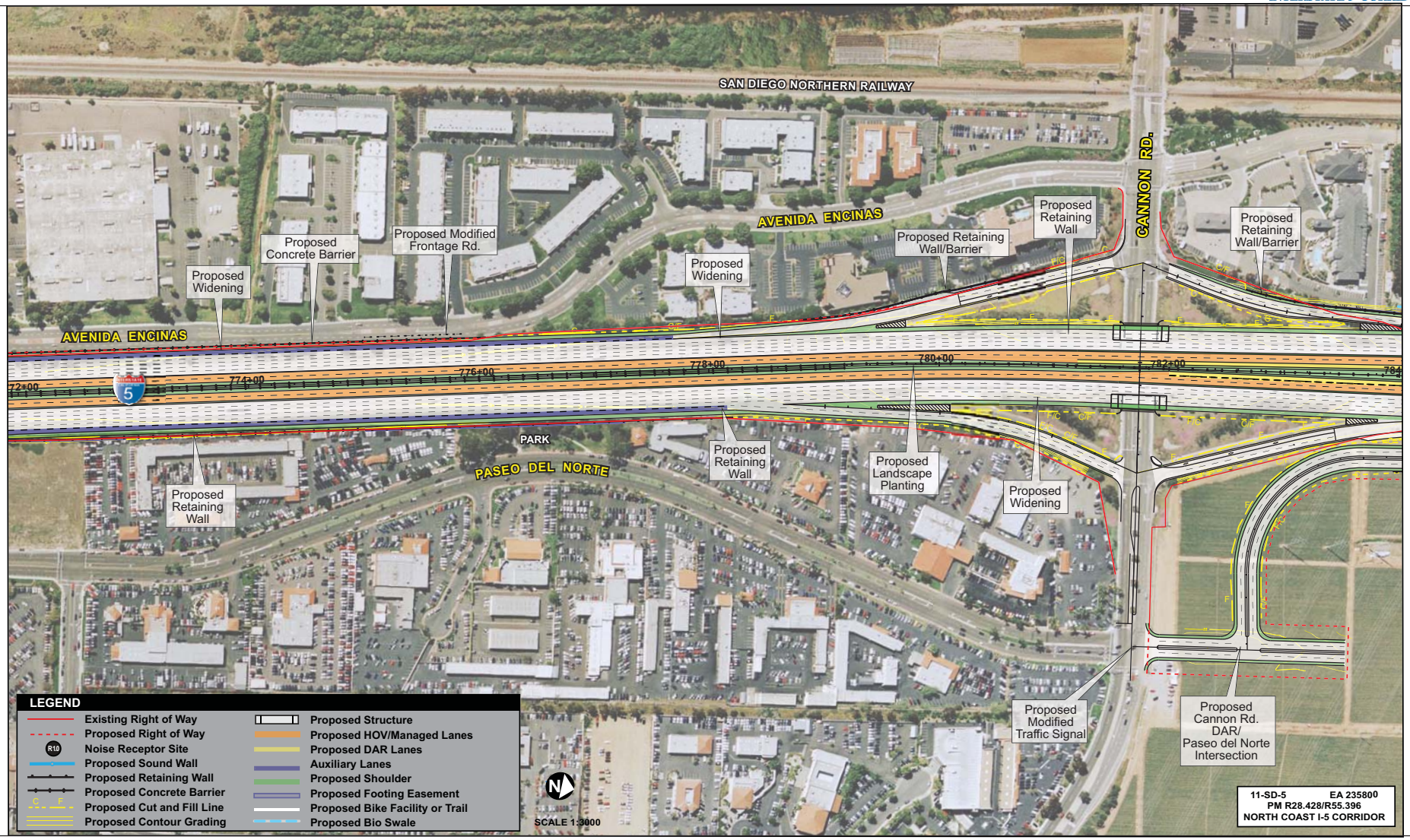

Figure 2-2.14ad Project Features Map: 10+4 Buffer Alternative

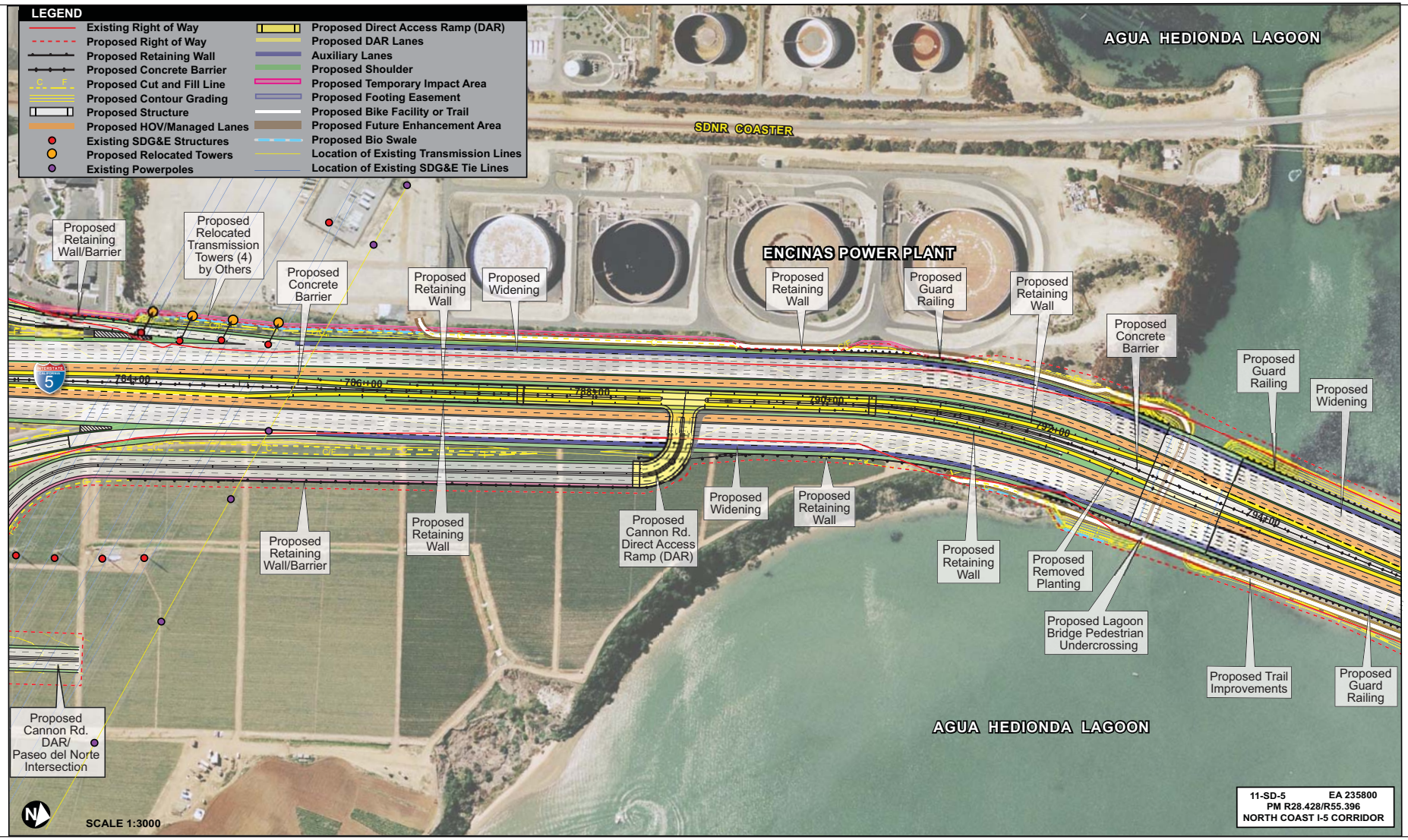

Figure 2-2.14ae Project Features Map: 10+4 Buffer Alternative

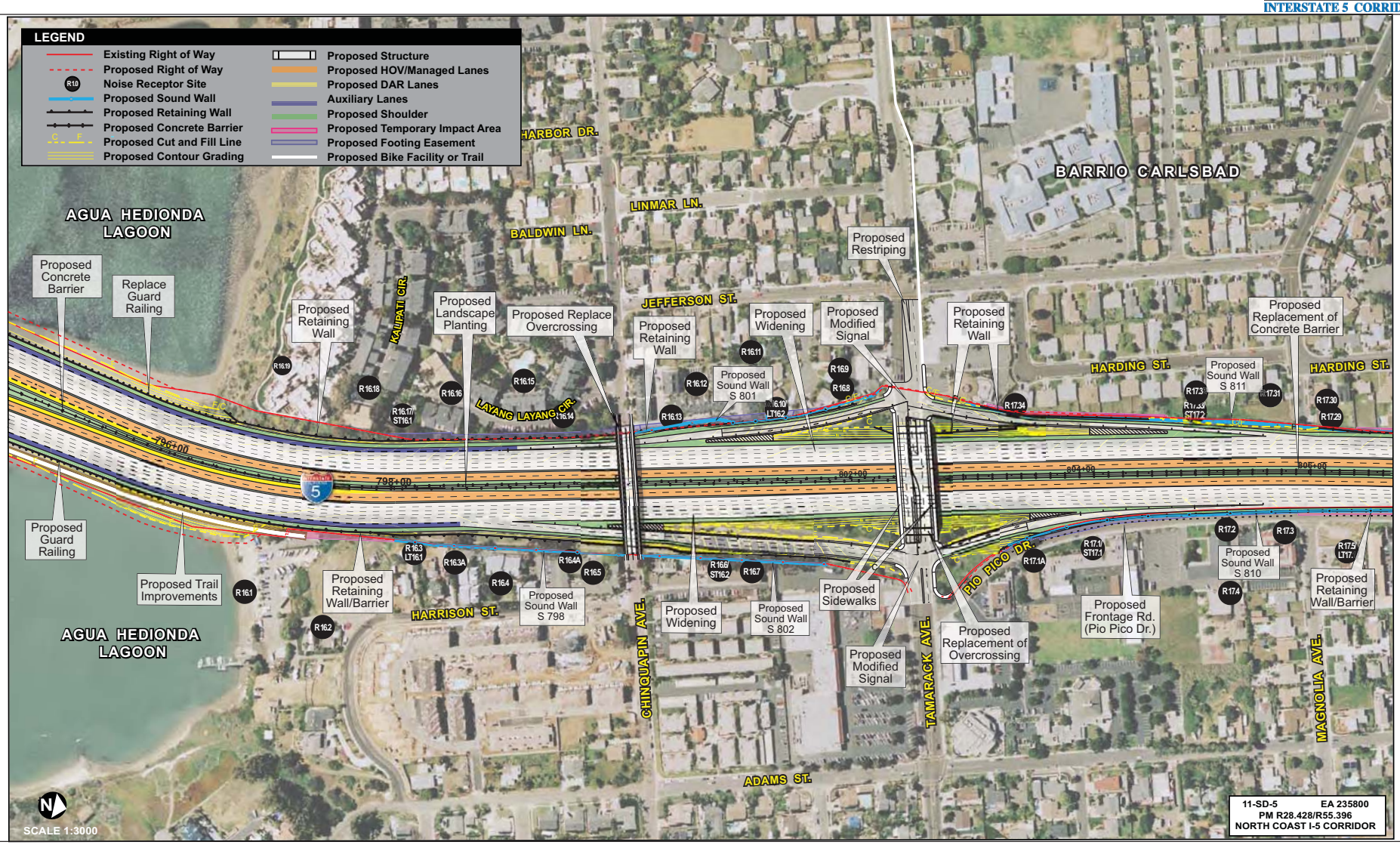

Figure 2-2.14af Project Features Map: 10+4 Buffer Alternative

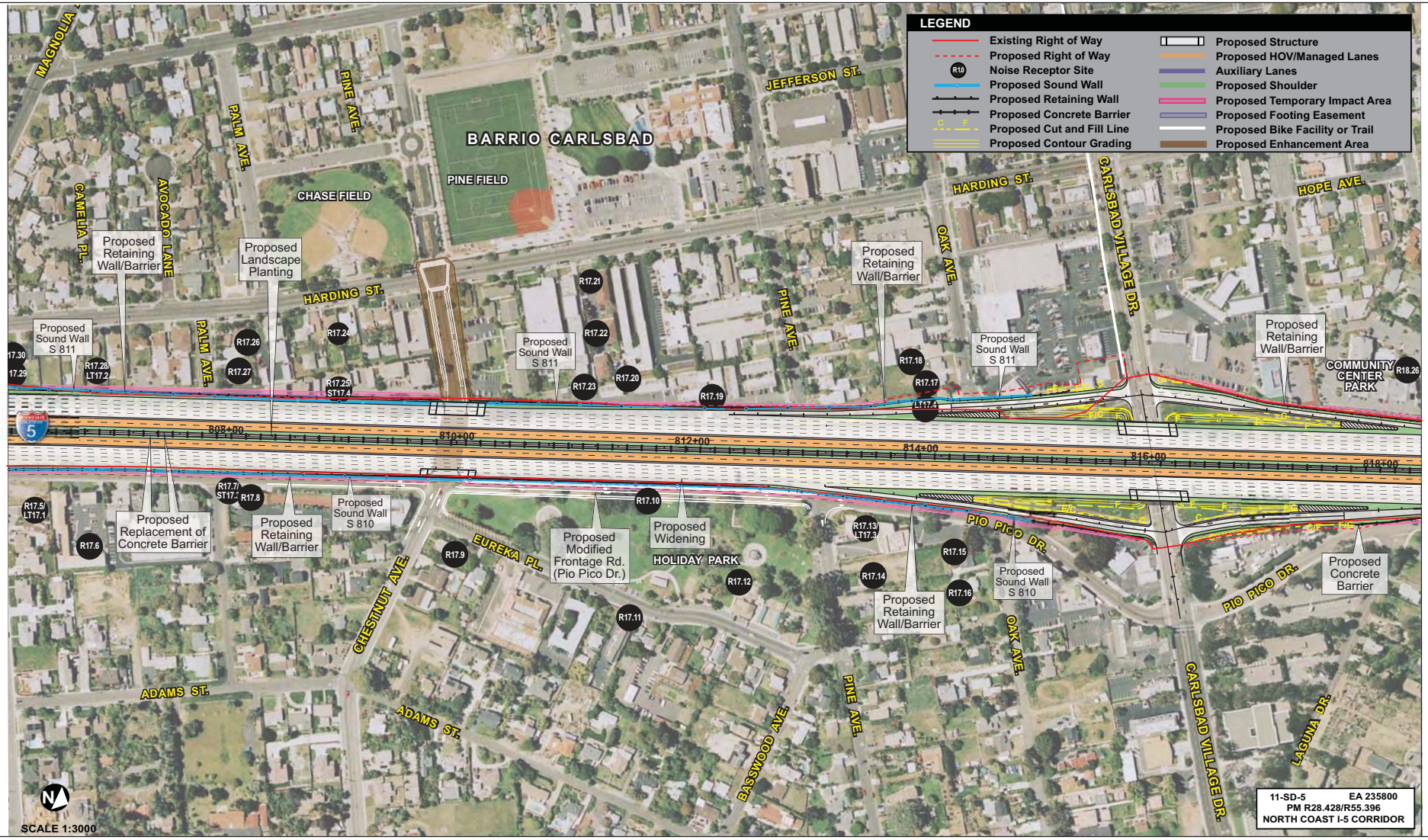

Figure 2-2.14ag Project Features Map: 10+4 Buffer Alternative

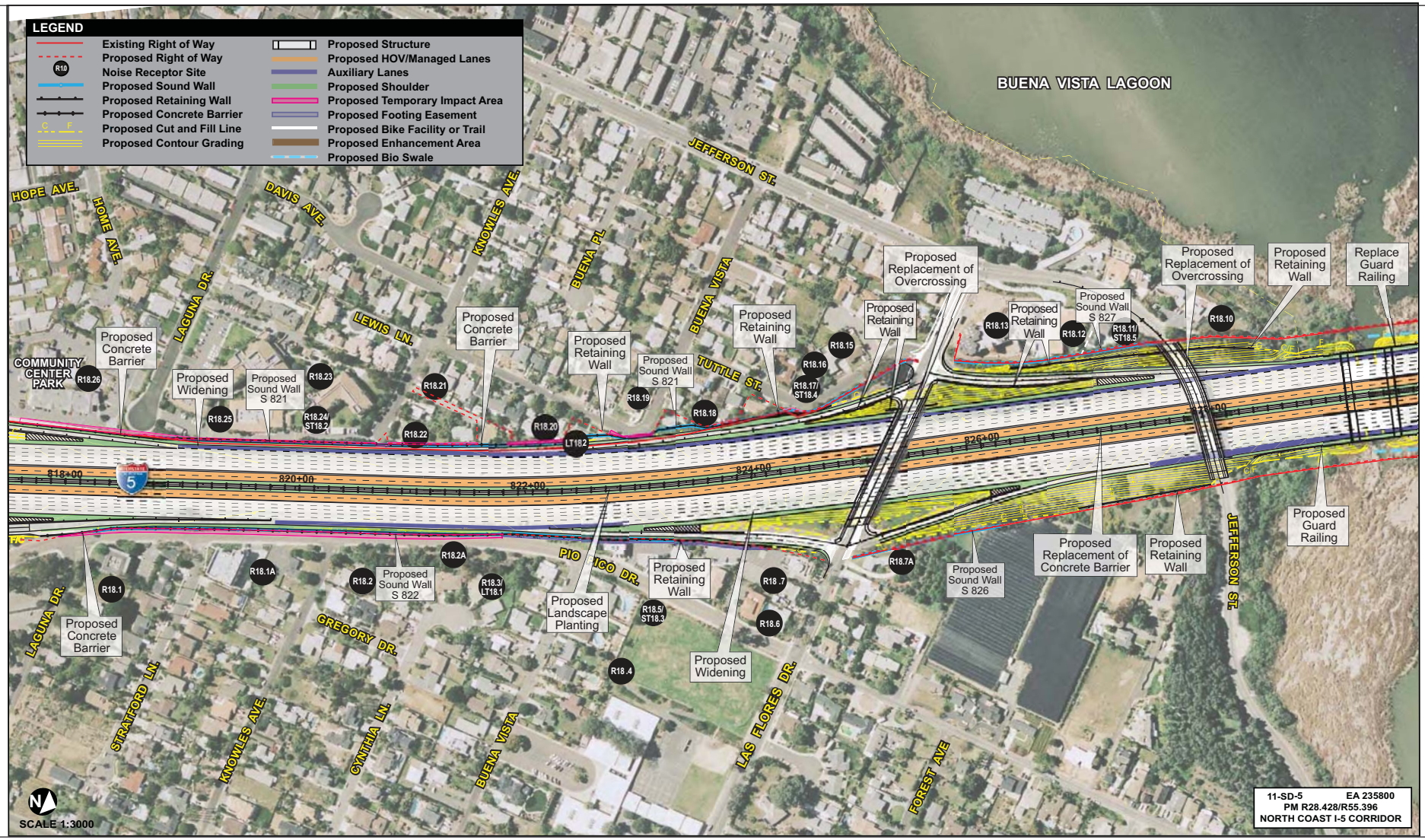

Figure 2-2.14ah Project Features Map: 10+4 Buffer Alternative

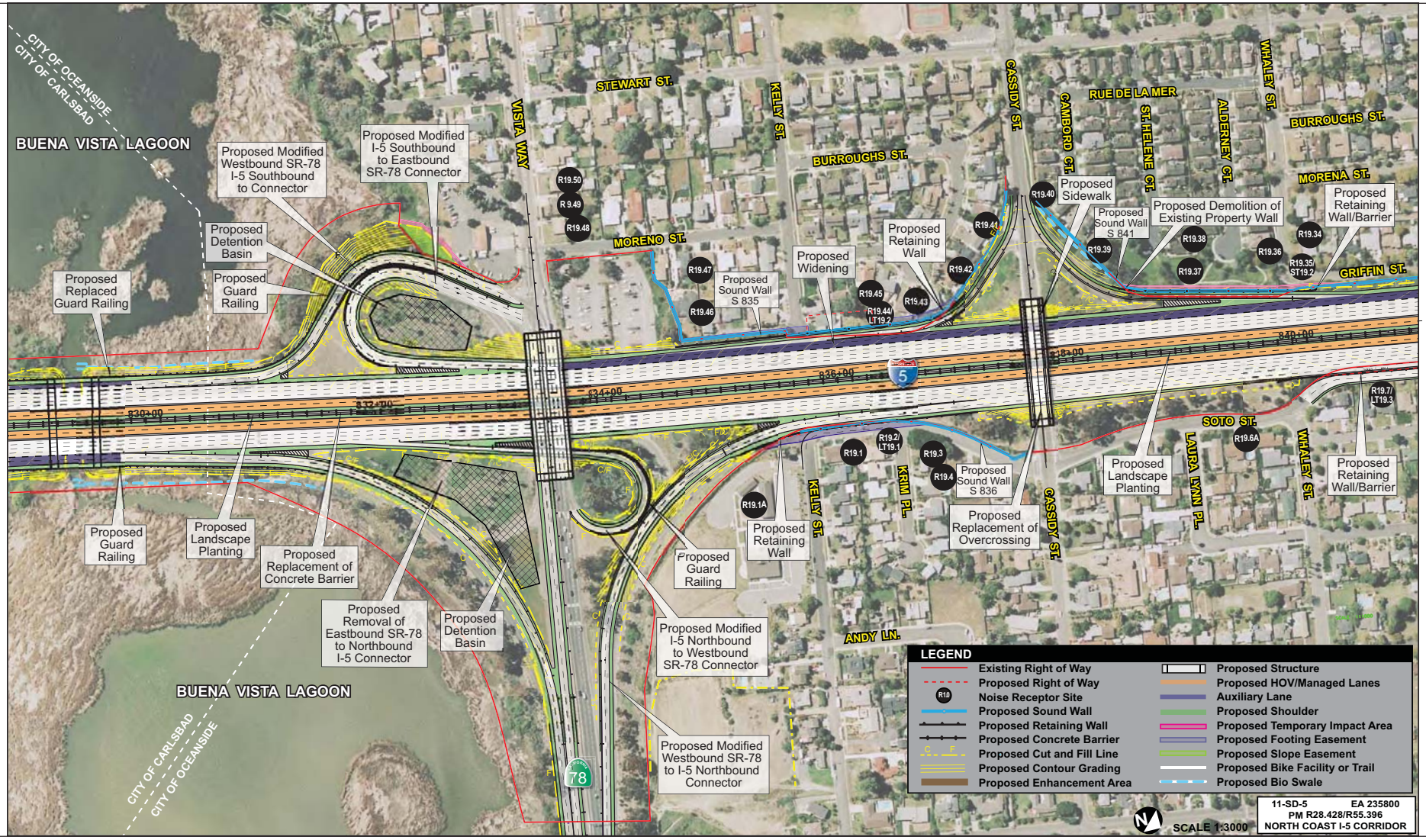

Figure 2-2.14ai Project Features Map: 10+4 Buffer Alternative

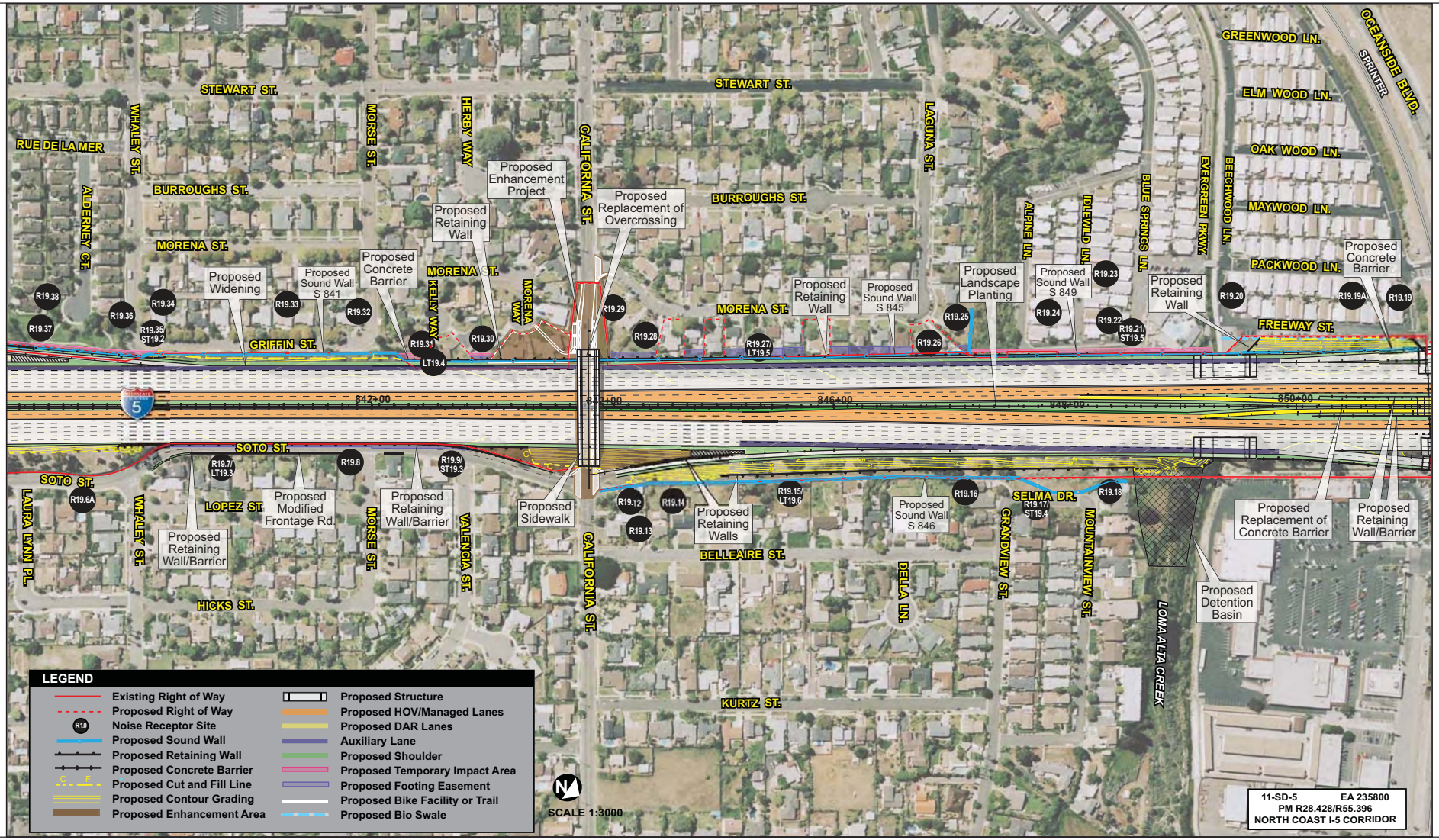

Figure 2-2.14aj Project Features Map: 10+4 Buffer Alternative

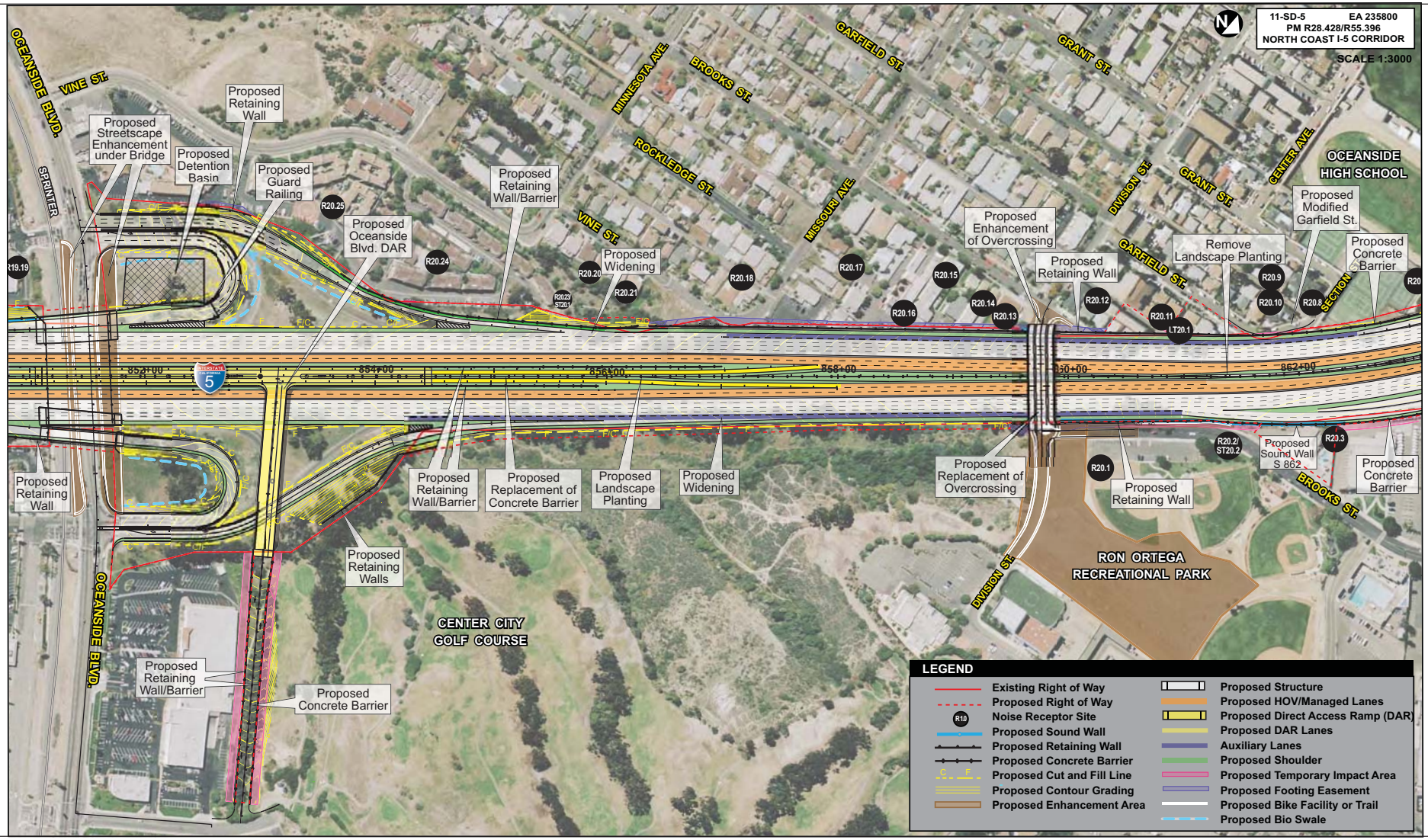

Figure 2-2.14ak Project Features Map: 10+4 Buffer Alternative

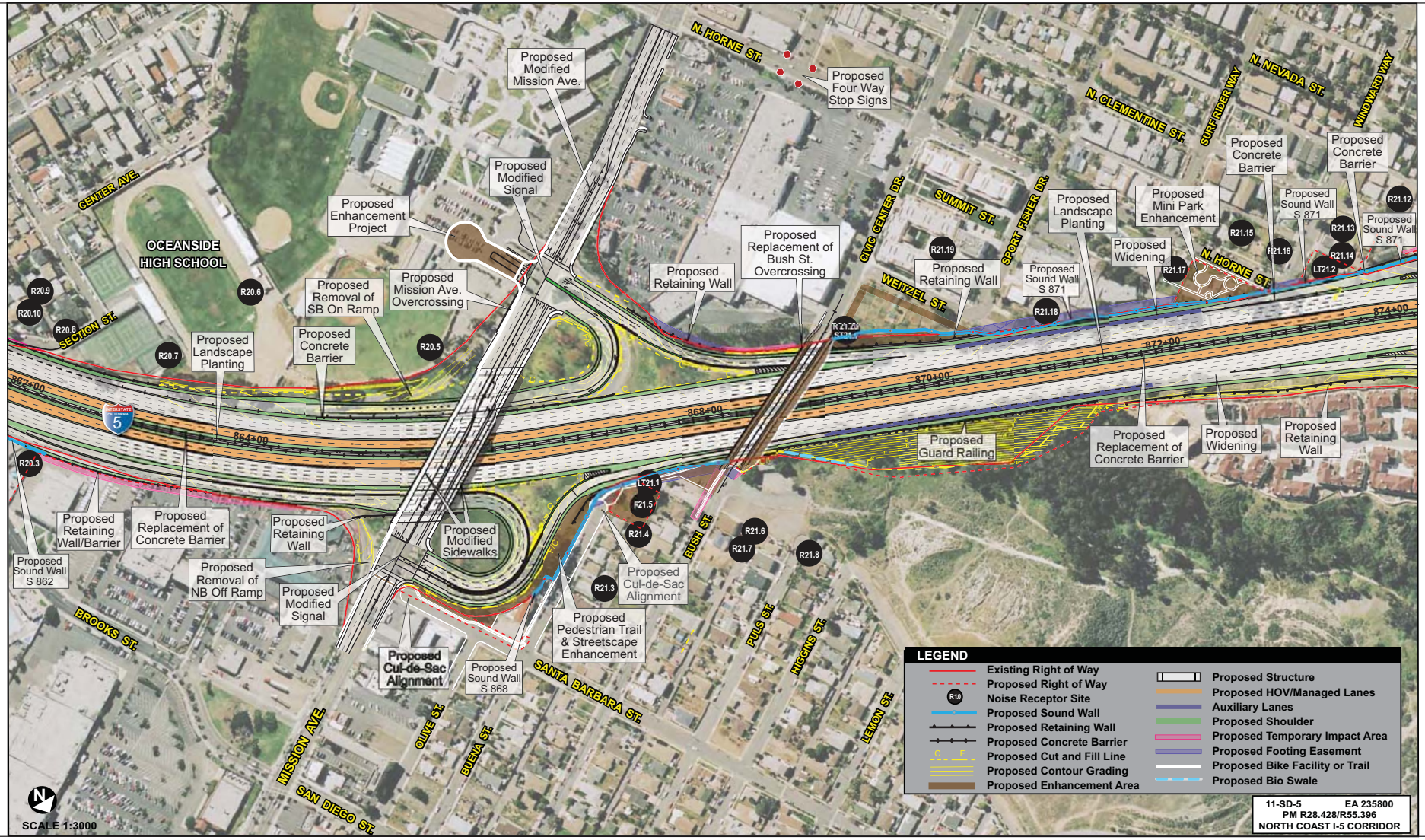

Figure 2-2.14al Project Features Map: 10+4 Buffer Alternative

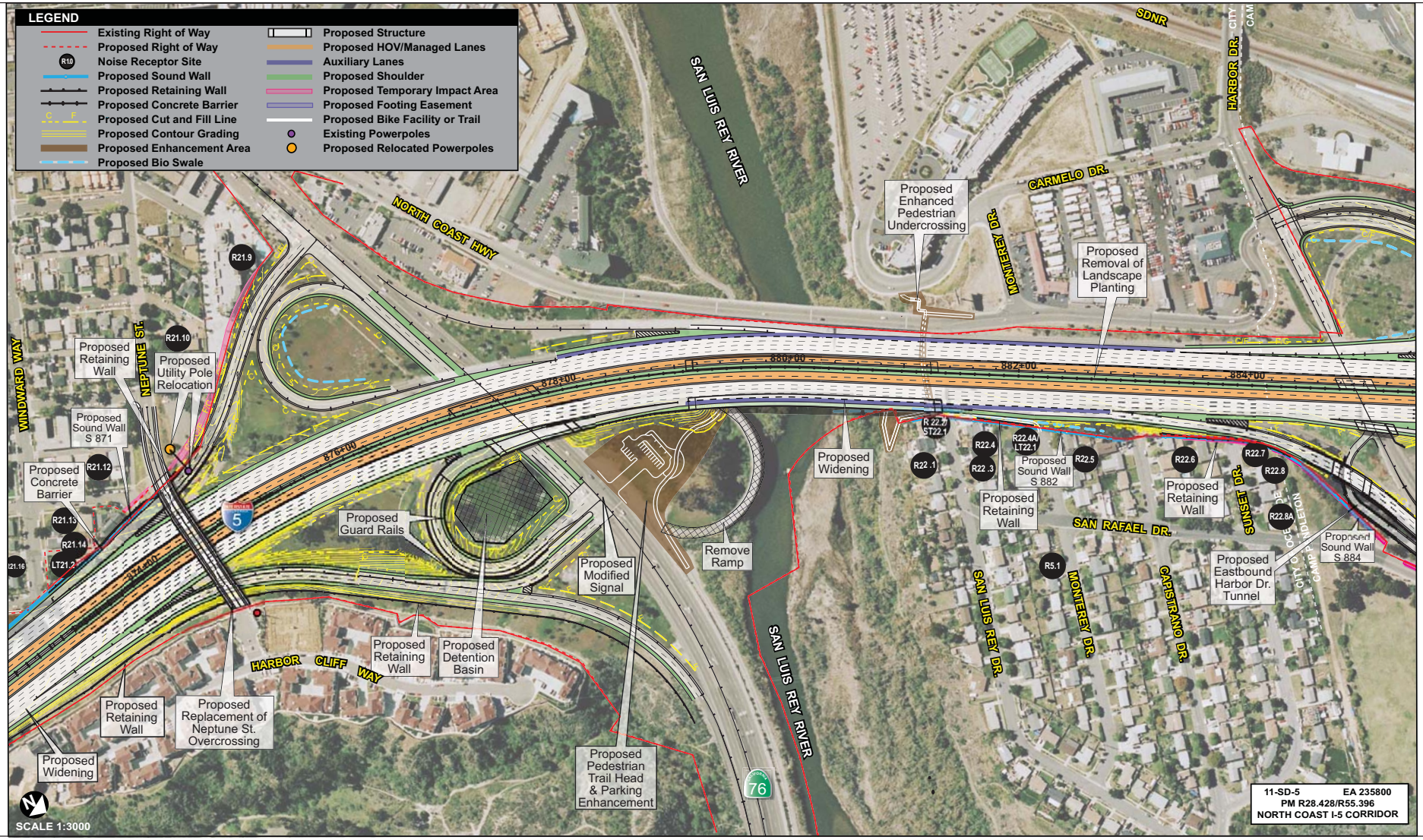

Figure 2-2.14am Project Features Map: 10+4 Buffer Alternative

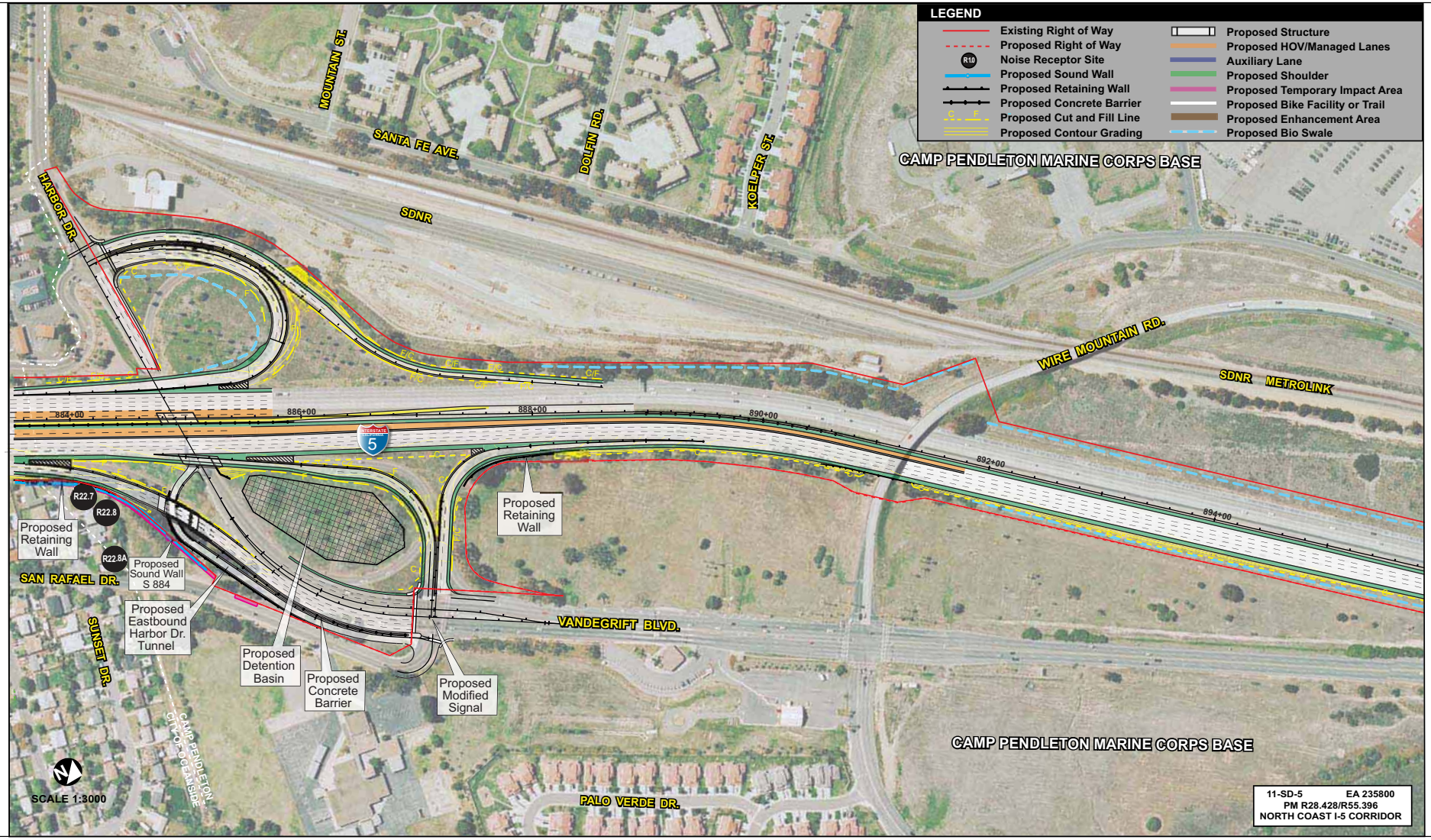

Figure 2-2.14an Project Features Map: 10+4 Buffer Alternative

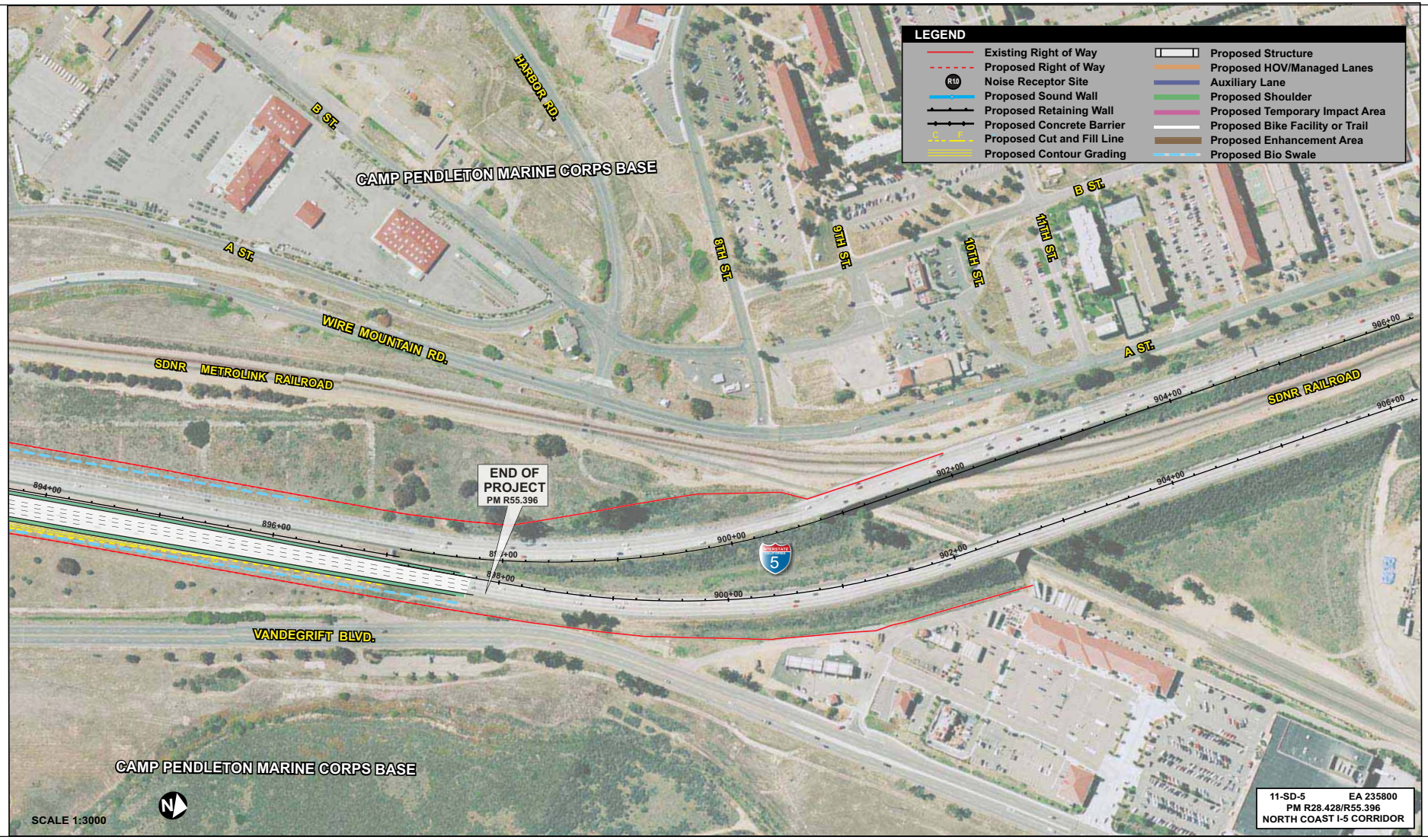

Figure 2-2.14ao Project Features Map: 10+4 Buffer Alternative