

Project Description

Project Overview

The Southern California Regional Rail Authority (SCRRA) is proposing the La Palma to Avery Signal Respacing Project (Project) to improve the operational flexibility and service speeds between the Control Point (CP) College and CP Serra along Metrolink's Orange County Subdivision (Figure 1). The Project comprises fifteen separate locations that are staggered in between the Cities of Anaheim and San Clemente, California.

SCRRA's goal for implementing the Project is to enhance operational flexibility and increase safety and reliability along portions of the Orange Subdivision between the Cities of Anaheim and San Clemente. The Project includes the following objectives:

- Objective 1: Increase train safety and reliability of train operations throughout the Project corridor
- Objective 2: Accommodate additional train capacity, including express trains, within the Orange County Subdivision's Inland Empire–Orange County Line and Orange County Line
- Objective 3: Reduce the impacts of commuter operations on the surrounding communities

There are three basic elements to this project. The elements are 1) introducing new intermediate signal locations, 2) installing call-on features at existing control points, and 3) introducing wireless crossing nearside station stop (WCNSS) capability at selected crossings. Once installed, the Project would provide independent utility by adding three eastbound and three westbound blocks of separation¹ for train traffic within the Project corridor.

Project Location

The Project includes signal improvements within an approximately 34.95-mile-long segment of the Orange Subdivision, which is utilized by Metrolink's Orange County and Inland Empire–Orange County Lines, Amtrak's Pacific Surfliner, and BNSF freight services. (Figure 1).

Project Components

Under this project there will be three new intermediate signals installed. The intermediate signals will be located within the existing railroad right-of-way at Mile Post (MP) 185.56, MP 197.10, and MP 198.77. New Positive Train Control (PTC) towers will be required for each new signal location and will be approximately 45 feet in height and positioned within the existing railroad right-of-way. The Project's physical footprint will be limited to within the existing railroad right-of-way and at those locations where a new signal and PTC antenna tower are proposed (Figures 2 through 7).

Two existing CPs will be configured with call-on signal capability. The two CPs are CP Tinkham (at MP 184.5) and CP Capistrano (at MP 198.0). The call-on signal functionality involves software and

¹A block of separation is a defined segment of rail track, controlled by corresponding signals, that allows trains to move past each other within the same segment.

hardware changes within the existing instrument enclosures located at each site. There will be no physical changes as a result of implementing the call-on signal functionality.

Ten crossings will be equipped with WCNSS capability. These crossings are:

1. E. State College Blvd. MP 170.21
2. E. Santa Ana Blvd MP 175.13
3. **E. 4th Street MP 175.48**
4. W. Palm Ave MP 172.47
5. **W. Chapman Ave MP 172.72**
6. Harvard Ave MP 179.98
7. **Pier Service Road MP 204.73**
8. Senda De La Playa MP 203.58
9. **San Clemente Metrolink PED Xing MP 203.71**
10. T Street PED Xing MP 205.16

Of the above listed crossings, only the four crossings marked in **bold** will have ground disturbance associated with construction, where new PTC towers will be required; PTC towers will be approximately 45 feet in height and positioned within the existing railroad right-of-way (see Figure 8).

Signal respadding is one method through which the capacity, speed, and efficiency of railroad lines can be improved without implementing major physical infrastructure improvements. Signal respadding involves modifying the existing signals within the Project corridor, either by removing, replacing, or relocating them, to add additional signal blocks² throughout the corridor. By providing additional signal blocks, train-to-train coordination is enhanced, thereby improving the safety and reliability, as well as capacity and efficiency, of multiple train movements through the corridor. Signal respadding layered with PTC implementation, is vital for safe train operations.

Another aspect of PTC utilization is the implementation of WCNSS capability at rail grade crossings. As shown on Figure , a PTC antenna tower is a communications tower that relays data from trains and trackside interfaces to the necessary communications channels (i.e. dispatcher, onboard locomotive systems, etc.). The WCNSS system prevents the activation of crossing warning devices as a commuter train approaches a station stop. Normally, crossing warning devices are activated if a crossing is close to a station. This imposes interruptions to traffic flows within the adjacent communities and confuses motorists because the train stops at the station before reaching the crossing. WCNSS safely eliminates this interruption by forcing the crossing warning system to remain inactive while the train is stopped at the station. The crossing is then activated when the train leaves the station. This system is integrated into Metrolink's PTC system to prevent the train from entering the crossing while the crossing gates are inactive.

The improvements that would be implemented along the existing railroad right-of-way between the Cities of Anaheim and San Clemente are detailed in Table 1 and illustrated on Figures 2 through 7.

² A signal block is a defined segment of rail track that is controlled by corresponding signals.

Table 1. Project Components

Proposed Action	Location	Description
Install call-on signal function	CP Tinkham at MP 184.5	New software and hardware components within an existing enclosure.
Install call-on signal function	CP Capistrano at MP 198.0	New software and hardware components within an existing enclosure.
Install new bidirectional signal	Signals 1855-1856 at MP 185.56	A new signal, enclosure, and PTC antenna tower would be installed.
Install new unidirectional signal	Signal 1971 at MP 197.10	A new signal, enclosure, and PTC antenna tower would be installed.
Install new bidirectional signals	Signals 1981-1984 at MP 198.77	A new signal, enclosure, and PTC antenna tower would be installed.
Install WCNSS system	S. State College Blvd. at MP 170.21	Install new hardware and software within an existing instrument enclosure.
Install WCNSS system	E. Santa Ana Blvd. at MP 175.13	Install new hardware and software within an existing instrument enclosure.
Install WCNSS system	E. 4 th Street at MP 175.48	Install new hardware and software within an existing instrument enclosure. Install new PTC antenna tower.
Install WCNSS system	W. Palm Avenue at MP 172.47	Install new hardware and software within an existing instrument enclosure.
Install WCNSS system	W. Chapman Avenue at MP 172.72	Install new hardware and software within an existing instrument enclosure. Install new PTC antenna tower.
Install WCNSS system	Harvard Avenue at MP 179.98	Install new hardware and software within an existing instrument enclosure.
Install WCNSS system	Pier Service Road at MP 204.73	Install new hardware and software within an existing instrument enclosure. Install new PTC antenna tower.
Install WCNSS system	Senda De La Playa at MP 203.58	Install new hardware and software within an existing instrument enclosure.
Install WCNSS system	San Clemente Metrolink PED Xing at MP 203.71	Install new hardware and software within an existing instrument enclosure. Install new PTC antenna tower.
Install WCNSS system	T Street PED Xing at MP 205.16	Install new hardware and software within an existing instrument enclosure.

Notes: CP=control point; MP=mile post; PTC=positive train control; WCNSS=Wireless Crossing Nearside Station Stop; Xing=At-Grade Rail Crossing

Utilities

A new power source will be required for this project near the San Juan Capistrano Station. All new installations will extend from existing power sources already in place within or adjacent to the right of way.

Project Construction

Project construction would begin in 2024 and last for approximately 1 year. Construction activities would take place within existing railroad right-of-way, and no property acquisitions would be required.

The proposed intermediate signals and PTC antennae towers would be installed individually. Installation of each of the new signals and each of the new PTC towers would require trenching of a maximum 1,000 square foot area, resulting in the disturbance of a maximum of 37 cubic yards of soil per signal/PTC tower installed (approximately 222 cubic yards total). Excavated soil would be used as fill in the signal/PTC antenna tower installation and, as such, no export is required.

Existing railroad operations would not be impacted during construction.

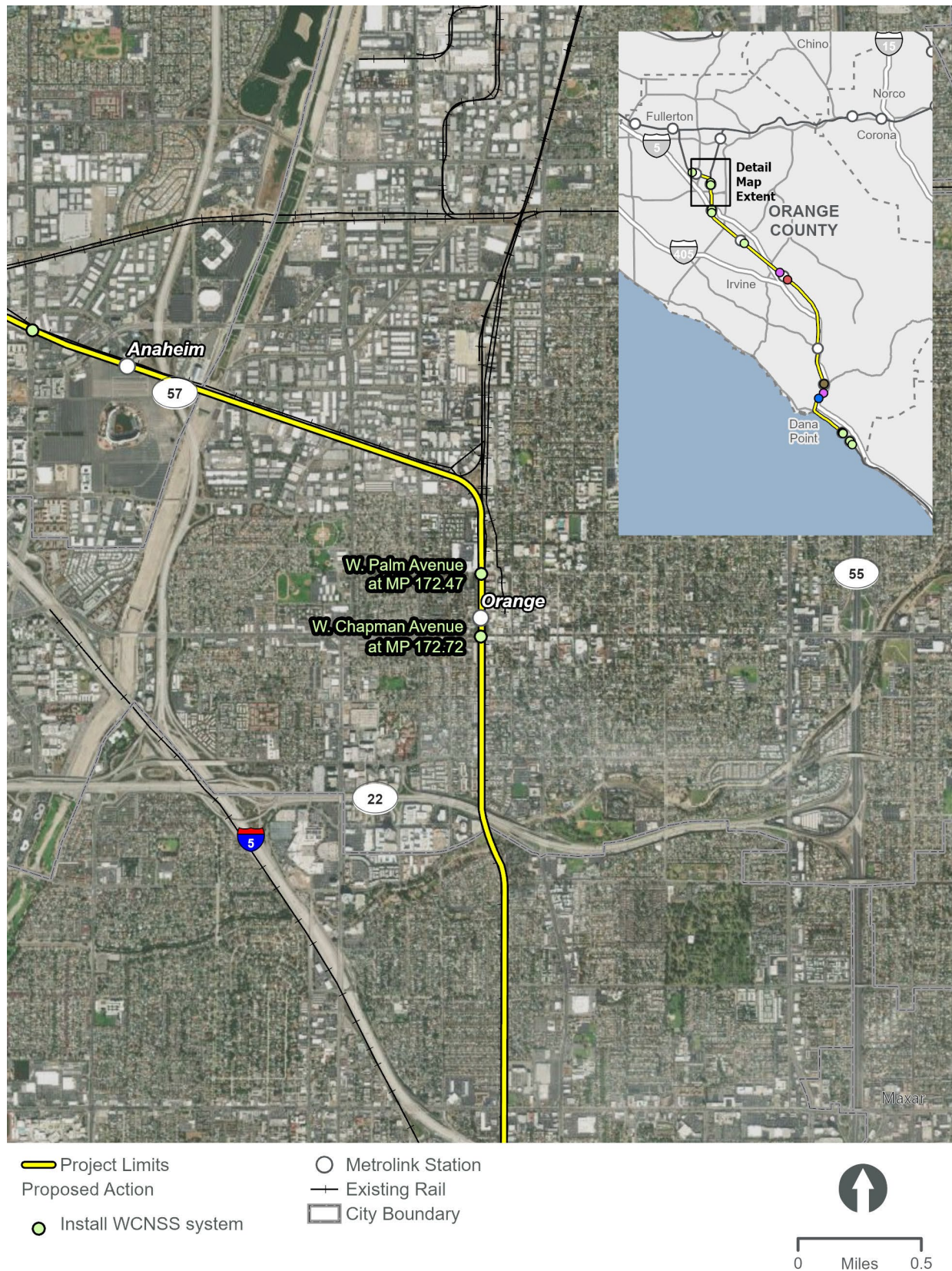
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Figure 1. Regional Location



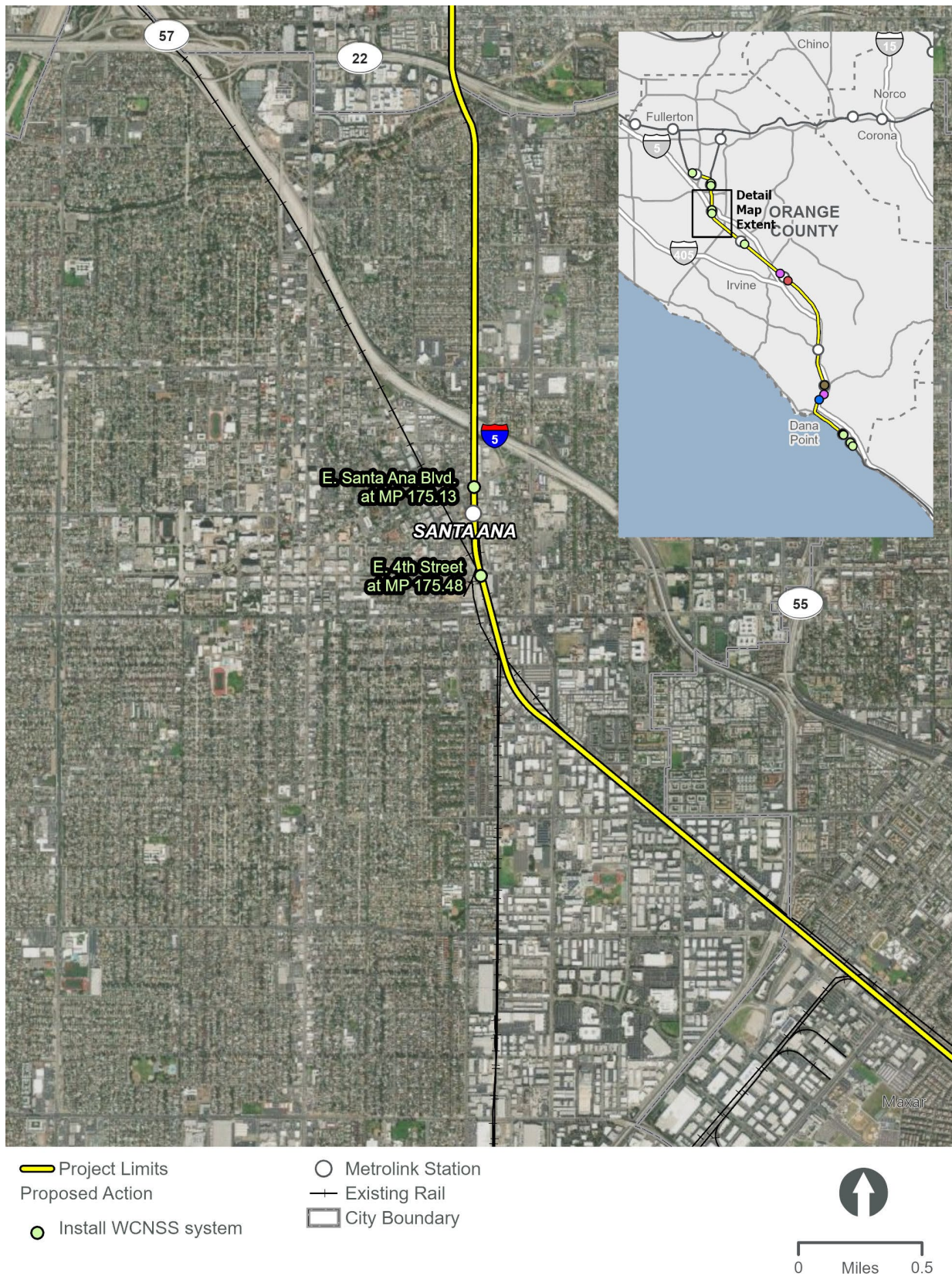
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Figure 2. Project Component Locations



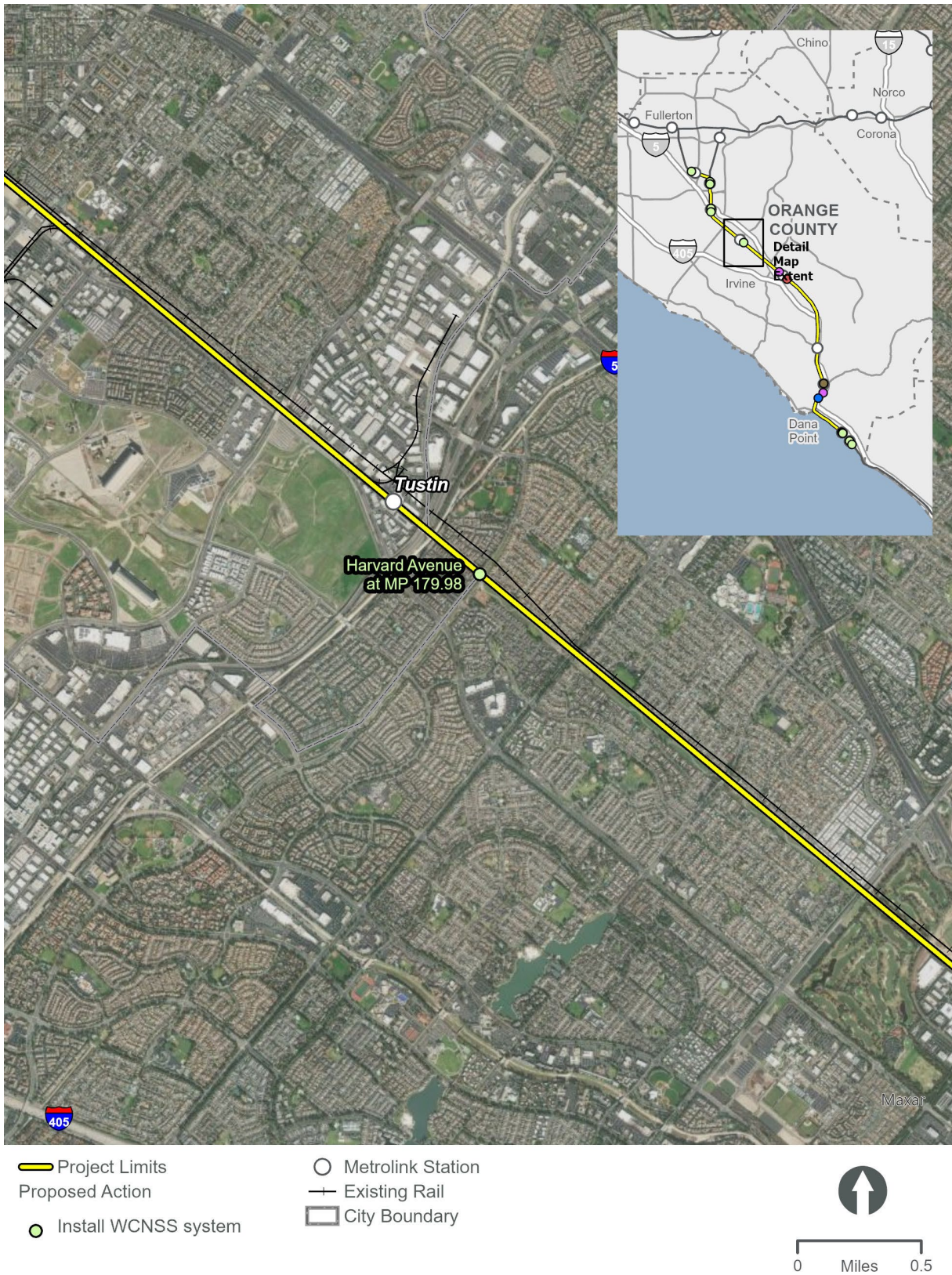
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Figure 3. Project Component Locations



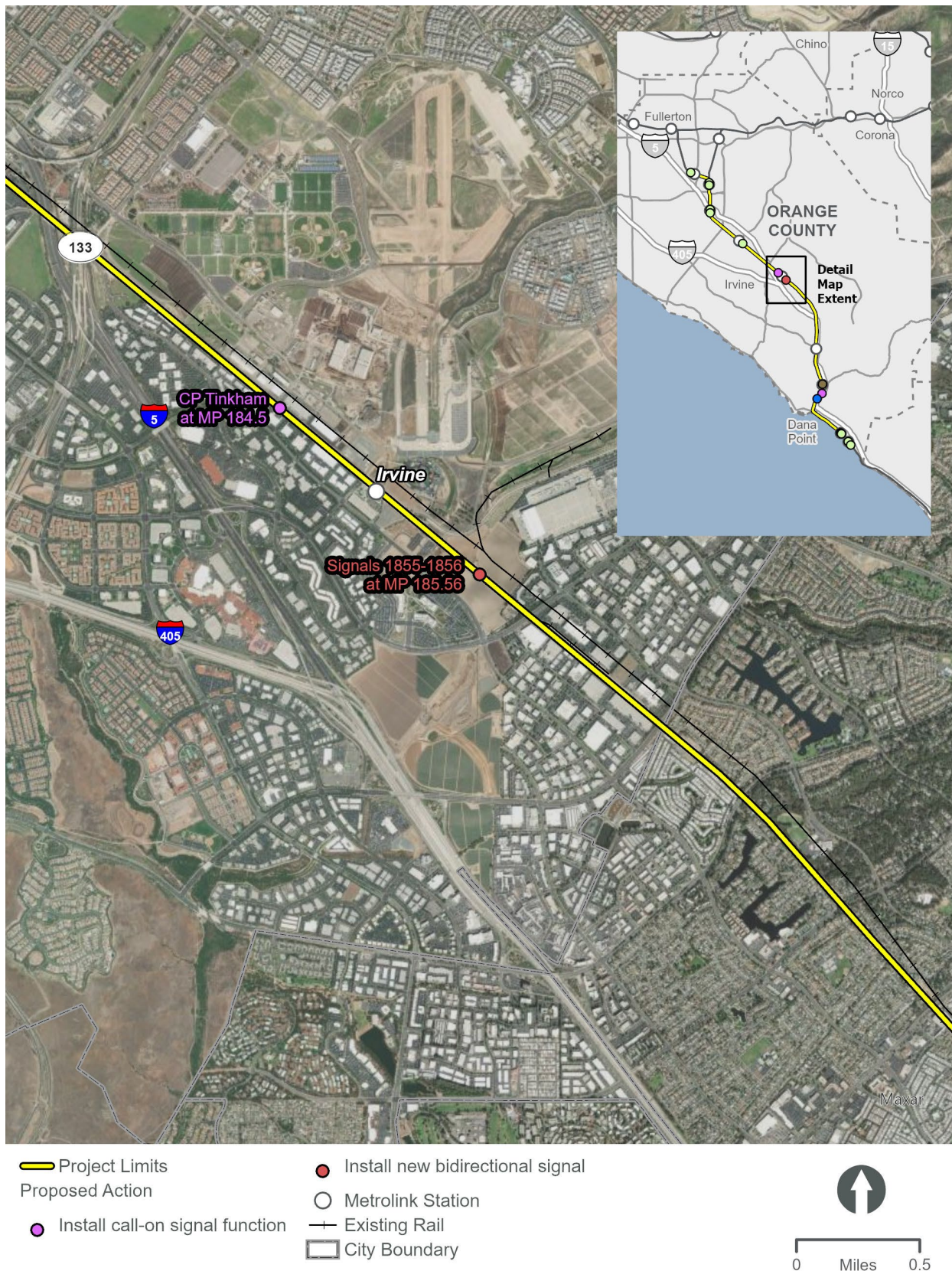
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Figure 4. Project Component Locations



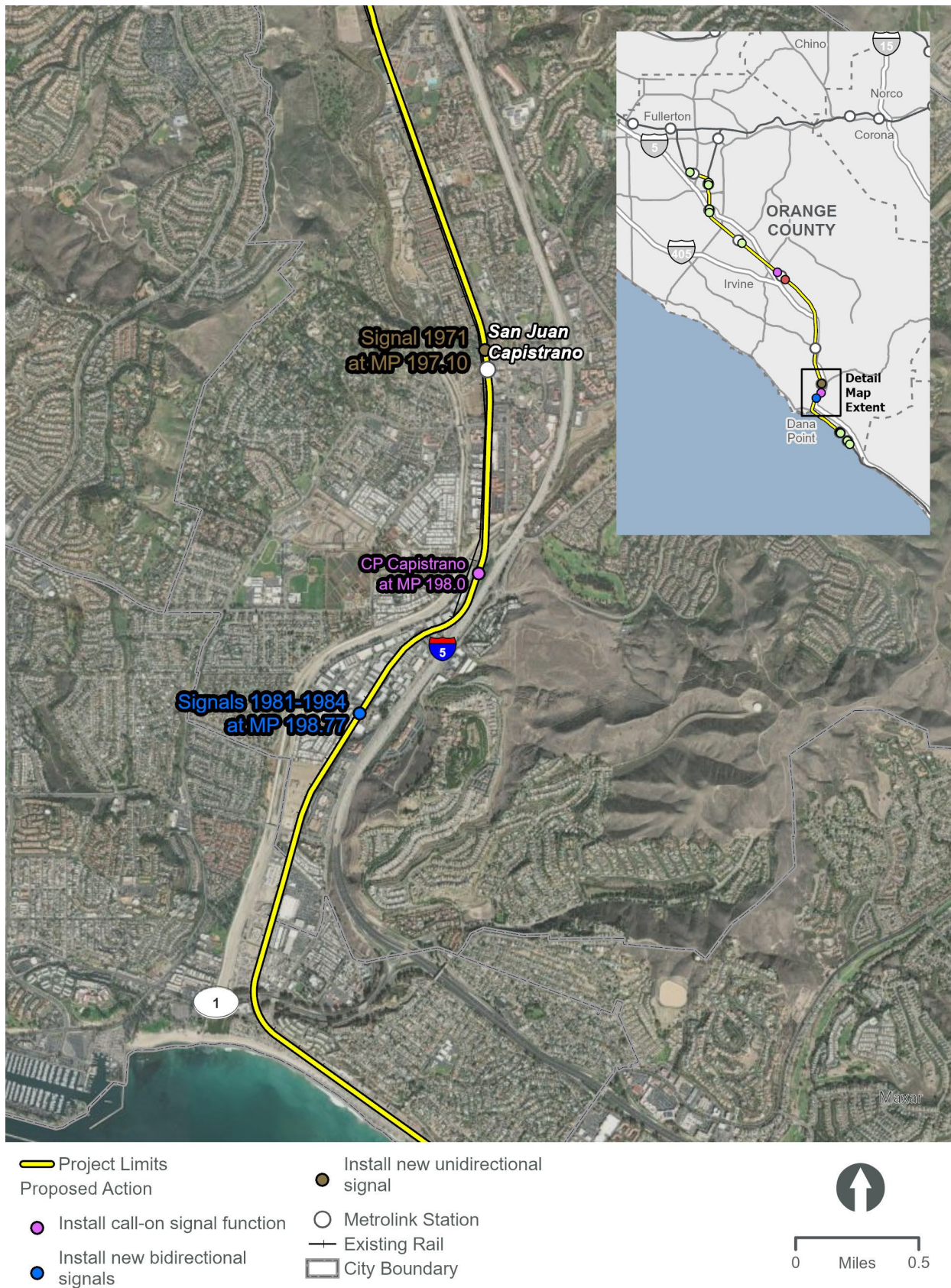
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Figure 5. Project Component Locations



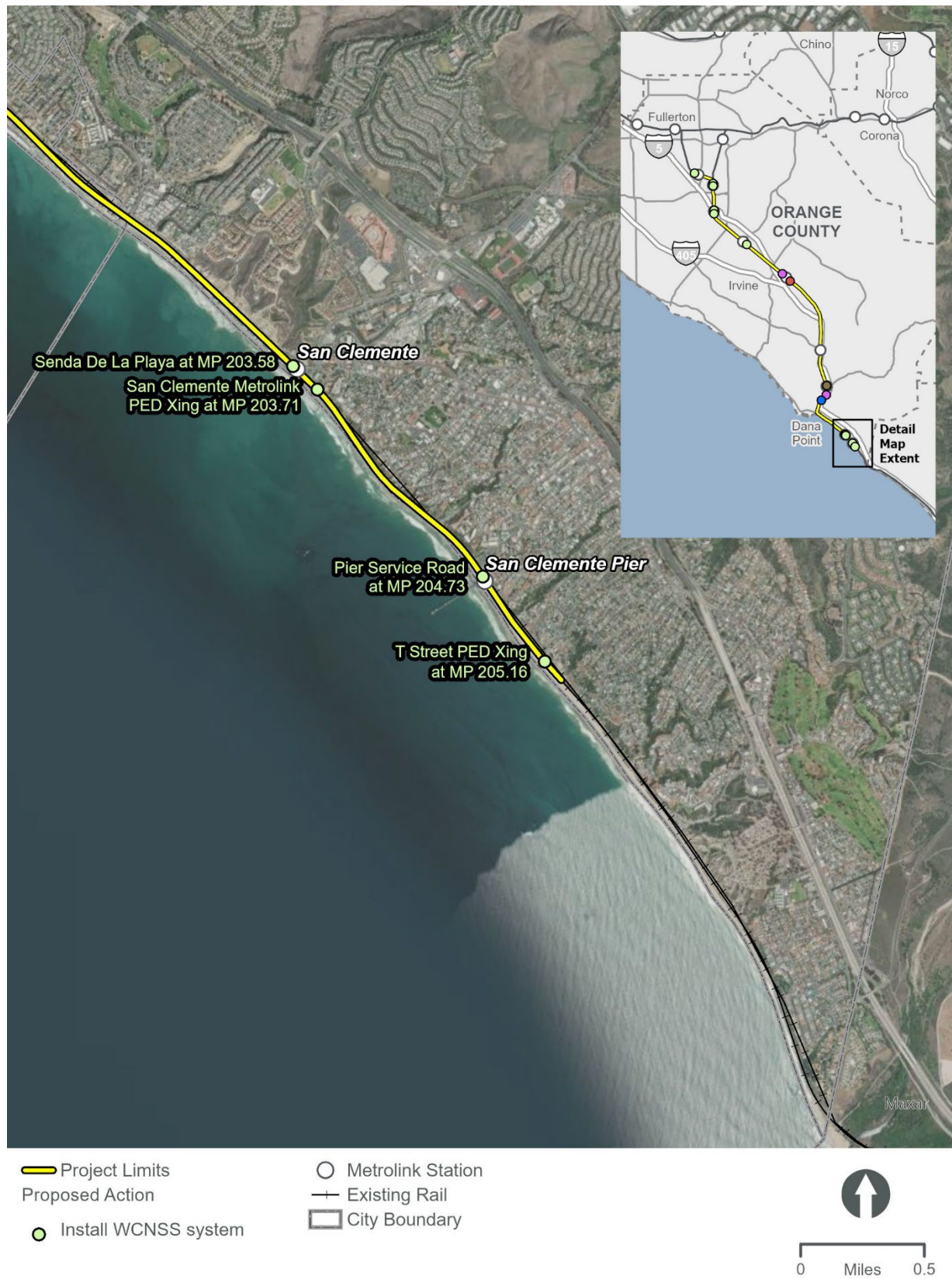
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Figure 6. Project Component Locations



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Figure 7. Project Component Locations

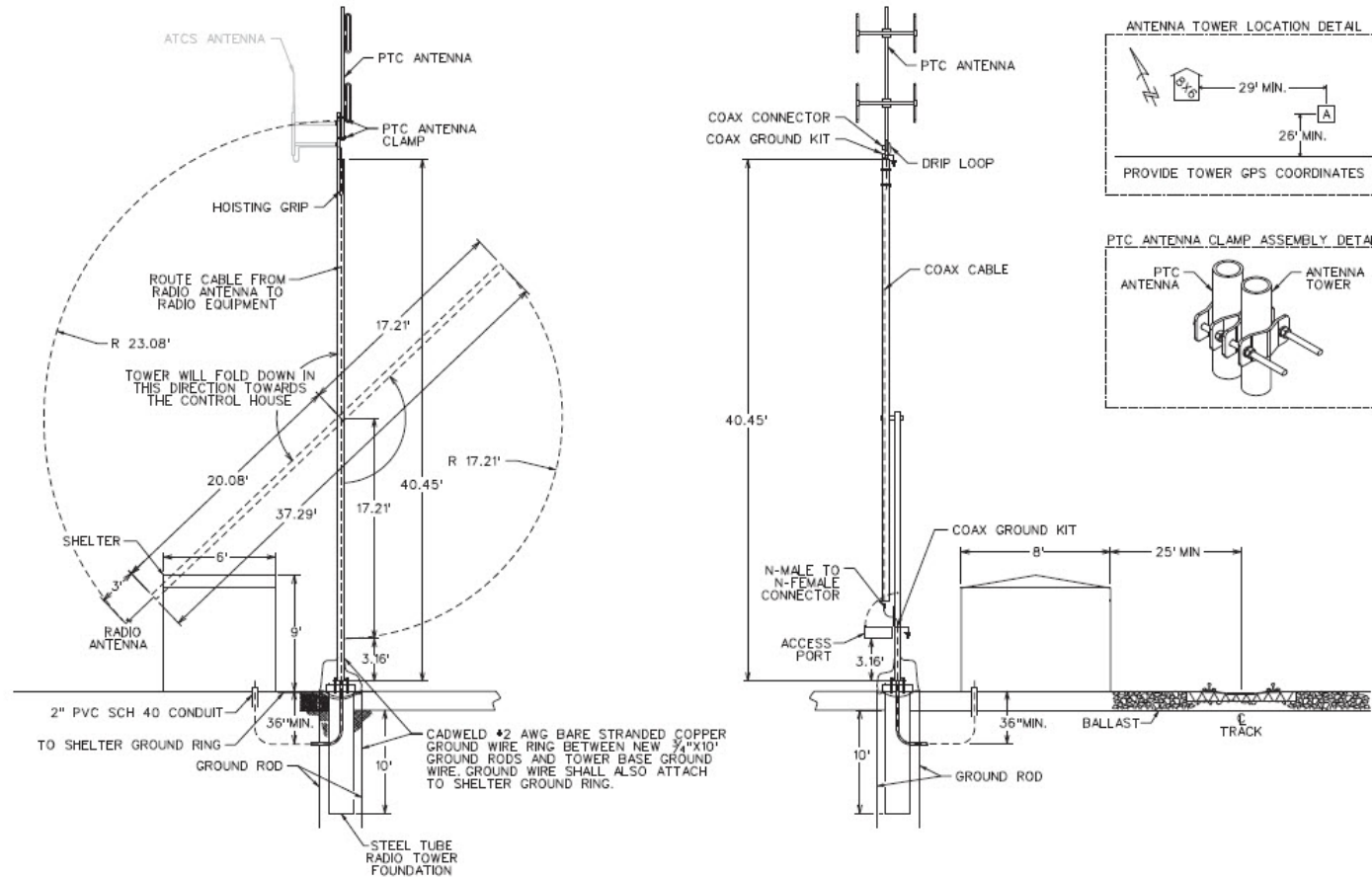


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Figure 8. Positive Train Control Antenna Tower Profile

NOTES:

1. THIS IS A TYPICAL COMMUNICATIONS TILT DOWN INSTALLATION WHEN DETERMINED APPROPRIATE BY DESIGN.
2. ALL ANTENNAS SHALL BE INSTALLED AT A FINAL HEIGHT DETERMINED BY PREDICTED AREA OF COVERAGE, TOWAIR DETERMINATION AND APPROVED FCC LICENSE.
3. ALL CONNECTIONS, SPLICES, ANTENNAS AND GROUND KITS SHALL BE WEATHER SEALED.
4. TILT DOWN TOWER WHEN LOWERED SHALL NOT FOUL TRACKS.
5. COUNTERBALANCE WEIGHTS SHALL BE ADDED FOR STABILITY OF THE TOWER LOAD.
6. FIELD VERIFY TOWER PLACEMENT AND MAINTAIN 10FT SEPARATION FROM OVERHEAD POWER.
7. GRAYSCALE DEPICTS TYPICAL EXISTING EQUIPMENT DEFINED ON OTHER SHEETS.



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