

# Advanced Signal System

## INSTALLATION FACT SHEET | May 2015



### WHAT IS CBOSS PTC?

The Communications Based Overlay Signal System (CBOSS) Positive Train Control (PTC) is an advanced signal system project that will monitor and control train movements, providing significant safety improvements, increased reliability and operating performance, and improved capacity and service. The project also fulfills a federal mandate that requires implementation of a Positive Train Control (PTC) system on all commuter corridors by December 2015. PTC is intended to prevent train-to-train collisions, over-speed derailments, and movement into established work zones or through a misaligned switch.

CBOSS PTC installation began in fall 2013 and is moving north from San Jose to San Francisco. Work includes the installation of a Data Communications System, consisting of conduit, fiber optic cable, and 10 radio base stations. Installation is anticipated to be complete in late 2015.

CBOSS PTC is a key element of the Caltrain Modernization Program, which includes electrification of the corridor and replacement of the system's diesel trains with high-performance electric trains.

### FIBER INSTALLATION ACTIVITIES

Caltrain is installing up to 52 miles of conduit and fiber optic cable within the Caltrain corridor from San Jose to San Francisco. The installation field activities are broken into one- to two-mile segments, moving consecutively from south to north.

Field activities include:

- Boring (approx. 80 percent of the time) and trenching (approx. 20 percent of the time)
- Installing conduit, pull boxes, inner ducts, and fiber optic cable
- Backfilling trenches

In order to maintain daytime train service, Caltrain performs most of the installation work during off-peak hours (8:00 p.m. to 6:00 a.m.) with several crews working simultaneously. The work begins with boring and trenching (where needed) with a second crew laying conduit and inner ducts to house the fiber optic cable. A third crew installs and tests the fiber optic cable, and cleans up the area.

Boring is required at many of the approximately 42 street crossings along the corridor. Staging and implementation of boring operations occurs mostly within the Caltrain right-of-way. Caltrain's intent is to avoid impacting vehicular crossings to the degree possible. Installation along bridges and inside tunnels may require temporary traffic lane closures during off-peak hours.



*Trench (42" deep x 9.5" wide)*



*Bore Placement*



*Fiber Optic Cable Installation*



*Backfilling Trench with Sand*

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### BASE STATION INSTALLATION ACTIVITIES

Caltrain is installing 10 radio base stations within the right-of-way in nine cities: San Jose, Santa Clara, Sunnyvale, Palo Alto, Unincorporated San Mateo County, San Mateo, Burlingame, Brisbane, and San Francisco. Locations were selected based on adequate signal coverage, utility route avoidance, minimal neighborhood impact, and installation access. Most base stations will be located near Caltrain stations. Each radio base station consists of a radio communications pole, ranging from 40 to 80 feet in height, and a metal hut, sized at 8 x 8 x 12 feet, to house communications and electronic equipment.

Field activities include:

- Preparing the site, laying foundation, assembling the radio pole, and connecting the fiber optic cable
- Assembling and securing the shelter to the foundation
- Connecting fiber optic cable to the shelter, inspecting utilities, connecting power and testing

### OUTREACH ACTIVITIES

A project web page, hotline, and email address to receive project comments and questions are available throughout the installation period. Project informational materials, such as factsheets, FAQs, and presentations, are available online, and updates are provided regularly to share installation information and key project milestones. Additional local outreach efforts may occur based on the nature and/or amount of time needed to complete work in specific locations. Installation impacts to surrounding communities and the public is expected to be minimal. Most installation activities will occur completely within the Caltrain right-of-way.



*Base Station in Right-of-Way*

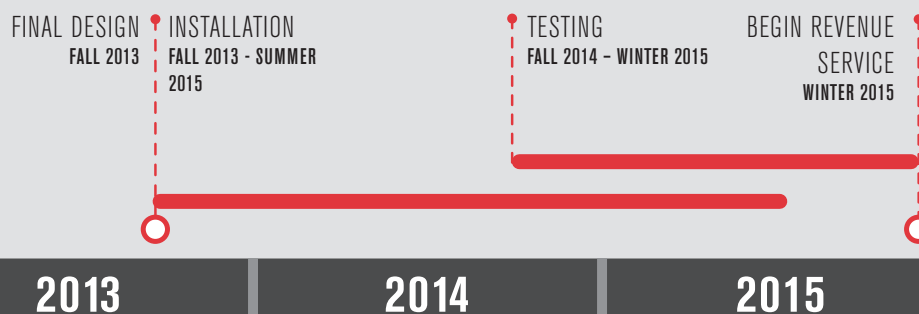


*Base Station Hut in the Right-of-Way*



*Base Station Foot Print*

### CBOSS PTC IMPLEMENTATION SCHEDULE



*Schedule subject to change*

**FOR MORE INFORMATION / PARA MÁS INFORMACIÓN**

**Visit:** [www.caltrain.com/CBOSSPTC](http://www.caltrain.com/CBOSSPTC)

**Email:** [caltrainptc@samtrans.com](mailto:caltrainptc@samtrans.com)

**Phone:** 650.508.6499