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# The Silicon Valley Wire

The latest news from the electrical industry in Silicon Valley

2nd Quarter 2016

# Rosendin Electric Installs Electrical Systems For VTA/BART's Berryessa Extension

The VTA/BART Berryessa 10-mile extension includes two new stations in Milpitas and San Jose

When the 10-mile VTA/BART Berryessa Extension officially opens next year, it will be a red-letter day for Rosendin Electric, the company that is wiring and installing the electrical systems for the mammoth \$160 million project (see map and photos on pages 4-5).



Rosendin Electric is part of a joint venture with Aldridge Electric (A/R) to build and wire the complex electrical infrastructure for the system, which travels at grade, below grade and above grade for 10 miles. At the project's inception in 2011, Rosendin Electric and Aldridge Electric combined forces with prime contractor Skanska, Shimmick and Herzog (SSH), another joint venture, to construct the \$775 million job.



Rosendin Electric wired six substations along the tracks which contain everything needed for traction power and train control.

The project is being designed and constructed by the Valley Transit Authority (VTA) under its mission as the Congestion Management Agency for Santa Clara County. VTA will own all of the property, facilities, and equipment related to the project. When the project is completed, BART will operate and maintain the system under an agreement executed with VTA.

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Rosendin Electric's prefabrication facility contains miles of cable and conduit used for the 10-mile VTA/BART Berryessa Extension.

### Inside This Issue



Rosendin Electric Wires All The Substations And Other Systems Along The 10-Mile Extension

How To Wire A Rapid Transit System

Cal Coast Telecom Wires New Video Surveillance System At The Santa Clara Convention Center



## Rosendin Electric Installs Electrical Systems For VTA/BART's Berryessa Extension

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The Architect for the VTA/BART Berryessa Extension is Lockwood, Andres & Newman, Inc. (LAN). LTK Engineering Services is contributing traction power and train control expertise to the project. Total cost for the VTA/BART Berryessa Extension is \$2.3 billion, which includes the cost of purchasing over 50 new trains.

The Aldridge Electric/Rosendin Electric team has completed the preconstruction phase, which includes scheduling, budgeting, and final design. The first phase of the installation began in 2013 with Rosendin Electric playing the major role in building out the project. Construction should be completed by February 2017, with extensive testing taking place later that year.

The project is multi-faceted and complex. Rosendin Electric is installing a number of systems, including the electrical infrastructure for two new train stations at Milpitas (91,853 sq. ft.) and Berryessa (50,650 sq. ft.). The trains are routed from Fremont to Milpitas, and then to the Berryessa neighborhood in north Santa Clara County. (A new train station built at Mission Blvd. in Fremont, called the Warm Springs Station, is part of the Kiewit/Mass Joint Venture, a separate build-out which brought a five-mile extension from Lake Elizabeth to Fremont). In addition to wiring the two new train stations, Rosendin Electric is also building out the entire traction power and automatic train control system for the Extension, which includes installing all cable as well as all the train control devices and signals along the 10-mile route.

In addition, Rosendin Electric is wiring all the substations and other systems along the route, including the build-out of two high-voltage substations, six traction power and train control substations, and a 34.5kV high-voltage parallel feeder system. Rosendin Electric is also building out a complete fiber optic



Rosendin Electric wired six substations along the tracks which contain everything needed for traction power and train control.



Rosendin Electric wired two high-voltage power substations which power the trains and new intersections along the 10-mile route.



Rosendin Electric is in a joint venture with Aldridge Electric to build and wire the complex electrical infrastructure for the VTA/BART Berryessa Extension.



The new Milpitas and Berryessa  $\ensuremath{\mathsf{BART}}$  stations are expected to be opened at the end of next year.

communications network. Rosendin Electric is completing two traction power gap breaker stations, used in maintenance and services of the track.

Rosendin Electric is providing all the manpower for the build-out, working with electricians from the International Brotherhood of Electrical Workers (IBEW) Local 332 in San Jose, and IBEW Local 595 in Dublin.

Greg Santos, the project superintendent for Rosendin Electric, is operating the project by managing four separate teams: (1) Traction power/train control, guided by foreman Aaron Thom; (2) Intersections and underground along the guideway, supervised by foreman Andy Wilson; (3) The Milpitas Station, with foreman Dave Kurze; and (4) The Berryessa Station,

overseen by foreman Justin Houser.

"We have everything in this project from 115,000 volts AC down to fiber optic cable," said Santos. "When you build a project like this, where we are moving people at 50 to 60 miles per hour down a train track, our quality and craftsmanship have to be outstanding. We have about 450,000 man hours of electrical construction on

#### VTA/BART BERRYESSA EXTENSION PROJECT TEAM:

#### CLIENT:

VTA/BART (Valley Transit Authority/Bay Area Rapid Transit Authority)

**JOINT VENTURE PRINCIPALS:** Skanska-Shimmick-Herzog Joint Venture, Design Builders Aldridge Electric/Rosendin Electric Joint Venture, System Installation

**ARCHITECT:** Lockwood, Andres & Newman, Inc.

**ENGINEER:** LTK Engineering Services

#### ALRIDGE ELECTRIC/ROSENDIN ELECTRIC PROJECT TEAM:

ALDRIDGE ELECTRIC VICE PRESIDENT: Wayne Geary

ALDRIDGE ELECTRIC PROJECT MANAGERS: Dylan Rooney; Elliott Vantrease; Stephen Goley, Senior Project Executive

ALDRIDGE ELECTRIC SENIOR SYSTEMS ENGINEER: James Kelly

ROSENDIN ELECTRIC REGIONAL VICE PRESIDENT: Mike Turner

ROSENDIN ELECTRIC SENIOR PROJECT MANAGERS: Jim Townsend; Joseph Silvestri, Andy DeMartin, Laya Yadgar

**ROSENDIN ELECTRIC SUPERINTENDENT:** Greg Santos

ROSENDIN ELECTRIC FOREMAN, TRACTION POWER/TRAIN CONTROL: Aaron Thom

ROSENDIN ELECTRIC FOREMAN, INTERSECTIONS AND UNDERGROUND ALONG THE GUIDEWAY: Andy Wilson

ROSENDIN ELECTRIC FOREMAN, THE MILPITAS STATION: Dave Kurze ROSENDIN ELECTRIC FOREMAN, THE BERRYESSA STATION: Justin Houser

#### ROSENDIN ELECTRIC ELECTRICIANS:

IBEW LOCAL 332, SAN JOSE: Bernardo N. Aguilar; Kenneth Wilson Beddow; Kent Bernard Brooks; Casey Austin Brown; Mark Christopher Cosentino; Warren Eugene Crow; Jason W. Dalke; Michael Vincent Donnelly; Zachary Phillips Donnelly; Tyrone Bernard Easter, Jr.; Antonio Gutierrez; Brent S. Hannon; Rian Robert-Wade Julian; David E Kurze; Charles A. Lytle; Brent Oscar Marchus; Arthur S. Mayberry; Brandon Glenn Nagy; Barry Lee Ohm; Joshua Allen Peterson; Gavin J. Powers; Joel Pulido-Garcia; Franklin Re; Charles A. Schlesinger; Richard Glenn Sotka; Daniel James Timpanaro; Alex Varela; Andy F. Wilson

IBEW LOCAL 595, DUBLIN: Aaron P. Thom; Austin John Aranda; Luis Alberto Barrera; Terry B. Busco; David Jose Calero; Christopher N. Corey; Altert Rodriguez Felarca; Justin R. Houser; Kenton D. Lockwood; Nathaniel Thomas Mayfield; Robert Perez; Gregory James Ponte; Joseph D. Ramos; Jacob H. Rozier; Alan K. Self; Eric J. Shaffer; Gregg I. Takeuchi; Michael James Warn

this job and there is no room for error."

"Wiring the two stations has had its challenges as well," added Santos. "At the Milpitas Station we have areas that are 17.5 feet thick in concrete. The walls down below are 3.5 feet thick. Getting conduits from one side to the other is a major task.

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Rosendin Electric routed all traction power and train control via conduit from the substations to the tracks.

Traction power and train control were installed underneath the aerial track at the Berryessa Station.

# HOW ROSENDIN

#### **ELECTRIC BUILDS AND INSTALLS THE VTA/BART BERRYESSA EXTENSION ELECTRICAL SYSTEMS**

- Wires the 90,000+ sq.-ft. A two-level Milpitas Station, where train platform is located below grade. All wiring, LED lighting and power to building; powering four escalators; two elevators; backup generator and automatic train control room.
- B Wires the 50,000+ sq.-ft. Berryessa Station, with elevated train platform, including automatic train control room.
- Installs the train control C system over 10 miles of guideway.
- D Outside linemen pull power to the two 115,000 high-voltage substations located in Milpitas and San Jose.
- E Runs 115,000 volt substation power to six 34,500 volt AC substations which run the entire length of the extension.
- Builds out four automatic E. train control houses and two train control rooms, one at each station.
- G Connects the 34,500 volt AC power at substations, which is converted to 1,000 DC power and is pulled to the rail by outside linemen. The trains run on a 1,000 volt DC power between the running rail and the contact rail.
- Installs the traction power Н system with all conduits below dirt, from the AC and DC power houses to train control, and then out to the track.
- Wires all intersections and underground along the quideway.
- Wires several power gap 1 breaker stations built for train maintenance.
- K Installs new traffic signals at both Berryessa and Milipitas Stations.
- Low voltage group pulls fiber L optics, telephone, public

- AC Power
- DC Power

#### C D E F HIGH-VOLTAGE **POWER SUBSTATION**

- Traction Power/Train Control Room
- AC Power and DC Power

#### SUBSTATION 💽 🖪

- Traction Power/Train Control
- AC Power
- DC Power

#### SUBSTATION C

- Traction Power/Train Control
- AC Power
- DC Power

TRAFFIC SIGNAL 🔳 🔳

#### SUBSTATION

- Traction Power/Tr
- AC Power DC Power



address system, access control and security cameras. The new Berryessa BART Station's aerial track is expected to serve 23,000 new riders immediately upon completion and 55,000 soon after that.



Rosendin Electric installed eight new intersections along the 10-mile route to ease and assist in the new foot traffic which is expected.



AC power, DC power, traction power and train control were installed underneath the guideway at the Berryessa Station.

# iring A Rapid Transit System



Rosendin Electric wired two high-voltage power substations which power the trains and new intersections along the 10-mile route.

#### MILPITAS BART STATION 🖪 🖸 🖪 🗷

- Traction Power/Train Control Room
- AC Power
- DC Power

G H

• Auxiliary Substation





Rosendin Electric wired six substations along the tracks which contain everything needed for traction power and train control.

# VTA/BART BERRYESSA

#### EXTENSION ROSENDIN ELECTRIC SERVICES:

- System Installation, Including:
- 6 Automatic Train Control Rooms
- 2 High-Voltage Substations
- 6 Traction Power Substations
- 2 Traction Power Gap
  Breaker Stations
- 34.5kV High-Voltage
   Parallel Feeder System
- Build-out of Milpitas Train Station
- Build-out of Berryessa Train Station
- Wiring Of Now Troffic

GAP BREAKER STATION

#### BERRYESSA BART STATION B C F H

- Traction Power/Train Control Room
- AC Power

C F G H

ain Control

- DC Power
- Auxiliary Substation

- Wiring Of New Traffic Intersections And Underground Along The Guideway
- Complete Fiber Optic

#### HIGH-VOLTAGE POWER SUBSTATION

Traction Power/Train Control RoomAC Power

C D E G H



Cal Coast Telecom installed Pelco cameras in various areas at the Santa Clara Convention Center, including emergency exits and other perimeter doors.

# Cal Coast Telecom Wires New Camera System Upgrades At The Santa Clara Convention Center

The Santa Clara Convention Center hosts numerous events each year in Silicon Valley. To maintain a technological edge in the technology capital of the world, the Convention Center has updated parts of its Closed-Circuit Television (CCTV) system with the help of Cal Coast Telecom.



Cal Coast Telecom's \$130,000 makeover of the Convention Center's video surveillance system began in November 2014 and has upgraded major portions of the CCTV system from analog to digital, replacing out-of-date cameras

the old analog cameras," said John Caldwell, Cal Coast Telecom project manager. Technicians from IBEW Local 332 in San Jose worked with Cal Coast Telecom to complete the installation.

"We migrated all of the old systems onto the Pelco NVR system and then added additional cameras," said Caldwell. "A total of 72 new digital cameras replaced 15 analog cameras on one software platform and 22 cameras on the other platform. We installed additional cameras to monitor areas that hadn't previously been covered. Pelco worked with Cal Coast Telecom to engineer and design the project's new system, and to determine the amount of video storage." Caldwell said the old CCTV system was replaced because images from the surveillance cameras were blurry, with the quality deteriorating.

#### Photo and

#### FROM LEFT TO RIGHT:

John Caldwell; Eduardo Chavez; David Inzunza; Chris Caldwell; Hector Mejia; Joe Hernandez, James Hartley; Telly Rollins; Edmund Ordaz; John Sawtelle; David San Miguel; Marie Pernick; Phil Butler; Luis Avalos



Cal Coast Telecom installed Pelco 360-Degree cameras, providing the new digital CCTV system total situational awareness and video motion detection. with the latest in technology.

Cal Coast Telecom is partnering with Pelco Security Cameras, one of the leading manufacturers for commercial security installations, to update and expand video surveillance at the 302,000-sq.-ft. Santa Clara Convention Center.

"To upgrade and simplify the Convention Center's old analog systems, we installed a Pelco network video recorder system (Pelco NVR) and replaced

The 72 new Pelco Power over Ethernet (PoE) IP cameras installed by Cal Coast Telecom replaced two separate outdated analog camera systems, that existed on two different video software platforms which were managed separately. The systems that were replaced primarily monitored internal convention center areas, including corridors, cash rooms, kitchen facilities, emergency exit doors, and other doors along the perimeter.



Cal Coast Telecom installed a Pelco network video recorder system and digital cameras at the Santa Clara Convention Center, expanding the video surveillance to 302,000-sq.-ft.

The Pelco Pan-Tilt-Zoom (PTZ) cameras installed are capable of remote directional and zoom control.

"The new digital system is of much higher quality and has expanded the number of cameras used to provide additional areas of surveillance," he said.

The new Pelco NVR system includes a variety of different camera models, including box style cameras, dome cameras, 360 cameras and Pan Tilt Zoom (PTZ) cameras. The new high-definition megapixel cameras provide superior image quality to the analog cameras used in the old system.

The box cameras are shaped like square cylinders and are attached to an arm that allows the cameras to be pointed in any direction. The dome cameras feature various styles, including a service mount dome, mini dome and pendent mount dome.

Caldwell said installing the new cameras posed a challenge in certain instances because the new cameras have different mounting patterns than the analog camera. "We had to patch the exterior of the building whenever we removed an old analog camera," Caldwell said. "We fabricated brackets so we could mount the new cameras to the different hole patterns. We also had to eliminate the old wiring that connected the analog coaxial cable, replacing it with a 24 Port PoE encoder, which is a PoE convertor that puts power into the coax."

Cal Coast installed a dedicated cabling infrastructure to support the new camera, including fiber backbone, a dedicated network and PoE switches.

The CCTV system is monitored in the Convention Center's headend room through a video monitor. Cal Coast Telecom set up several client monitoring stations that allow surveillance on all video cameras. The client monitoring stations can be viewed from computers by security personnel and other authorized staff members.

Cal Coast Telecom's Security **Division engineers and** deploys CCTV, intrusion and access control systems. Other services provided include structured wiring, audio visual systems, distributed antenna systems (DAS) and paging systems. For more information about Cal Coast Telecom, contact their corporate office at (408) 275-8888 or go to www.cctcom.net.

#### CAL COAST TELECOM TEAM SANTA CLARA **CONVENTION CENTER CCTV INSTALLATION:**

**OWNER:** City of Santa Clara

**CAL COAST TELECOM SENIOR MANAGEMENT:** David S. San Miguel, President Security Systems Division

**CAL COAST TELECOM PROJECT MANAGEMENT:** John Caldwell, Project Manager

**CAL COAST TELECOM** ENGINEERING: James Hartley, Security Sales Engineer

**PROJECT TECHNICIANS:** 

IBEW Local 332, San Jose Phil Butler, Chris Caldwell, Chris Cleveland, Alex

**STRATEGIC PARTNER:** Pelco Security Cameras Gordy Abbott, Business Development Manager





Pelco Pan Tilt Zoom (PTZ), 360 degree, and dome cameras in the new digital CCTV system.

Cal Coast Telecom replaced the existing outdated analog cameras in the Santa Clara Convention Center with Pelco digital cameras.

## **Rosendin Electric Wires VTA/BART Extension**



The new Milpitas and Berryessa BART stations are expected to be opened at the end of next year.

#### **CONTINUED FROM PAGE 5**

"Another challenge is the number of agencies Rosendin Electric must coordinate with to execute on the project, including VTA; BART; MCI Inc.; Chevron; Kinder Morgan; The Union Pacific Railroad and the Cities of San Jose, Milpitas, and Fremont, to name only a few."

Rosendin Electric is using PlanGrid Software for project documentation by the senior staff and foremen, and BIM



Rosendin Electric wired security cameras along the entire extension which can be viewed from the



The tracks run 20 feet beneath the new Milpitas BART Station and cross underneath main intersections in the



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Rosendin Electric electricians bent an endless amount of conduit and piping to very narrow tolerances in

360 construction management software for reporting back the installation of the project and other uses.

All materials for the project are purchased under the guidelines of BUY AMERICA, which stipulates that a majority of the project's materials need to be made and manufactured in the United States.

For more information about Rosendin Electric and its services, contact Larry Hollis, Vice President Business Development (busdev@rosendin. com) or call (408) 286-2800. BART headquarters in Oakland. city of Milpitas as to not impede traffic.

to not impede traffic. order to make everything work.



The new Berryessa BART Station's aerial track is expected to serve 23,000 new riders immediately upon completion and 55,000 soon after that.