



LATEST SOUND & COMMUNICATIONS TECHNOLOGY NEWS

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Ed Roberts Campus



USCF Medical Center



Phil Crompton Q&A



Plumbers Local 38 Training Center



A simulation procedure takes place via live video in the UCSF Teaching and Learning Center.

Live Interactive Education For Physicians In Training

ontra Costa Electric's Technology Division is wiring the future of medical education in Northern California.

The company's technicians just finished installing a \$1.5 million state-of-the-art telemedicine network at the UCSF Teaching and Learning Center on Parnassus Avenue. The Teaching and Learning Center broadcasts real time video education and simulations over a UCSF network

viewed by medical students and other health professionals.

The Center includes simulation rooms, standardized patient rooms and technology enhanced classrooms. Rooms are connected to each other with direct video broadcasting. Students can view the procedures live in real time, or watch through a window in one of the debriefing rooms or training rooms. **(See center spread, page 4-5)**

"UCSF took the whole floor of the old library and made it into a state-of-the-art training facility," said Prien. "We removed all the old







A publication of the National Electrical Contractors Association (NECA) and the International Brotherhood of Electrical Workers (IBEW) of Northern California. The new telemedicine network is among the most technologically advanced in the country, not surprising since UCSF is known for the quality of its medical education and was recently named America's 7th best hospital, according to a ranking conducted by *U.S. News & World Report.*

Contra Costa Electric Project Manager Ray Prien said the Technology

Division wired 35 miles of CAT 6 Ethernet network cable throughout the 2nd floor of the newly renovated Teaching and Learning Center, where 22,250 square feet is dedicated to classrooms, a computer lab and simulation and clinical skills. The Center, which formerly served as a library, opened in January.



Simulation Training Room

CAT 5 cabling, which didn't have enough capacity to carry the video signals, and replaced it with CAT 6. We also installed new Cisco switches, along with a 10 gigabyte NG network and then connected all of it to a 144 strand fiber optic cable for distribution."

The Teaching and Learning Center includes two sophisticated simulation suites, with 10 full body mannequin simulations installed in the rooms.

Simulation and standardized patient-based exercises are becoming increasingly more important in the education of health care professionals, according to Patti Mitchell, Project Manager for Capital Programs at UCSF.

(Continued on Page 7)

To find a NECA-IBEW Union Contractor go to www.norcalvdv.org

The McMillan Companies Pioneers Universal Design Technology At The Ed Roberts Campus for People with Disabilities in Berkeley

ED ROBERTS CAMPUS

PURPOSE: Designed to support people of all abilities

SERVICES: Provides vocational training, education, housing and benefits assistance, fitness and health support to people with disabilities

LOCATION: Berkeley, California

ARCHITECTS: Leddy Maytum Stacy Architects

DESIGN: Far exceeds ADA; Integrates Advanced Universal Design and sustainable design within a transit-oriented development

FLOOR SPACE: 82,400 s.f.

ACCESSIBILITY FEATURES: Automatic doors; hands-free building system controls; large elevators with specialized controls for wheelchair users; 7 ft. wide corridors; easy-to-navigate wayfinding system aided by acoustical landmarks; high-contrast interior finishes and colored and textured flooring; helical ramp that provides dramatic access to the 2nd floor; Braille building maps

PARTNERS: Bay Area Outreach and Recreation Program; Center for Accessible Technology; Center for Independent Living; Computer Technologies Program: Disability Rights Education and Defense Fund; Through the Looking Glass; World Institute on Disability.

helical two-story ramp allows anyone with disabilities to navigate the building without using an elev

VOICE DATA VIDEC

SOUND AND COMMUNICATIONS



The Ed Roberts Campus is designed to be a global leader in Universal Design, which goes far beyond ADA requirements.

When McMillan Security Systems installed 14-inch magnetic card readers on all the doors of the new 149,000 square foot Ed Roberts Campus in Berkeley, the company didn't realize that the oversized readers would open more than doors for people with disabilities in Northern California.

The Ed Roberts Campus has won international acclaim since it was unveiled this spring, making McMillan's card readers part of the technology that is opening doors for a new era in Universal Design.

"The card readers can be activated by a wheelchair user stopping near one of the doors," said Dmitri Belser, President of the Ed Roberts Campus. "There is no need for the person to swipe a card. The door will open when the access card mounted on the side of the wheel chair picks up the card reader's radio frequency signal."

The building, designed by Leddy Maytum Stacy Architects, functions as a community center serving the Independent Living movement and sets international standards for Universal Design. It has drawn visitors from throughout the globe to study its accessibility, technology and sustainable features.

It is a two-story building with both elevators and an iconic central ramp in the lobby that links the two floors together, so even when the power is out, so those with disabilities can evacuate the building. The elevators have both regular buttons as well as buttons at floor level, so those in a wheelchair can push the chair into the button to open the elevator.

The late Ed Roberts founded Berkeley's Center for Independent Living in 1972, initiating the world's first organization run both by and for people living with disabilities. After Roberts died in 1995, 7 disability agencies came together to create a memorial to his life, which lead to the building of the Ed Roberts Campus.

Located at the Ashby BART Station, the design and technological features of the building far exceed ADA (Americans with Disabilities Act) requirements.

As Belser said, "This goes way beyond ADA. It is probably the most accessible building ever built. It sets new standards for Universal Design, the idea that a building should function for everyone, regardless of their age, ability, or status in life."

For McMillan, installing the specialty card

division to ensure integration and activation of the auto-door systems through a universally designed proximity card," said McMillan Project Manager Mike Schimm. "Many of the clients are in wheelchairs, so they simply present their credential, which allows their location to be picked up by radio frequency, and the door opens automatically."



The building includes a wireless assisted listening network and doors that open with card readers activated by radio frequency, all installed by McMillan Data Communications.

McMillan also installed a specially designed wireless assisted listening system that gives users who are hard of hearing the ability to hear what is being said in meetings. The assisted listening system is built into the floors, and then transmits sounds directly by microphones to a client's hearing aid.

"The person who is listening can

Ed Roberts Campus Project Team

CLIENT:

Ed Roberts Campus, Dmitri Belser, President

ARCHITECT: Leddy Maytum Stacy Architects

GENERAL CONTRACTOR:

BCCI Construction Company Mike Dean, Senior Vice President Preconstruction Fred L. Avery, Senior Estimator Kevin P. O'Leary, Project Manager

TELECOM CONSULTANT: Patrick Ciccarelli, Varsity Communications

COMMUNICATIONS CONTRACTOR:

McMillan Electric Co. Patrick McMillan, CEO, McMillan Electric Co.; David Auch, Vice President, McMillan Electric Co.; Jim Murray, Managing Partner, McMillan Data Communications; Mike Schimm, Co Managing Partner, McMillan Security Systems; Rod Clark, Division Manager, McMillan Media Systems

INSIDE WIREMEN IBEW Local 6

Security Systems also introduced an intrusion detection system that provides immediate notification of unauthorized entries.

McMillan originated fiber for the building in the basements, and then distributed it to an MDF room on the first level, and then into 5 IDF rooms throughout the campus. The company used some 200,000 feet of cable throughout the building and made over 500 voice/data connections. McMillan Media Systems also installed a public address system that is wired in multiple zones, and covers the entire building. Throughout the project, McMillan worked with 8 technicians from the International Brotherhood of Electrical Workers Local 6.

"The project was challenging because it was a very fast timeline, and included custom design features," said Patrick McMillan. "However, our various divisions were able to cohesively work together to cover all the disciplines, from structured cabling to fire alarm and security systems."

"All of our contractors, including McMillan, put a lot into this project," said Dmitri Belser."Everyone thought they were doing something really special here, and we were honored to have them all involved. McMillan was a really great partner for us."





The Ed Roberts McMillan management team included: (from left to right) Michael Schimm, Co-Managing Partner, McMillan Security Systems; David Auch, Vice President, McMillan Electric Co.; Rod Clark, Division Manager, McMillan Media Systems; Jim Murray, Managing Partner, McMillan Data Communications.

readers was part of a million dollar electrical/ communications project that included design/ build for lighting, power and fire alarm systems, assisted listening, cable infrastructure, wireless, and a public address system.

"McMillan Security Systems worked with our high voltage

moderate it to the level they want," said Patrick McMillan, CEO of McMillan Electric Company.

McMillan Security Systems installed an electronic entry control that is administered through an off-site virtual web host that allows the building's managers to make adjustments from any internet connection.

The web host administers entry control for perimeter security doors remotely, without the use of specialty security management software or a dedicated PC. McMillan

The McMillan Companies, Inc., San Francisco, is one of the leading sound and communications contractors in Northern California. They provide services in Data Communications, Security Systems, and Audio-Visual Integration. David Auch, Vice President, can be reached at dauch@mcmillanco.com, 415.826.5100 or 415.720.0569.

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The SimMan is Alive and Well! Contra Costa Ele To Broadcast Simulation Procedures and Keep

Contra Costa Electric's Technology Division recently wired a state-of-the-art telemedicine network at the Kanbar Teaching and Learning Center at the UCSF Campus on Parnassus Avenue. The 22,250 square foot center, considered to be one of the top ten telemedicine sites in the country, opened in January and is dedicated to promoting medical education. The "telepresence" network allows simulation and other teaching and learning sessions held at the Kanbar Center to be recorded in real time. These signals then travel over a network to be viewed live by students in adjacent classrooms at the Learning Center. The telemedicine network is connected to

UCSF Teaching and Learning Center

Because the existing CAT 5 cabling bandwith was too small to carry the telemedicine video signals throughout the space, Contra Costra Electric's Technology Division replaced it with CAT 6, and installed Cisco routers. Contra Costa wired the telemedicine network throughout the entire 22,000 sq. ft. space, including the Simulation Center, the classrooms and the technology commons. The CAT 6 cabling ties into the infrastructure through a 10 gigabyte network(NG). The NG connects to a 144 strand fiber optic cable that leaves the building and can go to another building through designated hubs. (see connecting campuses diagram, pg. 5.) Contra Costa Electric also installed all the fixed racks. One-half the cabling is under the floor; the other half is in the ceiling. Because the floor is 1.5" off the ground, Contra Costa Electric coordinated extensively with other tradesmen to share the available floor space.



Telemedicine Training Rooms

Medical students can view simulation training from four telemedicine training rooms nearby. Each room includes four 52" LCD displays, 2 wall mounted video cameras, ceiling installed speakers, front screen projection, a DVD/VCR combo player, wall-mounted and wireless AV control panels and wireless microphones.

Classrooms have multiple projection/ presentation screens and flexible group seating for team based learning

University of California, San Francisco Project Team

CLIENT:

University of California, San Francisco Patti Mitchell, Project Manager for Capital Projects at UCSF

ARCHITECT:

Student Computer Lab

Computer lab and classrom includes 20 workstations, moveable walls, multimedia workstations for rich media development and lounge areas with outlets and wireless access. Video and Audio Recording Equipment

Harley Ellis Devereaux

GENERAL CONTRACTOR: McCarthy Building Company

NETWORK INSTALLATION, AV, AND DATA CONTRACTOR: Contra Costa Electric, Technology Division

Ray Prien, Project Manager

TECHNICANS FOR NETWORK INSTALLATION: IBEW Local 6 and Local 302, lead by Senior Technician Ruben Cazarez Telemedicine breakout rooms offer 52" LCD flat panel screens, ceiling mounted loud speakers, and a wall-mounted AV control panel.

Standardized Patient Lounge

www.norcalvdv.org

ectric Installs A Telemedicine Network At UCSF UCSF On The Forefront of Medical Education

two simulation classrooms, where teachers use 10 full body mannequins to simulate various procedures, such as simulation of resuscitation events. Students can watch the simulations directly from a nearby debriefing room, or view them digitally in real time in the debriefing room. Contra Costa Electric is also installing a telemedicine

distribution link to several hubs off-campus, which will allow the live teaching sessions to be transported in real time to students at other sites related to the Medical Center, including interns at SF General Hospital as well as to professors and medical students on other parts of the UCSF campus.





Simulation Center

This medium sized simulation room can be set up as a two bed inpatient room or as an intensive care unit. It has a grid ceiling so that various equipment can be snapped into place on the grid to film video procedures, such as cameras, lights, and microphones.

Debriefing room offers equipment to watch clinical encounters in real time, or with video playback.

> Media Control Room has digital direct video broadcasting equipment to broadcast simulations in real time.

Hubs For The UCSF Teaching And Learning Center



Media Review Room



The large simulation rooms can be set up as an operating room or as a 4-bed inpatient room. Simulations can include injections, IVs, intubation and birthing scenarios. The rooms contain an interactive fully body manikin with feedback control that will monitor physiological parameters that change over time.

12 Clinical Skill Exam Rooms

Contra Costa Electric is installing a 10 gigabyte (NG) network that carries telemedicine signals exclusively and is not connected to the regular UCSF computer network. The NG on the 2nd floor connects to a 144 strand fiber optic cable that leaves the building, ties into a first floor closet, and then connects to a nearby hub outside that contains a Cisco 6509 switch. The signal is carried by fiber to a hub near SF General and also to another hub near the UCSF Data Center.



of Northern California

Healthcare Technology Consultant Phil Crompton Talks Telemedicine



Phil Crompton is a Principal at Vantage Technology Consulting Group in El Segundo. He has provided strategic technology planning to many hospitals in California and throughout the West.

Q: Have you been a consultant on any telemedicine projects like the UCSF Kanbar Teaching and Learning Center at UCSF? If so, which ones?

 A: I first encountered this type of project at the University of New Mexico Health Sciences Campus, where I was involved in Master Planning three new buildings on that campus, including a School of Nursing building which included a series of simulation and training spaces. UNM is a leader in the integration of simulation, telemedicine and grid computing. More recently, I have been involved in a number of Allied Health Building projects which include simulation spaces. It's clear that this project type is providing results and accordingly more Colleges and Educational facilities are interested in providing this kind of space.

Q: Can you describe the vision and goals of the simulated projects?

A: The goal of these projects has been to create simulated patient encounters that are as life-like as possible while providing the appropriate levels of supervision and monitoring (for assessment purposes). Experiential learning spaces like these have proven to be extremely effective learning environments. Practicing something is way more effective than being told about something – it's like the old adage "Tell me, I'll forget; Show me, I'll remember; Involve me, I'll understand." a pilot who has never experienced an emergency before. Why should health care be any different? The outcome should be improved patient safety and reduced medical errors, which must be a good thing. A by-product should be improved staff satisfaction, since they should be more comfortable with the technologies if they've had the opportunity to try them "in the lab".

Any technology that brings realism to the experience is important. The latest generation of robotic simulators are extremely realistic and hopefully will continue to improve. High definition cameras and screens allow us to view what's taking place without being in the room – this makes an assessment easy and more lifelike and allows the students to review their performance afterwards. Some of our nursing schools are going as far as to install real hospital systems – such as nurse call and code blue, smart beds and physiological monitors and telemetry – in their facilities to dial up the realism factor.

Q: The UCSF Kanbar Teaching and Learning (Telemedicine) Center is being used to help teach new techniques and improve on existing medical techniques by allowing medical trainees to watch clinical encounters in real time Is this a coming trend in the medical field ? What are its benefits?

- A: Absolutely, and it's a good thing. Many hospitals and medical centers allow their surgeons access to these types of facilities to allow them to "mock-up" a particularly difficult procedure and do a runthrough prior to working on the patient. CPMC, based in San Francisco, has a facility called SimSurg Education Center where surgeons, anesthesiologists and perioperative nurses can come to learn new techniques. SimSurg features a full operating room and a bioskills surgical lab and includes full video conferencing capabilities, allowing procedures to be viewed in high definition in its conference and meeting rooms.
- Q: At UCSF, the telemedicine center is being expanded into a Telepresence Network around UCSF that includes the capability for direct video broadcasting from the Kanbar Center on the Parnassus campus to San Francisco General Hospital or to other parts of UCSF. Is this a trend as well? Where will this technology take us?

where a surgeon located in New York can perform a procedure in San Francisco using robotics and video conferencing systems. Assuming these trends continue, we can start to deliver the best in healthcare to patients located anywhere in the world.

Q: What kind of technologies is needed to support the bandwidth requirements of telemedicine?

A: Telemedicine will challenge our hospitals in a number of ways. As telemedicine systems proliferate through operating rooms and other clinical spaces, hospitals are going to need media asset management systems to manage the recordings. Larger storage area networks will also be required, although hopefully data deduplication technology will help here. Resilient, high bandwidth networks will also be needed – it wasn't that long ago that a separate network was needed to support these systems.

Q: What are some of the other new healthcare technologies currently gaining popularity?

A: Hospitals are focusing on deploying electronic medical record systems and wireless tablets and other devices providing access at the point of care will proliferate through our hospitals. Patient television is becoming more interactive, allowing patients (and their visitors) to take control of their environment and obtain information about their care plan. Home health is primed for take-off, with patients able to access their medical records from home and, in the near future, hospitals able to monitor their patient condition when they are at home rather than taking up a bed at the hospital.

Q: What will the hospital of 2015 be like?

A: Pretty much like the hospital of 2011, but with more tablets and other wireless devices. Looking a little further out, it's likely that the hospital will become an important component of a community-based continuum of care model which extends into a patient's home, place of work and other locations. Length of stay at the hospital should decrease as patients are able to return home sooner. The hospital will continue to see an increasing level of acuity and will also be the primary destination for trauma cases, birthing and end-of-life cases, although specialized facilities may evolve to address these markets.

- Q: How will these projects change medicine? What technologies are most important in these projects?
- A: Hopefully these projects will make incoming Doctors, Nurses and other Health Professionals more 'techready' when they begin their working lives, while allowing existing professionals to get a skills 'tune-up' in a safe environment. This is why we have flight simulators – I don't want to be in an airplane with
- A: I anticipate this will be an increasing trend as high definition cameras and displays continue to reduce in cost and digital media transmission standards begin to stabilize. Right now we have several projects in design where images from an operating room can be transmitted to another operating room (for a peer review or second opinion), to a conference room (as a training opportunity) or anywhere in the world. Robotic surgery is also developing and I see a future

Increased specialization is likely in major population centers, where outlying community hospitals will become feeders for these specialized facilities.

To contact Phil Crompton, email Phil.Crompton@VantageTCG.com, or call 310.536.7676 ext. 208.



SOUND AND COMMUNICATIONS of Northern California

Contra Costa Electric Wires State-of-the-Art Telemedicine Network At UCSF Medical Center - Continued From Page 1



The debriefing room is near the large simulation room. It is used by students to view simulation procedures by telepresence real time video, as well as through the window.

The Teaching and Learning Center will broadcast real time video education and simulations over a network to be viewed by medical students and other health professionals.

"The simulation rooms have sophisticated cameras, speakers, and microphones," said Mitchell. "Video of simulated procedures is made in real time and broadcast to the students at the Teaching and Learning Center. In the future, it will be broadcast to other points connected to the UCSF Medical Center, such as SF General."

The SimMan, as he is affectionately known, is just one of eight high fidelity adult simulation mannequins who are treated in the two large simulation rooms. These suites can be configured to recreate an ICU, operating room, or any patient care room. There are three pediatric mannequins—"SimBaby" and two neonatal mannequins "SimNewB". The rooms also contain part-task simulators-stand-alone body parts that are designed for training a special skill such as intubation or needle insertion.

"This telemedicine network is really a Telepresence network," said Prien. "It's like video conferencing on steroids. It is a 100% live interactive experience. You can see a person's entire body, as well as the entire environment. With traditional teleconferencing, you could only see someone at their desk. It is much more limited."

Contra Costa Electric technicians, lead by Senior Technician Ruben Cazarez, tied the video signals from the 2nd floor to a building distribution facility on the first floor. From there, the signals travel to a nearby hub, where fiber optic cable takes them to the next distribution point.

"The establishment of the Teaching and Learning Center will synergize health sciences training across the schools and manifest an exciting new era for our education mission," says Dean Sam Hawgood, MBBS. More than 2,500 students will use the Teaching and Learning Center each year for simulations and telemedicine training.

Where can I find an **Educational Technology Systems contractor?**

Contra Costa Electric Inc. Contact: Bill Cherry Bill_cherry@emcorgroup.com 825 Howe Rd. Martinez, CA 94553 (925) 229-4250 http://www.ccelectric.com

Decker Electric Company Contact: Jeff Bloom jbloom@deckerelectric.com 1282 Folsom St. San Francisco, CA 94103 (415) 552-1622

DK Technology Contact: Pedro Chavez pchavez@dk-technology.com 2610 Crow Canyon Rd. Ste 230 San Ramon, CA 94583 (925) 829-6001 http://www.dk-technology.com

Engelhart Electric Company Contact: Mark Engelhart marke@engelhartelectric.com 1052 Commercial St. San Carlos, CA 94070 (650) 595-1091 http://www.engelhartelectric.com

Integrated Communication Systems (ICS) Contact: Aaron Colton aaron.colton@ics-integration.com 990 Parrott St. Suite #40 San Jose CA. 95112 (408) 491-6000 http://www.ICS-Intergration.com

Lloyd F. McKinney Associates Inc Contact: Rick McKinney

rick@mckinneyassoc.com 25350 Cypress Ave. Hayward CA, 94544 (510) 783-8043 http://www.mckinneyassoc.com

McMillan Data Communications Contact: Pat McMillan 1515 S. Van Ness Ave. San Francisco, CA 94110 (415) 826-5100 ext. 116

Metropolitan Electrical Construction Inc. Contact: Nick Dutto ndutto@metroelectric.com 2400 3rd St. San Francisco, CA 94107 (415) 642-3000 http://www.metroelectric.com

Quality Sound

Contact: James Brian jbryan@qualitysound.net 2010 E. Fremont St. Stockton, CA 95205 (209) 948-2104 http://www.qualitysound.net

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Young Electric Co. Inc

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For a complete listing of over 100 qualified Sound and Communications contractors, please visit www.norcalvdv.org.



All simulation rooms have multiple HD video cameras and digital technology that Contra Costa Electric wired for direct broadcasting to adjacent debriefing rooms. Videoed simulations can include everything from resuscitation procedures to taking vital signs and monitoring birthing events.

The Teaching and Learning Center includes 12 clinical exam rooms where standardized patients (who are trained actors) can be treated. The Center also features a technology commons, with a computer lab, audio and video recording equipment, and multiple networked multimedia pods, as well as lounge areas, all wired by Contra Costa Electric.

For more information about the Teaching and Learning Center see http://tlc.ucsf.edu. For more information about Contra Costa **Electric's Technology Division, contact** Ray Prien, Ray_Prien@emcorgroup.com, or call 925.766.1402.

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Paganini Communications Wires State-of-the-Art Training Center for Plumbers Local 38



The Joseph P. Mazzola Training Facility is now open for use by the Plumbers and Steamfitters Local 38 in San Francisco.

Stand by for the opening of a new training center in San Francisco that teaches theoretical physics and hydraulics and has SMART Boards in its classrooms.



Paginini Communications wired interactive white boards in the classrooms.

No, its not an extension of UC Berkeley, it's a 40,000 square foot training facility for Plumbers and Steamfitters Local 38, with many of the bells and whistles wired by Paganini Communications.

The new Joseph P. Mazzola Training Facility will host a 10,000 hour training program where apprentices in the plumbing trades learn pipe trade mathematics, CAD design, elements of hydraulics and heat, physics, and plumbing theory.

Paganini wired the voice and data systems

They also installed a new access control and security system, a PA clock system, and updated the classrooms with interactive AV equipment, including white boards and ceiling mounted projectors.

With the upgrades, the new training facility becomes one of the most contemporary educational facilities for the trades in the U.S., allowing Local 38 to continue its tradition of teaching respected craftsmanship. The building will formally open later this year.

"The state-of-the-art facility allows our apprentices to receive the best possible training with the most modernized equipment," said Stephen Mazzola, Training Director of the UA Local 38 Joint Apprenticeship Training Committee (JATC).

Larry Andrini, Vice President of Paganini Communications, said the most interesting component of the job was the installation of interactive white boards in the classrooms.

"Interactive white boards enable anything that can be seen or done on a computer screen to be projected onto the white board, bringing every classroom to life," said Andrini. Paganini used about 45,000 feet of cabling within the facility, and made some 250 connections and terminations throughout the three floors. The company provided the horizontal networking cables and the copper and fiber backbone cables.

Fiber and copper are used to connect the server room to the IDF rooms located on each floor, and Paganini also installed wireless access points on each floor. Three technicians for IBEW Local 6 worked to complete the installation.



Paganini Communications used 45,000 feet of cabling to wire the new facility.

The security system includes fourteen interior and exterior cameras utilizing a full access control system that allows all points of access to be monitored 24/7.

For more information about the Training center, contact Larry Andrini at Paganini Communications, LarryA@pagcos.com or call 415.575.3900, ext. 233.

Plumber's Training Center Project Team

CLIENT:

Plumbers Local 38, Stephen Mazzola, Training Director of the UA Local 38 JATC

ARCHITECT: CAS Architects. Inc.

GENERAL CONTRACTOR: Nibbi Brothers

ENGINEER: Alphatech

COMMUNICATION PRODUCT MANUFACTURER: Commscope Uniprise

COMMUNICATIONS, AUDIO/VIDEO, SECURITY CONTRACTOR: Paganini Communications, Inc., Larry Andrini, Vice President of Paganini Communications

INSTALLER TECHNICIANS: IBEW Local 6 David Pellegrini, Field Foremen Installers from IBEW Local 6

for the three story build out at 2660 Newhall Street to accommodate classrooms, labs, offices and student lounges.

Union Contractors (NECA-IBEW) in Sound & Communications combine a skilled and trained work force with world class technology. For the best installations in voice/data/cabling, network systems, data center facilities, audio/video systems, sound systems, fiber optics, wireless, security systems, fire/life safety systems, and CATV, call a union contractor or visit www.norcalvdv.org.



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