

VOICE  
DATA  
VIDEO

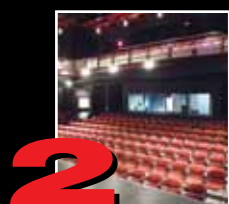
SOUND AND  
COMMUNICATIONS  
of Northern California

# THE VOICE

2011  
FIRST  
QUARTER

L A T E S T S O U N D & C O M M U N I C A T I O N S T E C H N O L O G Y N E W S

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Trace Elementary

And  
more...



A publication of the National Electrical Contractors Association (NECA) and the International Brotherhood of Electrical Workers (IBEW) of Northern California.



PHOTO COURTESY OF POINT 1

## Point 1 Wires State-of-the Art Data Center for San Joaquin Community College District

*Point 1 wired the main telecommunications room at the Delta College Data Center.*

### *At Delta College, Point 1 And OneInterface Set New Standards For Data Centers In Educational Arena*

**D**elta College in Stockton will soon unveil its new Data Center, one so state-of-the-art that it is touted as a model for California's Community College system. Built on the site of a former vineyard on the north end of the campus, the Data Center marks a new day in technology for the rapidly-growing institution, which serves 25,000 students.

For years, Delta College made do with a small, antiquated data center that was opened in 1974, and last renovated in 1995. After conducting a study several years ago, Lee Belarmino, Vice President of the school's information technology department, determined the old Data Center was too small and no longer standards compliant.

To implement his plan for a new Data Center, Belarmino turned to OneInterface of Fresno to engineer and design the center and Point 1 Electrical Systems, Inc. to wire it. **(See illustration on pages 4 and 5 of how the Data Center is wired.)** Dave Sartain, Director of IT and Data Center Services for Delta College, worked directly with OneInterface while the company was creating the overall design of the center. Sartain helped to set the goals for the data center, planning it so that it would remain state-of-the-art for the next several decades. Sartain also monitored and managed the installation of the data center. Thanks to a recent bond, funds were available to build the new 16,500 square foot facility—but the Data Center faced tight budget constraints. To keep costs down, the external building is a pre-fabricated shell; the Data Center proper was built for \$6 million.

The outcome is a model Data Center that contains the latest fiber optic and networking technology. Advances in these technologies allow voice, video, data, air conditioning, security, and other low voltage systems to run through the same network, a schematic called structured cable

design that was implemented by Point 1. Point 1's wiring of the network configuration helps to achieve technological convergence, allowing disparate systems to talk to one another.

"This wiring schematic also allows the District to support

CONTINUED ON PAGE 6



PHOTO COURTESY OF POINT 1

*Installer technicians from IBEW Local 595 worked with Point 1 to complete the data center.*

**To find a NECA-IBEW Union Contractor go to [www.norcalvdv.org](http://www.norcalvdv.org)**





PHOTO COURTESY OF LLOYD F. MCKINNEY ASSOCIATES

*The Firehouse Arts Center Theater in Pleasanton features portable seating, state-of-the-art AV as well as an overhead tension grid.*

# Lloyd F. McKinney Associates Brings The Firehouse Arts Center Theater to Life!

Once again, the technician magicians at Lloyd F. McKinney Associates have set the arts on fire.

This time Lloyd F. McKinney and its team have unleashed their mojo on the theater in the historic Firehouse Arts Center in downtown Pleasanton. The versatile systems integration firm is known for its expertise in installing sophisticated theater systems around Northern California.

Originally built in 1929 as Fire Station One with bricks from a local foundry, the new 17,000 square foot Arts Center opened last September.

The \$10 million facility has been transformed into a public arts center featuring a studio theater, arts gallery, classrooms, a grand lobby and office space.

The renovation, spearheaded by the Cultural Arts Council, the Pleasanton Art Foundation and the City of Pleasanton, blends modern architecture with the restoration of the brick exterior of the historic fire station.

The centerpiece of the project is the 240-seat Firehouse Theater, which hosts

musical and theater performances, lectures, films, and classes. The 3,400 square foot flexible theater space offers portable seating that can be configured into a variety of options on the main floor, as well as in a wrap-around second floor gallery.

Frits Groenhuizen, project engineer for Lloyd F. McKinney Associates, and also a musician and live sound expert, used his extensive experience with running live sound boards to help spearhead the project. Jeremy Hamm, the Lloyd F. McKinney Associates Firehouse Arts Center Theater project manager, brought special expertise to his role, since he is also a long-time theater stage designer and an instructor of theater technology at Los Positas College.

Hamm and his team of five installer technicians from the International Brotherhood of Electrical Workers (IBEW) Local 595 installed all the audio visual systems within the theater.

They also installed a 180 square foot control room that features a full window and two full-height equipment



PHOTO COURTESY OF LLOYD F. MCKINNEY ASSOCIATES

**The Firehouse Arts Center Control Room installed by Lloyd F. McKinney Associates is fully equipped for live performances.**

racks. Hamm and his team collaborated with Auerbach Pollock Friedlander, San Francisco, who served as the Theater Consultant.

The Firehouse Theater is primarily designed for musical and recital performances. The stage is essentially a big open deck, and is designed without a

back stage or wings, or any of the more traditional stage elements that are required for complex theatrical productions.

Because the theater is relatively small, live performances don't need a lot of amplification. The Lloyd F. McKinney Associates team installed eight portable Shure vocal microphones (SM57 and



SM58) to provide amplification. They set up a Crown PCC-160 boundary microphone for the front of the stage. “It is especially good for dance shows, since it picks up the sound of tap dance shoes really well,” says Hamm.

Hamm and his installers mounted an Audio Technica AT835B monitor microphone at the rear of the audience, which picks up the sound of the performance and directs it to a recorder.

“We also have really six good loud speakers made by EAW,” said Hamm. (EAW JF-60 and SB-150ZP) “Both of the main speakers and the two sub woofers give a really deep rich tone.” The loudspeakers and subwoofers are mounted in the dense tension grid system above the balcony area. The grid acts as a catwalk which allows technicians to navigate it to place additional lighting elements as well as to add speakers if needed.

In the control room, which has a very large window looking out into the theatre, Hamm and his team installed a state-of-the-art Yamaha LS9-32 audio mixing console along with a Stage Research SFX ProAudio computer-based production effects program, which allows the sound technicians to produce a variety of special effects.

“It’s very important to have an unobstructed view of the theatre from the control room,” says Hamm. “When you run

sound for a show, you really have to listen to it live. To assist with them, we installed a large, openable window.”

A Production RF video system in the control room can record and transmit performances to other parts of the building. For movie nights, Hamm and his team installed a top of the line projection system, a Christie Digital HD-405 with 6000 lumens. The projector is configured in a 16 x 9 format, which is the new standard for showing a contemporary wide screen movie. An 11 foot by 20 foot Da-Lite Professional screen is also installed.

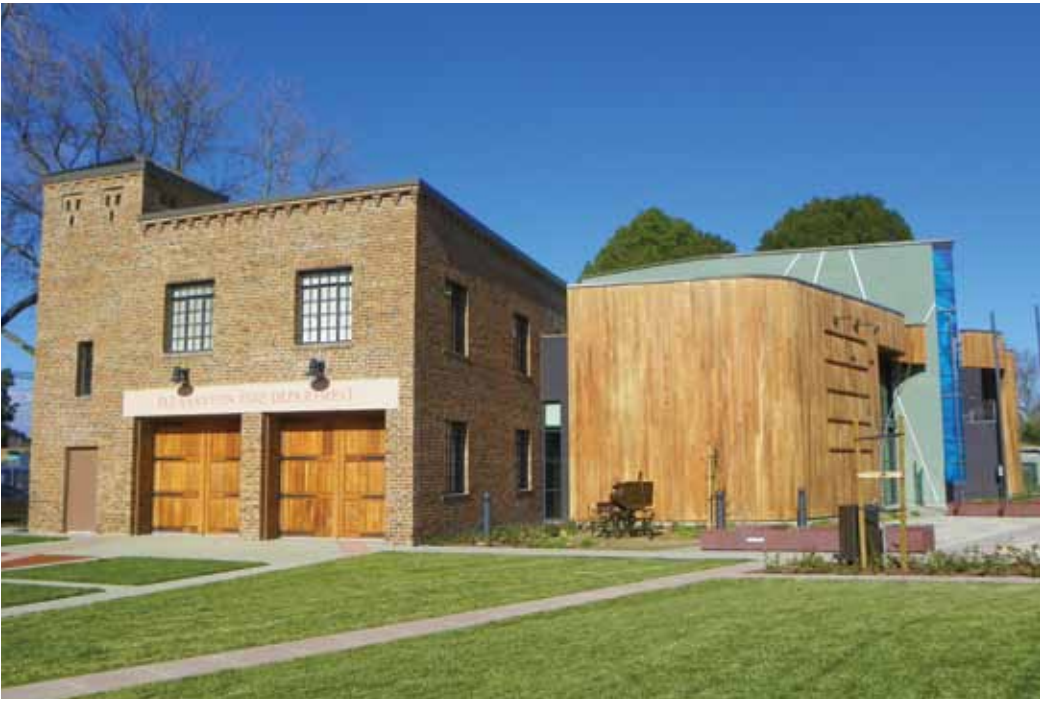
“The new theater offers an intimate setting that has been very well received,” said Bob Elliott, a theater technician with the City of Pleasanton. “We are doing a lot of different things—jazz, guitarists, stage plays, lectures, films, and the theater works perfectly, with a very positive public response.”

Other theater systems installed by Lloyd F. McKinney Associates include El Cerrito High School, Foot Hill College, Los Positas College, and St. Mary’s College of California.

**For more information about Lloyd F. McKinney Associates, contact Steve Bailey at [steve.bailey@mckinneyassoc.com](mailto:steve.bailey@mckinneyassoc.com), 510.783.8043.**



*The new Firehouse Arts Center in Pleasanton blends modern architecture with the restoration of the brick exterior of the historic fire station.*

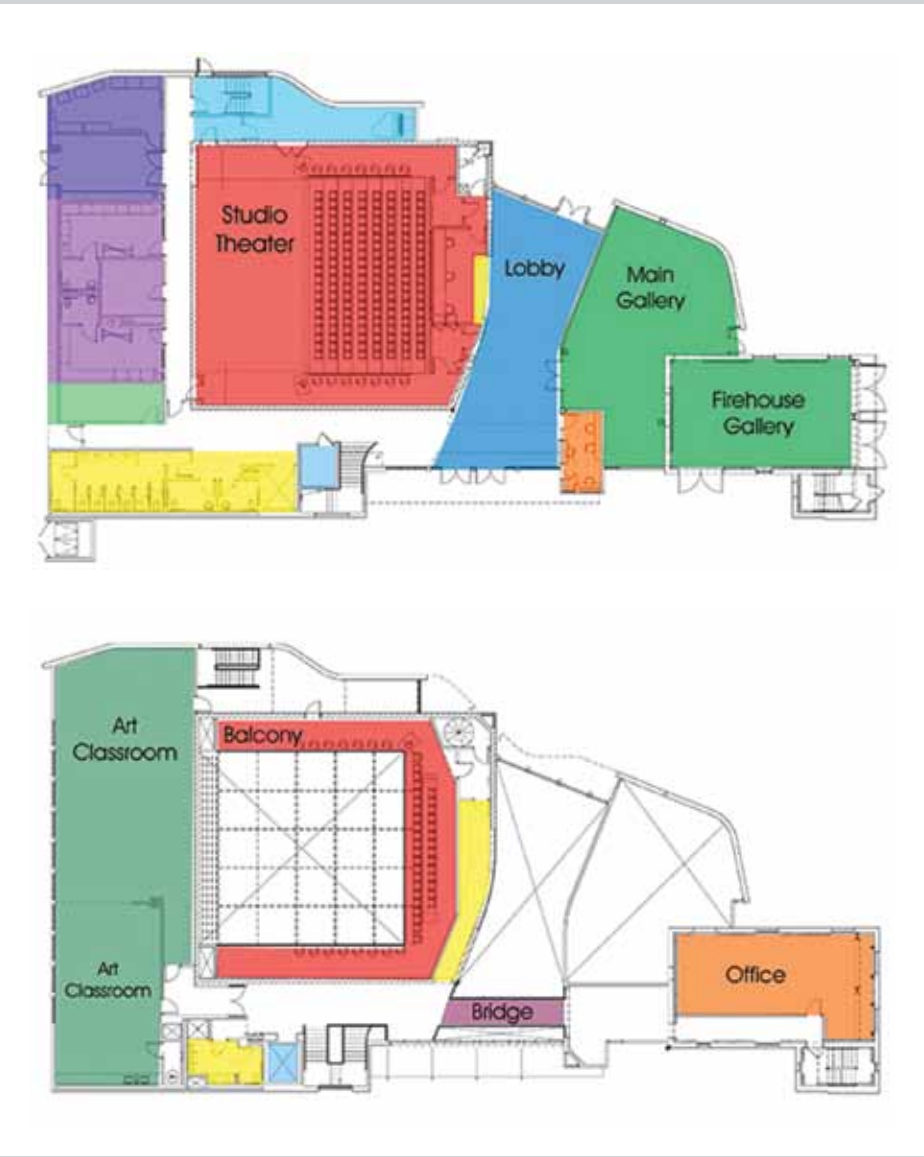


*Fire Station One was originally built in 1929.*

## FLOOR PLAN, FIREHOUSE ARTS CENTER

The first floor includes the 240-seat studio theater, which offers a range of seating and stage configurations, along with dressing rooms and a green room. A grand lobby joins the studio theater with two galleries in the visual arts center.

The balcony on level 2 overlooks the theater, and features a tension grid system overhead that serves as a catwalk. Art classrooms provide space for visual and performing arts activities. The bridge runs from the art classrooms to offices, connecting the upper levels of two sides of the building.



## Firehouse Arts Center Project Team

- CITY OF PLEASANTON:**  
Andy Jorgensen, Civic Arts Manager
- ARCHITECT:**  
ELS Architects & Urban Design, Berkeley
- GENERAL CONTRACTOR:**  
W. A. Thomas, Martinez
- AV CONSULTANT:**  
Auerbach Pollock Friedlander, San Francisco
- AV CONTRACTOR:**  
Lloyd F. McKinney Associates, Hayward
- GENERAL MANAGER:**  
Steve Bailey
- PROJECT MANAGER:**  
Jeremy Hamm
- SYSTEMS ENGINEER:**  
Frits Groenhuizen
- SENIOR TECHNICIAN:**  
Andy Glock
- SYSTEMS PROGRAMMER:**  
Ron Taylor
- LEAD TECHNICIAN:**  
Francisco Aguilar
- IBEW INSTALLER TECHNICIANS:**  
IBEW Local 595
- PROJECT PHOTOS:**  
Adrain Moreno

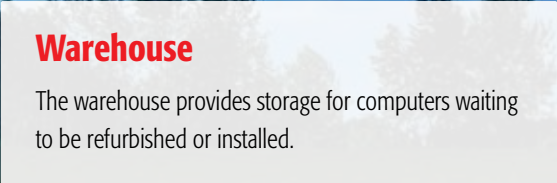


# Even 25 Years From Now, the Delta Data Center Will Be Good To Go, Thanks To Its Innovative Model and Careful Engineering



## AV War Room

Point 1 wired the conference war room for meetings regarding major outages or incidents. The room includes overhead projectors, lights, speakers, and laptop accommodations.



## Warehouse

The warehouse provides storage for computers waiting to be refurbished or installed.



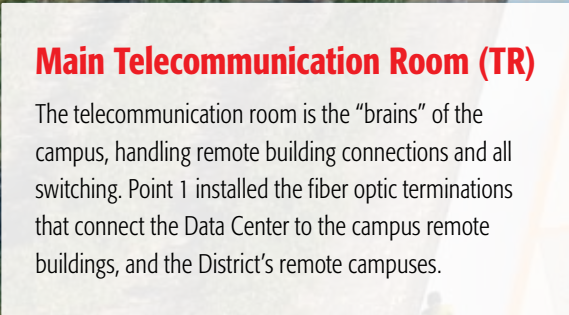
## Staff Offices

Management and administrative staff for the technology center have offices in the Data Center.



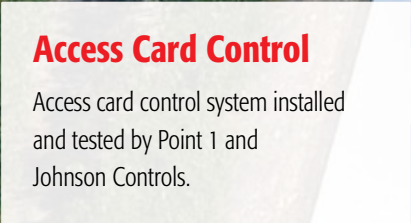
## Offices for Network Technicians

Senior network technicians monitor the TR room from these work spaces.



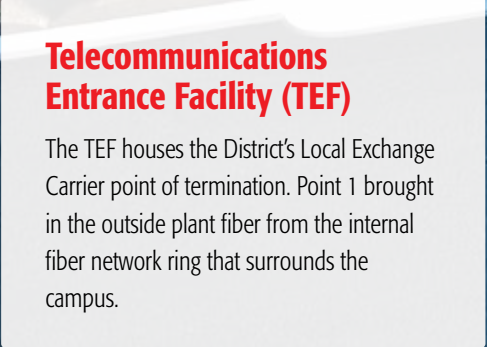
## Main Telecommunication Room (TR)

The telecommunication room is the “brains” of the campus, handling remote building connections and all switching. Point 1 installed the fiber optic terminations that connect the Data Center to the campus remote buildings, and the District’s remote campuses.



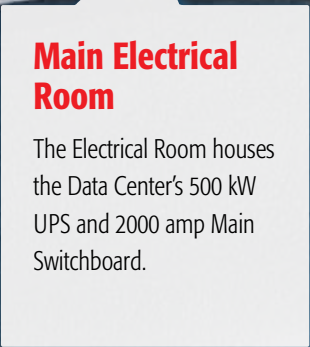
## Access Card Control

Access card control system installed and tested by Point 1 and Johnson Controls.



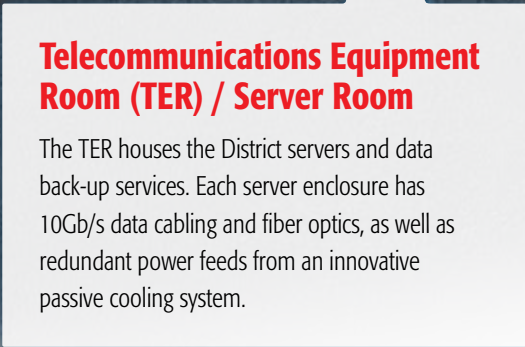
## Telecommunications Entrance Facility (TEF)

The TEF houses the District’s Local Exchange Carrier point of termination. Point 1 brought in the outside plant fiber from the internal fiber network ring that surrounds the campus.



## Main Electrical Room

The Electrical Room houses the Data Center’s 500 kW UPS and 2000 amp Main Switchboard.



## Telecommunications Equipment Room (TER) / Server Room

The TER houses the District servers and data back-up services. Each server enclosure has 10Gb/s data cabling and fiber optics, as well as redundant power feeds from an innovative passive cooling system.



## TER Passive Cooling Design

The design selected by OneInterface directs cool air under the floor in front of the server enclosures. The server fans pull the cool air through vertical chimneys.



The new Delta Data Center is now being powered up to provide a state-of-the-art “technological nerve center” for the campus.

Point 1 Electrical Systems, Inc. wired the fiber and copper connections for the Data Center, and also installed its AV equipment, card access security and fire alarm systems. OneInterface of Fresno,

a technology-centric electrical engineering firm, designed the center and its network infrastructure.

Delta College wanted the center to consolidate its technology services staff into a centralized facility, while improving customer service and providing quality services 24/7. The new facility houses the Data Center proper, as well as a “war

room” conference area; offices for techs and network engineers; spaces for workshop and staging and a warehouse that includes storage for computers and cables. Over 25,000 students attend San Joaquin Delta College in Stockton. The students use 3,000 desktop computers to complete work in classrooms and labs.



**Access Card Control**

Access card control system installed and tested by Point 1 and Johnson Controls.

**Staging Network**

Workbench areas give techs rooms for repairs to computers or to equip new computers for a classroom or lab.

**TER Fiber and Copper**

Thousands of fiber and copper wires that Point 1 installed within structured cabling (Express Cable) run between the TEF, the TER and TR. OneInterface designed the cabling to provide 10Gb/s for up to 60 meters.

Point 1 installed thousands of fiber and copper (Augmented Cat 6) wires between each row and rack of servers.

**TEF Air Conditioning System**

The TEF houses large air conditioners that are used to keep the facility at a moderate temperature with the assistance of an innovative passive cooling system. It features a dual unit 134 ton air conditioning system for maximum redundancy.

**DATA CENTER FAST FACTS:**

**DELTA COLLEGE MANAGER:**

Lee Belarmino,  
Vice President, Information Technology  
  
Dave Sartain,  
Director of IT and Data Center Services

**IT STAFF:** 40

**STUDENTS ON CAMPUS:** 25,000

**FACULTY AND STAFF:** 1,000

**CLASSROOM AND LAB COMPUTERS:** 3,000

**CONSTRUCTION COST:**

\$6 million, built to  
TIA 942 compliant standards

**GREEN FEATURES:**

Skylights, energy reduction windows, water use reduction, recycled-source building materials, smart building technology

**SQUARE FEET:** 16,542

**FIBER OPTIC TERMINATIONS:**

Over 6,000

**10GB/S DATA TERMINATIONS:**

Over 4,000

**PROJECT TEAM ONEINTERFACE ENGINEERING AND DESIGN:**

**LEAD DESIGN FOR THE NETWORK TEAM:**

Tyler Arrigoni

**LEAD DESIGN FOR THE ELECTRICAL/ TECHNOLOGIES TEAM:**

Gil Galvan

**SERVICES:**

Feasibility study, 12kV substation and site work design, paralleling generator design, UPS design, e-power distribution and lighting design, 10Gb/s data cabling design, network architecture and equipment design, A/V system design, security camera system design, access control system design, fire alarm system design, fiber campus backbone

ILLUSTRATION BY PAICHING WEI



# SAN JOAQUIN DELTA COMMUNITY COLLEGE DATA CENTER CONT'D

future technologies only imagined,” said Belarmino.

To connect the structured wiring design, Point 1 used augmented Cat 6 and wired it to provide 10Gb/s capabilities for up to 60 meters. Shane Stoltenberg of Point 1 managed the voice and data wiring for the center; Jay Young was the project manager for the security installation and the fire alarm system.

Point 1 worked with eight Installer-Technicians from the International Brotherhood of Electrical Workers (IBEW) Local 595 to complete the project, which took 7,500 man hours.

Point 1 collaborated hand-in-hand with OneInterface, one of the few engineering firms in the state that provides turnkey design services that include technology-centric electric electrical engineering and complete integrated enterprise network services. OneInterface designed the Data Center to meet and exceed TIA-942 standards, set by the Telecommunications Industry Association for network design and cabling systems of data centers.

Tyler Arrigoni, of OneInterface, lead designer for the network team, said the TIA-942 standards were critical in determining baselines for the design. “If you design to a standard, you have the world designing around you and you’re not chasing a piece of technology,” he said.

OneInterface began by using three dimensional AutoCAD modeling to produce detailed electrical construction documents. All of the equipment racks, cable runways and every nut and bolt are drawn in 3D, making adds, moves and changes easier. An intelligent infrastructure



Wiring in the Telecommunications Equipment Room

solution provides real time monitoring of the infrastructure connectivity and network electronic services.

One of the Data Center’s most innovative designs is its passive cooling system, which is energy efficient. To reduce cooling costs OneInterface located the air ducts under the floor beneath each individual server rack, directly cooling the servers and communication equipment. The servers, wired by Point 1, pull the required air through and then use a vertical exhaust duct to keep the hot air completely contained.

For redundancy, OneInterface specified a dual feed 500 kW uninterruptible power supply configured for N+1 redundancy. The system uses a web based management system for power status and notifications.

Point 1 installed a card access control system for the non-critical areas of the Data

Center and a finger printing bio-metrics system for the Data Center central. The computer rooms are constructed with concrete cinder blocks, with special steel barriers tactically located.

“It would take a tank or a bulldozer to get in,” says Belarmino. “The goal is to improve the delivery of technology services,” he added. “We envision a Data Center that will see Delta through the hi-tech advances of the next few decades.”

**Point 1 Electrical Systems, Inc. frequently works with community colleges and other clients on low voltage systems integration projects. Shane Stoltenberg can be reached at [shane@point1.com](mailto:shane@point1.com); 925.667.2959. OneInterface can be reached at 559.437.3750 or email [Gil Gilvan at Gil@oneinterface.net](mailto:Gil@oneinterface.net).**



IBEW Installer Technicians from Local 595 wired the Delta College Data Center, working with Point 1.

**SAN JOAQUIN DELTA  
COMMUNITY COLLEGE  
DATA CENTER  
PROJECT TEAM:**

**ARCHITECT:**  
BFGC Architecture, San Jose

**ELECTRICAL AND  
NETWORK ENGINEERS:**  
OneInterface, Fresno

**DELTA COMMUNITY COLLEGE:**  
**VP OF INFORMATION TECHNOLOGY:**  
Lee Belarmino  
**DIRECTOR OF IT AND DATA CENTER SERVICES:**  
Dave Sartain

**GENERAL CONTRACTOR:**  
Flintco Pacific, Inc., Roseville

**ELECTRICAL CONTRACTOR:**  
Collins Electric, Inc., Stockton  
**PROJECT MANAGER:**  
Chris Zaro

**SYSTEMS CONTRACTOR:**  
Point 1 Electrical Systems, Inc., Livermore  
**PROJECT MANAGER**  
**FIRE ALARM AND SECURITY:**  
Jay Young  
**PROJECT MANAGER AV:**  
Michael Muniz  
**PROJECT MANAGER STRUCTURED CABLING:**  
Shane Stoltenberg  
**SUPERINTENDANT:**  
Jay Young - IBEW Local 332  
**PROJECT LEAD FORMAN:**  
Tim White - IBEW Local 595  
**PROJECT LEAD VOICE DATA/FIBER:**  
Chris Klinkner - IBEW Local 595  
**PROJECT LEAD**  
**FIRE ALARM AND SECURITY:**  
Jeff Stark - IBEW Local 595  
**PROJECT LEAD AUDIO VISUAL:**  
Tom Freitas - IBEW Local 302

**IBEW INSTALLER-TECHNICIANS:**  
Junior Blanco - IBEW Local 332  
Larry Collins Jr. - IBEW Local 595  
Nico Gueltig - IBEW Local 595  
Chris Jenner - IBEW Local 595  
Gilbert Castillo - IBEW Local 595  
Keith Ostermeier - IBEW Local 595  
Marvie Gelico - IBEW Local 595  
Phillip Mendiola - IBEW Local 595



# Data Center Consultants Tyler Arrigoni & Gil Galvan from OneInterface Engineering Talk Trends In Technology



Tyler Arrigoni



Gil Galvan

PHOTOS COURTESY OF ONEINTERFACE

**Q: What services does a technology consultant offer within the realm of data center design?**

**A:** You must have the diversity of expertise to know the ideal final installation from the perspective of each particular user of each system supported within the Data Center. For instance, if you were a network engineer, how exactly would you like to administer your equipment, both physically and logically, over the long term? You must have the related expertise to understand these needs and communicate them effectively in the construction documents.

**Q: Designing a Data Center has changed over the last few years. What are some of the hallmarks of an effective data center design for today?**

**A:** Most engineering firms use traditional Data Center practices to determine the total server and network equipment loads when calculating the anticipated electrical and mechanical load consumptions. This approach has been unsuccessful for many projects due to continually increasing power densities and the reality that the gear chosen as the design targets are, at best, accurate only at the initial install. We believe in working from the inside out. Determine the maximum capacity practical heat load that each enclosure and rack will be rated for, and then work to thermally isolate each enclosure to mitigate or eliminate thermal mixing which can lead to non-determinism. With this modularity in design, we can then easily determine the maximum rack densities based on any combination and configuration of electronics based solely on their aggregate power and efficiency ratings.

**Q: Please describe the quality of the drawings and specifications that you provide for implementation?**

**A:** OneInterface has taken design documents to the next level and developed precise engineering with three dimensional AutoCAD modeling. All objects are drawn as precise solid models and assembled in 3D to substantially decrease any unforeseen design and constructability issues. This extreme level of detail requires considerably more work on our part, but virtually eliminates interpretation errors between the contractors and the design team. The owner gets to see the drawing from all angles and is able to truly understand the space during the design process, not after it's built.

**Q: How have passive cooling techniques advanced in the last few years?**

**A:** For years, the mechanical engineers simply did general "comfort cooling" type cooling to data centers sized to a basic heat load density. The TIA 942 helped establish the "hot isle, cold isle" approach in response to the ever increasing awareness of the problems caused by

thermal mixing. Now, passive cooling has finally focused its attention on precision and isolation. It's always been challenging to balance the ever increasing need for precision cooling with a fully passive cooling design. You need to be very diligent with your mechanical engineer to ensure that each enclosure gets the appropriate air and isolation without thermal mixing or points of failures. VAVs ducting each enclosure are points of failure and need to be handled in other creative ways. Our goal is to maintain as precision, isolated, and passive of a cooling solution as possible.

**Q: How do you achieve maximum redundancy in a data center?**

**A:** Maximum redundancy is something that needs to be approached pragmatically. Communicating and designing to the exact owner performance and fault-tolerance requirements, while successfully implementing with industry best practices and standards, is our litmus test to determine whether any parts of our design are too closely coupled to a particular technology. We believe you can have a technology agnostic, scalable, fault-tolerant, standards-based data center that is also tailored directly to the owner's initial objectives the first day of operation.

**Q: How can you keep budgets down, yet quality high, when planning a data center?**

**A:** After the programming phase is reviewed and approved by the client, budgets are established for each system. During the design phase, project estimate updates should be performed to prevent any particular system from going over budget.

**Q: How do you like working with IBEW technicians?**

**A:** Having professional tradesman constructing our building designs is a key component to a successful project. The IBEW is an industry leader in education and safety, providing professional services benefiting everyone on the team. Their diverse range of skilled electrical services ranging from Outside Wireman, Inside Wireman, and Telecommunication VDV Technicians help ensure outstanding reliability with the most highly trained workforces.

**OneInterface Engineering, Fresno, provides comprehensive building system technology engineering and technology centric electrical engineering. In addition to Data Center design and engineering, they provide services to many other areas, including higher education and healthcare. Contact Gil or Tyler at 559.437.3750 or email gil@oneif.net or tyler@oneif.net. Visit www.oneif.net for more information.**

## Where Can I Find A Voice, Data, Fiber Optics Specialty Contractor?

**AECO Systems Inc.**

Contact: Dave Millen  
dave\_millen@aeco-systems.com  
3512 Breakwater Ct.  
Hayward, CA 94545  
(510) 342-0008  
www.aeco-systems.com

**Alpha Electronic Systems**

Contact: Bob Waits  
bobw@gillselectric.com  
2410 Webster Street  
Oakland, CA 94612  
(510) 451-2929  
www.gillselectric.com

**Contra Costa Electric Inc.**

Contact: Bill Cherry  
Bill\_cherry@emcorgroup.com  
825 Howe Rd.  
Martinez, CA 94553  
(925) 229-4250  
www.ccelectric.com

**Cupertino Electric**

Contact: Dave Dorcak  
dave\_dorcak@cei.com  
1132 N. Seventh St.  
San Jose, CA 95112  
(408) 808-8000  
www.cei.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  
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(925) 829-6001  
www.dk-technology.com

**Dynaelectric Company**

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(415) 597-4700  
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**Eilbacher Electric**

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**Hall-Mark Services Inc.**

Contact: Gary Moody  
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**Harris Electric**

Contact: Calvin Harris  
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**Intrepid Electronics Systems Inc.**

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**Metropolitan Electrical Construction Inc.**

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**Spectrum Communications**

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lenb@youngelec.com  
195 Erie Street  
San Francisco, CA 94103  
415-648-4700  
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# In Six Weeks, ICS Helps Trace Elementary Get Back On Its Feet After It's Destroyed By Fire



*ICS Project Manager Curtis Gibson, framed by Trace Elementary Portables, helped to open the school on time!*

It took six weeks of intense work and coordination, but ICS Integration and other San Jose contractors met an impossible deadline to help Trace Elementary School rise from the ashes of a devastating fire.



*Trace Elementary was destroyed by fire July 5th.*

In the early morning of July 5th, a suspicious fire demolished the 25,000 square foot school in San Jose's Rose Garden District. Teachers, parents, and children gathered the next day to view the smoldering ruins, wondering how the school could possibly reopen on time.

The construction trades rallied to meet the deadline, with TBI Construction serving as the general contractor. 25 portable classrooms were quickly set up across the street from the demolished school, and were configured into

18 classrooms, a media center, library, and cafeteria. "While the portables were being installed, ICS began its prep work, ordering materials and planning the low voltage wiring," said ICS project manager Curtis Gibson. The first portables were ready for wiring on July 18th.

In order to carry out its work successfully, ICS closely coordinated with the other trades on the site who provided the conduit raceway. Once the raceway was installed, ICS built out a main wiring closet (MDF) and communication closets (IDFs) to contain the low voltage systems.

"We created a MDF in one of the buildings across the street from the portables that the fire didn't touch," said Gibson. "We constructed 4 IDFs in new portables-two were across the street amongst the 18 new classrooms and two were on the main campus in two new sets of portables."

ICS began pulling wire from classroom to classroom, installing a fire alarm system and security system into each portable. They also wired a public address system and clock into each building. Ten technician installers from International Brotherhood of Electrical Workers (IBEW) 332 worked with ICS to complete the project.

Parents and kids visited the site, cheering on the crew and mounting celebratory posters on the chain link fence surrounding the portables. Spearheaded by TBI Construction, the contractors donated \$25,000 to the Trace Community Fund.

School opened on time on August 25th—with lots of happy kids and grateful parents.



*ICS constructed the MDF for the portables at a Trace Elementary structure the fire left standing and built out the IDF in the portables across the street.*

**ICS Integration frequently works for the San Jose Unified School District and many other educational systems, as well as corporate and institutional clients. Curtis Gibson can be reached at [curtis.gibson@ics-integration.com](mailto:curtis.gibson@ics-integration.com) or by calling 408.491.6000.**

**Trace Elementary Project Team**

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San Jose Unified School District

**ARCHITECT:**  
Bill Gould Design Art and Architecture

**GENERAL CONTRACTOR:**  
TBI Construction & Construction Management

**ELECTRICAL CONTRACTOR:**  
Sasco Electric

**VOICE DATA:**  
Sasco Electric

**FIRE ALARM, SECURITY SYSTEMS, PA:**  
ICS Integration,  
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