



**TJC**

and ASSOCIATES, Inc.

Message from  
the President

Industry News -  
Adhesive  
Anchors

Featured  
Employee -  
Maria Aguirre

TJCAA's Business  
Certifications

- Alameda County Small, Local Emerging Business
- City of Oakland Local Business Enterprise
- California DGS Micro Business (SB (micro))
- Port of Long Beach SBE
- San Diego County Water Authority SBE
- SoCal Network SBE
- CA PUC WBE
- City of Sacramento SBE
- Sacramento Municipal Utilities District (SMUD) SEED Vendor

# The TJCAA Quarterly

# fall 2014

www.tjcaa.com

## Message from the President, Gianna Zappettini



Fall is in the air. That means football season has returned, and each of the teams in the National Football League is working toward the ultimate goal of playing in the Super Bowl. TJCAA team members are constantly working toward our ultimate goal of providing excellent service

to our clients. If you have a project that needs engineering assistance, run it by us or pass it along, and we will take it the rest of the way for the score.

## Industry News - Adhesive Anchors Get Hot

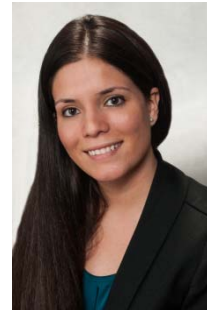
With the adoption of the 2013 California Building Code, engineers are required to design adhesive anchors based on bond strengths corresponding to a minimum long-term elevated temperature that is much higher than previously required. The 2013 California Building Code references American Concrete Institute 318-11, Building Code Requirements for Structural Concrete and Commentary (ACI 2011) Appendix D, and an updated standard, ACI 355.4-11 Qualification of Post-Installed Adhesive Anchors in Concrete and Commentary (ACI 2011). ICC-ES explains "Whereas AC308 previously permitted testing at standard temperature (73°F± 8°F), ACI 355.4 requires that all products be tested at a long-term temperature not less than 110F." (icc-es.org 2014)

ICC-ES also states, "the elimination of so-called 'room temperature' bond values will likely have far-ranging impact on the use of these products in

design." **TJCAA Structural Engineer Daisy Yu explains that some adhesive anchors that would have fulfilled the old requirements will no longer be appropriate under the new ones.** A number of adhesive anchors, she points out, take a significant hit in their bond strength capacities when tested at the 110°F elevated temperature.

The good news is that there are adhesive anchors available that can provide the capacities needed at the 110°F long-term elevated temperature. Please contact us if you would like to discuss which adhesive anchors are appropriate for your specific application and loads.

## Featured Employee - Maria Aguirre



Our featured employee for this edition is our newest TJCAA team member, Maria Aguirre, an Electrical Designer. Maria works with our Instrumentation, Controls, and Electrical group and is already providing design support for several water and wastewater treatment projects.

We welcomed Maria to the TJCAA family this summer when she moved to the Oakland area from Wichita, Kansas. "That was a big change," she says, as was her first big move from Palmira, Colombia to the United States when she was 14 years old.

When we asked her how she got started in electrical engineering, she explained she actually began her college work in computer engineering. She quickly discovered that programmers spent more time indoors at a desk than she might like.

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## Did You Know?

Her circuits class interested her, so she changed her major, and earned her BS and MS in Electrical Engineering.

As a sports fan, Maria informed us that the athletes from her alma mater, Wichita State University, are known as the Shockers. While the name refers to wheat field workers, who historically gathered harvested or “shocked” wheat into bundles, we think it is an apt mascot name for an EE.

Maria’s fieldwork, on the other hand, may have helped prevent shocking experiences at some facilities. As an intern and a beginning professional, her fieldwork included hands-on troubleshooting and problem solving for issues such as harmonics or voltage drops. This experience gives her useful insight for the new system designs and upgrades she develops with TJCAA. Her experience also includes working on power distribution and electrical installations in the power industry, as well as in Wichita’s well-known aeronautical industry.

Although she had never been to the San Francisco Bay Area before her interview with TJCAA, she is settling in well, and says that she enjoys exploring different places around the region. We are certainly glad that she spotted TJCAA’s ad on LinkedIn, and that she was attracted by our “good people and a good working environment.”

## Did You Know?

You probably know that “going cheap” on electrical installations can be dangerous, and result in service problems, but did you know that it can also result in bizarre transmogrifications? Recently, our lead Electrical Engineer, Paul Giorsetto was on a project site at a mobile home

park where electrical cables are often buried directly in sand to save money on installation.

The electrician described a different site at which mysterious power surges were occurring, and they could not be easily located and stopped. It turns out, the surges were coming from an arcing fault between old, buried cables. The fault itself had occurred on the cable several hundred feet away from the service point. The additional cable distance meant that a low-current, high-impedance fault occurred. The low current meant that the fault would not immediately trip the circuit breaker, releasing sufficient energy to arc between the conductors.

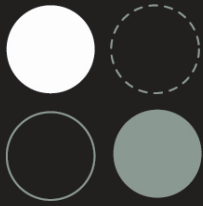
At this other site, when the damaged buried cable was uncovered at the fault point, they found a large, oddly shaped, smooth lump along the cable. Because the cables were installed in sand, the high heat associated with the arc flash hit the surrounding material—the sand—and created *glass* around it. How? Arc flash temperatures can exceed 35,000 degrees Fahrenheit even at relatively low current magnitudes!



The photo above, taken by Paul, shows the fault point that had to be cut out. The low fault current meant the upstream circuit breaker or fuse didn’t “see” enough current to stop the energy flow quick enough, allowing the arc to persist and convert the sand to glass. This situation highlights

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Entertainment  
News -  
The Hundred  
Foot Journey

Dates to Note

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the somewhat counterintuitive basis of arc flash concerns: relatively long-lasting, low-current faults can have higher arc flash hazard than high-current faults that trip out quickly. Design features such as differential protection, maintenance switches or zone protection can address the issue and decrease the hazard.

If you would like to discuss the electrical installation at your facility, please give us a call.

## Entertainment News - The Hundred Foot Journey

Our multitalented President, Gianna Zappettini, put on her Movie Reviewer hat for this one:

“The Hundred-Foot Journey” is a movie with all the right ingredients: love, loss, squabbles and scenery. But the secret ingredient that makes this movie enjoyable is the food that is prepared—classic French and traditional Indian. If you love food, as I do, you will appreciate the strolls through the markets with displays of local produce, fish and fowl, as well as the artistic presentation of entrées. It would have been great if "surround-scent" were available to infuse one’s nose with the spices and aromas of the food, otherwise left only to the imagination. I recommend that you eat before you go or you may not be able to hear the movie over your growling stomach. Better yet, wait for it to come out on Netflix or Blu-ray so you can stop the show and make a sandwich! (PG, 122 minutes)

## Dates to Note

- |                |   |
|----------------|---|
| September 23   | Autumn Equinox  |
| September 27   | SOL at Angelica’s (angelicasllc.com)  |
| October 16     | Dictionary Day  |
| October 20–23  | Solar Power International, Las Vegas, Nevada  |
| October 21     | MLB World Series Begins   |
| November 2     | Daylight Savings Ends   |
| November 6     | Saxophone Day   |
| November 17–18 | Leonid Meteor Shower  |
| November 22    | 117th Big Game: Cal vs. Stanford  |
| December 6     | Junius Courtney Big Band at the Richmond Senior Winter Ball (Tickets and info 510-620-6793) |