

**TJC**

and ASSOCIATES, Inc.

# autumn

## The TJCAA Quarterly

# 2018

[www.tjcaa.com](http://www.tjcaa.com)

Message from the President

Employment Opportunities

Is your hatch lid a "10"?

### TJCAA's Business Certifications

- Alameda County
- Small, Local Emerging Business
- Bay Area Green Business Program, Green Business
- City of Oakland Local Business Enterprise
- California DGS Small Business (SBE)
- Port of Long Beach SBE
- Port of Oakland LIABE/SBE/VSBE
- San Diego County Water Authority SBE
- SoCal Network SBE
- Sacramento Municipal Utilities District (SMUD) SEED Vendor

### Message from the President, Gianna Zappettini

I recently enjoyed our great company picnic with TJCAA staff and their families at [The Ranch at Little Hills](#) in San Ramon, CA. One of the many activities offered was a rock-climbing wall. I watched several of our group assess the task presented, take the necessary and appropriate steps to go the distance, and succeed in reaching the top.



TJCAA adopts the same approach for every engineering project. We assess the details, take the right steps to provide great services, and succeed in producing a quality outcome for our clients. We look forward to working with you on future projects that would benefit from our multidisciplinary engineering services in Structural, Electrical, Instrumentation and Control, SCADA, and Control Systems Programming.

### Employment Opportunities



TJCAA is looking for qualified engineers to work on great projects with great people. To view and apply for open career positions, visit our website at

[www.tjcaa.com](http://www.tjcaa.com).

### Industry News— Is your hatch lid a "10"?

Our clients' facilities frequently include pre-cast concrete vaults with metal access hatches. These vaults typically contain valves, meters, piping, pumps, wet wells, and various equipment. ASTM has released a new standard with the intent of standardizing these hatch loadings ([ASTM C1802-18](#), *Standard Specification for Design, Testing, Manufacture, Selection, and Installation of Fabricated Metal Horizontal Access Hatches for Utility, Water, and Wastewater Structures*).

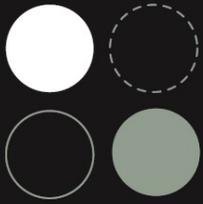
While horizontal metal access hatches have until now been rated by designations such as H-20 (a large truck), ASTM C1802-18 defines ratings according to the "load level" to which they are restricted. The load levels range from 1 to 10. Example designations include light pedestrian loads (level 1), occasional truck traffic (level 4), and special equipment loads (level 10).

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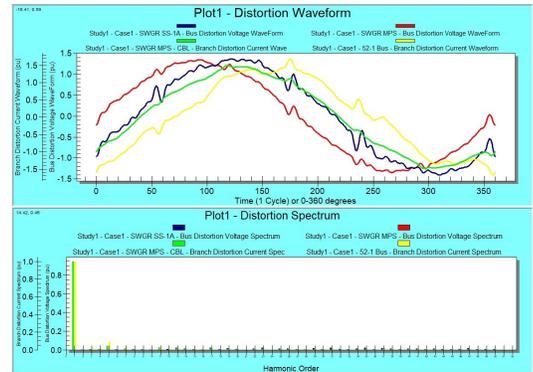
We frequently work with process engineers to develop specifications and details for vaults and hatches, and some jurisdictions are already incorporating the new standard into their specs. On the supply end, our contacts in hatch manufacturing tell us that they can work with either designation now, and are transitioning to the new rating system.

TJCAA is ready for the new standard, with updated live load tables and standard details. (Note, we anticipate that the rating system may be carried over into grating systems.) We are ready to meet your vault/hatch needs in stride, and can help interpret or convert to the new standard as part of your design. Please contact us if you have questions about the new system.

### EBMUD/Carollo/TJCAA Project Wins ASCE Award

East Bay MUD's Sobrante and USL Water Treatment Plant Ozone Systems Improvement Project, on which TJCAA teamed with Carollo Engineers, received the 2018 Outstanding Water/Wastewater Treatment Project Award from the American Society of Civil Engineers on September 6. [ASCE's](#) annual award in this category recognizes a project that "demonstrates innovation and improves the state of the practice for the water/wastewater treatment industry. This includes implementation of new methods, improvements on existing methods, and/or incorporation of emerging technology."

TJCAA performed electrical system modeling for the Sobrante and USL WTPs, which are both in the San Francisco Bay Area.



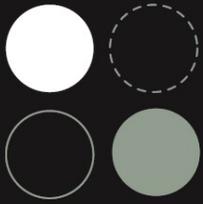
Harmonic Study in SKM

We applied SKM Power\*Tools© simulations to several issues of concern at these important facilities: updating the existing facility's arc flash study to meet requirements of NFPA 70E, identifying potential methods for reducing arc flash hazards, and developing harmonic distortion models that could be used to address power quality concerns related to the new ozone equipment.

Our work included field reconnaissance and inventories of existing electrical equipment. Licensed electricians with Advanced Power Solutions (a TJCAA subconsultant) confirmed field conditions allowing TJCAA engineers to update the District's system model followed by updating short circuit, coordination studies and arc flash calculations. In addition, TJCAA and APS installed data loggers for extended monitoring of system voltage and current harmonic distortion levels over a 5-week period. The results of this extensive data logging effort allowed us to establish the baseline power quality of the existing system and incorporate harmonic levels and testing criteria into the specifications for the new ozone generation equipment.

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We also provided EBMUD with arc flash mitigation strategies that were incorporated into the electrical distribution improvements at the USL facility.

We are proud of our work on this project, which is designed to increase worker safety and improve power quality at the facilities, and we wish to thank EBMUD and Carollo Engineers for their leadership on this important project.

### TJCAA Adds Licenses for ETAP® Software

TJCAA is pleased to announce that we have added licenses for the ETAP® suite of software, which is designed for simulation, analysis, and optimization of electrical power systems (etap.com). Like its software competitor SKM Power\*Tools®, ETAP offers a variety of modules that TJCAA uses for arc flash, short circuit, load-flow, transient motor starting, and harmonic analyses and for time-current coordination. See our article on power system analysis using SKM in the Winter 2017 edition of the TJCAA Quarterly.

TJCAA Electrical Design Specialist Manan Bhatt notes that our clients' power system analysis needs may point toward either ETAP or SKM, and we are prepared to deliver high quality analyses using either suite. ETAP offers hardware for intelligent control, so some public sector clients may lean toward ETAP for their existing infrastructure that has particular needs for maintenance and efficient monitoring.

If you have questions about our services in power system modeling, analysis, and optimization, please contact us.

### Did you know— What is falconry?

We mentioned in our last edition that TJCAA CAD Drafter Donald Hildebrandt enjoys the ancient sport of falconry with his father and their two Harris hawks. The art of falconry is defined by the [North American Falconers Association](#) as "taking of wild quarry in its natural state and habitat by means of a trained raptor." Raptors are birds of prey: they have hooked beaks, keen eyesight, sharp talons and a carnivorous diet. Raptors include falcons, hawks, eagles, vultures, kits, ospreys, and owls.

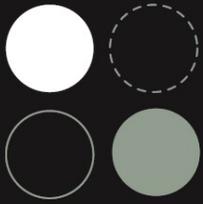


Red-Tailed Hawk photo: istock/CarolinaBirdman

Evidence suggests that humans were hunting with raptors as far back as 2,000 BCE, and that falcons were offered as royal gifts even earlier than that. (pbs.org) According to the [California Hawking Club](#), today there are about 700 falconers in California, and as many as 4,000 in the United States.

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Practicing falconry in California requires not only a state license and a hunting license, but also dedicated study and training. Don explains that his father completed years of apprenticeship learning to hunt with raptors. Becoming a Master Falconer can take more than 7 years.



Sitka the Bald Eagle,  
at the Ketchikan Raptor Center  
photo: Cavanagh

Adopting this sport isn't easy, and it's not for the faint of heart. The California Hawking Club's self-test to see *whether it's the right sport for you* asks, "Will you, can you, commit part of your waking hours to a creature who at the very best of times will merely tolerate your presence, is as affectionate as a stone, and at the worst of times will cause you heartache and puncture wounds?"

Falconers typically obtain their raptors by trapping them as babies in the wild. They raise the birds and train them to hunt. Strict regulations and state inspections ensure that falconers' hawk houses provide suitable living quarters for the birds while they are training with their humans.

Don notes that after 1½ to 2 years with their raptors, falconers have the joy of releasing the birds to live on their own, skilled at hunting and ready to soar. Caring for and honoring these magnificent birds, and promoting conservation of their habitat, are key themes for falconry organizations.

Raptor rescue centers such as [HawkQuest](#) in Parker, Colorado also lead the effort to promote raptor health and conservation. HawkQuest cares for a variety of raptors and brings the birds' special presence to people of all ages through educational programs. Justin Mencini, educator and nephew of TJCAA founder Terry Cavanagh, admired the birds he met volunteering with HawkQuest: "They were super smart and had a great memory—they would know your face."

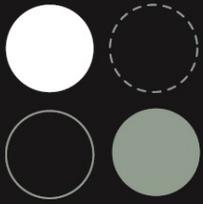


Justin Mencini with a Harris Hawk  
photo: Mencini

Mencini chaperoned the center's Harris hawks at ranches in the area, where the birds would practice hunting. As a bonus, they helped control a local rabbit overpopulation. "They hunt in packs," Justin explains, "So cool!" We agree: birds of prey are pretty cool, indeed.

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### Entertainment Review— The Solstice in Alaska



Solstice Sunset in Alaska photo: Cavanagh

While we frequently provide you our staff's review of an "entertainment" item, such as a movie or Broadway show, we're going a different direction this time—north. As you may have noticed, the TJCAA Quarterly is released on the astronomical season transition days: the spring and fall equinoxes and the summer and winter solstices. This past summer at solstice time, Terry Cavanagh was cruising Alaska, and we asked him about what it was like to be so far north on the "longest day of the year."

He reports that they stayed up late on the ship, checking out the beautiful scenery at an hour when it would be pitch dark at more southerly latitudes. "The setting was awesome," Terry said, "and watching the ocean go by in the solstice twilight was incredible." ([Science at Sea](#) Alaska Inside Passage Cruise, rated G, 7 days).

### Dates to Note

- Sep 22 The Autumn Equinox
- Sep 22–23 World Maker Faire, New York
- Sep 24 Full Moon (the Harvest Moon)
- Sep 28–30 Ryder Cup, Le Golf National, near Paris, France
- Sep 30 Kelly Park Big Band, The Sound Room, 5–7 PM
- Oct 12–15 ASCE Convention, Denver, CO
- Oct 16 Dictionary Day
- Oct 16 73<sup>rd</sup> NBA Season begins
- Oct 23 114<sup>th</sup> MLB World Series begins
- Oct 28 Kelly Park Big Band, The Sound Room, 5–7 PM
- Nov 4 Daylight Savings Time ends
- Nov 6 Election Day
- Nov 6 Saxophone Day
- Nov 11 Armistice Day, Centenary year
- Nov 17 121<sup>st</sup> Big Game: Cal vs. Stanford
- Nov 25 Kelly Park Big Band, The Sound Room, 5–7 PM
- Dec 13–14 Geminid Meteor Shower