

# autumn

## The TJCAA Quarterly

2021  
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### Message from the President

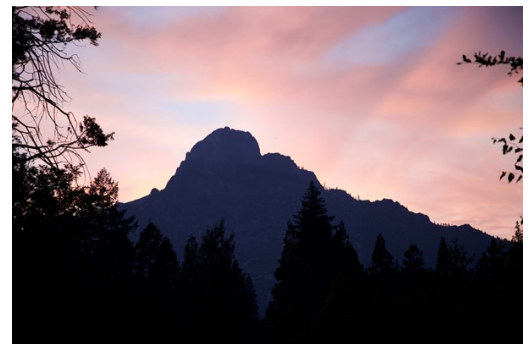
### Employment Opportunities

#### TJCAA's Business Certifications

- Alameda County Small, Local Emerging Business
- Bay Area Green Business Program
- California DGS SBE
- City of Colton SBE
- City of Los Angeles SBE
- City of Oakland LBE
- Eastern Municipal Water District SBE
- Inland Empire Utilities Agency SBE
- Metropolitan Water District of Southern California SBE
- Sacramento Municipal Utilities District (SMUD) SEED Vendor
- San Diego County Water Authority SBE
- Port of Long Beach SBE
- Port of Oakland LIABE/SBE/VSB
- PWC Registration—Dept of Industrial Relations (DIR)
- West Basin Municipal Water District SBE

### Message from the President, Gianna Zappettini

This year I returned to one of my favorite spots in the Tahoe National Forest. Outdoor activities have always been a part of my life and staying away for a year made me appreciate them even more. There to greet my return were the Sierra Buttes, which I have hiked and camped under since I was five years old. I can always count on being happy and satisfied when I drive up Highway 49 and the range comes into view. I get a similar feeling when I think about the expertise provided by our great team members at TJCAA. Fortunately, that feeling never wavered even though we were not always together during the pandemic. If TJCAA can assist you with your next engineering project involving structural, electrical, or control systems programming requirements, I know you will be happy and satisfied with our expertise, too. Like the mighty Sierra, TJCAA is ready to make your day.



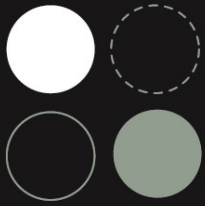
### Employment Opportunities



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).

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## Industry News

### What's that on my drawing?



Curalium Consulting provides technical writing and editing services for engineers and scientists.

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### Industry News

#### **New Connectors Catalog**

Our engineers stay abreast of developments in the fastener industry, so that when specifying wood-to-wood, wood-to-masonry, and wood-to-concrete structural connections we choose the most appropriate product for each application. One of our go-to sources is the industry-leading Simpson Strong-Tie Company, Inc., which has just released its 2021–2023 *Wood Construction Connectors* catalog. The catalog features not only product information, but also applicable specification and installation instructions. In case you think that structural engineers are all work and no play, note that we're inspired by the potential for installations of Simpson's new item [APBO-KT](#).

#### **ACI 350**

We anticipate that an update to American Concrete Institute (ACI) CODE -350-06 will come out this year. This document, *Code Requirements for Environmental Engineering Concrete Structures*, is central to our designs for water and wastewater treatment plant structures. In our next edition, watch for a discussion regarding anticipated updates to the code.

### What's that on my drawing?

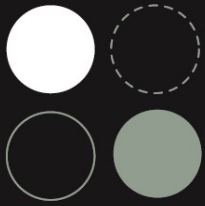
For projects large and small, we prepare *design documents*. These include specifications that provide detail about equipment, materials, and procedures; calculations that demonstrate the design meets Code requirements; and drawings, which depict a wide variety of information about a project. Design drawings include structural, electrical, instrumentation, and controls schematics plans and details. To help our readers interpret these drawings, which may not be "old hat" for all of you, here is our next installment of "Reading Engineering Drawings 101."

In our [Winter 2020](#) and [Spring 2021](#) editions, we focused on P&IDs (piping and instrumentation diagrams). In our [Summer 2021](#) edition, we covered some of the symbols used for structural drawings. Here, we continue with structural drawings, which show how to build physical elements (foundations, walls, roofs, etc.) in buildings and other structures. Consisting of both plan and section views, the structural drawings are two-dimensional representations of what one would see in real life. The plans can be used together with the sections and details to visualize what the structure looks like in 3D.

Structural plans use symbols to depict members and fasteners and use dimensions and notes to convey additional detail about sizes, placement, and type. As covered in our previous edition, lines show the edges of walls, foundations, and roofs, reinforcement, and other features.

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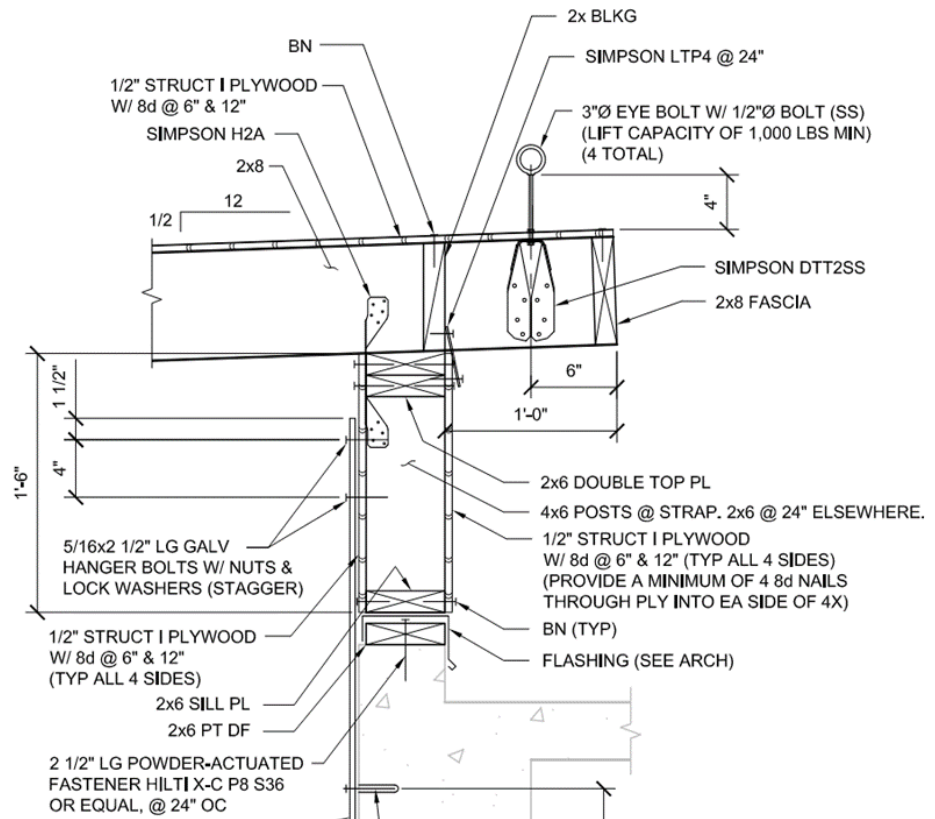
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Screened lines may show items on the drawings for informational purposes, such as equipment and piping. Various line types and line weights can be used as symbols themselves, as well as to indicate placement or to identify different materials.

In the plan excerpt shown above, we see a wood purlin (horizontal member in a roof) on top of a wood wall, on top of a concrete roof curb. While the concrete is depicted with a symbol (containing small triangles within the area), the wood is shown as plain on its flat surface. This excerpt also shows a fascia, blocking, fasteners, and flashing.

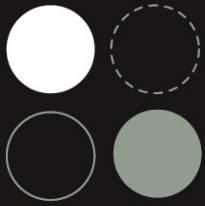
The plywood depicted in the drawing above is shown in cross-section, for which we use the special symbol below.



In a cross-section such as this, we see members that run parallel to the plane of the paper (i.e., left and right of the page), such as the purlin, and members that run perpendicular to the plane of the paper (i.e., in and out of the page) such as the double top plate at the top of the wall.

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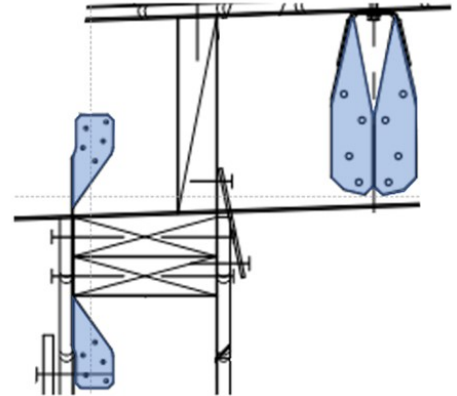
Wood members depicted with an "X" inside are continuous, in that the member continues through and is not interrupted by any intersecting members. In the example above, the sill plate and double top plate run continuously perpendicular to the plane of the paper and the vertical 4x6 post is "sandwiched" between them.



In comparison, some members are depicted with only one diagonal line inside (see image below). These members run perpendicular to the plane of the drawing and are not continuous. They stop and start between the intersecting framing members. In the example drawing above, the blocking between the purlins is shown this way.



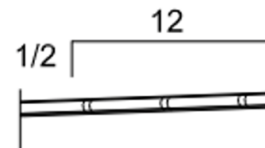
A wide variety of wood connectors can appear on the structural drawings, including metal clips, metal straps, and fasteners. These connectors are important for holding the structure together and for transferring design loads including seismic and wind. In the excerpt at upper right, the blue highlighted symbols show Simpson fasteners. On a drawing, accompanying notes list the appropriate model numbers.



In our large example drawing, several fastener types are depicted with the following simple symbol and are specified with notes. This symbol is commonly used to depict nails as well as powder-actuated fasteners (a.k.a., metal shot pins).

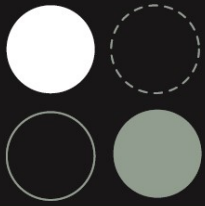


Our drawings also use labeling conventions to convey other information, such as in the picture below, which shows the slope of a member, in this case, a 1/2-inch rise for every 12 inches of run.



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What's that on my  
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### Quiz

In the example drawing, the 2x8 fascia is which of these?

- a) Short pieces of wood between the purlins
- b) A continuous piece running at the end of the purlins

### Bonus Question

From the example drawing, this note means which of the following?

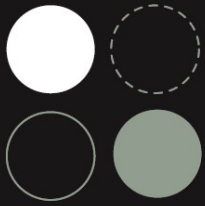
1/2" STRUCT I PLYWOOD  
W/ 8d @ 6" & 12" (TYP ALL 4 SIDES)  
(PROVIDE A MINIMUM OF 4 8d NAILS  
THROUGH PLY INTO EA SIDE OF 4X)

- a) 1/2-inch structural separator plywood, with 8-d nails at two spots, 6 inches and 12 inches on the four sides. Provide a minimum of four 8-d nails through plywood into each side of unit number 4X.
- b) 1/2-inch-thick Structural Grade 1 (one) plywood, with 8-penny nails at 6 inches on center at the boundaries and edges of the plywood, and at 12 inches on center in the field of each sheet. Provide a minimum of four 8-penny nails through the plywood into each side of the 4x6 post.
- c) 1/2-inch-thick structural Grade I ("eye") plywood, with 8-inch depth nails at 6 inches on center at the boundaries and edges of the plywood, and at 12 inches on center in the field of each sheet. Provide a minimum of four 8-inch depth nails through the ply on each side of side of the 4x6 post.
- d) 1/2, and you can quote me on this, structural line plywood, with 8 dimensions, or quote 6 or 12 of the 4-sided type. Provide a minimum of four 8-dimensioned nails by plying the person in unit 4X with a side of parmesan truffle French fries. It's sure to work. p.s., I'm in unit 4X.

Answer on page 7.

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### Entertainment News



### Entertainment News

Ever since our company was founded, we have been holding regular company events. We have included a wide variety of activities, including everything from billiards to bocce, tours and train rides, even wine tasting and scavenger hunts. Not surprisingly, we missed our office and event camaraderie during the pandemic. To carry on our tradition, we enjoyed several virtual events while we were working remotely.

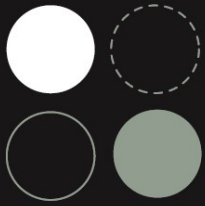
This summer, our featured event was Virtual Game Night. With the smiles and leadership of the [Team Days](#) company, we laughed our way through seven games during 90 minutes of fun, all while doing the best for our competitive teams: red, green, and blue. Our first game was, in fact, to create and don costume of a certain color within 2

minutes. Blue Team, which included Jacqui, Mike, McKenzie, Eden, and Terry won in a tie breaker, which was, "Guess how many jellybeans in the jar." Incidentally, you haven't truly witnessed pro-level ciphering until you've seen an engineering-oriented group develop a team estimate of the number of jellybeans in a jar!



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Dates to Note

Quiz Answers

**Dates to Note** (Subject to change—  
dates shown are as of publication day)

- Sep 22–25 [2021 SEAOC Convention](#),  
Carlsbad, CA
- Sep 24–26 43rd Ryder Cup, Whistling  
Straits, Kohler, WI
- Sep 29 Annual Coach Shaffer  
Memorial Golf Tournament,  
Tahoe Donner Golf Course
- Oct 5 Windows 11 release date
- Oct 6–8 [ASCE 2021 Virtual Convention](#)
- Oct 11–13 [2021 ICRI Fall Convention](#),  
Minneapolis, MN
- Oct 18–21 [CA-NV Section AWWA Annual  
Fall Virtual Conference](#)
- Oct 19 2021-22 NBA Season  
Opening Game
- Oct 20 Hunter's Blue Moon
- Oct 26 117th MLB World Series  
begins
- Nov 7 Daylight Savings Time ends
- Nov 17 Leonid Meteor Shower
- Nov 19 Partial Lunar Eclipse
- Nov 20 124th Big Game:  
Cal vs. Stanford
- Nov 23 Fibonacci Day
- Nov 28 Red Planet Day
- Dec 10 Dewey Decimal System Day
- Dec 13–14 Geminid Meteor Shower

### Quiz Answer

In the example drawing, the 2x8  
fascia is which of these?

- b) A continuous piece running at  
the end of the purlins.

### Bonus Question Answer

From the example drawing, this  
note means which of the  
following?

1/2" STRUCT I PLYWOOD  
W/ 8d @ 6" & 12" (TYP ALL 4 SIDES)  
(PROVIDE A MINIMUM OF 4 8d NAILS  
THROUGH PLY INTO EA SIDE OF 4X)

- b) 1/2-inch-thick Structural  
Grade 1 (one) plywood, with 8  
-penny nails at 6 inches on  
center at the boundaries and  
edges of the plywood, and at  
12 inches on center in the field  
of each sheet. Provide a  
minimum of four 8-penny nails  
through the plywood into each  
side of the 4x6 post.

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