



This Month's Program:

## Daylighting 301: Managing Daylight with Automated Solar Control—Wednesday, January 25

An AIA accredited program. Presented by: Draper, Inc.

**Description:** Description: Shades play a crucial role in helping a facility reach daylighting autonomy, the minimum use of artificial light and the maximum use of natural light without being overcome by glare. This course provides an overview of the benefits of designing a space with ample views and daylight, the challenges this presents, and how motorized shading can help solve these issues..

### Learning Objectives:

1. Discuss the benefits of natural light and how it can be maximized and controlled to enhance the personal comfort of the building's occupants
2. Explain how energy can be conserved through the proper specification of automated shades
3. Describe how a shade is motorized and identify the different motorization options available, along with the controls and building integration possibilities
4. Discuss the importance of openness and color when selecting a fabric
5. Discuss the importance of specification and some of the issues that can come about during construction
6. Detail how motorized shades can contribute to credits under the LEED® green building certification program.

Date: Wednesday, January 25, 2017

Time: 11:30 a.m. to 1:00 p.m.

Southside Johnny's  
528 S. Tejon Street  
Colorado Springs, CO 80903

No cost to Pikes Peak Chapter members

Please RSVP at [www.pikespeakcsi.org](http://www.pikespeakcsi.org)

by noon on  
Monday, January 23

If you have difficulty, RSVP to  
Greg Gulliksen at (719) 473-7225 or  
[gog@csnaarchitects.com](mailto:gog@csnaarchitects.com)

**SPEAKER:** Todd Garner, CSI, has 18 years of experience in the architectural building products market. Since October 2001 Todd has been calling on architects and dealers in New York, New Jersey, and Pennsylvania as the Regional Sales Manager for Draper, Inc. Beginning this year, Todd is covering several states in the Rockies and Upper Midwest regions. Todd earned his Bachelor of Science degree from Indiana University, and a Master of Science degree from the United States Sports Academy. Todd resides in Spiceland, Indiana, where Draper's international headquarters is also located.

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## About Draper:

Our passion is innovation, with a tradition reaching back to 1902 and stretching forward to infinity. Draper's award-winning solutions combine form and function to upscale your experience and deliver the high-end performance you need. We started with a simple idea—make a quality product at a reasonable price. Five generations of innovation later, our family-owned company is a global leader in interior and exterior solar control, audio visual, and athletic systems solutions.



2017 is here! I love the beginning of a new year. It's a great time to reflect on ups and downs from the previous year, as well as the goals for the new year. One of my goals for our Chapter is to increase membership. I am a strong believer in the benefits of CSI both nationally and locally, and feel that increasing membership in our chapter serves to strengthen us as a Chapter and benefit each of us individually while at the same time benefitting new members that join our Chapter. It is truly a win-win situation! I encourage each of you to think about colleagues, co-workers, team members, vendors and suppliers that would benefit from joining our Chapter and invite them to a meeting as your guest. CSI is such a diverse group of folks from our industry and we all learn from each other. That diversity is our greatest strength.

Along those lines, we have new CSI business cards that show our programs for the remainder of this year, so please remember to pick some up at the next meeting and share them amongst your industry contacts.

I also have a very exciting announcement that I'd like to share with you all. Our website committee has been working very hard and we are now ready to start accepting sponsors and advertisers for our website!! For a very reasonable fee, we will place your company's logo and a link to your website on our homepage so that everyone that visits the site will have the opportunity to see that you are a PPCSI sponsor and can click the link to visit your website. This is a great way to get exposure to our members and guests for your company. If you are interested, please contact any board members for additional information.

We are also still looking for members that are interested in stepping up to a position on the board. We are looking to fill the position of Secretary, Membership Chair and a few general board positions. This is a great way to get to know our Chapter inside and out and be an active participant in where our Chapter is going. Please give it some thought and let us know if you have questions or are interested. The time commitment is minimal and you get so much in return for your time.

This month Todd Garner from Draper, Inc. will be presenting Daylighting 301: Managing Daylight with Automated Solar Control. Todd is a fellow CSI member, with 18 years of experience in the architectural building products market. Todd has been with Draper since October 2001, and recently started covering the Rockies and Upper Midwest region. We've prepared a quick video that will tell you more about Draper at <https://www.youtube.com/watch?v=QOtgobIqnc>

Our very own Luke Bleichrodt with RW Specialties will be our Tabletop Sponsor this month. RW Specialties has been a tabletop sponsor many times and is very supportive of our Chapter and the Herald R. Holding Scholarship. Please make sure to thank Luke when you have a chance. I look forward to seeing all of you very soon. Please make sure to visit our new website and look around when you are registering for this month's meeting. We're always looking for feedback and new ideas, so please let us know what you think. As always, thanks to each of you for your continued membership in our Chapter.

**Joni Zimmerman, CSI Pikes Peak Chapter President**



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See Page 6 for more info on Spring Education Exams  
Spring 2017 Dates

Early Registration: Jan 9—Jan 16  
Standard Registration: Jan 17—Feb 27  
Final Registration: Feb 28—March 14



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### Upcoming Program Dates

Folks, please make sure to mark your calendars for the following dates and join us for our Monthly Meetings!

**Wednesday, February 22, 2017**

**Wednesday, March 22, 2017**

# CSI Certificate/Certification Program

**CSI is the construction community's authority on communication and construction documentation.**

Through CSI's Certificate/Certification Program, you can develop a conceptual understanding of the entire construction process and concrete skills in:

- Construction documentation development and administration
- Specification writing and enforcement
- Product research and sourcing
- Communication with the design and contracting teams

## CDT

CSI's Construction Documents Technologist (**CDT**) program has provided foundation training in construction documentation for architects, contractors, contract administrators, specifiers, and manufacturers' representatives for decades. As the cornerstone of CSI's certification program, it's also prerequisite to CSI's advanced certification exams.

### Getting your CDT means:

- Understanding how a project unfolds from conception to delivery
- Understanding the documentation involved

## CCCA

A CSI Certified Construction Contract Administrator (**CCCA**) develops, administers and enforces construction documentation.

### Getting your CCCA means:

- Developing an in-depth understanding of quality assurance and quality control
- Having advanced skills in bidding and negotiating procedures
- Developing skills in construction observation and inspection
- Understanding Division 01, General and Supplemental Conditions, agreements, and all other documents related to the project
- Understanding enforcement and liability

## CCS

A CSI Certified Construction Specifier (**CCS**) is a skilled product researcher who knows how to investigate and identify cost-effective, efficient solutions, and then communicate those solutions through the specifications.

### Getting your CCS means:

- Developing an in-depth understanding of agreements, conditions of the contract, Division 01, and their relationships to specifications
- Having advanced skills in specification development, enabling you to write specs and use spec-writing software more effectively
- Understanding how to research and source products

## CCPR

A Certified Construction Product Representative (**CCPR**) is a trusted advisor, a valued resource called upon by the design team again and again.

### Getting your CCPR means:

- Making sales calls, presentations, construction meetings, and product shows more effective
- Knowing the parts of construction product marketing collateral that are of most interest to designers and contractors
- Understanding roles and responsibilities of everyone involved in the project, and how and when to communicate with them
- Understanding all phases of the construction documentation, and your role in each phase
- Speaking the same language as the design and contractor teams

Learn more, or register for an exam at [CSIResources.org](http://CSIResources.org).



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## The New Daylighting System, Now with 30% Federal Tax Credit

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Visit [www.csisouthwestregion.org](http://www.csisouthwestregion.org) for sponsor info and attendee registration, starting Jan. 16, 2017

## Interested in Advertising on our new Website?

Our website committee has been working very hard and we are now ready to start accepting sponsors and advertisers for our website!! For a very reasonable fee, we will place your company's logo and a link to your website on our homepage so that everyone that visits the site will have the opportunity to see that you are a PPCSI sponsor and can click the link to visit your website. This is a great way to get exposure to our members and guests for your company. If you are interested, please contact any board members for additional information.



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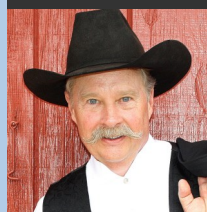
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CSI Pikes Peak Chapter  
would like to thank  
**Rob Haddock**

for agreeing to include his award winning seven part article series on metal roofing in the *Intent* each month. The article series won the Carl G. Cash Award from ASTM D 08 Committee on roofing and waterproofing. Part 4 of the series is included at the end of this newsletter.

# WHITE PAPER



## Part 4: Metal Roofing From A (Aluminum) to Z (Zinc)

### Induced Finishes for Metal

There are numerous reasons for alteration of the surface of sheet metal roofing materials. One is corrosion protection. Another is to make a metal solderable or more compatible metallurgically. Then, there are also appearance-related reasons. Of course, the most obvious way to alter a metal's appearance (while adding color) is to paint it; however, paint has organic components that degrade over time causing it to fade. (See Part 3, "Paint Finishes for Metal.")

There are other treatments intended to preserve the original mill finish of some metals. The post



application of clear protective films to copper sheet and other metals has been attempted for years. But, it has had very limited success, and is not recommended due to extremely high maintenance costs. There has been success in the mill-application of a thin layer of acrylic to Galvalume®-coated steel, which was discussed in Part 2. Unlike the clear film that is intended to protect indefinitely, this is done to protect the natural mill appearance of the metallic coating from staining only during fabrication, handling and installation. By design, the clear coating will dissipate with several years.

In other cases, the aesthetic objective of an applied finish is not to preserve, but to mask the natural mill finish, and there are a number of ways to do this— all varied with the specific base metal in question and its oxide's behavioral characteristics.

So, while some trends in architecture tend toward the addition of artificial color films to mask the mill finish, others are aimed at being au naturel, demanding induced inorganic finishing of natural metals. The latter objective is a finish that is not an applied film, but rather a mechanically or chemically induced alteration of the metal's surface appearance.

### Artificial Aging Chemically

One appearance objective may be to make the metal look aged—weathered and oxidized—even when new. We live in a society that demands push-button results and a technology age that strives to deliver what the market demands. Food is delivered piping hot at the drive-up window 90 seconds after it's ordered. And if blue jeans can be artificially aged, why not metal roofs? Many processes have been developed to give various metals an aged appearance.

◀The Chrysler building, an icon of Manhattan, sports a "2B stainless-steel finish."



▲ VMZ Double Lock Standing Seam Panels in Pigmento Red from VMZINC were used on the AIA North Carolina chapter building in Raleigh.

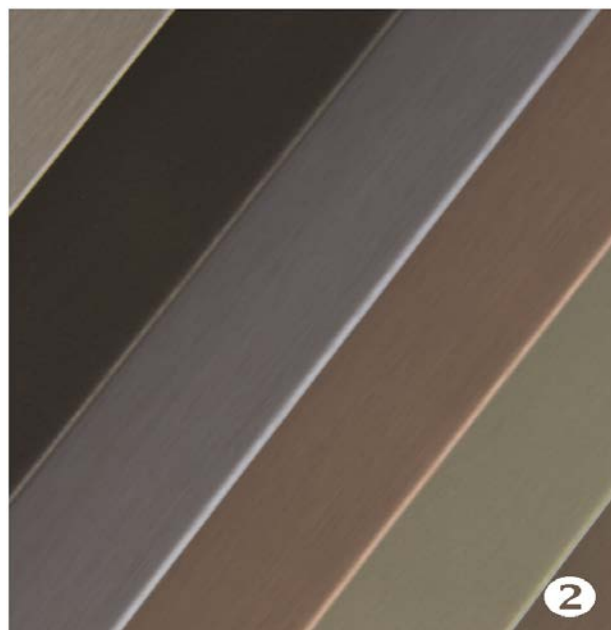
However, don't always expect these mill-induced finishes to have as reliable color-consistency as the natural patination process. Many methods have been used to artificially patinate copper. Field application of different acetic solutions is the least desirable and often results with unsightly splotches. Because the induced patination is not natural, it will go through a conversion process as nature takes its course. This transition can be objectionable.

The green/blue color and differing hues found on naturally aged copper are primarily copper-chloride-hydroxide crystals and copper sulfates and result from sulfurous pollutants in the atmosphere, accelerated by heat and moisture. Studies have identified approximately 70 different compounds that may occur in natural copper patina. The ratio in which these occur depends on moisture and air pollutants, so it varies geographically. Like snowflakes, the crystals all have a unique and individual shape. Consequently, they reflect and refract light differently, which accounts for the varied hues of aged copper.

**When you see marketing for “weathered Galvalume,” it is typically a paint coating and not artificial aging of the metal.**

While the coveted copper patination process may take 40 years or more in a dry, pollution-free

climate, it is chemically launched at some mills to a jackrabbit start before shipping. Induced patination processes have been attempted for many years with only limited success. Prior to the late 1900s, the only tried-and-true patination process for copper was brush-applied horse urine, which produced somewhat splotchy results. Since that time, more sophisticated techniques have (thankfully) come into play.



▲ VMZINC offers (left to right) mill finish, ANTHRA-ZINC and QUARTZINC, in addition to PIGMENTO colored finishes. They all age to natural weathered zinc over time.

**Many processes have been developed to give various metals an aged appearance.**

Revere Copper Products has called its artificially aged copper EverGreen. The process, while induced, mimics the natural weathering process on an accelerated timetable. It involves chemically and mechanically cleaning copper sheets; preparing the surface for patina growth; application of the patinating solution; then “growing” the patina crystals, which are copper-chloride. Revere has taken this product off the market, and we know not whether it will return.

Other copper mills also produce some pre-patina options including KME (“TECU® Patina”) and Aurubis Architectural, formerly Luvata, (“Nordic Green™”). Users and designers should always check market availability before specifying any patinated copper products as their introduction to and subsequent removal from the market seems to be the rule rather than the exception. Products that

were available last year may not be available next year.

Zinc sheet with an aged look is also in demand. The natural mill finish of zinc has a slight gloss and barely detectable surface grain finish. The natural weathering stages of oxidation dull the mill finish over time, eventually producing a low- or no-gloss deep matte gray, which results from the formation of a protective layer of zinc hydroxylcarbonate that blocks moisture and chemicals from penetrating it.

But for those who don’t want to wait for natural aging, chemically induced pre-weathering assimilates the natural oxidation process before the material leaves the mill. This is done by immersing the metal in a sulfurous pickling bath or phosphorus-based solutions. So, in addition to mill finish products, RHEINZINK and Umicore Building Products (VMZINC®) offer varied “pre-weathered” appearance options.



◀Revere Copper Products called their pre-patinated finish *EverGreen*®.

▼RHEINZINK Preweathered Zinc (center) has the appearance of a directional grain with a subtle blue-gray hue. The mill finished product “Bright Rolled” is at right and the “Graphite Grey” at left.

VMZINC achieves different appearances with phosphataic solutions that are varied slightly to produce products, called QUARTZ-ZINC® and ANTHRA-ZINC®, the appearance of the latter mimicking black slate. “PIGMENTO” uses pigment technology while retaining the grained texture of pre-weathered zinc. The surface color is created by adding mineral pigments to a durable protective coating, creating organic red, green, blue and brown pre-weathered zincs. Over time, all of these finishes will gradually yield to a natural gray-colored zinc carbonate.

RHEINZINK uses a pickling process for both its pre-weathered products, but then to achieve the darker product, “Graphite-Grey” the sheet alloy is actually altered slightly.

While some metals can be artificially aged, Galvalume steel is an exception. The material will lose gloss slowly over the course of many years. At present, no method to artificially accelerate this aging has been found. When you see marketing for “weathered Galvalume,” it is typically a paint coating and not artificial aging of the metal.

Another chemical process is the anodizing of aluminum. While this is still popular in mechanical and glazing applications, it is going the way of the dinosaur when it comes to exterior architectural metal claddings. This is because modern paint technologies are superior to color anodizing from cost, consistency and weathering standpoints. Clear anodizing is still done on architectural products for reasons pertaining more to corrosion resistance and metallurgy, rather than appearance alteration.

### **Mechanically Induced Finishes**

Stainless steel often receives a mechanically induced finish to achieve gloss and/or finish consistency. The finish can be rolled or polished to achieve a dull or bright finish. The texture of the rolls can also control finish texture. Hot rolling followed by annealing will produce a rough-textured, dull surface, which is designated No. 1.

Cold rolling through unpolished rolls results in a dull finish, which is designated 2D. A bright, reflective finish, which is designated 2B, is accomplished by cold rolling, annealing and a final pass through polished rolls. An example of this finish can be seen on the Chrysler Building in New York. Further polishing, brushing, buffing, or grinding can produce even brighter finishes and other textured effects.

Recently, stainless-steel producers have introduced several embossed (rolled) finishes with roughened, uniform textures. Trademarked names include “Architex®” from J&L Specialty Steel Inc., and “Greystone® Dull” from AK Steel®. These finishes offer low gloss, low reflectivity and



▲ Some stainless producers have developed proprietary finishes, some of which are shown here. *Photo courtesy of AK Steel.*

enhanced aesthetic appeal for a variety of roofing applications. One high-profile application of this material can be seen on the Ronald Reagan Airport in Washington, D.C.

Other types of mechanically induced finishes achieve textured effects. The most common is embossing, which gives the metal surface an “orange peel” look. One reason for embossing may be to reduce the visual effects of oil canning in the finished product. Another may be to reduce the perception of gloss. Embossing is used primarily on coated steel and aluminum. It is often done on-line at the end of the paint coating line or at the beginning of the fabrication process. A third-party specialty house can also do it off-line.

The process uses a large cylinder that presses the pattern into the metal as it passes beneath the cylinder. Because the process can be a bit traumatic to the coating on steel, G-90 is preferred by some instead of Galvalume due to its greater flexibility. It should be noted that “oil canning” effects, as discussed in Part I, are much more pronounced on high-gloss surfaces, hence induced finishes are more often used to tone down a mill finish, rather than to brighten it.

*Rob Haddock is president of the Colorado Springs, CO-based Metal Roof Advisory Group, Ltd. He is a consultant, technical writer, training curriculum author, inventor and educator. In 2012 he became a charter inductee of Modern Trade's "Metal Construction Hall of Fame" for his many contributions to the industry.*

*Photos courtesy of Metal Roof Advisory Group, Ltd., Colorado Springs, CO, unless otherwise noted.*

Founded in 1983, the Metal Construction Association brings together the diverse metal construction industry for the purpose of expanding the use of all metals used in construction. MCA

promotes the benefits of metal in construction through:

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- Educational and awareness programs
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- Monitoring of industry issues, such as codes and standards
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- Promotional and marketing support for the metal construction industry
- Publications to promote use of metal wall and roof products in construction

For more information, please visit the MCA Web site at [www.metalconstruction.org](http://www.metalconstruction.org)

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