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Association of
Licensed Architects

A Publication of the Association of Licensed Architects

Winter 2019/2020

ALA Design Awards



2020 Architectural Outlook

CE Article: Recent Trends in
Architectural Coatings

Interview with Keynote Presenter
Blair Payson, AIA, LEED
AP of Olson Kundig



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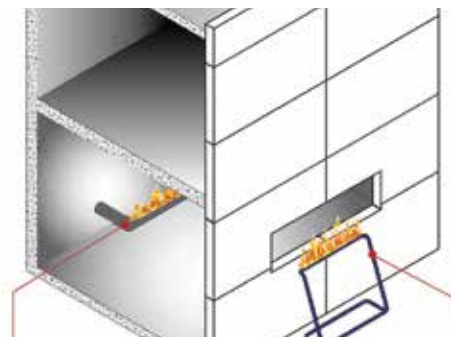
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Cover: Designer: Mike Bechtel, AIA, Owner: Singlespeed Brewing Company, Contractor: Peters Construction, Photographer: Cameron Campbell, Organization: INVISION Architecture



Happy New Year 2020! We hope it's off to a good start. Our 21st ALA Midwest Architecture Conference was a huge success.

The Exhibition Hall was full of knowledgeable representatives and their outstanding products; seventeen seminars of pertinent architectural codes, standards, and best practice were held; sponsors promoted their various areas of expertise; and keynote speaker, Blair Payson, of Olson Kundig taught, shared, and captivated our attendees with his experiences, anecdotes, and knowledge with "The Generalist Practice". Gain greater insight into Blair and his work by reading his personal interview appearing later in this issue! We received significant positive feedback on Blair's presentation, as well as 'approval' of the schedule change, shifting the keynote speaker to the morning vs. afternoon. Thank you to our Executive Director, Joanne Sullivan, and the ALA Staff for another valuable opportunity for us all!


The evening before, we held the Design Awards banquet, with Stephen Chung serving as our emcee, acknowledging 43 outstanding projects. As you can see by the cover, the 2019 Don

Erickson Presidential Award for this year is INVISION's Singlespeed Brewing Co., Waterloo, Iowa. ALA had tremendous participation in the competition, and an incredible number of award recipients. Enjoy viewing their ideas and successes in the Awards section.

It is our pleasure to announce that ALA will be offering webinars on the second Tuesday of each month. You should have received an email with the schedule for the first six months. The goal is to offer more programs in general, but certainly to reach out to those of you who cannot easily attend in person. Watch for emails and check the alatoday.org website for further information.

Please take careful note, as we are making a couple of significant changes for the upcoming year:

- The golf outing will be moving to the Bloomingdale Golf Club. Bloomingdale offers an enjoyable challenge for golfers of all levels! There will be a shot gun start in the morning, lunch at the turn, followed by a buffet dinner and the infamous raffle. Join us on Tuesday, June 30th.
- Our conference will be moving to the Northern Illinois University Conference Center in Naperville, Tuesday, November 3. This switch provides a convenient location with modern, sunlit rooms and an auditorium. Booths will be replaced by table tops in our Exhibition space. Affiliate members – you can reserve a table top on the ALA website at alatoday.org now. See you there!

I look forward to connecting with you at all the events on tap for 2020! 



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Blair Payson: Learning for a lifetime, sustainability and remarkable buildings

BY: TONI ANTONETTI, PR CHICAGO

This year's ALA Midwest Architecture Conference featured a keynote address by award-winning architect Blair Payson, AIA, LEED AP, a principal of Olson Kundig, a leading-edge architecture practice based in Seattle. Payson joined Olson Kundig in 2004 and has worked on both architectural and exhibit design projects, including the Century Project for the Space Needle, the Bill & Melinda Gates Foundation Visitor Center and residential projects across the western United States and Mexico. His current work spans workplace, residential, civic and cultural projects, including a new art park at the Crocker Art Museum in Sacramento.



A maker at heart, Blair is an architect who revels in the details. From large cultural projects to temporary design interventions, Blair is able to distill large, complex projects into distinct culminating moments. Lately, Blair's research has taken him on site visits to a subterranean cavern deep underground in one week, to hundreds of feet above an urban landscape the next. This demonstrates not only the range of Blair's interests, but also his proclivity towards risk and experimentation.

Licensed Architect talked with Blair Payson before the conference, getting his thoughts about learning and networking, trends in architecture, sustainability and his favorite building.

Q. How important is it for architects to not only continue learning, but network with colleagues?

I once heard that the ideal architectural career has three stages: the first 50 years is learning how to

be an architect, the next 50 years is actually practicing as an architect and the last 50 is teaching others how to be an architect. Obviously the math doesn't work, but what I take from that is that even people I might consider masters of our craft are still learning. Learning is a constant. The thing that changes is who you're learning from. And the only way to find new teachers is by engaging colleagues inside and outside our profession. At its best, architecture is a lifelong learning profession, which in itself is such a luxury. It'd be a pity not to embrace that. Much of humanity doesn't have that opportunity.

I also love learning from other disciplines, and especially those working on the edge of architecture, such as clients with an entrepreneurial mindset or suppliers in related areas, including fabricators. One fabricator, Fives Lund, which won a Supplier of the Year award from Boeing, helped us in construction of the first revolving glass floor in the world at the Space Needle in Seattle. We are generalists at Olson Kundig and like to take things from a sketch all the way through construction, and we learn so much in the process – people in the building trades have so much experience and advice to offer.

Q. What trends in architecture are capturing your imagination right now?



I'm proud of our profession changing the awards structure to prioritize equity and sustainability.

There's a new appreciation for buildings that are accessible and welcoming to all people. Sometimes it's as simple as thinking about transparency, about inside-outside clarity so you can see into the space, and about a good light balance. That emphasis gives us another tool to help our clients see the value in investing in those areas, and to help ourselves prioritize what we need to focus on to stay relevant, let alone be seen as a leader in the field.

Beyond that, I like to see what others are up to, but what still excites me – what I've always been excited by – are buildings that celebrate craft and offer a sense of delight. I remember many years ago when I first started at Olson Kundig, Tom Kundig shared his philosophy of getting a building as refined and tight as possible and then throwing it off with one kink or anomaly. That's not necessarily a

trend, but that approach often leads to those timeless moments that make buildings special.

Q. What are some of the sustainability features that Olson Kundig is incorporating into projects?

It seems that we have turned a corner in that it's actually feasible to deliver operational net zero energy buildings now. But often it's a collection of unseen and not necessarily revolutionary moves that makes that possible – the right siting, massing and window locations combined with hyper-efficient systems like hydronic radiant heating/cooling or direct air supply systems paired with photovoltaic energy generation. In our projects, these pieces are so integrated they don't necessarily jump out as "features". At the moment, we're invested in reducing the carbon footprint of the building materials we use. It has prompted questions about where and how we use materials such as high carbon footprint concrete and where low carbon footprint materials like wood can be used. Mass timber is changing everything at the moment; it makes so much sense to use a material that takes little energy to produce and that removes carbon from the atmosphere as it matures.


Olson Kundig's offices are in an old building constructed in the 1890s. The great thing about some of these old warehouse buildings is that they are flexible and can naturally accommodate changing uses. From a materials point of view, designing for adaptability is a central tenet in terms of being relevant for the future. For our office, we had to think outside of the box, given the limitations of the historic building. We developed an operable skylight that allows us to naturally vent and flush our space with fresh air. We liken it to trimming the sails on a sailboat in that we've developed a hands-on relationship with the building. Natural ventilation through the skylight is a more sustainable approach than typical mechanical conditioning, and it connects us with



the outdoor environment. When it's open, we hear the seagulls, smell the sea – in that sense it has become a central cultural link to who we are and where we work.

Q. Do you have a favorite building or project and why?

I knew from a very young age I wanted to be an architect. But it was because I liked the act of building rather than actual buildings. It took longer for me to truly appreciate the subtleties and richness of buildings themselves. The earliest building I would consider a lifelong favorite and one I return to whenever I'm in Houston is the Cy Twombly Gallery by the Renzo Piano Building Workshop. It's a building that feels fresh, with interior light so natural you feel like you could almost be outside. The remarkable thing is that it only has one window. It's a small and, at a glance, seemingly simple building. But it offers a level of refinement and clarity that I still hold as the gold standard.

We just finished a project – the Center for Wooden Boats. It's a small industrial structure on Lake Union in Seattle, an area that has a rich history of boat making. I love the building and the associated cultural program of teaching traditional boat making skills. The activity of the boat shop is visible from the exterior and offers a dynamic contrast to the surrounding neighborhood, which is home to several large technology companies. 

Architectural Outlook for 2020



BY: KAREN ANDREWS, SENIOR RELATIONSHIP MANAGER, PROFESSIONAL SERVICES GROUP

Planning for the upcoming year can sometimes be a challenge, but 2020 may top other years for difficulty. Who do you listen to – the economist who says a downturn is definite, or the one who reassures you by pointing to consumer confidence numbers? The answer: consider paying close attention to sector trends and determine how to make them work to your advantage for the next 12 months and beyond.

Most sectors are growing, but at a slower pace

In cities across the nation, construction cranes are creating a virtual skyline as they turn architects' plans into vibrant communities. The healthy economy that supports those building booms began nearly 10 years ago and is outlasting previous economic expansions – most begin to fade after five years. As architects prepare for the future – and the pivotal role their work plays in their communities – economic analysis will play an important role in choosing the projects to pursue.

The AIA Consensus Construction Forecast Panel projects overall

expansion. “The outlook showing nonresidential construction activity continuing to expand reflects the underlying strength of the economy, even this late in the business cycle,” says AIA Chief Economist Kermit Baker, Hon. AIA, PhD. The following chart on page 9 shows forecast growth by sector for 2019 and 2020:

Boomers are trend drivers

Supporting the AIA forecasts is Bureau of Labor Statistics data that point to healthcare as a sector with potential to grow revenues in 2020 and beyond: “...demand is expected for more healthcare facilities as the baby-boomer population ages and more people use healthcare services.”

For those baby boomers, healthcare needs are becoming increasingly tied to lifestyle preferences. In-house healthcare services – with a continuum of care from independent living through assisted living to nursing care – are often a must when shopping for a senior living facility.

For architects working in senior living, **Building Design + Construction** advises “... providing easier access to visitors and to encourage outpatients to use the services, [so that] rehabilitation gyms, spas and fitness areas [should be] placed closer to the entrance. The location of the amenities keeps a balance between private and public space while high-end design schemes attract younger visitors.”

Market Segment Consensus Growth Forecasts	2019	2020
Overall nonresidential building	3.8%	2.4%
Commercial/industrial total	2.5%	1.1%
Hotels	3.6%	0.5%
Office space	6.9%	2.2%
Retail	-0.8%	0.3%
Industrial total	6.4%	3.3%
Institutional total	4.9%	3.7%
Public safety	8.2%	5.9%
Healthcare facilities	2.7%	3.7%
Education	6.1%	4.4%
Amusement/recreation	4.4%	1.0%
Religious	-4.5%	-2.8%

Source: American Institute of Architects

Data Centers: the bright light of the Chicago economy

Data centers are critical to the information infrastructure of the nation. Chicago is among the nation's largest data center metro areas. At **DICE Midwest**, a recent data center conference held in Chicago, the takeaway was that "...data center expansion could continue even if the economy hits a rough patch because the use of electronic devices keeps growing regardless of consumer spending patterns."

That is good news for architects focusing on commercial design for the data industry. Earlier this year, online research company *Industrial Info* reported "... tracking five projects valued at about \$325 million in the Chicago, Illinois, metropolitan area. As data consumption increases in the U.S. and existing space is utilized to its fullest, the Chicago area is poised to gain more utilization as a data hub in the Midwest."

Repurposing as a growth prospect

There is also promise for firms with a practice in repurposing existing

sites, which can mean designs for empty suburban shopping malls or downtown warehouses and office buildings. *Forbes* estimates "about one-fourth of the nation's 1,100 shopping malls — or roughly 220 to 275 shopping centers — will close by 2022." What has become the survival strategy for many malls is similar to the plans for the suburban Chicago Northbrook Court, where a closed big-box store has been repurposed into a sports facility, and plans for design and construction of apartments on the site of another closed store are underway.

Preparing for an economic downturn

Architects often are among the first to see signs of a slowing economy; their work is at the initial stages of projects, with completion years down the road. A long-term perspective may include focusing the practice on adding a new mix of sectors — particularly those characterized by higher margins — as well as reducing work in others that often lag in payment or are impacted by lower tax revenue, such as state and municipal projects. Along with new sectors, consider expanding

your firm's footprint into cities, counties and states experiencing economic growth. When considering any of these strategies, help ensure your firm's ability to source capital in the future. For example, consider taking advantage of current low interest rates by securing a new line of credit, or expanding a current line of credit.

Ensuring your practice has a mix of skills and specialties to match the needs of the marketplace is key. That may mean continuing education, hiring specialists for new sectors or adding interns and new graduates. The Bureau of Labor Statistics indicates that the profession has a healthy pool of candidates: "With a high number of students graduating with degrees in architecture, strong competition for internships and jobs is expected."

Chicago firms are ideally located to hire professionals as they study and graduate from schools of architecture at University of Illinois Urbana-Champaign, University of Wisconsin-Milwaukee, University of Notre Dame, Illinois Institute of Technology and University of Illinois at Chicago.

And finally, staying on top of emerging ideas is critical. The **Chicago Architecture Biennial** offers "...an expansive and multi-faceted exploration of the field of architecture and the built environment globally." 

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2019

ALA Design Awards

*Forty-three projects were recognized by our judges in the 2019 ALA Design Award Program for their outstanding achievements as a **Gold Medal, Silver Medal, and Award of Merit.** **Leroy Herbst, FALA**, of **L. B. Herbst & Assoc.**, chaired the judging with **Matthew Kramer, ALA** of **Matthew Kramer Architects**.*

ALA wishes to thank our judges for their time and thoughtful consideration:

Stephen Bruns, ALA - Principal, Bruns Architecture, Milwaukee, WI

Joseph Geoghegan, Jr. ALA, NCARB - Chief Architectural Officer and Principal, RGLA, Schiller Park, IL

Natalie Hicks, AIA, NCARB – Architect, Wright Heerema Architects, Chicago, IL

Alfredo Marr, AIA, LEED AP, NCARB – Principal, Lucien LaGrange Studio, Chicago, IL

Michelle Rumsa, ALA – Architect, Edgewater Resources, St. Joseph, MI

The awards dinner was held at Drury Lane in Oakbrook Terrace, IL on October 28th where **Howard Hirsch, ALA, AIA, LEED AP**, Chairman of the Committee, welcomed over 110 attendees. Our emcee for the evening was **Stephen Chung, AIA, LEED AP**, Principal Stephen Chung Architect and Producer/Host of *Cool Spaces!* To conclude the evening, **ALA President Jeff Budgell, FALA, LEED AP** announced the top honor, the **Don Erickson Presidential Award**, to *Singlespeed Brewery* by *INVISION Architecture*.

All boards were on display during the cocktail reception showcasing the talent and diversity of our members. Congratulations to all the winners and to those who submitted their projects. We hope you enjoy viewing the winning projects on the following pages.

Don Erickson Presidential Award

Singlespeed Brewery



Singlespeed Brewery Waterloo, IA

Category: Commercial

Designer/s: Mike Bechtel, AIA

Owner: Singlespeed Brewing Company

Contractor: Peters Construction

Photographer: Cameron Campbell

Organization: INVISION Architecture

Description: This brewery, beer hall, restaurant, and retail space gives new life to a historic structure built in 1927 as a bakery and occupied by Hostess' Wonder Bread while preserving the historic character of the building.



Gold Awards



Buchanan County Outpatient Unit Expansion Independence, IA

Category: Institutional
Designer/s: Jason DeVries, AIA
Owner: Buchanan County Health Center
Contractor: Larson Construction
Photographer: Cameron Campbell
Organization: INVISION Architecture

Description: This project offers a brilliant entry transformation to an existing one-story 1960's facility, using natural materials that relate to its agricultural context creating a visually warm and welcoming addition that resonates with the hospital's aging, rural patient demographic.

CA Washington Chicago, IL

Category: Residential 2
Designer/s: SGW Architects
Owner: Belgravia Group
Contractor: Maris Construction
Developer: Belgravia Group
Photographer: Exterior: SGW Architects, Interior: Belgravia Group
Organization: Sullivan Goulette Wilson Ltd.

Description: With six stories and 70 condominium units, CA Washington (located in Chicago's always-in-demand West Loop) was designed with modern families in mind. We broke the massing into two towers to optimize light within the units while holding the urban street wall.



Gold Awards



Latin School Play Garden Chicago, IL

Category: Institutional

Designer/s: Michael Wilkinson,
Greg Gibson and Michelle Sakayan

Owner: Latin School of Chicago

Contractor: Larry Asimow Landscaping

Photographer: Kendall McCaugherty
© Hall+Merrick

Organization: Level Architecture
Incorporated

Description: This play garden, occupying the grounds of a former mansion, follows Reggio Emilia principles, an approach towards early childhood education that encourages children to construct their own learning through play and exchange with each other, as well as the teacher.

Unisphere Silver Spring, MD

Category: Commercial

Designer/s: Olga Zaremba,
Gayle Lane

Owner: United Therapeutics
Corporation

Contractor: Whiting-Turner

Photographer: Halkin/Mason
Photography

Organization: EwingCole

Description: United Therapeutics believes that sustainable design directly aligns with its mission of saving lives. Unisphere, a site net zero building, utilizes 3,000 solar panels, an earth labyrinth, and an atrium pool that acts as a heat sink.



Silver Awards



328 W. Wisconsin Chicago, IL

Category: Residential 2

Designer/s: SGW Architects

Owner: Belgravia Group

Contractor: Maris Construction

Developer: Belgravia Group

Photographer: Exterior: Emilia Czader; Interior: Michael Robinson

Organization: Sullivan Goulette Wilson Ltd.

Description: 328 W. Wisconsin is a boutique 7-unit condominium building in Chicago's Old Town Triangle. The four-bedroom units offer gracious amenities on par with luxury single-family homes, appealingly arranged on one level. The exterior composition speaks in a modernist language while nodding to the historic surroundings.

Architect's Office Chicago, IL

Category: Interior Architecture

Designer/s: Patricia Saldaña Natke

Owner: Patricia Saldaña Natke

Contractor: Urban Equities Construction LLC

Photographer: Barbara Karant + Associates

Organization: UrbanWorks, Ltd.

Description: This 3,070-square-foot Architect's Office, located in a vintage Loop building, puts a Chicago based architecture firm's design skills in action for their staff, while providing a demonstration lab for clients.



Courtyard by Marriott at Techworks Waterloo, IA

Category: Commercial

Designer/s: Mike Bechtel, AIA

Owner: Financial District Properties

Contractor: Ryan Companies

Photographer: Cameron Campbell

Organization: INVISION Architecture

Description: The project is a transformation of a former John Deere manufacturing warehouse into an upscale hotel, office space, banquet center, and restaurant. The solution is a unique balance of hotel brand requirements, a luxury guest experience and historic preservation.

Silver Awards



First Evangelical Lutheran Church Lorain, OH

Category: Religious

Designer/s: Paul Barribeau, AIA | Liturgical Consultant:
Dekker/Perich/Sabatini

Contractor: Thomas and Marker Construction

Photographer: Josh Groth

Organization: GROTH Design Group

Description: The design goals for this new church were liturgical excellence, celebration of the arts and flexibility arrangement opportunities. Central to the success were an invitational threshold to the neighborhood and a hanging lattice to allow for flexible lighting.

Harlan Rogers Concessions Waterloo, IA

Category: Institutional

Designer/s: Brent Schipper, AIA, LEED AP;
Mike Dean, Assoc. AIA

Owner: Fort Dodge Parks, Recreation & Forestry

Contractor: Woodruff Construction

Photographer: Cameron Campbell, Integrated Studio

Organization: ASK Studio

Description: A ball field concessions building in the community of Fort Dodge. The precedent is a fort. This fort is designed to protect from the adversaries of weather and to always protect the bounties of Snickers bars and Powerade...with an unexpected esthetic.



Harmonic Farms Costa Rica

Category: Unbuilt

Designer/s: Lars Peterssen, AIA; Gabriel Keller,
Assoc. AIA; Chad Healy, Assoc. AIA

Organization: Peterssen/Keller Architecture

Description: Guided by the Costa Rican spirit of pura vida (pure life), the designers developed a masterplan for an innovative sustainable community on a steep, heavily forested site overlooking Playa Camaronal in Costa Rica's Guanacaste Province.

Silver Awards



Huntington Residence Wayzata, MN

Category: Residential I

Designer/s: Ted Martin, AIA and Gabriel Keller, Assoc. AIA

Contractor: Elevation Homes

Photographer: Spacecrafting Photography

Organization: Peterssen/Keller Architecture

Description: Challenged by a hilly, south-facing site in an established lake neighborhood, the designers created two traditional gable forms connected by a modern metal form with an open floor plan that recalls a sleek urban loft.

Medical Cannabis Cultivation Facility Akron, OH

Category: Commercial

Designer/s: Jeremy T. Schlicher / Urban Green Design Ltd.

Owner: Midwest Development

Contractor: Summit Construction

Photographer: Zackariah Cole

Organization: Urban Green Design Ltd.

Description: A unique facility with highly technical requirements, the design seeks to enhance the community and deliver an efficient, pharmaceutical interior environment through holistic design. This is achieved through responding to the urban fabric; integrating all systems; responding to the natural conditions of the site; and creating human-scale interactions in materiality.



Orono Modern Orono, MN

Category: Residential I

Designer/s: Ted Martin, AIA and Lars Peterssen, AIA

Contractor: Streeter + Associates

Photographer: Paul Crosby Photography

Organization: Peterssen/Keller Architecture

Description: Challenged by the hilly topography, the architects perched this modern home on the top of the hill, creating a light-filled living environment and an easy, natural flow between indoors and out.

Silver Awards



Saint Catherine of Siena Sanctuary Alteration Trumbull, CT

Category: Religious

Designer/s: Duncan G. Stroik

Owner: Reverend Joseph A. Marcello

Contractor: Victor Zucchi & Son

Photographer: Duncan G. Stroik and Amy Mortensen/for the Diocese of Bridgeport

Organization: Duncan G. Stroik Architect, LLC

Description: In 2018, Saint Catherine of Siena parish sought to add a sense of magnificence to their country Gothic church. The architect proposed a new limestone retablo – the largest one in the United States in over 60 years – together with a marble altar, tabernacle, and ambo.

Shepherd of the Prairie Lutheran Church St. Huntley, IL

Category: Religious

Designer/s: Paul Barribeau, AIA

Owner: Shepherd of the Prairie Lutheran Church

Contractor: Shales McNutt Construction

Photographer: Josh Groth

Organization: GROTH Design Group

Description: This place of worship borrows form from the vernacular of its agrarian setting; it is a barn and silo placed in fields of the heartland, a building for planting and harvest, where the sustenance of creation feeds the world.



Singlespeed Brewery Waterloo, IA

Category: Commercial

Designer/s: Mike Bechtel, AIA

Owner: Singlespeed Brewing Company

Contractor: Peters Construction

Photographer: Cameron Campbell

Organization: INVISION Architecture

Description: This brewery, beer hall, restaurant, and retail space gives new life to a historic structure built in 1927 as a bakery and occupied by Hostess' Wonder Bread while preserving the historic character of the building.



Silver Awards



South Loop Elementary School Chicago, IL

Category: Institutional

Designer/s: SMNG A

Owner: Public Building Commission, Chicago Public Schools

Contractor: Madison Construction

Photographer: Tom Rossiter

Organization: SMNG A Ltd.

Description: This urban school is organized vertically as a 4-story L-shape sited to maximize natural light and shield play areas from westerly winds. Designed as a LEED Silver building, it features the first personalized learning environments designed for Chicago Public Schools.

Square Lake Cabin May Township, MN

Category: Residential I

Designer/s: Lars Peterssen, AIA and Brent Nelson, AIA

Contractor: Elevation Homes

Photographer: Paul Crosby Photography

Organization: Peterssen/Keller Architecture

Description: Challenged to design a spacious rustic lake cabin for three young families, the architects massed the house as two separate wings connected by links and balanced them carefully on the undulating site to maximize views of the lake.



Story County Outpatient Unit Expansion Nevada, IA

Category: Institutional

Designer/s: Jason DeVries, AIA

Owner: Story County Medical Center

Contractor: Graham Construction

Photographer: Cameron Campbell

Organization: INVISION Architecture

Description: The design deploys a formally simple diagram as a counterpoint to the existing facility, using lpe and terracotta cladding that complements the existing campus palette which is extrapolated into the interior creating a spa-like environment for patients and guests.

Merit Awards



Abbott Residence - Minneapolis, MN

Category: Residential I

Designer/s: Bob LeMoine, AIA and Gabriel Keller, Assoc, AIA

Contractor: Reuter Walton

Photographer: Spacecrafting Photography

Organization: Peterssen/Keller Architecture

Description: Guided by the client's vision of a timeless modern home in an established urban neighborhood, the designers created a traditional, gable-roofed cottage vernacular contrasted by moments of dramatic open and modern glass voids.

Advocates Law Offices - Salt Lake City, UT

Category: Commercial

Designer/s: Elizabeth McNicholas (Architect of Record)/ Designer:
Establish Design

Owner: The Advocates

Contractor: Jackson & LeRoy

Photographer: Joshua Caldwell

Organization: MGLM Architects

Description: This new Law Office building references Utah's traditional "Frontier" dialect of humble brick buildings in form, with Georgian details overlaid to reflect its high-brow purpose. The aesthetic carries through to the interiors, delivering a level of comfort akin to a home.



Amen Residence - Evanston, IL

Category: Residential I

Designer/s: Thomas Ahleman

Owner: Jonathan and Mary Amen

Contractor: C.A.B. ASSOCIATES, LLC

Photographer: Michael Lipman

Organization: Studio Talo Architecture Inc.

Description: Jonathan and Mary loved their home's mid-century character but not the claustrophobic kitchen or lack of a master suite. Our modern addition opens up the space and adds the master on the first floor so they can enjoy their home for years.

Aurora Fire Station No. 7 - Aurora, IL

Category: Institutional

Designer/s: Dewberry

Owner: City of Aurora, Illinois

Contractor: Wegman Construction Company

Photographer: Mariusz Mizera

Organization: Dewberry Architects Inc.

Description: The fire station was designed with natural tones and materials that tie into the station's surroundings. The design massing is reduced visually through the placement of sloped roofs against the higher volume of the apparatus bay.



Merit Awards



Calhoun Parkway Residence - Minneapolis, MN

Category: Residential I

Designer/s: Lars Peterssen, AIA and Chad Healy, Assoc. AIA

Contractor: Tieration Homes

Photographer: Steve Henke Studio

Organization: Peterssen/Keller Architecture

Description: Challenged by an unusually deep, narrow site with west-facing views of a lake, the designers resolved the lot constraints while bringing a fresh, modern spirit to an established urban neighborhood.

Capitan Mountain Sunrise - Capitan, NM

Category: Residential I

Designer/s: William Tabberson, AIA

Owner: Jerry and Mary Jayne Maly

Contractor: Ed Cillessen, Cillessen Construction Co. Inc

Photographer: William Tabberson and Pam Harwood

Organization: William Tabberson, Architects

Description: Tabberson Architects' Capitan Mountain Sunrise is a full timberframe house that far exceeds common expectations for quality building. The CNC fabricated mortise-and-tenon timberframe structure detailed with Southwestern flavor is the greatest showpiece element within this fully custom home.



Central High School Addition - Burlington, IL

Category: Institutional

Designer/s: Larson & Darby Group

Owner: Central CUSD #301

Contractor: Shales McNutt Construction

Photographer: Gedeon Trias, Larson & Darby Group

Organization: Larson & Darby Group, Inc.

Description: CHS added 12 classrooms, a new fieldhouse, kitchen/commons and band areas, and space for three Career and Technology Education pathways: Business Incubator, Mobilemaker, and a new veterinary science program – the first high school veterinary lab in Illinois.

Community Recreation Center - Schaumburg, IL

Category: Interior Architecture

Designer/s: Williams Architects

Owner: Schaumburg Park District

Contractor: FH Paschen

Photographer: Larry Kmiecik

Organization: Williams Architects

Description: The Schaumburg Park District's Community Recreation Center was originally constructed over 30 years ago. The renovation has produced a vibrant, energized Lobby space which directly reflects the activities within the facility and has imbued the Community Recreation Center with new life, further enhancing the patrons experience, and increasing the Park District's outreach and income.



Merit Awards



Cottagewood Beach House - Wayzata, MN

Category: Residential I

Designer/s: Bob LeMoine, AIA and Gabriel Keller, Assoc, AIA

Contractor: Streeter + Associates

Photographer: Paul Crosby Photography

Organization: Peterssen/Keller Architecture

Description: Challenged by a narrow lakefront lot, the designers combined elements of classic lake vernacular with modern forms to create a modern beach house with spectacular views, room for entertaining and a strong connection between indoors and out.

Duluth Trading Company Headquarters - Mount Horeb, WI

Category: Commercial

Designer/s: Michael Sobczak

Owner: Duluth Trading Company

Contractor: National Construction, Inc.

Photographer: Tricia Shay

Organization: Plunkett Raysich Architects, L.L.P.

Description: The new, five-story headquarters for the highly-successful retailer Duluth Trading Company features an exterior designed to fit in downtown Mount Horeb, WI, and an interior that proudly reflects and propels Duluth's brand of hardworking clothes for hardworking people.



Hotel Nia-Autograph Collection by Marriott - Menlo Park, CA

Category: Commercial

Designer/s: Cuningham Group Architecture, Inc. | Interior Designer - McCartan, Inc.

Owner: Independence Menlo Hotel Owner, LLC

Contractor: Webcor Builders

Developer: Ensemble Real Estate Solutions & Investments, LLC

Photographer: Garrett Rowland and Carlos R. Hernandez

Organization: Cuningham Group Architecture, Inc.

Description: A new breed of lifestyle luxury hotel – Hotel Nia's two-sided ship's bow form is a striking gateway to an emerging mixed-use district in Menlo Park, CA. Regionally grounded in materials and vibe – collaborations with Facebook informed the Hotel's gathering spaces.

Hub Ann Arbor - Ann Arbor, MI

Category: Residential 2

Designer/s: Myefski Architects

Owner: American Campus Communities

Contractor: Spence Brothers

Developer: Core Spaces

Photographer: Kevin Kaminski

Organization: Myefski Architects, Inc.

Description: This 12-story residential development brings an unprecedented living experience to downtown Ann Arbor. The modern, urban complex houses 124 units and includes a fitness center, a club room for group gatherings, and a stunning rooftop deck.



Merit Awards



Kean University North Avenue Academic Building - Union, NJ

Category: Institutional

Designer/s: Kenneth A. Gruskin, AIA and Joel Shulman, AIA

Owner: Kean University

Contractor: Dobco, Inc.

Photographer: © 2019 Kenneth A. Gruskin/Gruskin GroupTM

Organization: Gruskin Architecture + Design, P.C.

Description: The six-story North Avenue Academic Building acts as a gateway to the eastern end of Kean University. The building is designed to inspire students to engage and think "outside the box" – figuratively and literally.

Kenwood Condos - Minneapolis, MN

Category: Residential 2

Designer/s: Ted Martin, AIA and Gabriel Keller, Assoc. AIA

Contractor: Kroiss Development

Developer: Kroiss Development

Photographer: David Swan and Spacecrafting

Organization: Peterssen/Keller Architecture

Description: Designed for a sophisticated, active urban lifestyle, these modern duplexes each contain two condos with private, single-level loft-style living, floor-to-ceiling windows and roof decks for spectacular views of the downtown skyline.



McHenry County College-Liebman Science Center - Crystal Lake, IL

Category: Institutional

Designer/s: Demonica Kemper Architects

Owner: McHenry County College

Contractor: Pepper Construction

Photographer: Connor Steinkamp

Organization: Demonica Kemper Architects

Description: Envisioned as a catalyst for students and community to engage with the natural sciences, the Liebman Science Center at McHenry County College dramatically expresses its planetarium volume; inspiring visitors to enter the facility and explore the dynamic activities occurring within.

Modern Lakeshore House - Wilmette, IL

Category: Residential 1

Designer/s: Fred Wilson and Elissa Morgante

Contractor: Ted and Sons

Photographer: Werner Straube

Organization: Morgante Wilson Architects

Description: The front of this new contemporary arts and crafts house wraps around to the back elevation which reveals a Mondrian like composition of glass and steel. The front nestles thoughtfully into the neighborhood, while the back takes in lake views through expansive glass walls.



Merit Awards

Northshore Mediterranean - Winnetka, IL

Category: Residential I

Designer/s: Fred Wilson and Elissa Morgante

Contractor: Jarzab Construction

Photographer: Michael Robinson

Organization: Morgante Wilson Architects

Description: The existing 1920's Mediterranean style residence received an addition and an extensive renovation throughout that renewed the existing charm of historical details while opening up the flow of the interior spaces for a modern living.



Offshore - Rooftop Bar at Navy Pier - Chicago, IL

Category: Commercial

Designer/s: KOO LLC

Owner: ACRON

Contractor: James McHugh Construction Co.

Developer: Maverick Hotels and Restaurants

Photographer: Heidi Harris and Anthony Tahlier

Organization: KOO LLC

Description: At 52,000 SF, Offshore is the world's largest rooftop bar located on Chicago's historically landmarked Navy Pier. The year-round venue is enclosed by a fritted barrel vaulted ETFE roof, designed to accommodate the net-zero structural loading requirement, and operable glass walls to bring the lakefront inside.



Roos Recreational Center - Forest Park, IL

Category: Institutional

Designer/s: Williams Architects

Owner: Park District of Forest Park

Contractor: Frederick Quinn Corporation

Photographer: Larry Kmiecik

Organization: Williams Architects

Description: The Roos Recreation Center (RCC) is the new centerpiece of the Park District of Forest Park's recreational offerings, providing expanded recreational opportunities for its residents. The RCC provides a warm, inviting welcome to all its patrons.



SPEEDVEGAS - Las Vegas, NV

Category: Commercial

Designer/s: Kenneth A. Gruskin, AIA and Joel Shulman, AIA

Owner: Motorsport Adventures, LLC

Contractor: J.A. Tiberti Construction

Photographer: © 2019 Kenneth A. Gruskin/Gruskin GroupTM

Organization: Gruskin Architecture + Design, P.C.

Description: SPEEDVEGAS is a premier driving experience venue in Las Vegas featuring exotic automobiles driven on a 1.5-mile track. The main building evokes a motorsports character of track/racing facilities; interior spaces maximize the visceral connection to the track and cars.



Merit Awards



The Fillmore New Orleans - New Orleans, LA

Category: Interior Architecture

Designer/s: Shannon Noon, Ryan Leichtweisz, Greg Baron

Owner: Live Nation

Contractor: Ryan Gootee, General Contractors, LLC

Developer: Harrah's Casino

Photographer: Halkin/Mason Photography

Organization: EwingCole

Description: The Fillmore New Orleans, a new live music venue on the second floor of Harrah's Casino, features design elements that effortlessly blend San Francisco's historic psychedelic 60s with the cultural archetypes of New Orleans.

The Henry - Chicago, IL

Category: Residential 2

Designer/s: Michael Wilkinson, Greg Gibson, Amelia Tabeling

Owner: Cedar Street Companies

Contractor: Method Construction

Developer: Cedar Street Companies/Harrington Brown

Photographer: Kendall McCaugherty © Hall+Merrick

Organization: Level Architecture Incorporated

Description: This 38,200 SF, 38-unit apartment building consists of one and two-bedroom units, a roof deck and indoor lounge, and ground floor retail space. The massing is broken down to suggest a collection of smaller buildings merged, and is reinforced by cladding variety and the shape of the lot.



UIC Richard J. Daley Library Addition- Master Plan - Chicago, IL

Category: Unbuilt

Designer/s: Ellen Dickson, Robin Whitehurst, Damon Wilson

Owner: University of Illinois at Chicago

Organization: Bailey Edward Design

Description: Transforming the UIC Daley Library into a place for academic exploration, Bailey Edward's design improves community and university collaboration and enriches the student experience with immersive technology centers, faculty learning and training centers, unique archives exhibits, gathering spaces, and high-density collections storage.

Wintrust Financial Center - Milwaukee, WI

Category: Interior Architecture

Designer/s: Sara Lepich/Peter Nagel

Owner: Jackson Street Real Estate LLC

Contractor: The Redmond Company

Developer: Jackson Street Real Estate LLC

Photographer: MILLER + MILLER Architectural Photography

Organization: The Redmond Company

Description: Stunning interior renovation of the Wintrust Financial Center's 1st and 2nd floors. Project includes an all glass interior vestibule, two-story atrium space, both private and open offices, large conference room, employee lounge, and multi-purpose space for both staff training and entertaining clients.



Recent Trends in Architectural Coatings

BY: JOHN A. GILBERT, BEHR PROCESS CORPORATION

The architectural coatings industry has undergone great change over the last ten years. Today's coatings have a much different raw material base, a different environmental profile and different properties. These changes have been brought about through a variety of influencers including synthesis chemists, paint formulators, end users, and environmental regulators. This paper examines some of the changes that have happened in the last decade as well as some trends coming in the near future.

Waterborne vs. Oil-Based/Solvent-Based

One cannot comment on changes in architectural coatings without first addressing the transition from oil/solvent-based paint to waterborne paint.

As I began work on this paper, the 9th Edition of the ACA's Industry Market Analysis was published by the ACA and Chemquest.¹ In their analysis of the overall U.S. architectural coatings market, they reported that in 2014 solvent-based coatings made up 108 million gallons, or 15 percent, of a 720 million gallon market.

By contrast, in 2001, solvent-based coatings made up 114 million gallons, or 23 percent of a 493 million gallon market. Therefore, one can conclude that although the total volume of solvent-based paint has only slightly decreased, it is now a smaller percentage of a larger market. In fact, as discussed below, there are certain U.S. markets in which it is very difficult to use some types of solvent-based paints due to environmental regulation. Although the reduction in market share of solvent-based coatings has continued for several decades, there are certain regional markets and specialized applications which favor the use of solvent-based materials. For the average end user, waterborne paints offer the convenience of a safe, low-odor product and easy cleanup with soap and water.

VOC Content

The first latex-based, waterborne coatings were much higher in VOC (volatile organic compound) content than those on the market today. Even as recently as 2006, it was common to formulate waterborne architectural coatings at 250 g/L VOC. Many of the resins for such coatings required the use of solvents in order to coalesce the latex particles into a continuous film. As regulations have driven VOC values downward, resins have been designed which require little or no solvent in order to form a film. In addition, zero-VOC coalescents have been developed. Resin and paint developers have been tasked with finding ways to maintain a low minimum

film formation temperature (MFFT) while at the same time maintaining the hardness of the dried film.

This is challenging because the low MFFT resins tend to have lower glass transition temperatures and the zero-VOC coalescents stay in the dried film. In fact, I see this as one of the biggest technical challenges in waterborne architectural coatings today: how to make paint at zero VOC that will coalesce appropriately at room temperature and yet dry to a hard, durable finish. This problem becomes particularly challenging at higher gloss levels because the formulations consist of more resin and less pigment.

Another challenge brought about by the lack of VOC in waterborne paint is open time or workability. Without the presence of slow-evaporating solvents, the paint will quickly become tacky when the water evaporates. In low humidity environments, water is quickly released from the paint as it is applied. Therefore, a second technical challenge for material developers is to come up with raw materials that enable longer open time for the paint user. It is not clear if this will be most easily achieved through binder design or through additive design.

Disparity is evident in architectural paint VOC regulation in North America. There are areas in which higher VOC coatings are still allowed. However, markets like California, the Ozone Transport Commission (OTC) states, and the Lake Michigan Air Directors Consortium (LADCO) states drive manufacturers toward lower VOC formulations. The OTC includes twelve states plus the District of Columbia in the region from Virginia to Maine. The LADCO states include Illinois, Indiana, Michigan, Wisconsin, Ohio, and Minnesota. To produce special formulations for each market is quite a logistical and formulation management challenge. For this reason, many coatings companies simply supply coatings nationwide that are compliant with the most stringent regulatory market, currently the South Coast Air Quality Management District of California (SCAQMD). In addition to being the district with the most stringent VOC regulations, SCAQMD is the only district

with limitations on colorant VOC. This district is currently in the process of updating its VOC rules for architectural coatings. In particular, the so-called “small container exemption,” which allows manufacturers to sell higher VOC products in quantities of one liter or less, will be restricted. Note that the OTC has recently adopted the latest California Air Resources Board (CARB) standards.

The regulatory landscape can be challenging to understand. California, for example, is made up of 35 different air districts but only a portion have adopted the current (or even the previous) CARB standards. Similarly, not every OTC or LADCO state has adopted its region’s standards. However, what is very clear is that the regulations will continue to become more rather than less stringent. The Clean Air Act requires the EPA to review the National Ozone Standard every five years to protect public health. In 2008, the EPA lowered the standard to 0.075 parts per million (ppm). Very recently, on October 1, 2015, the EPA lowered the standard to 0.070 ppm. As a result, more states and counties in the United States will be driven to create more stringent local VOC standards in order to attain the new ozone limits. It is unclear today if and when the EPA will begin the work of updating the national VOC standard which today allows far higher VOC levels than those districts that have implemented more recent rulings.

Alkylphenol Ethoxylates (APEOs)

Alkylphenol ethoxylates have been in use for many years because of their surfactant properties. For the last decade, they have been severely restricted from use in the European market due to concerns around their aquatic toxicity profile and bioaccumulation profile.¹ Further concern exists that their biodegradation pathway may result in the formation of the corresponding alkylphenols, which have bioaccumulation profiles of greater concern than the ethoxylated analogs.¹¹ The most commonly used APEOs are based on nonylphenol.

As with many chemical compounds, there is disagreement in the industry concerning the level of risk associated with their usage. In the North American market, formulators have been encouraged to voluntarily eliminate APEOs, although there is no regulation. The author’s company has gradually and voluntarily replaced older generation APEO-containing materials with APEO-free resins and surfactants, even though customers and regulatory agencies are not insisting on it. Indeed, one of the benefits of waterborne coatings is that the application tools can be easily cleaned up with soap and water, therefore it is desirable not to have water soluble chemicals of environmental

concern in the formulation. If there is a chance that a material in the paint is toxic to aquatic life, we would rather err on the side of caution and eliminate it.

In-Can Preservation

As VOC levels in architectural coatings have been reduced, preservation of finished paints and also paint ingredients against biological contamination has become more challenging. A waterborne paint formulated at 250 g/L has enough alcohol solvent in it to prevent growth of microorganisms in the can. Today, however, most paints are formulated at 50 g/L or below, increasing their ability to support the proliferation of microorganisms. Unfortunately, the options available to paint formulators are limited.

Formaldehyde-containing preservatives came under scrutiny many years ago and have been mostly formulated out of waterborne paints. Isothiazolinone derivatives have been used effectively as substitutes, but there are concerns around skin sensitization with such products. In Europe, new labeling requirements for isothiazolinone derivatives became active in June of this year.¹² These requirements require that an “allergen phrase” appear on labels of paints containing > 1.5 ppm of CMIT/MIT (5-chloro-2-methyl-isothiazolin-3-one / 2-methyl-isothiazolin-3-one), > 50 ppm BIT (1,2-benzisothiazolin-3-one), and > 60 ppm MIT (2-methyl-isothiazolin-3-one). These levels are, for the most part, below the concentration at which these materials are useful as preservatives, forcing most companies to put the statement “Contains [active ingredient]. May produce an allergic reaction.” on the label. It is not clear if any legislation of this type will regulate isothiazolinone derivatives in the United States in the future.

Various forms of zinc, silver or copper preservatives have been made available to paint formulators as well, although they can cause associated challenges with paint stability and film discoloration. Pyrithione compounds can be used alone or in combination with other preservatives and are generally recognized as safe. In summary, today’s architectural coatings are more susceptible to biological contamination because of their low VOC content. However, the preservation options are limited due to the regulatory and safety limitations of these materials.

Some combinations of preservatives, when used at higher levels, can actually allow the coating to provide a sanitizing effect. In other words, bacteria, mold or viruses from the environment which come into contact with such a coating will be killed off by the preservative at the film’s surface. In the United States, the EPA strictly regulates the claims that can be made relative to human health. Although they allow phrases on the label that fall under

the “treated article exemption,” any further claims require significant testing and approval under EPA protocol.¹³ Therefore, it is common to see label claims related to the dried film being resistant to microorganisms, but it is not common to see claims related to keeping people healthy.

Labor Savings

Since 2009 there has been a major transition in the North American market to paint-and-primer-in-one products. These products are designed to provide primer properties in the topcoat itself, allowing the user to complete a job in a shorter amount of time. If a topcoat can provide adhesion to the substrate, hide imperfections, block minor stains, and give a uniform appearance, then the user can eliminate the step of applying a primer layer. In most cases, a consumer who is performing a residential repaint can apply a paint-and-primer-in-one product. Common sense should prevail in challenging jobs: it is still recommended that a traditional primer be used if the substrate is difficult to adhere to, if the job involves varying porosity in the substrate, if heavy stains are present, if there is bare weathered wood, or if the paint needs to cover severe water or smoke damage. For a typical homeowner attempting to repaint a room over a weekend, paint-and-primer-in-one products offer the opportunity to finish the job faster, along with the convenience of only having to buy topcoat (rather than primer and topcoat).

Another labor-saving trend in the North American market has been a transition to better hiding in architectural coatings. Several items have contributed to enable hiding using fewer coats. First, the development of higher dispensing accuracy of point-of-sale tinting equipment has allowed for the use of more concentrated colorants for tinting. The result is that more color pigment can be incorporated in paint by a given volume of colorant, resulting in better hiding. In addition, the development of paint materials that help to properly space titanium dioxide in the dried film has contributed to improved hiding. Third, the introduction of higher hiding color pigments such as pigment red 254 or pigment yellow 184 allows the formulation of colors with high contrast ratios. As a result, today it is more likely that a paint job can be done in one or, at most, two coats.

Deck Restoration Coatings

One of the trends in the last few years has been the appearance of deck restoration coatings. These are opaque, solid color materials designed for application to a wood deck at a thick film, typically eight to twelve mils. As wood decks age, they can develop cracks and splinters as well as a visually unsatisfying appearance. Replacing a wood deck can be very expensive; therefore lengthening the service life by a few years with a restoration coating can be desirable. By



Figure 1

utilizing a deck restoration coating, the customer can make an older deck functional while at the same time delaying the cost of replacing it. Figure 1 shows a sample of a deck restoration coating applied to a weathered board with cracks.

To be effective, the coating must have the ability to bridge cracks, cover up splinters and hide visual defects. As is the case with any coating on a horizontal surface, the substrate must be properly prepared before application is attempted.

Exterior Paint Properties

Keeping the exterior of a house looking fresh and new can be challenging. Many homes experience extremes of temperature, precipitation, sunlight and particulate matter from the environment. One area of emphasis in the last ten years has been dirt pickup resistance. This is the ability of the coating to retain its original color even after exposure to dust and smog particles. The best way to evaluate dirt pickup resistance is to expose painted panels to an outdoor environment. However, waiting for differentiation of coatings by natural exposure can take a year or longer. Accelerated methods involving wet or dry exposure to dirt have been employed in laboratories in order to predict dirt pickup resistance. This is a difficult property to quantify because there is great variation in the type of dust or dirt present in any given environment, as well as variation in temperature and rainfall.

In general, coatings that are higher in gloss, smoother and harder at the surface have better dirt pickup resistance. The more porous, rough surface of a flat coating allows for dirt to get stuck in the valleys between the pigment particles. A lower Tg coating can allow for dirt to embed itself in the surface when the weather is warm and the coating is soft. Even so, within a given sheen/hardness of coating, one can see great variation in resistance to dirt pickup. There is no magic formula for a

coating with good dirt pickup; we have arrived at most of our formulas by testing individual ingredients in each class of material (binder, thickener, additive, etc.).

In this test, dry dirt was applied to the bottom half of the coated panel. After 10 minutes, the panel was turned vertical so that most of the dirt fell from the surface of the film. As you can see, one coating retains significantly less dirt than the others.

Exterior elastomeric coatings represent a particular challenge for achieving dirt pickup resistance. These coatings are designed to be highly flexible so that they can bridge cracks in the substrate as they form. However, this results in a rather soft, low Tg film that can allow dirt to stick at the surface and embed itself in the coating. Future material development efforts will be aimed at making flexible coatings with some hardness at the coating/air interface to prevent dirt from sticking. Currently, ASTM subcommittee D01.42 is working on publishing a new test method for measuring dirt pickup resistance of architectural coatings.

Another important property for exterior paint is the development of integrity against rain early in the life of the coating, or “early rain resistance.” Exterior painters cannot predict exactly when rainfall will occur. It is desirable to have a coating that will not be damaged or washed away by a rain shower one or two hours after it is applied. This property can be easily tested by exposing painted panels to water streaming from a shower head at a controlled flow rate.

Early rain resistance is achieved by creating a coating that coalesces quickly and accelerates water leaving the film. Usually this property comes at the expense of dry time: a coating that has early rain resistance will become dry to touch very quickly.

VOC-Compliant Oil-Based Materials

Despite the recent trend to waterborne coatings, there are some applications in which oil-based materials are still preferred. For those who want the look and feel of an oil-based wood stain for their deck or gazebo, these materials offer the advantages of good penetration into the wood as well as a water-repelling effect. In general, they need to be re-applied every year or two.

However, these materials are generally very high in VOC and only allowed, in their traditional form, in 33 states. Today product developers are working with low volatility oils and oil derivatives that can provide acceptable application viscosity with less reducing solvent. In some cases, exempt solvents can be used to allow viscosity reduction without adding to the VOC value.

Reduction of VOC of the finished product to 275 g/L allows it to be sold in most areas of the United States, although the South Coast Air Quality Management District of California requires 100 g/L. Similar to the paint analogs, the lowering of VOC in these products presents some challenges as return-to-service time (due to long dry time) and dirt pickup resistance can be compromised.

New Looks

It is possible to produce many novel, eye-catching looks by using special paint application techniques. Faux finish and glaze techniques have been around for many years. Distressed looks which give the appearance of a rusted surface or a tarnished metal are popular. It is possible, with some practice, to become proficient at applying such looks to a wall. In addition, there are many contractors in the market offering professional application of these looks. However, for the average do-it-yourself painter, achieving these looks may require too much skill or artistic talent, and many homeowners are not willing to take on such a project.

Therefore, one of the challenges for today’s paint manufacturers is to develop products that can provide new looks (as opposed to a single, homogeneous color) with a very simple and easy application process. One



Figure 2

very appealing product which has gained some traction in China is “multicolor paint,” which mimics the look of natural stone such as granite or marble. Such coatings are made by producing a product that has individual domains of color which do not mix with each other. When sprayed over a base color, the final finish has an appearance of natural stone. Today this look can only be achieved by spraying, but a version that could be applied with a paint roller would be more suitable to the average do-it-yourselfer who may not be willing to use spray equipment. Figure 2 shows a prototype of a roller-applied multicolor paint.



Figure 3

Another way of achieving a new look is to incorporate some type of larger colored particles into a paint formulation. There are a variety of available raw materials that can be used for this purpose. In general, they need to be larger in diameter than the film thickness of the dried paint so that they are visible after the job is finished. By using various types and sizes of colored particles, a variety of effects can be achieved. Again, this type of coating can be applied by spray or roll application, although most homeowners will prefer to use a roller. The texture arising from the larger particles is useful for providing an aesthetically appealing, non-slip surface to concrete walkways and patios. Figure 3 shows a close up view of such a coating, illustrating the texture achieved via the use of large particle flakes.

In Figure 4 one can observe the appearance improvement resulting from the application of this type of coating to the aged concrete on a pool deck.

Summary


The architectural coatings industry has enjoyed a period of healthy innovation over the last decade. A few of the key drivers have been the conversion from oil-based to waterborne paint, VOC reduction, removal of chemicals of concern, the emergence of paint-and-primer-in-one products, the desire to provide improved film properties such as dirt pickup resistance and early rain resistance, and the desire to provide easy-to-apply new looks. Coatings formulation continues to be a field rich in innovation. As consumer tastes change, regulatory rules change and new raw materials become available, paint formulators will continue to use their expertise and creativity to produce new products. 



Figure 4

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Quiz

Architectural Coatings

1. Although certain regions or specialized applications favor solvent-based materials, a reduction in market share of solvent-based coatings has continued for several decades due to _____.
 - a. Cost effectiveness
 - b. Availability
 - c. Environmental regulation
 - d. Architectural preference
2. Resins are necessary to _____ the latex particles into a continuous film, which is important to the hardness of the dried film.
 - a. Coalesce
 - b. Contain
 - c. Formulate
 - d. Transition
3. Another technical challenge in material development is to come up with raw materials that enable longer open time for the paint user.
 - a. True
 - b. False
4. Open paint time can be impacted by _____.
 - a. Additive design
 - b. Binder design
 - c. Workability
 - d. A & B only
5. The formaldehyde-containing preservatives are being substituted in waterborne paints. Replacements with isothiazolinone derivatives raise concerns of _____, however, pyrrhione compounds are generally recognized as safe.
 - a. Regulation
 - b. Bacteria and mold
 - c. Skin sensitization
6. Another important aspect of preservatives is the sanitizing effect. These can have a beneficial impact on:
 - a. Bacteria
 - b. Mold
 - c. Viruses
 - d. All of the above
7. To address labor-saving efforts in paints and coatings, it is still recommended that traditional primer be used if there are issues with:
 - a. Adherence
 - b. Varying porosity
 - c. Heavy staining
 - d. Weather, water, or smoke damaged wood
 - e. All of the above
8. Labor-saving trends have not found success with the addition of more concentrated colorants for tinting and higher hiding color pigments.
 - a. True
 - b. False
9. Effective coatings must have the ability to:
 - a. Bridge cracks
 - b. Cover up splinters
 - c. Hide visual defects
 - d. Provide dirt pickup resistance
 - e. All of the above
10. The ultimate challenge in today's painting and coatings trend is to provide a safe, easy-to-apply, long lasting new look!
 - a. True
 - b. False

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Through the Roof



BY: KIMBERLY PAARLBERG, RA, INTERNATIONAL CODE COUNCIL

What can be on the roof of your building has literally gone through the roof – pun intended. With the expansion of solar power and green roofs, this can be an important part of energy considerations. More and more this is also a place designers provide amenities for building occupants or is open to the general public – such as dining or drinking al fresco, or swimming or lounging in the sun with rooftop pools and decks. The 2018 IBC has greatly expanded their coverage of occupied roofs. An occupied roof should be classified as the group it most closely resembles (302.1). When I think of an occupied roof, I typically think about rooftop lounges, restaurant or swimming pools. So, for purposes of this discussion we will talk about assembly spaces on the roof, and how this can affect your building design, including provisions for accessibility and accessible means of egress.

It is important to note that the occupied roof does not count towards the building height or area (Section 503.1.4). What this means is that you can have an assembly space on the roof if an assembly space is permitted on the floor below. For example, a 4-story apartment building, Type 3A construction can have a rooftop lounge area because Group A-3 and Group R-2 are permitted 4 stories in the table for number of stories (Table 504.4). There is an exception to this limitation if the building is fully sprinklered and there is an occupant notification system throughout the

building and on the roof (503.1.4 Exception 1). In our example, using this exception the 4 story apartment building with a rooftop lounge could be Type 3B construction even though Group A-3 is limited to 3 stories. The roof would have to have audible and visible alarms to let people on the roof know if there is a fire in the building. What has not yet been clarified is if an occupied roof is considered an occupied floor when determining if the building does or does not have to meet the high-rise provisions in the code (definition of 'high-rise building', 403).

A significant warning is that most items on the roof are limited to a maximum of 48 inches in height (503.1.4.1). Items that can exceed that height are mechanical penthouses (1510.2), towers, domes, spires, and cupulas (1510.5). Code change G136-18 now clarifies that penthouses will include stairways and elevators (with their associated lobbies) that are used to provide access to and from the occupied roof. If the occupied roof had other items, such as toilet rooms, storage rooms, cabana or shade trellis, this would become an additional story to the building. Even



Figure 1

higher guards, such as those shown in Figure 1, would make this occupied roof another story. The language does say “element or structures enclosing the occupied roof,” so growing plants, such as illustrated in the lead photo, would not be considered.

Occupied roofs are required to meet the provisions for accessibility and means of egress, including accessible means of egress (1004.7, 1009.1, 1103.1). For evaluation of these requirements, the occupied roof is considered a story (1006.1, 1006.3, 1104.4).

Accessible routes between stories are most often provided by an elevator

(1104.4). An occupied roof, in most occupancies, can use the 3,000 sq. ft. aggregate area exception (1104.4 Exception 1) for providing an elevator to that level. Keep in mind that this exception is only for the vertical portion of the accessible route between levels, not the accessible route or elements on that level. Unless there is another exception (e.g. the mechanical penthouse is not required to be accessible where accessed only by

service and maintenance personnel, 1103.2.9), elements on the occupied roof would still have to be accessible. For example, even if there was not



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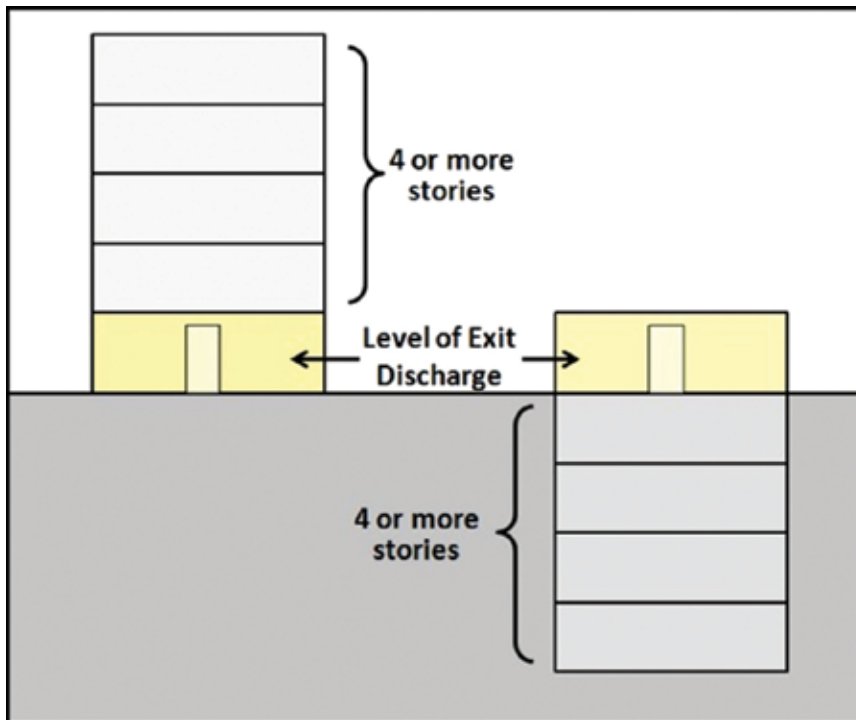


Figure 2

elevator access to a roof top lounge, there could not be raised platforms on the roof that only had steps between them.

Going back to our example of an apartment building with amenities on the roof and to explain where the 3,000 sq. ft. exception would not apply – rooms and spaces that are for use of the general public or residents need to be on an accessible route (1107.3) so that all residents have equal access. An apartment building that has a first floor with Type B dwelling units is not required to have an elevator to

upper floors (1104.4 Exception 2, 1107.7.1). However, if the only lounge, or only pool is on the roof, an elevator may be required in the building. It is tough to argue equivalent facilities for similar items on the ground level, so best practice would be to provide an accessible route to the occupied roof for all apartment buildings.

There may be some situations where the occupied roof would not be exempted from the vertical accessible route by the 2010 ADA Standard for Accessible Design or the Fair Housing Act. Occupied roofs are not directly addressed in either of these

documents, but they both require equal access to services.

Means of egress requirements would be the same as if the occupied roof is a story, including number of exits, exit capacity/minimum width and travel distance (1006.1, 1006.3, 1006.3.2, 1006.3.3). Levels that are required to be accessible are also required to have at least two accessible means of egress (1009.1) where two or more means of egress are required. In one, two, and three-story buildings the accessible means of egress can be met by the two exit stairways to the roof. In a sprinklered building, the extra stairway width and areas of refuge are not required at the stairway (1009.3.2, 1009.3.3). Since the area of refuge is not required, the two-way communication is required in the elevator landing (1009.8) on each floor above the first floor (i.e., level of exit discharge), including the at the occupied roof level. This will allow for any building occupants that cannot use the exit stairway to communication with emergency responders. The elevator landing was chosen as a consistent location where it could be found by everyone with mobility impairments. This is not tied to the elevator having standby power.

Buildings with 4 or more stories above the level of exit discharge are also required to provide standby power to the elevator so that the fire department can use the elevator for assisted rescue if the building has lost power (1009.2.1, 1009.4.1). It is not

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intended for the elevators to allow for self-evacuation since occupants will not know exactly where the fire is. On a flat site, that terminology would mean that a five story building would have to provide standby power to the elevator (see Figure 2). Most buildings this tall are sprinklered. In a sprinklered building, an area of refuge is not required at that elevator (1009.4.2). What was not clear in the 2018 IBC was when standby power would be required to the elevator for an occupied roof – at a 4 story building, or not till a 5 story building. Code change E40-19 revised Section 1009.2.1, so the 2021 IBC will now require the standby power for occupied roofs on 4 story buildings. Section 1009.2.1 still includes an exception for buildings with horizontal exits on every floor (except the level of exit discharge) or ramp access to every floor. While you may have ramp access to an occupied roof, such as in a parking garage or outdoor sports arena, there is no way to provide a horizontal exit on the roof level. The logic for the allowance for not providing standby power to the elevator in a building with a horizontal exit has been that there are large refuge areas where all occupants would be protected from smoke. By the nature of the roof being open to the outside air, it could be interpreted that a similar type of protection is provided for persons on the roof. The fire department should be consulted when developing the fire and safety evacuation plans to see how they plan on using the elevators.

Fire service access elevators are required in buildings with an occupied floor more than 120 feet above the street (i.e., lowest level of fire department access, 403.6.1, 3002.4). The fire service access elevators can also serve as the accessible means of egress.

While accessible means of egress are not required to be added in existing buildings, accessible

means of egress are required to be maintained (IEBC Section 305.2, 305.6 Exception 2). How persons that cannot use the stairways would be assisted is addressed on a case-by-case basis through the fire and safety evacuation plans (IFC Chapter 4). Code change EB94-19 added a requirement for buildings with elevators that are undergoing a Level 3 alteration to add two-way communication at

the elevator landings. This would allow for occupants that cannot use the stairway to have a way to communicate with emergency responders.

So next time you have a chance to get up on the roof, take advantage and enjoy the view! 🏡

*International Code Council
Code references are 2018 IBC.*



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Exterior Continuous Insulation: LESS IS MORE

BY: LANCE WILLIAMS, ARCHITECTURAL SALES MANAGER, ATLAS ROOFING CORPORATION

As the design of framed wall construction has shifted toward exterior insulation, architects must consider new challenges.

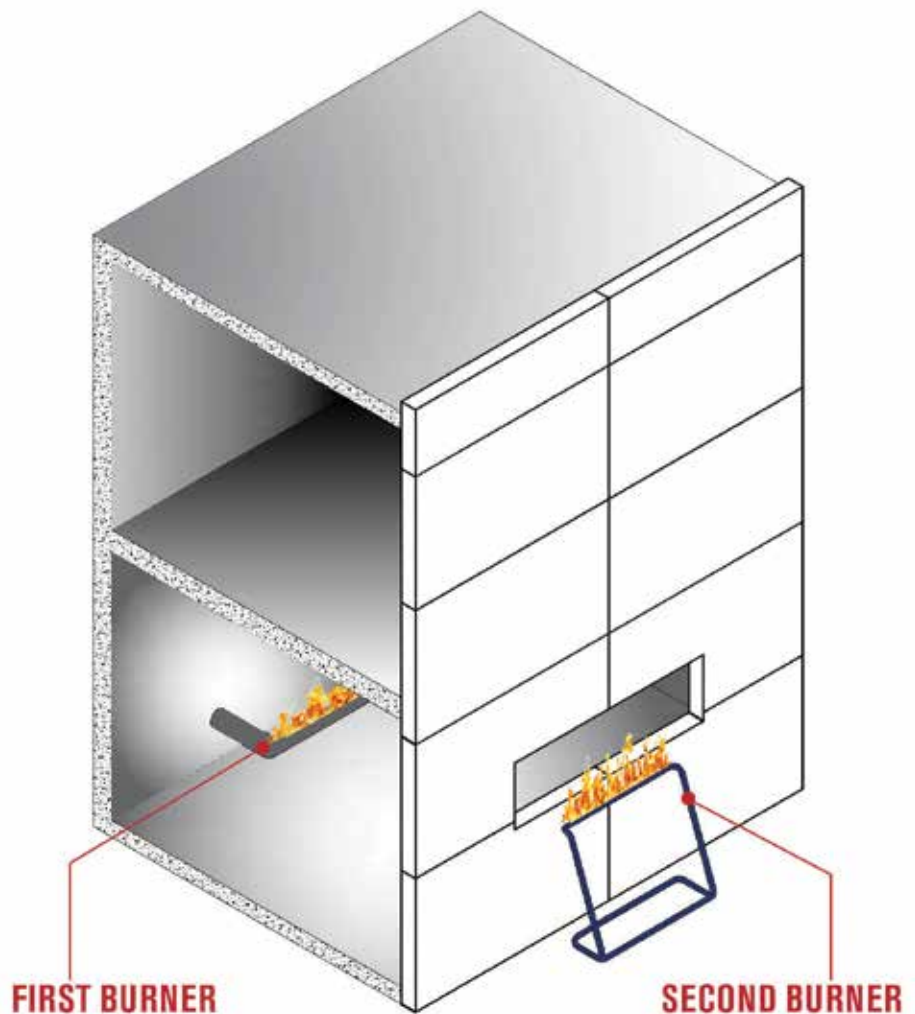
Blaise Pascal, the 17th century French philosopher and mathematician, famously said, “If I had more time, I could have written a shorter letter.” Architects in particular understand exactly what point Pascal was making: simplicity is difficult to achieve. In a landscape of ever-changing building codes, it can feel like there are few sophisticated solutions for complex issues like fire safety, reliable insulation performance, and building service life durability. However, even as building codes evolve, polyisocyanurate (polyiso) rigid foam insulation continues to be the preferred building material that can address many of the modern architect’s most pressing design challenges.

In a series of three articles, we will explore the characteristics of polyiso rigid foam insulation with respect to the top three concerns of most architects. The first and one of the most important to consider is fire safety.

Fire Safety Testing

In order to comply with most modern energy codes, continuous exterior insulation has become an increasingly common design specification. However, the inclusion of rigid foam insulation in most commercial, non-combustible wall assemblies in the U.S. requires NFPA 285 testing.

This test is intense and thorough - a full-scale, two-story wall assembly is subjected to 30 minutes of continuous flames. The first story room contains one of two burners. The first burner, located on the interior side of the test assembly, is lit to begin the test. Five minutes later, a second burner is lit facing the exterior of the assembly just outside the window opening, simulating flames blowing out a window. Every five minutes thereafter, the intensity of the flame is increased. There are a number of ways to fail this intense full wall assembly test, the



most common being temperatures that exceed test thresholds at the thermocouples placed at various points on the assembly and flames reaching further above and/or to the side of a window than allowed.

In addition to being tested for the propagation of flame per NFPA 285, wall assemblies that include rigid foam insulation such as EPS, XPS and polyiso are required to undergo the ASTM E84/UL723 testing for flame spread and smoke development to designate them either as Class A (flame spread index of 25 or less) or Class B (flame spread index of 75 or less). Only Class A rigid foam is allowed in assemblies requiring NFPA 285 compliance.

Different materials, different performance

Not all continuous insulation materials are created equal. Some, like XPS insulation, have a relatively low melting point and can face challenges when tested in accordance with NFPA 285. Further, XPS has limited design choices because it typically only passes the NFPA 285 test when paired with non-combustible claddings.

Rigid foam insulation isn't the only building material to require this test; different types of cladding and water-resistive barriers (WRBs) also must undergo NFPA 285 assembly testing. Between all these elements - cladding, insulation and WRB - the full assembly must pass the test, as

ineffective combinations can result in failure.

In many cases, polyiso insulation can eliminate many of the design challenges created by fire safety testing and energy and building code compliance. Unlike XPS, polyiso does not require additional fire-safing insulation. It can be used behind a wide variety of claddings, including ACM and MCM metal panel, aluminum and fiber cement. XPS can't be used in such assemblies without adding an additional layer of gypsum outbound of the XPS.

When designing for an NFPA 285 compliant wall assembly, selecting an insulation material considered non-combustible does not guarantee NFPA 285 compliance. Mineral wool, a non-combustible insulation, is exempt from NFPA 285 testing but can be used in assemblies with materials that do require NFPA 285. However, specifying mineral wool in a wall assembly does not guarantee an automatic pass. Careful consideration is required when selecting the other components of the wall assembly. Class A polyiso insulation often is the most efficient and effective choice for insulating NFPA 285 compliant wall assemblies as it maximizes the R value, allowing for thinner walls. Further, Class A polyiso can be installed direct to metal studs, eliminating the need for exterior gypsum, and it can service as the air barrier and WRB, further reducing construction and labor costs. Insulating with polyiso provides designers with confidence, simplicity and countless

design options for those who want them.

An Effective Solution

Efficient, modern buildings have become increasingly complicated to design and build, but choosing the right building materials can solve multiple challenges at once. Continuous polyiso foam insulation often is specified for energy efficiency, but it also happens to be one of the safest and most flexible insulation types when faced with fire safety testing.

With polyiso insulation, it's much easier to design an NFPA 285 compliant wall assembly. Polyiso is approved with a wide range of claddings and WRB types that will comply with the NFPA 285 requirements. More importantly, its R value remains stable, as it is unaffected by air movement and moisture that invariably finds its way into the building's wall enclosure. If Blaise Pascal himself were an architect today, he'd surely celebrate the elegance and simplicity of designing with polyiso insulation.

As our series continues, we will next look at moisture management. With continuous exterior insulation, the outboard insulating layer is much more likely to come into contact with air and water in both liquid and vapor forms, potentially increasing damage functions impacting buildings. We will consider these design and performance challenges next. 

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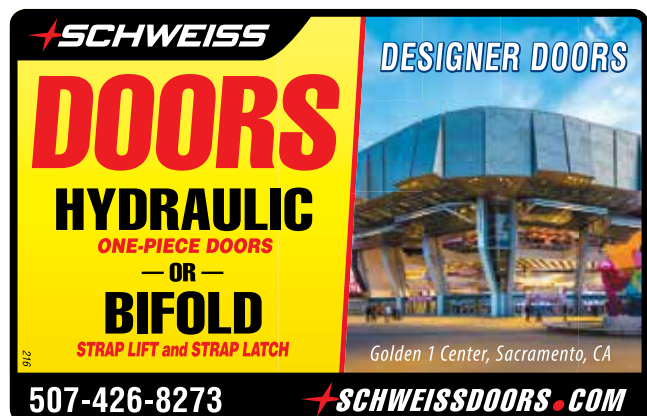
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