IN THIS ISSUE

PAGE 3  
Message from the President

PAGE 4  
2018 APA Convention Wrap-up and Gallery

PAGE 15  
2018 APA Awards for Excellence Winners
CONTENTS

2018 APA Convention Wrap-Up

2018 APA Awards for Excellence Winners

Kiley’s Corner
Mix Design Development

DEPARTMENTS

President’s Message 3

Seay Management Report 21

Cover Photo: Marymount University Ballston
Manufacturer: Arban & Carosi, Inc.
PRESIDENT’S MESSAGE
Mario Forlenza, Modern Mosaic, Ltd

Hello fellow precasters, associates, and professionals.

It was great to see a strong turnout of the APA membership at our 2018 Annual Convention in National Harbor, Maryland. The Gaylord National Resort & Convention Center was a beautiful venue and we enjoyed some dynamic presentations and productive meetings throughout the weekend. Thanks to all of you who attended, and a special “Thank You” to the companies that sponsored these events. You truly make it all possible.

This is a packed Precaster! We have some very informative articles and I know that you will all enjoy the section in this issue highlighting this year’s Award for Excellence winners. Once again, we had a large selection of entries, each of which were excellent, this truly makes judging the submittals a hard task. A special thanks to all of our judges and of course, congratulations to our 2018 winners!

Mark your calendars for the 2019 Spring Workshop, which will be held in Louisville, Kentucky, March 3 - 4. This year’s focus is Motivating & Incentivizing Blue Collar Workers. This topic has been requested many times and we are excited to be able to focus on it and offer our attendees solid steps to face the issue head on. As you may already know, this year we are having the Spring Workshop in conjunction with The Precast Show which is February 28 – March 2. Our hope is that you benefit from having two great events in one beautiful city! We hope you will make it to what is shaping up to be the best Spring Workshop in recent years and arrive a day or two early to see the hundreds of exhibits at the Precast show. Thanks to the NPCA for working with us on this partnership and for offering the APA Spring workshop attendees member pricing for The Precast Show.

Finally, I would like to wish you and your families a wonderful holiday season and a prosperous and healthy New Year.

With kind regards,

Mario Forlenza, APA President

UPCOMING APA EVENTS

2019 SPRING WORKSHOP
Motivating & Incentivizing Blue Collar Workers
Louisville, KY
March 3 - 4, 2019

2019 ANNUAL CONVENTION
The Scottsdale Resort at McCormick Ranch
Scottsdale, AZ
September 27 – 30, 2019
2018 Annual Convention Wrap-Up

We hope you enjoyed the 2018 APA Annual Convention. We appreciate each of you attending and making it another successful meeting! We would like to start by thanking our sponsors. We are so appreciative of the support you provide the Architectural Precast Association and look forward to partnering with you again in the future.

This year’s Annual Convention was packed with informative sessions and fun-filled cocktail receptions. Attendees were able to enjoy the beautiful grounds at the Gaylord National Resort & Convention Center as well as some fantastic sightseeing opportunities in the area!

The APA Awards for Excellence were absolutely wonderful, as we all celebrated the outstanding work that so many of our producers accomplished over the past couple years.

We are also excited to share that because of your generosity, we were able to raise over $3,500 for The Cure Starts Now in memory of John Bradley Thompson. Thank you all for your heartfelt support and commitment to help find a cure for Diffused Intrinsic Pontine Glioma (DIPG).

We are already planning for the 2019 Annual Convention. Mark your calendar now for September 27-30, 2019 when we take the APA Convention to beautiful Scottsdale, Arizona – You will not want to miss it.

APA Board of Directors Special Recognition

During the program Jesse Thompson, Clarke Jewell, and Carl Hall were re-elected to serve on the APA Board of Directors. We congratulate all of you on this honor and wish you great success in your three year term. We would also like to recognized a member who is leaving the board at the end of the year, Tom Soares. Tom has been an integral part of the APA board and he will be greatly missed. Thank you Tom for your service and your continued support.
ANNUAL CONVENTION WRAP-UP & GALLERY

Arban & Carosi, Inc. Plant Tour
Arban & Carosi, Inc. Plant Tour

Smith-Midland Plant Tour
THANK YOU TO OUR SPONSORS

PLATINUM

LEHIGH
WHITE CEMENT

GOLD

JVI
MeadowBurke
TRU ABRASIVES

SILVER

FEDERAL WHITE CEMENT

PLANT TOUR BREAKFAST

ASSOCIATE DISPLAYS / ASSOCIATE PRESENTATIONS

ADVANCED CONCRETE TECHNOLOGIES
ALP SUPPLY
ISOTEC
Kem-O-Kleen
MIX
Polytek Development Corp.
SMOOTH-ON
thermomass
TRIMAX
VOELLER
When normal ready-mix concrete is made the largest aggregates in the mix can range from 1-1/2 inches down to 3/8ths of an inch in size with compressive strengths that can be as high as 10,000 psi. Good mixes are “well graded” meaning the voids between the largest aggregates are filled with smaller aggregates and so on down the line until there is the least amount of void space possible. Ultra-High Performance Concrete (UHPC) is like that except that filling the voids between aggregates is referred to as “particle packing.” Sri Sritharan, the Wilkinson Chair of Interdisciplinary Engineering at Iowa State University’s Department of Civil, Construction, and Environmental Engineering, Ames, Iowa, adds that particle sizes for UHPC are kept very small to create a more dense matrix, the largest size not exceeding 600 microns (about the size if a grain of silica sand). This helps increase the standard compressive strength of these mixes in excess of 22,000 psi.

In the beginning it was called Reactive Powder Concrete (RPG) but that changed in the mid-nineties when it became known as UHPC. Research on this product originated in Denmark as far back as 1964 as a part of their effort to develop higher strength concrete mixes. Their research focused on very dense particle packed mixes with low water/cement ratios and in the 1970’s the development of superplasticizers (High Range Water Reducers of HRWR) further helped to achieve low water/cement ratios. Dominique Corvez, Vice President and head of Ductal North America for Lafarge, whose headquarters in the U.S. are in Chicago, Illinois, says they began to look at this technology in France too. Contractors experimented with it first but LaFarge, one of the world’s largest cement producers, developed an UHPC product they called “Ductal” and it is still in use.
today. In the beginning every batch was made from scratch but today there are several commercial producers of packaged dry mixes. LaFarge Holcim is one of the largest producers of this.

Advantages of UHPC
Compressive strength is the most recognized way to characterize UHPC. As previously stated, compressive strengths are expected to be in the 22,000 to 30,000 psi range to be considered UHPC but research studies of cured UHPC under high pressure and heat have produced compressive strengths as high as 116,000 psi to date. But there are other unique advantages too.

- High modulus of elasticity (MOE) which can be in the 7,500 ksi range
- High tensile strength compared to normal concrete
- UHPC has high bond strength to steel reinforcement and this can reduce the size of a concrete placement needed to bond concrete elements together
- It has excellent resistance to freeze-thaw cycling without the need for air entraining admixtures
- Structural elements can be smaller and more lightweight compared to those made with normal concrete
- Architects can design thinner concrete elements, improving the architectural appearance of their work
- It is a very dense material with capillary pores eliminated making it impervious to water and salt penetration without sealing the surface
- It has very low shrinkage and can be used as a non-shrink grout
- It faithfully transfers even the finest relief from molded surfaces resulting in more ideal architectural concrete pieces

Ingredients
The goal for UHPC is to produce very dense impervious concrete by particle packing—arranging particle sizes in the mix so there is minimum void space between particles—in a very low w/c ratio environment. Similar to self-consolidating concrete (SCC), UHPC flowability is measured in “spread” rather than inches of slump.

UHPC is normally mixed on the construction in small amounts with a high-shear pan mixer. But sometimes special ready-mix trucks are used. Shown here, ingredients are loaded into the drum for mixing. Photo Credit: Sri Sritharan

Spread diameters of 12-20 inches are common, making it easy to place and consolidate, resulting in very high strength and good resistance to environmental damage.

There are many different mix designs for UHPC but they will use some or all of the ingredients below:

- Cement. Portland cement with a little longer hydration process is preferred
- Ground Limestone. Used as a fine aggregate
- Sand. The largest size aggregate in the mix.
- Quartz powder. Very finely ground silica which is used to provide vital particle sizes
- Fly Ash. A supplementary cementitious material (SEM) that also helps with the particle packing process
- Silica Fume. A SEM with particle sizes as little as 1 micron to help densify the mix.
- Admixtures. Polycarboxylate superplasticizers (High Range Water Reducers) which are used to assist in the mixing and placing process and making very low w/c ratios possible
- Fibers. A range of fibers are being used in UHPC mixes. They include; steel, glass fiber, Poly Vinyl Acetate (PVA), polypropylene, and others.
amount of each depends on the material used but steel fibers are typically dosed 2% to 3% by volume of the mixture. This corresponds to 0.5 to 0.8 cubic feet of fiber and the fibers are very thin, usually 0.2 millimeters in diameter.

- Water. The low amount of water, approximately a 0.2 water/cement ratio, reduces shrinkage and increases the strength of the concrete

Mixing UHPC
Due to the fineness of the materials and the very low w/c ratio mixing UHPC mixes requires special equipment. Sritharan says most UHPC is mixed on construction sites with high-shear pan mixers but he says he has been on sites where special ready-mix trucks were used. Mixing UHPC from scratch requires an involved blending process to properly distribute all the fine powder materials together. As a result, most UHPC construction applications today use pre-bagged products. For this and other reasons less than 1-1/2 cubic yards is typically mixed at one time.

Heat curing
Sritharan says that subjecting UHPC to steam curing with temperatures in the 194°F range develops high early strength. Steam curing for 48 hours enables UHPC to attain its full strength quickly and when high pressure is introduced with elevated steam temperatures it’s possible to greatly increase strength even more.

Construction site applications
UHPC is costly to make—much higher than standard concrete mixes and perhaps this is the reason its acceptance has been slow. But when all the benefits are considered it can be cost effective. In the U.S. infrastructure and bridge construction is currently the biggest UHPC user, mostly for connecting precast bridge elements together. It is usual to provide 18 inch reinforcing bar overlaps for proper anchorage but UHPC installations require only 9 inches due to its superior bond strength. As a result concrete yardage for these junction spaces is much less and there is greater resistance to ambient conditions.

Sritharan says the Iowa Department of Transportation is also researching the use of UHPC as an overlay material for bridge decks. A 1 to 1-1/2 inch thick overlay can supply ultimate protection for bridge decks, as they aren’t affected by salt, other deicing compounds or freeze-thaw cycles.

Thin Architectural UHPC Composite Panels
Kevin Gannon, RA, the Director of Program Development for Taktl LLC located in Turtle Creek, Pennsylvania, says one of their biggest problems is differentiating Architectural UHPC (AIUHPC) from civil engineered ready mix products and also Taktl products from Spray-in GFRC or extruded GFRC products. AIUHPC uses only non-metallic reinforcing fibers and often includes continuous mesh. Because of the thinness of UHPC panels, the mix design, and manufacturing methods favor flexural strength over compressive strength, while retaining all of the durability factors expected with UHPC. With the greatest resource for UHPC material reference standards being the Federal Highway Administration, architects are bound to have specification challenges. Taktl has made great strides with regard to establishing the reference standards and criteria for architectural UHPC facade.
applications. They focus their technical sales and project management resources on educating designers and supporting contractors. “Once they use the product they readily specify it on other projects,” he adds.

Taktl originally focused on complex injected molded UHPC castings says Jason Flannery, the companies Design Director. It was an outgrowth of their metal outdoor fixture and furnishing business. They began to look at concrete because of how it could be shaped for facades. He says they began manufacturing UHPC facade panels in 2010, something no one else was doing in the US. They spent three years doing research and developing equipment. “We decided early on to develop the new company vertically—do every phase of the work in house from mold development and construction to innovating a continuous semi-automatic casting process,” he says. Today their only business is UHPC architectural concrete and they have a 200,000 square feet under roof with 150 employees. Last year they produced 1.5 million square feet of facade cladding, including hospitals, museums, university building and mixed use high-rise buildings – either field set in rainscreen cladding assemblies, or integrated into unitized facade systems.

Dr. George Quercia, Taktl’s Director of Research says they produce UHPC curtain wall panels which are only 5/8 inches thick. Within this thickness are two layers of mesh as well as glass fiber reinforcement. Typical panel sizes are 4 x 10 feet but they can cast up to 5 x 12 sizes and instead of forming each panel they cast oversize and trim them to size with concrete saws. These panels can replace 6-inch thick normal concrete curtain wall precast

In the factory 5/8 inch thick UHPC panels are lifted by the yellow lifting device from the assembly line (top left). At the University of Cincinnati, Lindner College of Business (Cincinnati, OH) 23,000 ft2 of UHPC 5/8” custom aggregate curtain wall are being installed. Photo Credit: Taktl
panels. The thin panels reduce transportation costs significantly and economically extend the distance to construction projects.

There is another advantage to architectural casting with UHPC—finely detailed mold surfaces are faithfully transferred to the casting due to the very small aggregates and paste structure of the mix. This makes it possible to create ever more detailed mold surfaces to achieve more stunning looks.

The value of UHPC

Though it is considered a new kind of concrete and doesn’t have much name recognition, UHPC has many advantages. Its great strength means that less material is needed to accomplish what regular concrete does. This can translate to engineering lighter structures starting with their footings. Water and ambient conditions that shorten the life of other types of concrete have little effect on UHPC because of its impermeable nature, providing a much longer pristine lifespan. Sticker shock might cause you not to give it a second thought but that would be a mistake. When everything is taken into account, strategic use of UHPC could turn out to be a bargain.

This article was first published in the August/September 2018 issue of Concrete Contractor Magazine. Reprinted with permission.

This shows what some of the possibilities are with UHPC cast dimensional corners, screens, and textures. Photo Credit: Takt!
SAVE THE DATE

2019 APA Annual Convention

The Scottsdale Resort at McCormick Ranch

Scottsdale, AZ

September 27 – September 30, 2019
Each year, the Architectural Precast Association hosts its Awards for Excellence program, which recognizes excellence in design, manufacturing and craftsmanship of architectural precast concrete structures and individual components. 54 award entries were received and 14 awards in 7 different categories were presented during the 2018 Annual Convention in National Harbor, Maryland.

The Design & Manufacturing Awards are judged by a jury of architects and the Craftsmanship Awards are judged by a jury of peers. The APA would like to thank Manoji Dalaya and Christopher Gordon with KGD Architecture and Duncan Kirk with HOK for their help judging the Design & Manufacturing Awards. Also, a special thanks to Dino Diana from American Stone Virginia, Chris Cox from Castone Corporation in Alabama and Carl Hall from Speed Fab-Crete Corporation in Texas for judging the Craftsmanship entries.
BAYHEALTH HOSPITAL - MILFORD
Design: Cannon Design
Manufacturer: Arban & Carosi, Inc.
Category: Craftsmanship & Medical/Government

Jury Comments:
• The wave pattern on the spandrels with its random peaks and slopes, and even an inverse wave, required keen attention to detail in some very complex formwork to fuse the building façade to the surrounding coastal geography.
• The random patterns required the producer to use multiple mold materials, and allowed very little, if any repetition in the formwork, thereby increasing the complexity of the job.
• In spite of the depth of the forms and the various shapes on the surfaces, the producers succeeded in providing a uniform and consistent colors and texture.

BENSON RESIDENCE
Design: Meyer, Greeson, Paullin, Benson Architecture & Interior Design
Manufacturer: Lucas Concrete Products
Category: Residential

Jury Comments:
• Unapologetically traditional and rigorously executed.
• Very careful detailing.
• Crisp cast stone details contribute significantly to the overall effect.
CORNELL NYC TECH
Design: James Corner Field Operations
Manufacturer: Sun Precast Company, Inc.
Category: Craftsmanship & Trim/Landscape

Jury Comments:
• Very nice consistent form work producing an intricate and pleasing to the eye architectural design.
• Excellent attention to detail with the accurate placement and location of the hostile architectural blades.
• Nice development of the batch design yielding an even distribution and uniform color.
• Very nice consistent form work producing an intricate and pleasing to the eye architectural design.
• Excellent attention to detail with the accurate placement and location of the hostile architectural blades.
• Nice development of the batch design yielding an even distribution and uniform color.

HINES – 700 PENNSYLVANIA AVENUE
Design: Gensler
Manufacturer: Modern Mosaic, Ltd.
Category: Commercial

Jury Comments:
• Contextual with a twist. This design projects tremendous weight and scale in a small building.
• The expressionistic form stands out boldly, while its brick finish blends quietly into the fabric of the historic neighborhood, creating an exciting tension.
LODGE KOHLER
Design: Elness Swenson Graham
Manufacturer: International Concrete Products, Inc.
Category: Craftsmanship

Jury Comments:
• This is a beautiful combination of an acid-etched precast finish and thin brick in the architectural precast panels, providing a very contemporary look with traditional materials.
• Particularly challenging were the Flemish Bond pattern and the English Corners, both of which required the production team to use multiple form liners, and cut a large number of the brick.

MAIN STREET CUPERTINO TOWN-CENTER GARAGE
Design: The Guzzardo Partnership, Inc.
Manufacturer: Architectural Facades Unlimited, Inc.
Category: GFRC

Jury Comments:
• A nicely executed rendition of Art Deco design on garage spandrel panels.
• An appropriate and effective use of GFRC material.
MARYMOUNT UNIVERSITY BALLSTON
Design: Gensler
Manufacturer: Arban & Carosi, Inc.
Category: Educational/Spiritual

Jury Comments:
• Successful scale, massing and siting of the building. Façade material choices clearly reinforce major building masses.
• Terracotta faced precast volume is well articulated and carefully detailed.
• Very crisp integration of precast, terracotta and metals.
• A machine like precision.

TWO MERRIWEATHER OFFICE BUILDING
Design: Gensler
Manufacturer: Arban & Carosi, Inc.
Category: Commercial

Jury Comments:
• The jury was drawn to the portion of the envelope that featured a precast frame seemingly floating on top of a glass curtainwall, in contradiction to its construction. An unusual effect is achieved.
• The formwork and joinery are crisp and well executed.
• Very consistent finishing considering the depth and profile of the panels.
UNIVERSITY OF CHICAGO CAMPUS NORTH RESIDENTIAL COMMONS
Design: Gensler
Manufacturer: International Concrete Products, Inc.
Category: Residential

Jury Comments:
- A wonderful project and a top pick from our jury.
- Bold massing is clad in complex twisting precast shapes with razor sharp edges.
- Panelization and joinery are outstanding.
- Great design and execution.
- This project is really all about precast. Beautiful!

VIA 57 WEST (DURST PYRAMID) COURTYARD
Design: Starr Whitehouse Landscape Architects and Planners
Manufacturer: Southside Precast
Category: Craftsmanship & Trim/Landscape

Jury Comments:
- The design complements the architecture seamlessly, extending the classroom and collaborative spaces to the exterior, enhancing function and completing the composition.
- There is high technical merit in the consistent finish of the curved, hand burnished precast benches.
- The judges were impressed with the amount of one-off, individual mold work required for the hardscape project.
- Each unit had unique sectional and radius properties requiring both accurate design and execution of mold construction.
- The units themselves exhibit clean, soft and flowing curved surfaces consistent with quality mold work and fabrication.
WEATHERING THE STORM

Recently, our country has been reeling from massive wind, flood, and fire destruction; with increasingly active seasons intensifying the probability that employers may experience closures or property damage. Here in Florida, we contend with hurricanes but we understand that other parts of the country deal with tornadoes, blizzards and violent thunderstorms. Many times these storms cause employers to close business operations for one or more days – usually without warning or preparation.

It is our hope that, by highlighting several key points that employers must know, we can assist your business to feel confidently prepared to deal with whatever nature throws your way.

Communication is Key

In times of trouble, employees are often unaware of who to call to discuss whether or not they should report to work. Taking into consideration both employment regulations and best principles of management, here is a policy you may wish to incorporate into your employee handbook:

[COMPANY NAME] recognizes that emergency conditions may develop which, for the safety of our employees, might require the temporary closing of the company’s facilities. Should that situation occur, a representative of management will announce that emergency conditions exist and will communicate that the company will close.

When an emergency closing occurs during the workday, exempt employees present for work will be paid for the entire day and non-exempt hourly employees present for work will be paid for the number of hours worked that day. Emergency closing during the workday will be announced to the various supervisors, who will be
In times of trouble, employees are often unaware of who to call to discuss whether or not they should report to work.

Although not a regulation, some employers choose to pay non-exempt employees for some or all lost time but that is a matter of company policy (and should be stated in the company handbook). Some employers argue that disaster pay to employees is good for employee morale during a difficult time and fosters employee loyalty. Others say that payment may be a good idea but the budget doesn’t allow it. Either way, it is up to the employer.

Unemployment Compensation

Some employers wonder, “If a storm prevents an employee from working for one or more days, is that employee eligible for unemployment compensation?”

The answer is a bit complicated because unemployment compensation is a function of each individual state, but the short answer is yes (as long as the employee has earned the appropriate level of wages during the “base period” of time - which varies by state).

Unemployment compensation is paid when employees are out of work for reasons other than their own misconduct but some states (like Florida) require a one-week waiting period, except that there is a special exception in the event of a disaster. There are many other qualifications a person must meet prior to drawing unemployment – for example, if an employee misses a day or two of work due to a hurricane then, technically, the employee can file a claim; however, if the employee has earned more than the weekly unemployment benefit would be then he or she would not be able to qualify. The bottom line is that, while an employee has the right to file a claim for a day or two of missed work, the odds are that he or she will not be eligible due to the qualification requirements.
Another consideration is how to navigate unemployment when accrued vacation time is being paid. Generally, unemployment benefits are reduced by any earned income payable (to the extent it exceeds the federal hourly minimum wage rate). Although Florida does not specifically list vacation pay in the definition of earned income, vacation pay would likely be considered “derived from work” and would be used to reduce unemployment benefits.

Leave of Absence
FMLA, Military Leave, and company specific Unpaid Leave Policies are all things to consider during a time of weather related disaster. Although being out of work due to a natural disaster in not an FMLA qualifying event, an employee could qualify for FMLA leave if, as a result of a natural disaster, the employee suffers a physical or mental illness or injury that meets the definition of a “serious health condition” and renders them unable to perform their job. FMLA could also apply if the employee is required to care for a spouse, child or parent with a serious health condition who is affected by the disaster.

Calculating FMLA Leave When the Workplace Closes

If an employer shuts down because of damage related to a hurricane or other natural disaster, and an employee was out on FMLA leave at the time the office closed, is the employee charged FMLA leave for these days?

The FMLA regulations (at 29 CFR § 825.200(h)) clearly state how an employer should calculate FMLA leave when it shuts down its operations:

If for some reason the employer’s business activity has temporarily ceased and employees generally are not expected to report for work for one or more weeks (e.g., a school closing two weeks for the Christmas/New Year holiday or the summer vacation or an employer closing the plant for retooling or repairs), the days the employer’s activities have ceased do not count against the employee’s FMLA leave entitlement.

Therefore, regulations indicate that, if an employer’s business is closed for a week or more because of a natural disaster, the days that the business is shuttered could not count against an employee’s FMLA leave allotment. Keep in mind: in these situations, employers cannot count the time against the employee’s FMLA allotment even if it is obvious the employee would not have been able to perform the duties of the job during the break.

Employees serving in the National Guard may also require additional leave to assist in cleanup efforts. These employees assisting with relief efforts may separately qualify for protected time off. Under the Uniformed Services Employment and Reemployment Rights Act of 1994 (USERRA), employees may take a leave of absence for service in the uniformed services. The USERRA covers employees engaged in the National Guard, given that the President of the United States calls the National Guard into action. Service in the National Guard for a unit activated by a state governor, rather than the president, and work for the Federal Emergency Management Agency generally would not be considered part of the uniformed services under USERRA.

It is also prudent to be prepared to handle requests for accommodation. The Americans with Disabilities Act (applicable to employers with 20+ employees) and related state and local antidiscrimination laws require employers to provide reasonable accommodations to qualified employees with disabilities. Because employees who sometimes physically or emotionally (e.g., post-traumatic stress disorder) injured by weather related incidents, those impacted may be entitled to an accommodation, and employers should take all such inquiries seriously.

continued on next page
Next Steps

Regardless of regulations, a natural disaster will probably present extraordinary circumstances that may result in an employer deciding to grant time off to employees affected by the disaster. Strict adherence to leave policies helps to minimize exposure to risk in normal operating circumstances, but when a disaster strikes, flexibility and consideration go a long way in maintaining happy employees. Just remember, if you do choose to make exceptions, be mindful to not engage in discrimination - ensure that such exceptions are based on legitimate, non-discriminatory reasons and are consistently applied across the workforce. Inconsistent application of workplace rules and policies are often relied upon by employees raising claims of discrimination.

Natural disasters are not only scary, their impact can have a lasting effect on both employees and employers. But with good policies in place, a little preparation, and a lot of communication your business will be able to weather the storm.

Employees serving in the National Guard may also require additional leave to assist in cleanup efforts. These employees assisting with relief efforts may separately qualify for protected time off.

Very best regards,
THE SEAY MANAGEMENT CONSULTANTS STAFF

Remember, if you have an employment issue or challenge, and you need an answer right away, and you want the very best Human Resources Management advice available, you need to call The Seay Team!
888-245-6272 | www.seay.us

Click this link to register!
Mix Design Development

By Kiley Marcoe, Metro Precast & Stone Services, Inc.

Before any architectural stone can be repaired a repair mix design needs to be developed that will mimic the stone in both color and texture. It is important to start with dry screened material that was used in the manufacturing process. The repair material used to remediate architectural concrete and cast stone cannot be batched from the ratio as the original concrete mixture due to the differences in the placing consistency (water to cement ratio) and the curing environment.

On existing buildings or when the mix design or materials are not available it is not uncommon to use other sands, different cement color blends, and mineral pigments and the development of a repair mix that will mimic the architectural concrete.

When the original mix design and original materials are available the approach that is taken in developing the patching mixture is started by reducing the production mix design down to a patch size batch, approximately 3 lbs. Usually you can simply change the weights from pounds to grams.

<table>
<thead>
<tr>
<th>Original Mix Design in pounds</th>
<th>Repair Mix Design converted to grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lehigh White- Type 1 Portland Cement</td>
<td>Lehigh White- Type 1 Cement</td>
</tr>
<tr>
<td>Puddle Duck- Fine aggregate</td>
<td>Puddle Duck Fine aggregate</td>
</tr>
<tr>
<td>DCS #25- Pigment</td>
<td>DCS #25- Pigment</td>
</tr>
<tr>
<td>DCS #620- Pigment</td>
<td>DCS #620- Pigment</td>
</tr>
</tbody>
</table>

The batching of materials should be performed with scales. It is important to never batch material by volume. The settling of cements can dramatically affect the repair color.

*Fresh cement out of a new bag*

*Settled cement from leaving it in the van for a couple of days, note that the same one cup volume has 65 grams more cement than the cup from the image above with fresh cement.*
Using different water to cement ratios from batch to batch can also result in color variations of the repair mix. When making a mix design use a water to cement ratio of approximately .35 to .55, a simple test for mix consistency is using a trowel test method. Your color will be consistent if the mix always sticks to the trowel from batch to batch.

Develop a repair mix design early before any job goes into production and compare your samples to the approved 12”x12” project sample. This allows for repair to first days production. When making repair mix samples start with the reduced actual mix design as starting point or sample color #1. Gradually increase the white cement by 10% for sample #2, #3 and so on. I recommend making at least six repair sample colors. A muffin pan is a great mold for multiple samples.

Use the pigment in the mix design as control, do not change the pigment weight from sample color to sample color. To adjust the sample color, change the amount of the sand and cement not the pigment amount.

<table>
<thead>
<tr>
<th>#1 Red</th>
<th>#2 Pink</th>
<th>#3 Salmon</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 grams sand</td>
<td>600 grams sand</td>
<td>650 grams sand</td>
</tr>
<tr>
<td>250 grams white cement</td>
<td>300 grams white cement</td>
<td>325 grams white cement</td>
</tr>
<tr>
<td>.5 grams red pigment</td>
<td>.5 grams red pigment</td>
<td>.5 grams red pigment</td>
</tr>
</tbody>
</table>

Always perform a mock-up for all types of repairs. Install a mock-up of the 3 best sample colors the best matching sample is very rarely the best repair color. This is due to the fact that samples are poured and repairs are trowel applied and often thinner than the muffin sized samples.

Mock-ups at the precast plant are as important as mock-ups on the jobsite. For jobsite work it allows for approval of the patch color by the architect and establishes the quality level for repair work.
Mock-ups also set the criteria for the amount of repairs to be performed. This process saves money by avoiding returning to the project to perform repairs in areas already worked.

In the below images mock-up color #2 was slightly too dark but mock-up #3 matched very well.
APA MEMBER BENEFIT:  
HR & EMPLOYMENT HOTLINE

As valued association members of the Architectural Precast Association, you have unlimited access to a complimentary HR & Employment HOTLINE through our partnership with Seay Management Consultants. This HR & Employment HOTLINE is available to you at NO COST and will provide answers to your human resources, personnel management and employment related questions.

Hundreds of employee questions arise in day to day business and almost every one of them can be different – questions about COBRA, FMLA, EEOC, ADA, and so many others. Sometimes a simple question can turn into a complicated or costly concern if it’s not handled properly.

When you have a question and need an accurate, straight forward answer, simply contact Seay Management Consultants and identify yourself as an APA member.

HR & EMPLOYMENT HOTLINE
Email: admin@seay.us
Toll Free: 888-245-6272

**HUMAN RESOURCES SPECIAL MANAGEMENT PROJECTS***

<table>
<thead>
<tr>
<th>Employee Handbooks</th>
<th>Management Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affirmative Action Plans</td>
<td>Supervisory Training</td>
</tr>
<tr>
<td>Equal Employment Opportunity</td>
<td>Compensation Management</td>
</tr>
<tr>
<td>Resolving Discrimination Charges</td>
<td>Salary Administration Programs</td>
</tr>
<tr>
<td>HR Audits</td>
<td>Developing Job Descriptions</td>
</tr>
<tr>
<td>Wage and Hour Analysis</td>
<td>Americans With Disabilities</td>
</tr>
<tr>
<td>Employee Opinion Surveys</td>
<td>Employee Conflict Resolution</td>
</tr>
</tbody>
</table>

Sexual Harassment Prevention
Wage and Hour Investigations
HR Workshops and Presentations

*Special Projects will be offered at a reduced hourly rate for clients of APA.*