



3RD QUARTER
2017

THE AGGREGATE

THE NEWSLETTER OF THE BALTIMORE WASHINGTON DC CHAPTER OF ICRI

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- C&O CANAL AQUEDUCTS
- SEPTEMBER DINNER MEETING
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CHAPTER CALENDAR

3rd Quarter Dinner Meeting
September 7, 2017

ICRI-BWC 26th Annual Golf
Tournament
October 5, 2017

4th Quarter Annual Awards
Banquet
November 2, 2017

Chapter Service Project
Build Day at the
Metro Maryland Habitat
for Humanity
November 4, 2017

The ICRI National 2017 Fall
Convention
Hyatt Regency New
Orleans, New, Orleans, LA
November 15-17, 2017

Fall Technical Seminar
December 7, 2017

MESSAGE FROM OUR PRESIDENT

SHANNON BENTZ
DESMAN



Shannon Bentz

There went another summer! Kids are back at school and the regular routine is starting to take shape. BW Chapter of ICRI is nothing routine this year. As we strive to improve our chapter and membership we continue to learn how to work with our new management company, Adverse Creations and how to work in our new roles as board members, committee chairs and chapter members.

I'm delighted to say that we have some new faces and budding interest in our memberships. I myself look forward to seeing some of these new folks at our dinner meetings and social events.

I know everyone is busy winding up their summer and getting prepared for the fall, but as we near the 3rd Quarter, ICRI has a lot to offer that shouldn't be forgotten. While these events get announced and posted they sometimes get overlooked.

- The Golf Tournament is just around the corner! We have maxed out with record attendance in the past and this even is one of the best. Don't forget to sponsor a hole, register your foursomes and get in a few practices because the event takes place in early October.

- The Fall Seminar is held in early December at CPR's "house". This year our theme is Pre-cast related and we are already filling presenter slots. If you have an interesting presentation, product or project related to precast (connections, failures, repairs, preservation, durability, etc.) please contact the BW Chapter.

- The national Fall Convention is coming up November 15-17th in New Orleans. NOLA is such a fun town and I am sure plenty of our members are planning on attending. If you are, why not have ICRI contribute monetarily towards your trip? If you register as our chapter delegate and attend the sessions, we will cover a fair share of these

costs. This boasts points for your chapter towards national awards each year. Please contact the BW Chapter if you're interested.

- Scholarship applications have been available on the website. There isn't much time to get these completed before our committee must begin the review process. As a member, your sons/daughters who are enrolled in college have the opportunity to receive a scholarship paid directly to the registrar from the BW Chapter.

- Project awards are also being considered. Everyone has that one story they love to tell regarding a project. Sometimes it's the cost, the solution, the problem, the repair, the approach, the location. While the project seemed to be nothing to speak of, my favorite one to discuss involves, detecting a non-existing façade leak that led to the complete reconstruction of a masonry wall all because of a feline friend. Ask me about it at our next dinner meeting. If you have a story to tell, you could be awarded project of the year. So please submit your nominations.

- Board nominations are also being compiled. If you would like to serve on our board, become more involved, make a difference and share your expertise, please consider joining our Board of Directors. Simply let a current board member know of your intent and we will be sure you are added to the ballot.

- It is also time for Habitat for Humanity where we give back to our community. Information will be forthcoming as we schedule our Build-Day.

The list can go on. Please take advantage of these opportunities and visit our website www.icribwchapter.org for all the up to date information. You can also email us at icribwc@gmail.com if there are comments, questions or feedback.

I look forward to seeing all of you at this dinner meeting.

Shannon

PROVIDING A CLEAR EGRESS

By David Caple

Many restoration projects involve conditions that make entering and exiting the jobsite complicated.

A few things to consider:

Complications can include storage of debris, equipment, materials, and use of shoring and formwork to name a few. When walking a jobsite the field managers should assess the site for situations where this hazard may arise. OSHA states in its rules that a contractor shall provide and maintain free and unobstructed egress from all parts of an occupied building. In addition, exits shall be marked by readily visible signs. In recent talks with other local safety professionals this is an item that OSHA has been citing frequently, most recently. Here are a few tips that could help you avoid costly fines, penalties and losses.

Simple Solutions:

For example, jobsites with tight shoring designs can be confusing in an emergency when an employee must exit the building through the work area. Marking the clear path through the jungle of shoring with "caution tape" or similar product is an easy and effective way to designate the proper route for egress. These isles must be kept clear of debris or other trip hazards. If a repair location falls in line with an exit sign or the conduit to the exit sign is damaged during demolition appropriate temporary measures need to be taken to mark the exit until the sign can be properly repaired or replaced. Never use a fire exit for storage and never lock or fasten a fire exit in a manner that restricts free escape from the inside when the building is or could be occupied.



Conclusion:

Field managers should be encouraged to review the emergency action plan for the jobsite with their employees. If your job doesn't have a plan, look for assistance from the safety department, a safety consultant, or management. You can help avoid injuries in the event of evacuation by following these few tips. For more information or to recommend a topic for a future publication contact me at d.p.caple@gmail.com

David Caple, COHC, CEAS

Construction Safety and Health Specialist, is the Principal Member of Pinnacle Safety Network, LLC. He has over 15 years experience in a combination of structural restoration and safety.



PAY-IF-PAID CLAUSE: CONTRACT MECHANISM FOR SHIFTING NON-PAYMENT RISKS

By Jennifer Mahar, Esquire

In today's economy, one of the greatest risks on a Project is the Owner's ability to pay. From a contract perspective, this risk ordinarily weighs heaviest on the contractor who contracts directly with the Owner compared to the contractor's lower-tiered subcontractors and suppliers who expect payment from the contractor.

The Pay-if-Paid clause is a contract mechanism used to shift the risk of Owner non-payment due to the Owner's financial insolvency to lower-tiered subcontractors and suppliers. When included in a subcontract between the contractor and a lowertiered subcontractor or supplier, the Pay-if-Paid clause does not require the contractor to make payment to the subcontractor or supplier until the contractor receives payment from the Owner. Receipt of payment from the Owner is a condition precedent to the contractor's payment obligations to the subcontractor (i.e., the subcontractor will not be paid if the Owner does not pay the contractor).

Pay-if-Paid clauses are enforceable in Maryland, Virginia, and the District of Columbia provided the clause's contract language is clear and unequivocal in expressing the contracting parties' intent to shift the credit risk of the Owner's insolvency to the lowertiered subcontractor or supplier. One example of a Pay-if Paid clause enforced by the Maryland courts reads: "It is specifically understood and agreed that the payment to the trade contractor is dependent, as a condition precedent, upon the construction manager receiving contract payments, including retainer from the owner." See *Gilbane Building Company v. Brisk Waterproofing Company, Inc.*, 86 Md. App. 21 (1991).

A Pay-if-Paid clause is not an automatic defense to the payment claim of a lower-tiered subcontractor or supplier. The circumstances surrounding the Owner's failure to make payment to the contractor must be examined. For example, if the Owner's nonpayment is due to the contractor's performance failures (i.e., defective work backcharges), and not the Owner's financial insolvency, then the Pay-if-Paid clause will not operate to relieve the contractor of its payment obligations to its subcontractors and suppliers.

As always it is important to read your contract carefully and understand the terms which govern either your obligations to make payment to your subcontractors or suppliers, if you are the contractor, or your receipt of payment, if you are a subcontractor or supplier.

For further questions, Jennifer can be reached at jmahar@smithpachter.com or 703-847-6300.



ICRI Baltimore Washington Chapter 3rd Quarter Dinner Meeting



Thursday, September 7th, 2017

SCHEDULE:

REGISTRATION:

MAGGIANO'S LITTLE ITALY AT TYSONS GALLERIA
2001 INTERNATIONAL DR.
MCLEAN, VIRGINIA 22102

4:00 pm Board Meeting
5:30 pm Social Hour
6:30 pm Dinner & Presentation

Member Rate: \$50
Non-Member Rate: \$60
All after 9/1/17: \$60

REGISTRATION DEADLINE IS SEPTEMBER 1ST, 2017

Company: _____

Name: _____

E-mail: _____ Phone: _____

Number of Attendees: _____ Attendee Names: _____

Developing Effective Training Programs

In today's business environment, with employee turnover, new material technologies, industry regulations, and a heightened focus on safety, effective employee training programs are a paramount business function. Yet most organizations fail to evaluate a training program's effectiveness. This discussion focuses on developing a program consistent with company strategy, employing adult learning principles to engage today's diverse audiences, setting learning goals and objectives, and properly assessing a training program's effectiveness in changing employees behaviors. Participants will learn how to develop new training as well as how to improve existing training events for their companies.



Speaker: Dave Fuller Technical Services Lead

Dave has been in the construction chemicals industry for 25 years in both sales and technical capacities working for PPG, ICI, Degussa and BASF. He has an extensive working knowledge of Coatings, Waterproofing Membranes, Sealants and Polymer Based Flooring Systems and repair materials. Dave also holds a Masters In Adult Education and Training and is responsible for the design and delivery of traditional and web-based product training programs for BASF internal and external customers. He is a current Member of ICRI, SWRI and ACI.

Scan and email or fax this completed form to Chapter Secretary, Kevin Kline by Sept. 1, 2017. Checks may be mailed with your form or you can bring them with you to the meeting.

Kevin Kline, EIT
Concrete Protection & Restoration, Inc.
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PRESERVATION OF STONE MASONRY AQUEDUCTS ON THE CHESAPEAKE AND OHIO CANAL



By Denis J. McMullan, P.E.
& Douglas E. Bond, P.E.

Editor's Note: The topic for the ICRI National Fall Convention is "Docks, Locks & Canals." We're republishing this article from 2010 to coincide with the Convention.

The Story of C&O Canal Aqueducts

The Chesapeake and Ohio Canal (C&O Canal), extending from Washington, DC to Cumberland, Maryland, is one of the most popular parks in the National Park System. Each year thousands of park visitors use the park's towpath to bike, hike, jog, and ride or otherwise use this park. But the use of this park is very dependent on towpath continuity. And towpath continuity is dependent on maintaining and rehabilitating the twelve aqueducts along the canal. Collapse of one or more of these historic aqueducts would sever the canal's towpath and would greatly limit the public's enjoyment of this park. This fact had led to intensive efforts to preserve and rehabilitate these 175-year old structures. Construction of the 185 mile long Chesapeake and Ohio Canal began in 1828 in Georgetown, District of Columbia, and was intended to reach the Ohio River but was never completed beyond Cumberland, Maryland. The

C&O Canal system included eleven stone aqueducts and one timber trough aqueduct, designed to carry the canal and boats across the major river tributaries that drain into the Potomac River along the canal's route.

The C&O Canal depended on the Potomac River for its water supply which was both an advantage and a liability since the Potomac River is prone to severe flooding. The need to keep the level of the canal close to the level of the Potomac River and to keep the river tributaries navigable required careful attention to elevations and forced the designers to minimize the depth of the arch structures.



Figure 1 - Map of C & O Canal



Figure 2 - The Seneca Aqueduct

The Seneca Creek Aqueduct, designed by C&O Canal chief engineer Benjamin Wright, was the first aqueduct to be built on the canal. Construction commenced on November 27, 1828 and was completed in 1832. The aqueduct was a three-equal span segmented circular arch design. Each span was thirty three feet with a rise of seven feet and eight inches. The west arch collapsed during a heavy flood in 1971 after which the National Park Service stabilized the structure by installing temporary steel beams across the missing span.

considered an icon of early American civil engineering. Its construction was begun in 1829 and was completed four years later in 1833. The aqueduct has six piers, two abutments, and seven, fifty-four foot arches, each with a rise of nine feet. The length of this aqueduct is 438 feet, and the total length of the structure including abutments is 516 feet.

The Monocacy Aqueduct is sited at the mouth of the Monocacy River adjacent to the Potomac River. The aqueduct is frequently flooded, and is subjected to impact from debris that is



Figure 4 - Completed stabilization of the Monocacy Aqueduct

The Monocacy Aqueduct was the second and largest of the eleven aqueducts erected along the canal. Also designed by Benjamin Wright it is often described by many historians as one of the finest canal features in the United States. This aqueduct is

washed against the structure on its upstream side. The National Park Service (NPS) had long been concerned about the structural stability of the aqueduct, and following the 1972 Hurricane Agnes flood, the Federal Highway Administration designed and installed internal grouted rods in the arch barrel and an external steel and wood banding system to temporarily stabilize the structure.

In June 1998, the National Trust for Historic Preservation identified the Monocacy Aqueduct as one of the eleven most endangered historic structures in the United States. This led to a major construction effort in 2003/2004 which stabilized the aqueduct and enabled the obtrusive external steel banding to be removed.

Aqueduct number three is located at the Catocin Creek and was constructed from 1832 to



Figure 3 - The Monocacy Aqueduct with steel bracing and flood debris



Figure 5 - The Catoctin Aqueduct

1834. The stone masonry aqueduct was ninety two feet long between abutments and had three arches. The center arch was elliptical in form with a forty-foot span and ten-foot rise. Elliptical arches are rare among aqueducts. There are only four elliptical arches out of twenty two arches on the C&O Canal. They were most likely utilized to provide larger hydraulic opening but also possibly for aesthetic reasons. The two side arches were semicircular with a twenty-foot span and a ten-foot rise. The center elliptical arch had a pronounced sag as early as the 1940's and probably earlier. The arch continued to sag until October 31, 1973 when it fell during a local flood and caused the consequent collapse of the west arch. The remaining east arch, wing walls, and east and west abutments remained standing but are vulnerable to further deterioration.

Aqueduct number four is located at the mouth of the Antietam Creek. Built in 1834 it is 140 feet long and has three elliptical arches. The parapet walls were partially destroyed during the Civil War and then repaired in-kind. The towpath parapet wall has deteriorated over the last several years with many displaced stones. Efforts are underway by the NPS to stabilize the structure.



Figure 6 - The Antietam Aqueduct

The fifth aqueduct to be built by the C&O Canal Company was the three span Conococheague Creek aqueduct. This aqueduct was also damaged during the Civil War with both Union and Confederate troops attempting to unsuccessfully destroy it. In the spring of 1865, the berm or upstream side of the aqueduct fell into the Conococheague Creek, briefly halting travel on the Canal.

The cause of the collapse was believed to be the cumulative result of freezing and thawing coupled with the effect of damage during the Civil War. The wall was soon fixed, with a "wooden trunk", which was subsequently rebuilt with stone in 1870.



Figure 7 - Wooden Wall Repairs at the Conococheague Aqueduct

In 1920, this rebuilt stone parapet also collapsed and was replaced with a wood sheet wall supported on cantilevered timber beams set into concrete on the prism floor, which only lasted a few more years. The arches of the remaining aqueducts, 6 through 11, are mostly intact although one is supported by steel bracing. The loss of the berm parapet and spandrel wall was a common failure for the C&O canal aqueducts. Of the 11 stone aqueducts, seven no longer have the berm parapet and upstream spandrel wall.

Disastrous floods and storms have been a part of the history of the C&O Canal since its very inception. During some storms, such as the giant flood of 1889, the Potomac River crested at 44 feet above the low-water mark, which would have overtopped all aqueducts in the area. Damage from flooding in 1924 caused the abandonment of the canal which by then was owned by the Baltimore and Ohio (B&O) Railroad.



Figure 8 - The Conococheague Aqueduct

Construction/Technology

The designers of the C&O Canal aqueducts faced the challenges of building durable, watertight structures that would provide adequate clearances over the Potomac's major tributaries and yet maintain an elevation for the canal that could use gravity feed from the Potomac River. The structures would need to be robust enough to withstand frequent flooding from the Potomac River together with often severe winters and the associated internal expansive forces from ice build up. The foundations needed to withstand scouring forces from the river and be rigid enough to prevent settlement of the piers and abutments.



Figure 9 - McMullan & Associates' Engineer checking ice on arch soffit of the Monocacy Aqueduct

Soil borings have indicated that the piers and abutments were usually founded on relatively solid rock that was close to the surface. Underwater investigations have generally revealed little to moderate erosion of the rock at the interface with the foundation stones. This is supported by very few instances of significant settlement problems. The only known significant foundation problem occurred at the west pier of the Catoctin Aqueduct.

Stone for most of the aqueducts was obtained locally but in some instances stone was obtained a considerable distance from the aqueduct. For example, granite for the Catoctin

Aqueduct was transported by the B&O Railroad from Ellicott Mills Quarry near Baltimore. The Antietam Aqueduct is constructed of Tomstown Dolomite from a quarry three quarters of a mile to the east; the Conococheague Aqueduct uses limestone cut from a quarry three miles away.

The quality of local stone was often a matter of dispute. The initial construction of the piers for the Monocacy Aqueduct used stone from Nelson's Quarry located at nearby Sugar Loaf Mountain, four miles east of the aqueduct. However this stone turned out to be of such poor quality that the contractor was forced to dismantle the first three piers and rebuild them using a harder quartzite stone from Johnson's Quarry approximately halfway between the aqueduct and Nelson's quarry.

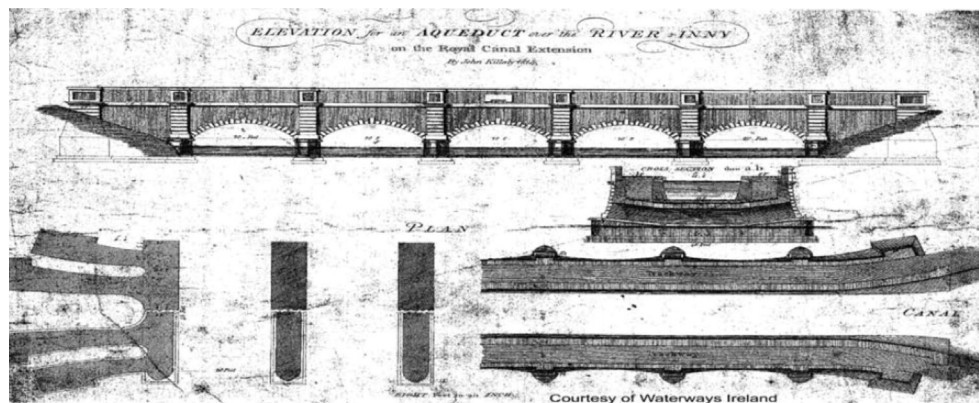


Figure 10 - Greater heights of of spandrel walls at the Aqueduct over the River Inny, Ireland andrel walls at the Aqueduct over the River Inny, Ireland

The discovery and use of natural cement, also known as "hydraulic cement", that sets under water made the construction of shallow watertight arch structures feasible on the C&O Canal. Other earlier canals relied on a thick clay layer between the prism floor and the top of the arch barrel for waterproofing. This resulted in a greater height of spandrel wall between the top of the arch and the water table and short span heavy structures, such as the five span aqueduct, over the River Inny (ca 1700's), on the Royal Canal Extension in Ireland.

Natural cement is made from naturally occurring limestone with appropriate argillaceous properties. It was therefore important for the early C&O engineers to find suitable limestone on the Potomac Valley. They conducted field testing of local limestone deposits to identify good candidates for the production of natural cements. Botelor's Mill, located immediately south of Shephardstown, was the first natural cement mill built in the Potomac Valley. It provided natural cement to the Monocacy Aqueduct and numerous other structures along the C&O Canal. After completion of the canal this industry continued. Eleven cement mills were eventually constructed to produce the large quantities of natural cement needed. The Round Top Cement Mill west of Hancock, Maryland was one of the largest.

Once the foundation stones had been laid, most likely inside timber cofferdams, the piers and abutments were brought up in rough cut stone faced with solid cut stone to the springline. Above the springline, the finish of the exterior stones was a higher quality. The solid cut stone in the piers stopped at the intersection of the extrados of the arches. The triangular volume between the adjacent arches was filled with mortared stone fill as can be seen in the exposed pier at the Conococheague Aqueduct.



Figure 11 - Interior mortared stone fill at the Conococheague Aqueduct

The arch geometry was formed in wood planking on timber centering that was removed upon completion of the structure. The semicircular arch that occurs in a few locations on the C&O Canal, with a rise to span ratio of 1:2 is the strongest shape of the arches used. However, this form results in short spans with numerous and expensive piers. The segmental circular arch was very commonly used on the C&O Canal with rise to span ratios varying from 1:4 to 1:6

Aqueduct Arch Dimensions			
Aqueduct	Span	Rise	Rise to Span
Seneca	33	8	1 : 4.1
Monocacy	54	9	1 : 6
Catoctin (Left/Right)	20	10	1 : 2
Catoctin (Center)	40	10	1 : 4
Antietam (Left/Right)	28	7	1 : 4
Antietam (Center)	40	7	1 : 5.7
Conococheague	60	15	1 : 4
Licking Creek	70	14	1 : 5
Tonoloway Creek	80	20	1 : 4
Sideling Hill	70	12	1 : 5.8
Fifteen Mile	50	12	1 : 4.2
Town Creek	60	15	1 : 4
Evitts Creek	70	14	1 : 5

Figure 12 - The Aqueduct Rise/Span Ratios

for the Tonoloway Aqueduct and the Monocacy Aqueduct respectively. This shape provided a more efficient use of materials, longer spans, and sufficient hydraulic openings for high water conditions. In a few locations, namely at the Antietam and the Catoctin Aqueducts, elliptical arches were employed.

A lot of attention was paid to the detailing of the ring stones (vousiers) and the keystones. At the Catoctin Aqueduct the ringstones have a margin around the four sides and a raised rock face finish. Vousiers varied in height with the maximum at the springline and tapering to a minimum at the crown. This was applied even to the smaller circular arches on the Catoctin Aqueduct.

After the arch barrel was laid the spandrel walls were constructed on the vousiers in a repetitive ashlar pattern. Spandrel stones were twelve inches to eighteen inches in depth with a regular pattern of header stones roughly four feet deep tying the spandrel stones to the stone fill.

The stone fill often referred to as “rubble fill” was actually carefully laid up large and small stones with mortared joints. After a section was laid for the day, hydraulic cement grout was poured into any small voids or holes left in the fill. Once the stone fill and the spandrel walls had reached the height of the bottom of the prism, a decorative water table stone was set in the spandrel walls. The interior wall face stones of the towpath and berm parapets were started on the mortared stone fill and each of the four walls was carried up another six to seven feet to provide parapets that contained the waterway. The same mortared stone fill was used between the parapet walls. This was then covered by large twelve inch thick coping stones, usually six feet by three feet, that cantilevered six to ten inches over the spandrel wall.

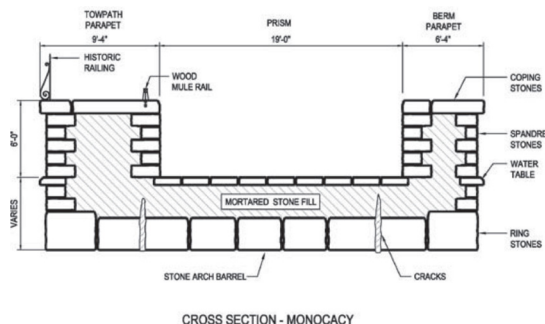


Figure 13 - Cross section of the Monocacy Aqueduct

A decorative wrought iron railing was installed on the towpath parapet along the river side and a wooden mule guide rail installed on the canal side. Timber rub rails were also installed on the inside face of the towpath walls to protect the boats.

Although the builders made every effort to ensure a water tight structure, it was a very difficult task. The aqueduct prisms constantly leaked. On the C&O Canal several different methods of waterproofing were tried. At the Conococheague Aqueduct, the prism floor was overlaid with hard burnt brick laid on one edge on a bed of mortar one inch deep. Cement grout was then poured over the bricks to fill any gaps and provide an additional layer of protection. On the Monocacy Aqueduct, the photographic and other historic documents strongly suggests that two inch wood planking was used. At the Catoctin Aqueduct, there is a two inch deep and one inch wide slot on the inside face of the parapet walls at the prism floor elevation suggesting that wood planking was also used here as a waterproof barrier.

After a collapse of the Catoctin Aqueduct berm parapet, and during the rebuilding effort, Chief Engineer Fisk in 1838 decided to use a new product “American Cement” patented by Thomas C. Coyle. Nine hundred and twenty four barrels of this cement were used in the reconstruction. This product contained resin and tar, and must have been applied hot as there were costs for the kettles noted. Test pits in the prism revealed a layer of this ‘resin cement’ at the floor level. In some locations, deteriorated stone masonry was replaced with Portland-Cement based concrete. At the Monocacy Aqueduct, a section of the berm parapet was rebuilt with concrete.



Figure 14 Iron cramps between coping stones at the Monocacy Aqueduct

Concrete was also used to fill voids and cracks. There was one crack in the arch barrel under the berm parapet at the Monocacy Aqueduct that appears to have been filled from above, probably by removing a section of the berm and pouring the concrete into the open crack. Concrete was also used to repair voids or deteriorated foundations as occurred at Pier #6 at the Monocacy Aqueduct.

To limit displacement of the coping stones, iron cramps were inserted into recesses in the surfaces of the coping stones to tie the stones together. At the Monocacy Aqueduct, in addition to the iron cramps, diamond shaped iron pins between the coping stones were used to limit differential lateral movements of the coping stones.

Denis J. McMullan, P.E & Douglas E. Bond, P.E

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2017 ICRI-BWC Q2 Dinner Meeting

by Michael Payne

The ICRI-BWC held its 2nd quarter dinner meeting on May 4 at the Gaithersburg Marriott Washingtonian Center in Gaithersburg, MD. The evening began with some casual conversation over fine food and drink during the social hour and dinner event.



Adam Hibshman, the Past-President of the ICRI-BWC chapter, was recognized for his role as chapter president in 2016. Shannon Bentz, the current chapter president, presented Adam with a plaque and congratulated him for his efforts and on a job well done. Shannon also provided some insight to the upcoming Habitat for Humanity trip, golf tournament, and other upcoming events.

Tom Ouska presented the speakers for the night as he welcomed two aspiring civil engineering students at the University of Maryland, Wing-Mei Ko and Vasili Plangetis, as representatives of the UMD ASCE Concrete Canoe Competition

team of 2017. Their presentation provided insight to the competition, which brings engineering/material science students together from different universities to come up with the most extreme concrete canoe design. The competition focuses on the idea of making a usable canoe out of a custom mix/design of concrete, but then takes it a step further to pit schools against each other for racing competitions and best of show honors. The UMD team got to show off its 2017 canoe, named "Confidential", at its home as UMD hosted the ASCE regional competitions for 2017. Wing-Mei and Vasili spoke through the difficulties of



coming up with a unique fiber-reinforced concrete design for the canoe, and the pressures of creating a technical report and providing oral presentations as part of the competition. Although Confidential did not advance to the national competition in 2017, the canoe was successfully buoyant. The UMD team took home a lot of valuable lessons and is already planning the 2018 concrete canoe design, "Metamorphosis".

Members of ICRI-BWC enjoyed the chance to ask the UMD students some questions after the presentation. The night ended with some words of wisdom and some good-hearted laughter from the crowd, and the group congratulated the students for a job well done.

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ICRI Baltimore Washington Chapter 2017 Annual Golf Tournament

Thursday, October 5th, 2017

SCHEDULE:

7:30 am Registration
8:30 am Shotgun Start
1:30 pm Lunch & Awards

REGISTRATION:

Single Golfer: **\$175**
Foursome: **\$700**



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2017 ICRI Baltimore Washington Chapter Outstanding Repair Project Awards

Purpose: Recognition for Exceptional and Innovative Repair Projects in the
Baltimore/Washington, D.C. Area

Project Eligibility Requirements

1. Repair and/or Restoration **must** be the major aspect for the overall project. This is defined by *at least* 25% of the project costs being associated with the repairs and/or restoration scope of work.
2. Repair and/or Restoration portion of the project **must** be performed, designed and/or supplied by an ICRI Baltimore-Washington Chapter member, in good standing.
3. Project submitted for consideration must be completed between June 1st the year prior to the Award (2015) and by May 31st of the year of the Award (2017). A single phase of a long term project may be submitted provided it meets the above completion timeline.
4. Maximum of one (1) award per individual ICRI Baltimore-Washington member or member-company with multiple submittals.

Project Scoring Criteria

A. Planning/Phasing, Design Issues & Project Administration (Maximum 30 Points):

1. Scheduling - Describe project schedule in terms of night (or day) work to minimize noise intrusion; working around the building/facility's peak operational periods; and climatic considerations (severity of the winter/summer, periods of frequent rain, etc.)
2. Environmental Controls - Describe methods of dust, water (hydro-demolition), fumes, and noise control.
3. Communication - Describe methods of communicating project information such as the schedule, impacts to the operation of the building/facility and/or the availability of parking, access or other coordination aspects to the facility users and adjacent properties.
4. Phasing - Describe how the work for the project was phased and staged to optimize site/building availability, reduce down time, minimize traffic flow effects, and the effects on operational revenues during construction. Describe any unique aspects of phasing the project.
5. Administration - Briefly describe any unique aspects of administering the project, such as the type of contract quantity measurements, procedures, etc.
6. Quality Control - Describe any unused quality control procedures, including testing, inspection, construction observations, warranties, guarantees, enforcing warranties and guarantees, etc.
7. General Design Issues - Describe any unique features in the design of the project.

B. Structural, Architectural and/or Operational Improvements (Maximum 15 Points):

1. Structural Improvements - Explain the original structural problems and the solution developed. Describe improvements incorporated into the project, specifically ICRI published standards and practices, to address existing structural shortcomings.
2. Architectural Improvements - Describe any modifications/upgrades implemented to improve the appearance of the overall project and/or the components of the project.
3. Operational Improvements - Describe any original deficiencies or shortcomings with the existing operational aspects of the facility/building and what modifications/upgrades were incorporated to improve such operations.
4. Historic Restoration Considerations - Describe any historical significance of the project and/or elements of the project. Describe solutions, materials or other strategies specified, employed and/or accepted to address Historical Restoration Considerations and measures taken to ensure that the repair/restoration not detract from the Historical Fabric per NPS.

C. Technical Innovation (Maximum 40 Points):

Technical Innovation evaluates the restoration design and/or the implementation of that design. Contractor implementation of restoration project components is an indication of effective quality control and pre-qualification requirements, and/or realistic project specifications. Implementation is also an indication of the successful construction administration and coordination by the design professional, and in some instances, the material or system manufacturers. Therefore, based on these considerations, document any innovations incorporated into the repair and/or restoration project, including the following:

1. Accelerated Repair/Restoration Techniques;
2. Logistical issues for demolition, shoring, debris removal, concrete delivery, etc.
3. Complex Structural Repairs;
4. Corrosion control measure, including cathodic protection systems;
5. Waterproofing systems, including fume and odor controls;
6. Substantial cost savings or cost effectiveness;
7. Repair/Restoration materials or material suppliers of products instrumental in the success of the project, especially if they collaborated in the development of non-typical or unique repair/restoration measures;
8. Other program specifics.

D. Costs (Maximum 15 Points):

Explain in narrative format the costs associated with the project and address the differences, if any, between the established budget, the actual bid/award cost, and the final project cost. ***Costs should not include costs for project design, land, or utility relocation.*** Describe any conditions unique to the project and how these conditions affected the final overall cost of the repair/restoration project. Indicate the effect that any structural, architectural and/or operational improvements incorporated into the project had on the cost of this project. Explain the cost implications of the aforementioned phasing design issues and technical innovations.

Submittal Process

1. Submittal information will be available to Baltimore-Washington Chapter members and posted to the ICRI Baltimore Washington website by **June 2017**.
2. Submittals shall be in the form of three (3) 3-ring binders containing the required submittal information. Submit all three (3) 3-ring binders and one (1) electronic, full-color format copy (PDF, etc.) of the submittals for distribution to the Award Judges.
3. Project submittals shall be addressed and forwarded to:

ICRI Baltimore Washington Chapter Outstanding Repair Project Awards Program
c/o Mr. Brian Radigan
Tremco Commercial Sealants & Waterproofing
745 Darlow Drive
Annapolis, MD 21409
bradigan@tremcoinc.com

Due Date: Friday, September 15, 2017 no later than 4:00 PM.

4. Entrants must have permission from project Owner/Client to submit project for the award.
5. Project submittals will not be returned and may be used by the Baltimore-Washington Chapter for display at chapter meetings.

Required Submittal Information

Part I:

1. Only one (1) copy of **Part I** information is required per one (1) group of submittals.
2. The **Part I** information should have, on a single sheet of paper:
 - Name of the Project
 - Name of the Repair Contractor
 - Owner/Owner Representative
 - Architect/Engineer
 - Material Supplier(s)
 - General Contractor (if applicable)
3. The **Part I** information should be sealed in a separate envelope with the **Project Name** typed across the front of the envelope.

Part II:

1. One (1) copy of **Part II** information is required with each submittal (i.e. four (4) copies of **Part II**, one with each binder and one included with the electronic submission):
 - The Name of the Project along with City and State where the Project is located.
 - Overall repair/restoration project budget and duration.
 - A written overview/summary of the repair/restoration project not exceeding 500 words.
 - A written narrative/summary for *each* category of the aforementioned repair/restoration Project Scoring Criteria not exceeding 500 words per section **OR** 2,000 words total.
 - No more than 15 photographs (8 ½" x 11" maximum size) showing before, during and after photos of repairs and scope of repairs. Individual photographs may be included under specific narrative sections **AND/OR** included as a comprehensive photo log.

NOTE: All submittal information **cannot** contain any Company or product information, Company logos or any other identifying information except for as required in **Part I** to ensure judges have no knowledge of Companies or products involved. *Part I envelopes will be opened after submittals are scored.*

Submittal Judging

Three to five judges, selected by the ICRI Baltimore-Washington Chapter Awards Committee and approved by the ICRI Baltimore Washington Chapter Board of Directors, will review and judge each awards project submittal. Judges will judge and score each project submittal utilizing the Project Scoring Criteria. Scores submitted by the judges will be tabulated by the Awards Committee which will select the highest scoring project submittal for the award. Judges will be ICRI members of record outside of the Baltimore Washington D.C. Chapter consisting of a **minimum** of one repair contractor, one material supplier and one engineer/architect. Submittals missing any of the required submittal data will be penalized during scoring of the projects. Judges will not contact entrants for any missing information.

Award and Project Presentation

1. A \$500 ICRI National Convention Scholarship will be presented to the entrant that has the highest project award submittal score and will be presented the ICRI Baltimore Washington Chapter Repair Project of the Year Award. Outstanding Project Awards will also be presented to the 2nd and 3rd highest scoring entrants.
2. **If** the ICRI-BW Chapter 1st Place winner chooses to submit the *winning* entry to **ICRI National's Outstanding Concrete Repair Project Award Program** for the following year, the ICRI-BW Chapter will pay the project's entry fee on behalf of the winner.
3. The winning project's entry fee will be paid by the BW Chapter **if** the submitter chooses to submit the project for the **National ICRI Outstanding Concrete Repair Project Award Program** for the following year.
4. The project award winners will be contacted before the end of October 2017 by the Awards Committee.
5. Project of the year will be presented, in a 30 minute presentation, by the entrant during the **2017 ICRI-BW Chapter's Annual Awards Banquet in November**. Second and Third place projects are to be presented, in 15-minute presentations each, by the entrants during the same meeting of the BW Chapter. All other submitted projects will receive recognition at the fall meeting by the awards committee.

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