



B A L T I M O R E

Monthly Newsletter



FEBRUARY 2021

UPCOMING MEETING

February 24th: 5:30pm-7:00pm

VIRTUAL MEETING

TOPIC:

Fire Protection Standpipe System Design

*Speaker: Ken Isman
University of Maryland*

REGISTRATION AVAILABLE AT:

<https://education.aspe.org/products/baltimore-chapter-meeting-fire-protection-standpipe-system-design-feb-2021>

Meeting will be free to ASPE members

Non-member fee is \$25

WWW.BALTIMOREASPE.COM

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- All ads must be paid in full prior to the advertisement being included in the newsletter.
- Advertiser must provide ads in high resolution PDF format. Logo must be provided in .jpeg format 200px wide max.
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Please Contact [Jason Eagles](#) or [Jeff Edwards](#)

Make checks payable to Baltimore Chapter of ASPE. Please contact the chapter Treasurer with any questions.

Kathy Dwyer
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kdwyer@ejdwyer.com





**Jeffrey W. Edwards, CPD ,GPD
President**

President’s Report

Hello to all and hope everyone and their families are all safe and doing great.

Our February virtual monthly meeting is just a couple of weeks away on the 24th. Professor Kenneth Isman from the University of Maryland will be our presenter again this year for our fire protection topic. Please refer to Chuck Swope’s article for additional information in our newsletter.

The past two years during February, the Baltimore ASPE chapter has participated in the Engineer’s Week presentation at the beautiful Engineer’s Club. Chris Imhof has lead most of our board members with our chapter’s presentation on Plumbing Engineering to middle and high school students in person. This year, along with most presentations still being held will be via a virtual presentation, again lead by Chris. Please refer to next months newsletter for an update on our Engineer’s Week presentation.

If you have any questions or would like to discuss anything regarding our chapter, please feel free to reach out to me.

Stay safe,

Best Regards,
Jeff Edwards, CPD, GPD
President-ASPE Baltimore Chapter

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CELEBRATE FEB 21-27 NATIONAL ENGINEERS WEEK 2021

the ENGINEERS CLUB & Engineers Week Council invite you to Engineers Week

Since 1951, National Engineers Week has helped to increase public awareness and appreciation of the engineering profession and to celebrate the accomplishments of engineers. **Due to the COVID-19 Pandemic, Activities will be virtual.** Join us for the many activities celebrating National Engineers Week and the Maryland Engineering Challenges.

MARKING the 70th Anniversary of National ENGINEERS WEEK

Meet Maryland's most prominent engineers & technology educators at these activities.

National Engineers Week was founded in 1951 by The National Society of Professional Engineers and is celebrated annually at the time of George Washington's Birthday. Our first president was a military engineer and a land surveyor. Like our first president, today's engineers are problem solvers. They design, develop and oversee the design, manufacture and construction of products, machines and structures. Engineers Week is a time to recognize the contributions engineers have made to our way of life and to encourage students to pursue engineering careers to perpetuate advancements for future generations.

The Engineers Club and its affiliated Associate Societies encourage everyone to support these Virtual activities during Engineers Week, and the Virtual Maryland Engineering Challenges sponsored by the Baltimore Museum of Industry, 1415 Key Highway.

For more information call 410-539-6914 or log on to esb.org. For information on other challenges in the Maryland Engineering Challenges Series, visit the Baltimore Museum of Industry website at thebmi.org, and click the Programs link.

Happy 70th NATIONAL ENGINEERS WEEK!

Engineers Week Virtual Activities

Tuesday	February 23 rd	ASHRAE Green Building
	10 AM to 11 AM	A Program for High School Students & Advisors to meet with engineers, discuss career opportunities & complete a design challenge using Green Building Technology.
Wednesday	February 24 th	Consider a Career in Engineering
	9 AM to 11 AM	A program for Middle & High School Students & Advisors to introduce them to the different branches of civil engineering & show them how a team of engineers interacts to design and construct a project. Presented by the ACEC/MD, MDOT- SHA & the Maryland Quality Initiative (MdQI) Industry Outreach Subcommittee https://students.mdqi.org
Wednesday	February 24 th	MDOT - Technology in Transportation
	1 PM to 3 PM	A Program for introducing Middle School Students to the steps the Maryland Department of Transportation (MDOT) takes to plan, design, construct and maintain roads/bridges using various modules of interactive technology. Presented by MDOT
Thursday	February 25 th	WTS - Introduce a Girl to Engineering
	10 AM to 11:30 AM	A Program for High School Girls & Advisors to introduce them to the field of civil engineering, provide an opportunity to hear from successful women who have made a career in the transportation industry and to practice what they have learned via several fun hands on activities. Presented by the Women's Transportation Seminar
Friday	February 26 th	ASPE- Plumbing System Design & Public Health
	10 AM to 11:30 AM	A Program for High School Students & Advisors to learn about how plumbing protects public health and the different professions that work within the plumbing business. There will be opportunities to meet and talk with engineers, sales representatives, architects, and plumbers.

ALL OF THE ABOVE ACTIVITIES ARE VIRTUAL

FOR MORE INFORMATION, CONTACT LEANNE HARRIS AT LHARRIS@JMT.COM



CELEBRATE

ENGINEERING, *Jan-May 2021*

Maryland Engineering Challenges at the Baltimore Museum of Industry

For more information contact Jessica Celmer by email: jcelmer@bmi.org, or visit thebmi.org and click the Programs & Events tab.

Baltimore Museum of Industry



Engineering Challenge	Dates in 2021	Individual Event Sponsors
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In recognition of the uncertainties resulting from COVID-19, this year's Maryland Engineering Challenge competitions will be held virtually. Competition rules and project requirements are also being adjusted to enable and encourage safe participation for students.

Wood Bridge	January 30 th	Sponsored by American Society of Civil Engineers, Hope Furrer, Assoc., Wallace Montgomery, Assoc., KCI Technologies, Inc., STV, Inc., WBCM, & Michael J Walkley, PA
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Future City	February 13 th	Sponsored by the MD Society of Professional Engineers, American Society of Civil Engineers, American Society of Highway Engineers & Society of American Military Engineers
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Straw Bridge	April 17 th	American Society of Mechanical Engineers, Baltimore Section
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Hovercraft	April 24 th	American Institute of Chemical Engineers, MD Section
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Cargo Ship	April 24 th	Technology & Engineering Educators Association of Maryland, NAVSEA, & the Propellor Club of Baltimore
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Robot	April 25 th	Institute of Electronic & Electrical Engineers
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Paper Airplane	May 8 th	American Institute of Aeronautics & Astronautics, Mid-Atlantic Section
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Safe Racer	May 15 th	Whitney, Bailey, Cox & Magnani, Wallace Montgomery Employee Team
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Happy

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ENGINEERING GREAT EXPERIENCES



Karen Schulte, PE, CPD, LEED AP BD+C
WOA Liaison

WOA Report

We're excited to announce WOA will be having a spring event. We've found a way to have the cooking class that we had planned for last May! The Baltimore Chef Shop, who we had planned to have our event with last year, is offering online cooking classes that we can participate in as a group. The ingredients for the meal will be sent to you (enough for 2 servings), and we'll gather on zoom and be lead through the preparation by one of the chefs. The date (hint it's going to be in March) and menu will be included in the formal event announcement.

Best Regards,
Karen Schulte, PE, CPD, LEED AP BD+C

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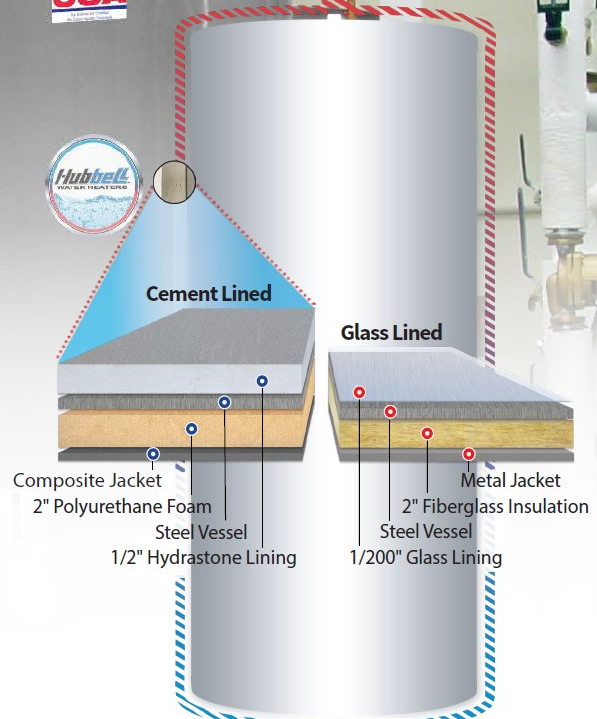
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Chuck Swope, PE, CPD, LEED AP BD+C
Vice President—Technical

Technical Report

I am glad to see such high turnout for our monthly meetings! On average we're seeing 20-25 attendees for each meeting. This is a good sign for us as a chapter, as one of my fears was that this break in social gatherings would be a problem for future attendance. It seems that our members aren't just in it for the crabcakes! Please thank (and reach out to) BJ Shrader from the McWane Plumbing group for his excellent presentation on our dreaded topic of Cast Iron Pipe VE. No one wants their designs changed at the last minute and it is important to know when to stand your ground.

This month, we're going to try something a little different. Previously, our presenters have handled their own conference software, but this time we're going to try out ASPE's software. It will work much like it did previously, except instead of registering with us, you will sign in to the education.aspe.org website and register there. We'll send regular emails to remind you of the change for this month. If all goes well, we'll consider using it in the future. This month's presentation will be presented by Kenneth Isman, Clinical Professor in the Fire Protection Engineering Department on the design of Class I standpipe systems in accordance with NFPA 14 and the International Building Code. The presentation will cover the placement of outlets throughout a building and hydraulic calculation requirements for standpipe systems. In addition, he will discuss the requirements for fire department connections and water supplies, including fire pumps.

Professor Isman holds a Bachelor of Science degree in Fire Protection Engineering and a Master of Science degree in Business Management, both from the University of Maryland. After graduation, Ken worked for 28 years in the fire sprinkler industry helping to design water-based fire suppression systems, performing research in developing new products and design techniques for the fire sprinkler industry, and representing the industry in the national and international development of codes and standards that affect the industry. In 2014, Ken returned to the University of Maryland as a professor to teach classes in fire protection systems design, life safety analysis and entrepreneurship. He is a Professional Engineer (licensed in Connecticut) and has been elected to the level of Fellow in the Society of Fire Protection Engineers. He has received both the NFPA Standards Medal, for lifetime service to the NFPA Codes and Standards process and the SFPE Harold Nelson award for lifetime service to the SFPE.

Ken has served on one or more of the committees responsible for NFPA 13 (Fire Sprinkler Systems), NFPA 101 (Life Safety Code) and NFPA 20 (Fire Pumps) since 1987 as well as 14 other NFPA committees including the NFPA Standards Council (2000-2006). A noted author and lecturer, Ken co-authored the books *Pumps for Fire Protection Systems* (NFPA) and *Layout, Detail and Calculation of Fire Sprinkler Systems* (NFSA). He wrote chapters of both the *NFPA Fire Protection Handbook* and the *SFPE Handbook of Fire Protection Engineering*. His latest book, *Standpipe Systems for Fire Protection* has been called, "the most comprehensive book ever written on that subject."

Best Regards,

Charles J. Swope, PE, CPD, LEED AP BD+C
Vice President - Technical

Is a fire pump necessary in your facility?



When faced with an apparently marginal water supply, a consulting engineer may be inclined to figure conservatively and employ a fire pump.

May 18, 2018

Todd E. Smith

Marginal water supplies present a particular challenge when consulting engineers performance-specify. Building, renovating or

retrofitting with a fire pump requires the first cost of the pump, the pressure maintenance pump, controllers and a reliable or alternate source of electric power, diesel drive or steam drive.

Owning a fire pump also requires the cost of regular inspection, testing and maintenance (ITM). Therefore, the best time to find out whether a fire pump is necessary is early on in the design stage. The first costs of pumps and power need to be captured in the construction budget, the architect needs to provide a fire-rated pump room large enough to house pumps and controllers, and the owner needs to plan the cost of ITM into their operating budget.

Capturing the costs associated with a fire pump, if required, is imperative during design. Not capturing the costs associated with a fire pump, if one is not required, is equally important. Careful consideration of fire water supply and demand is necessary as early as possible during the design. When faced with an apparently marginal water supply, a consulting engineer may be inclined to figure conservatively and employ a fire pump. Because of budgetary ramifications, this type of conservative decision could ruin a client relationship if the builder's calculations show during construction the pump was not necessary.

Understanding supply

In order to properly apply pumping to water-based fire suppression, recognizing the fire water supply is beyond the consulting engineer's control, improve margin by minimizing pressure losses in the fire suppression system itself. Margin is the surplus water pressure when you subtract the demand pressure from the supply pressure at a particular operating point. Both pressures are normalized to a common location known as the base of riser (BOR) and compared graphically. Now consider both supply and demand pressures vary with flow and you may realize it is necessary to understand how much water flows to a design fire in order to identify the margin.

Flow is dependent upon how many fire sprinklers operate, where they are located relative to the BOR and the required hose stream. Vast collections of empirical data by reputable sources indicate the high majority of all fires are controlled with significantly fewer fire-sprinkler heads than are required to be in a minimum design area as defined in NFPA 13, FM Global (FM) or the

Unified Facilities Criteria (UFC). This means compliance with a design standard requires a conservative demand flow compared to the actual flow likely to control a fire in the design area assuming the protected hazard has been properly identified.

A calculated design margin of zero would provide a positive margin if less than the quantity of fire-sprinkler heads in a given design area activate. Some standards dictate a minimum requirement for margin, but NFPA 13 does not. We are able to influence fire water demand flow through intentional application of the applicable design standard. NFPA 13 gives engineers and designers more latitude than FM and UFC standards.

A clear understanding of supply begins with a recent fire hydrant flow test in the vicinity of the project. Testing should be performed in accordance with NFPA 291 or a similar guideline. The difference between static and residual pressures needs to show a discernable pressure loss. Question the testing agency if fire hydrant test results are not clear. It is imperative that no assumptions are made about test results associated with the water supply. Fire hydrant flow tests provide a snapshot in time of fire water supply performance. It is necessary to have a high degree of confidence the results are repeatable because the above-ground fire-suppression design depends on this data.

Minimizing demand flow

Let's consider ways to minimize pressure losses in a fire-suppression system in order to improve margin. Finding the minimum allowed demand flow to the hydraulically-remote area is the first order of business. Remember that physically remote is not necessarily hydraulically remote and several sets of hydraulic calculations may be necessary to approximate the design area with the highest demand.

Keep building height as short as possible. Building height is the single-largest consumer of available pressure and will almost certainly not be a consideration for the architect. If the building program requires a multistory building, you may be forced into a fire pump by height alone. If the project is just tall enough for the water supply to be considered marginal, can an attic level be avoided? Can an attic be made inaccessible and non-combustible in order to avoid sprinklering?

If the prevailing design standard allows, look for opportunities to omit fire sprinklers or apply a design-area reduction. It is crucial to understand all unique design requirements you are bound to by the design standard you are working with. Insurers and federal agencies often have requirements that actually increase water demand far beyond common NFPA 13 requirements.

Minimizing demand pressure

Once you are confident you have approximated the minimum design flow, it is time to look at minimizing friction losses. Increasing pipe diameter is one way to reduce friction losses. Another is employing a looped main or gridded system that gives water multiple pathways to reach a design fire. Sometimes this can be done without an increase in pipe size. If an isolated area in a facility has a significantly higher design density, such as the acetylene torch cutting area in the

middle of a welding lab, consider routing the fire main directly toward the high-demand area from the riser first.

Of course, larger pipes and multiple pipes mean higher material and labor costs. It is important for the consulting engineer to develop the system far enough to have an understanding of size and route of fire-sprinkler risers and mains. Enough information must be conveyed on the drawings to ensure the builder can infer the design intent that was used to realize the anticipated friction losses. Early attempts at hydraulic design may have the builder asking for a fire pump. The ensuing conversation needs to be based in defensible design logic in order to bring resolution.

Underground piping between the utility tie-in and the building provides similar opportunities to reduce flow and pressure losses. It is vitally important to understand the configuration and sizes of the utility infrastructure in order to have a degree of confidence that the fire-flow test results are repeatable.

Backflow prevention is a requirement of the plumbing code to protect water supplies from cross-contamination. Many municipalities require outdoor backflow prevention near the tie-in. If your building is far enough from the existing underground water main to require adding a fire hydrant, be cautious about designing private fire hydrants on the building main downstream of the backflow preventer. Tie fire hydrants in upstream of the backflow preventer or tie into a different location on the city main. Additional friction loss through a backflow preventer due to hose stream will be substantial.

What is an acceptable margin? If working with NFPA 13, there is latitude for professional judgement. When deciding, it is necessary to consider aging of pipe over the anticipated lifespan, as well as the likelihood for future expansion or a change in the building program. Some design standards dictate as much as 10 psi or 10%. It is important to vet the question through the authority having jurisdiction during design in order to avoid surprising them with narrow margins during construction. It is much easier to debate the rationale for or against a fire pump with an AHJ during design. Margins in the low single digits are hydraulically viable but may be a difficult sell.

If through this process you have determined there is no way to achieve the required minimum margin without a fire pump, this method also will minimize the size of the fire pump. There is no green incentive for being conservative with fire-pump sizing and being too conservative has a higher first cost. If a standpipe system or combined system is required in your facility, consider employing a manual wet standpipe to separate standpipe demand from the fire-sprinkler system. This will greatly reduce the capacity of your pump and power sources.

Performance-based design of fire suppression requires far more effort than simply denoting an area of coverage on plan-view drawings and applying rule of thumb. Identify or choose a minimum margin you can confidently defend. Know the prevailing design standard inside and out. Apply it as required but take advantage of allowed exceptions. And finally, convey a clear plan for the builder to start with.



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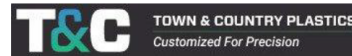
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Nikita Patel, EIT, MBA
AYP Liaison



AYP Report

Earlier this year, I had the opportunity to sit through the Region 1 ASPE meeting as the Region 1 AYP Liaison. This role gives me a unique opportunity to connect to AYPs all the way from Quebec down to Hampton Roads. Since then, I've spoken to other AYP liaisons in Region 1, and this year, we have one goal in mind: creating fun, engaging and unique opportunities for AYPs to connect to each other.

We had a great turnout for the event back in November, but this year we would like to turn our focus to professional development. We have some great plans, but still some way to go before we bring our ideas to you, so think of this note as a trailer. I look forward to connecting with you again soon!

Thanks,
Niki

Nikita Patel, E.I.T., M.B.A.
Sales Engineer

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Watts was established in 1874 by Joseph Watts, the inventor of water pressure regulators. They are headquartered in North Andover, Massachusetts, with 10 locations in the United States, and 50 locations worldwide. They are the parent company to several brands, also located in the United States, including Ames, Backflow Direct, Dormont, and Mueller Steam. They proudly support the Buy American Act on a number of their products.

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Christopher Imhof, PE, CPD
Education Committee Chair, VP - Legislative

Legislative and Education Reports

Legislative

Senator McCray has sponsored legislation requiring the Maryland Department of Labor to adopt by regulation the International Swimming Pool and Spa Code (ISPSC) as the Maryland Swimming Pool and Spa Standards. You can view Senate Bill 254 on the Maryland General Assembly website (mgaleg.maryland.gov). I am a member of the Plumbing, Fuel Gas, and Mechanical Code Action Committee (PFGCAC) for 2024 code development for the ICC codes. The action committee held their final meeting regarding proposed changes to codes. Web posting of “proposed changes to the I-Codes” shall be done no later than March 21st, 2021. Code Action Hearings will be held virtually during the period of April 11 – May 5, 2021. For more information, please continue to read this newsletter for updates.

A reminder that WSSC Water has extended the solicitation period for 2021 code development cycle until June 1st, 2021. I am the Technical Standards Engineering Manager for WSSC Water and if you have any comments or questions please send me an email, christopher.imhof@wsscwater.com

Education

Registration for the next CPD exam is now open, full members of ASPE are automatically eligible. Once again ASPE is administering the exam via remote proctor, so you can take it any day at your leisure between April 5 and 16. You can find more information about registration, webinars, review classes, and practice exams by visiting education.aspe.org.

As I mentioned in previous newsletters, the Chapter is currently working with the Engineers Club of Baltimore to organize our 2021 Engineers Week Event. This will be the 3rd year the Chapter has hosted an event for Engineers Week. The event is scheduled to take place Friday, February 26th and will be hosted virtually. We are planning on hosting an essay/poster contest for those who attend with gift cards as prizes.

Regards,

Chris Imhof, PE, CPD
Vice President – Legislative
Education Chair

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Brian Crisp, CPD
Vice President - Membership

Membership Report

Hello again folks! Hope everyone is staying happy and healthy.

No real membership updates this month, but I did notice some people are using the multi-year renewals to save money in the long run. If you (or your company) don't mind paying for 2 or 3 years of membership upfront, you can save 5% or 10% on dues, respectively. There is also an early renewal discount for first year members.

The Baltimore Chapter is "holding steady" at 115 current members as I like to say. No new members to speak of this month, but let's congratulate those who have renewed in the month of January!

Rosa Flickinger, 1 years
Christopher Imhof, 3 years
Karen Schulte, 4 years
Ron Saunders, 7 years
Erin Jankowiak, 7 years
Neal Cluck, 9 years
Michael Notarange, 9 years
Donald Yudiski, 13 years
Richard Grier, 21 years
Derek Wilson, 23 years

Just a reminder, if your membership lapses (for financial reasons or otherwise), but you renew within a year of when your membership expired, you can maintain your tenure. If you have any questions about this, feel free to reach out to me.

If you or anyone you know is interested in joining, or at least hearing about the benefits of membership, please don't hesitate to reach out to me. You can also join directly at <https://www.aspe.org/join>.

Thanks, and "see" you at the meetings!

Brian Crisp, CPD
Vice President, Membership
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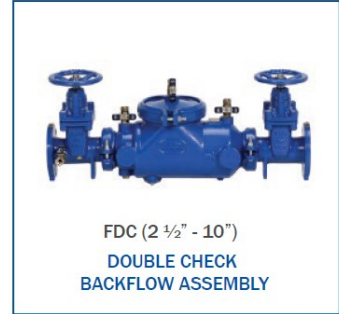
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Karen E. Schulte, PE, CPD,
LEED AP BD+C
Mechanical Project Engineer

1306 Concourse Drive, Suite 100
Linthicum, MD 21090
410.646.4500 tel > 410.646.4738 fax
kschulte@muellerassoc.com

Mechanical/Electrical Engineering



CHRISTOPHER IMHOF, PE, CPD

Technical Standards
Engineering Manager
Regulatory Services Division

Office: 301.206.8514
Cell: 540.230.4664
christopher.imhof@wsscwater.com

14501 Sweitzer Lane
Laurel, MD 20707
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10 Sudbrook Lane
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LEED AP BD+C
Mechanical Project Engineer

1306 Concourse Drive, Suite 100
Linthicum, MD 21090
410.646.4500 tel > 410.646.4738 fax
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Mechanical/Electrical Engineering



2020-2021 ASPE Baltimore Chapter Meeting Schedule

Date: **September 23, 2020**

Speaker: Niki Patel -Sherman Engineering

Topic: NFPA 99

Date: **October 28th, 2020**

Speaker: Ed Ross -QuantumFlo

Topic: Booster Pumps

Date: **November 18th, 2020**

Speaker: Lauren Berenato –Jomar Valve

Topic: Valves 101

Date: **December 16th, 2020**

Speaker: James Walls–CISPI

Topic: Installation Standards of Cast Iron Piping

Date: **January 27th 2021**

Speaker: BJ Schrader/Laura Loziuk –McWane

Topic: Cast Iron and PVC Piping Value Engineering

Date: **February 24th, 2021**

Speaker: Ken Isman –UM

Topic: Fire Protection Standpipe System Design

Date: **March 24th, 2021**

Speaker: Jeff Henscheid –PVI

Topic: Water Heater Sizing, Construction & Efficiency

Date: **April 23, 2021**

Event: Annual Golf Outing

Date: **April 28th, 2021**

Speaker: STH

Topic: Electroadsorptive Water Treatment Technology

Date: **May 26th, 2021**

Speaker: Tom Weaver Associates /Franke

Topic: Engineered Infection Prevention

Date: **June 17, 2021**

Speaker: Joint Meeting / Philadelphia

Topic: Fire Sprinkler Protection of Rack Storage



Monthly Sponsorship Opportunities

The Baltimore Chapter of ASPE continues to have successful meetings and is looking to continue improving throughout the year.

The Chapter has the following sponsorship opportunities for each month:

Tabletop Presentations: \$100 to provide a tabletop presentation of equipment or material relative to the plumbing profession. The tabletops will be set up from the beginning to the end of the monthly meeting and provides the opportunity to provide a brief (under 5 minutes) presentation.

Please make checks payable to the Baltimore Chapter of ASPE.

Contact Jeff Edwards or Kathy Dwyer if interested

jedwards@muellerassoc.com

kdwyer@ejdwyer.com

NOTE: ONLY APPLICABLE WHEN WE RETURN TO OUR REGULAR IN PERSON MEETING EVENTS