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Upcoming Meeting

Date: March 23, 2022

Time: 6:00pm to 8:00pm

Place: Olive Grove Restaurant

Topic: Rainwater Use and
Greywater Reuse

Speaker: Jay Otto - Otto Sales

Meeting Format

6-6:30 Social

6:30-6:45 Announcements and Table Tops

6:45 Dinner Served

7:00-8:00 Speaker

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MEETING LOCATION



Olive Grove
Restaurant & Lounge

705 North Hammonds Ferry Road
Linthicum, Maryland 21090
Phone: 410.636.1385





ASPE BALTIMORE CHAPTER GOLF OUTING and COOKOUT

**Friday, April 29, 2022
The Timbers at Troy
Columbia, Maryland
\$125 / Golfer**

- Prizes for Team Play
- Door Prizes
- Longest Drive Prizes
- Closest to the Pin Prizes

SCHEDULE

7:30 AM	Registration/Check-In/Breakfast		
8:30 AM	Shotgun Start Scramble Format "Captain's Choice" Mulligans Available		1:30 PM Cookout (Hamburgers, Hot Dogs, etc.)
			2:00 PM Awards & Prizes

Sponsors and Participants, please contact/return registrations to:

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 James Posey Associates
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 11155 Red Run Boulevard
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 Phone: (410) 265-6100

(For Credit Card Payments, please contact chapter treasurer
 Kathy Dwyer via email: kdwyer@ejdwyer.com)

**Make checks payable to ASPE Baltimore Chapter.
 Reservations will be confirmed when check and participant information is
 received.**

PLEASE RETURN COMPLETED FORMS BY APRIL 15, 2022

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Name _____ Phone No. _____

No. of Golfers: _____ @ \$125 each Total for Golfers: \$ _____

Sponsorship Level: _____ Total Sponsorship: \$ _____

Total Amount: \$ _____

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- **Cart Sponsorship** **\$600.00**
(Includes tee marker and cart signs for each cart)



All proceeds from the Golf Outing will benefit future Chapter events and activities.

Please make checks payable to: **ASPE Baltimore Chapter**

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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.
- Cost per advertisement size is as follows:

<u>Size</u>	<u>Per Year</u>
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½ page	\$500
Bus. Card	\$250

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
EJ Dwyer Company Inc.
kdwyer@ejdwyer.com





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

Technical Report

Thanks to all who attended last month's meeting, and a special thanks to all of those that stayed for the whole session. I appreciate the time commitment that you give to ASPE and I hope we have made it worth your while. Professor Ken Isman from the University of Maryland's Fire Protection Engineering department is such a great asset to our chapter and we're glad that he keeps coming back year after year. The insights into NFPA's reasoning proves that technical compliances isn't nearly as good as understanding why the standards are written the way they are. For more information, I highly recommend reaching out to our chapter or directly to Professor Isman.

This month's topic is another that is important to our industry, Rainwater Use and Greywater Reuse. Our good friend Jay Otto (and our Administrative Secretary) with Otto Sales will cover ways in which rainwater can be captured and used and also how greywater can be treated for reuse. Capturing water onsite and using it onsite is of growing interest with buildings of all sizes in light of growing awareness of water challenges from the Chesapeake Bay to droughts in California. In this talk, Jay will cover three areas for commercial scale buildings:

- Non-Potable Rainwater Systems
- Potable Rainwater systems
- Greywater Recycling Systems

The presentation will cover motivation for adopting onsite water systems, key technical considerations, permitting, and case studies with ample time for interaction to make sure all your questions are answered.

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



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ASPE Design Guide Volume 4 Chapter 4

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“At no time is a booster at 100 percent flow based on Hunter’s diversity curves”

“When selecting the total flow capacity, one preferred way to evaluate the operational efficiency is to use a method that can be scientifically proven, such as the 70 percent method.”

“Tanks will typically be required when the manufacturer does not utilize low flow testing algorithms to detect low flow”

“New energy standards concede that reducing the speed of a pump during most of its operational time and restarting for makeup loads is more efficient than using tanks as “water storage batteries” during low-flow conditions.”

** The above is taken from American Society of Plumbing Engineers design guide volume 4 chapter 4**

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Water Reuse 101: Back to Basics

Many sources of untreated water can be reused on-site to reduce a building's reliance on potable water.

January 3, 2022

Jonathan Franzese



Humans have employed water reuse and recycling strategies long before the advent of modern municipal water treatment plants and the widespread supply of potable water to homes and businesses. As new technologies were developed, providing clean drinking water throughout the world became more common. However, there are areas that still rely on tried-and-true strategies to remove pathogens and ensure an adequate year-round supply of water.

Some of these strategies cannot be exactly replicated in commercial and residential buildings; however, much

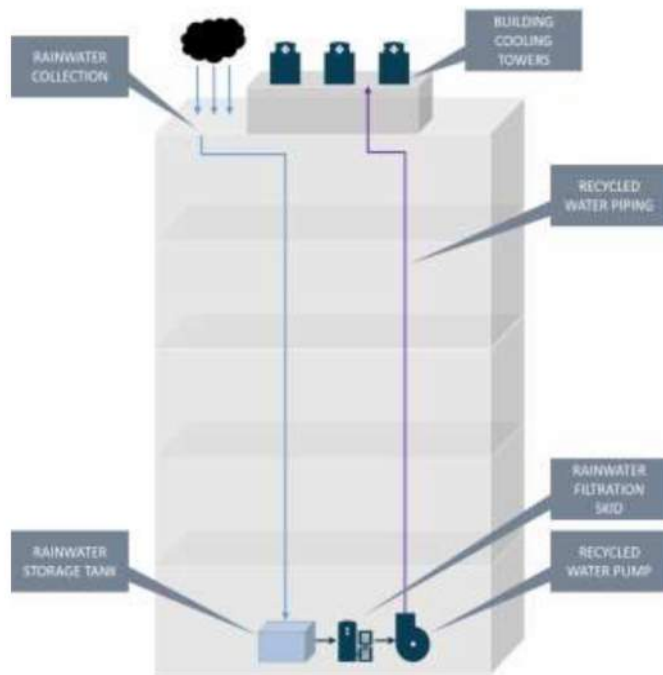
can be applied to modern-day buildings.

Before diving into the subject, I want to bring up an area of improvement for plumbing engineers who have been in the industry for a long time. Engineers can develop what I like to call “blind spots.” Some of these are borne of project types or geographical location, but one that almost all will develop universally is forgetting what it was like starting in the engineering industry.

Water reuse can be a very complicated subject, with varying codes, authorities having jurisdiction (AHJ) requirements, and complicated system designs. The goal of this column is to provide beginner-level information and be accessible to all designers and engineers.

This article originally appeared in *Plumbing Engineer*, a TMB Publishing publication. For more articles like this, please visit www.phcpropros.com.

Alternate Water Sources



Many sources of untreated water can be reused on-site to reduce a building's reliance on potable water. Deciding on the source(s) of water to be reused is the first step in the design of a water reuse system. The decision will inform the types of coordination, filtration, disinfection and end-use application of the recycled water.

Before selecting a source, the plumbing engineer shall evaluate the suitability of the building for each option and weigh the costs and benefits to each system. Sometimes this evaluation is simple, e.g., a high-rise building has a very small roof area compared to building size, thus eliminating a rainwater collection system.

- 1. Alternate water source:** Nonpotable source of water that includes but is not limited to greywater, on-site treated nonpotable water, rainwater, atmospheric generated water, air-conditioning condensate and reclaimed (recycled) water.*
- 2. Blackwater:** Wastewater containing bodily or other biological wastes, as from toilets, dishwashers, kitchen sinks and utility sinks.*
- 3. Greywater:** Wastewater from water-bearing fixtures, including laundry, such as clothes washers and laundry sinks, and bathing, such as bathtubs, showers or sinks, but excluding toilets, urinals, bidets, kitchen sinks and dishwashers.**
- 4. Groundwater:** Natural flowing water below grade, typically collected via the building's subsoil drainage system. Flows can vary seasonally, and the reuse of this water can sometimes be federally or state-regulated.
- 5. Rainwater:** Natural precipitation landing on a manmade impervious aboveground surface and can be collected on-site for beneficial uses. It is important to ensure rainfall is not too acidic in reuse applications.*
- 6. Condensate:** Water collected from the drains of air conditioning and other HVAC equipment. It can also be referred to as clear water waste.
- 7. Seawater:** Water collected from an ocean, sea or other saltwater body. This is more commonly seen on islands or other areas that cannot be served through traditional

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municipal water treatment systems.

* IAPMO IGC 324, *Alternate Water Source Systems for Multi-Family, Residential, & Commercial Use*

** NSF350, *Onsite Residential and Commercial Water Reuse Treatment Systems*

Recycled Water End Uses

Just as there are many sources for recycled water, there are many end uses for this water. It is the responsibility of the plumbing engineer to verify the applicability and feasibility of these options before making a design choice. Typically, it is best to try and match source and end usage to ensure a water balance in the system and avoid needing too much makeup water or having an oversupply of recycled water.

Log Reduction Targets for Onsite Water Reuse Systems

Alternate Water Use Scenario	Enteric Viruses	Parasitic Protozoa	Enteric Bacteria
Blackwater			
Outdoor Use	8.0	7.0	6.0
Indoor Use	8.5	7.0	6.0
Graywater			
Outdoor Use	5.5	4.5	3.5
Indoor Use	6.0	4.5	3.5
Stormwater or Foundation Drainage			
Outdoor Use	3.0	2.5	2.0
Indoor Use	3.5	3.5	3.0
Rainwater			
Outdoor Use	N/A	N/A	3.5
Indoor Use	N/A	N/A	3.5

1. Laundry. Recycled water can be used for laundry in both residential and commercial settings. Typically, harvested rainwater is used for residential applications; commercial laundry systems employ mostly closed greywater systems using potable water only for final rinses.

2. Irrigation. There are two main types of irrigation systems: subsoil drip and spray. Most AHJs do not allow recycled water to be sprayed/aerosolized due to a heightened risk of infection such as *Legionella* or other respiratory diseases that may be present in recycled water.

3. Cooling tower. Cooling towers work by using water to absorb and reject heat from a

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building through evaporation. These are still commonly used HVAC systems for certain building types. However, cooling towers are being phased out of designs, with more energy- and water-efficient equipment taking their place.

4. Flushing. Water is reused to flush water closets and urinals. This is the most common application of water reuse in commercial buildings as it represents the main source of nonpotable water needs for many building types. Smaller versions of these systems can be used in residential applications.

5. Potable. In limited cases, it is possible to reuse water for potable consumption. This is mainly done for off-grid-style homes in remote locations such as islands or mountains where traditional systems are not possible. Rainwater typically provides the cleanest source water for this application.

Recycled Water System Types

Once the plumbing engineer evaluates potential alternate water sources and reviews end use(s) for the recycled water, the next step is the design of the actual water recycling system. When evaluating system designs, the engineer should focus on a few key factors to ensure the final design meets the project's needs, including:

- **Compliance with local codes.** Knowing the requirements of the AHJ is the first step in designing a system that can be permitted and constructed. As water reuse regulations are in varying stages of development throughout the United States, local health departments and code officials should be contacted to ascertain specific design requirements in the project's location.
- **System complexity.** As engineers, sometimes we can focus on the most technically advanced solution when a simpler system can meet the needs of the project at a lower cost; for example, using too fine of a filter or adding an unnecessary UV lamp. Ensure filters are easily located for service and consider the long-term maintenance needs and equipment replacement strategies to provide the building owner with a quality system.
- **System costs.** From personal experience, if the system doesn't fit in the project budget, it doesn't matter how much water will be saved. Consider the owner's objectives for the building and tailor recycled water systems to meet the project's needs. While saving more water is preferred, a system saving 50 percent water usage is better than a system that could save 90 percent water usage but is too expensive for the project, ending up saving no water.

In addition to these aspects, the following considerations are specific to each type of recycled water system:

- **Greywater.** Ensure waste streams are kept separate from blackwater and consider the end use when selecting filtration equipment. If the recycled water is used for subsoil irrigation, it may not be required to select the same level of filtration and disinfection as

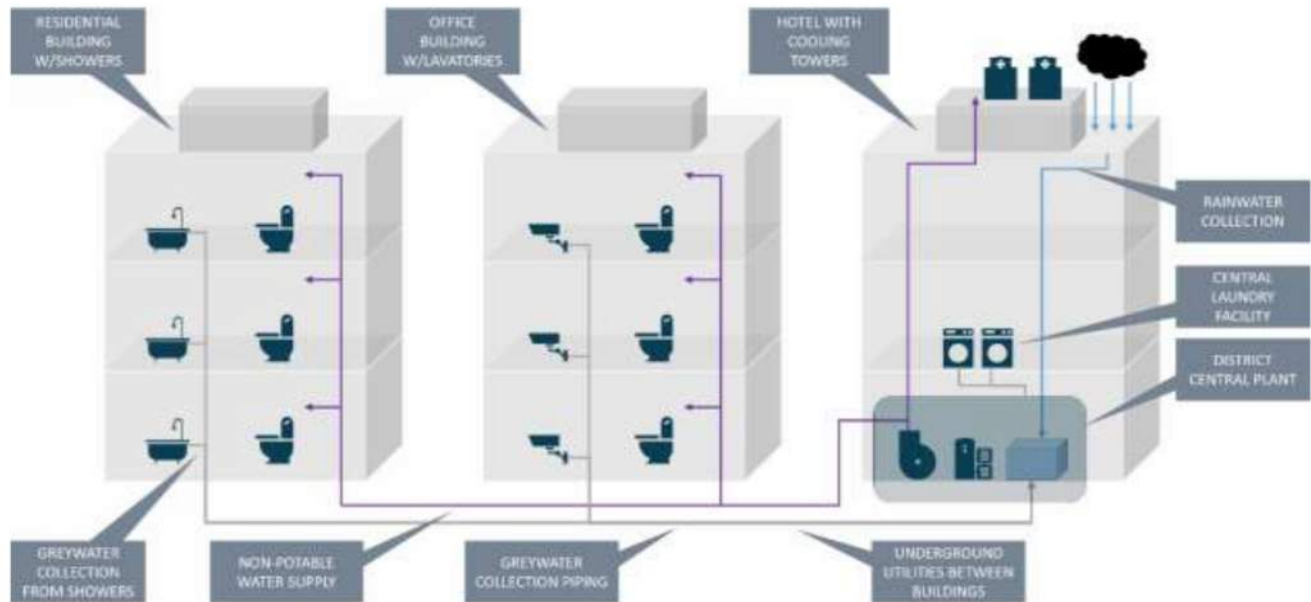
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would be needed for flushing needs within a building.

It is also good practice to compare the daily flow needs of the irrigation system vs. the daily output of the greywater plant to ensure an adequate supply of water is needed and the system is not filtering excess greywater.

- **Rainwater.** When selecting roof areas for capture, the engineer should consider the roof surface type and avoid areas that are open to pedestrians to avoid contamination of the rainwater. The levels of filtration shall also take into account the potential for debris on the roof, from fine dust to larger dirt and rocks.

In areas with heavy rainfall rates, it is necessary to safeguard the building against stormwater overflows from the system. Locations subject to snow should consider adding heat tape to prevent roof drains from freezing and maintaining a constant flow of water into the rainwater system.



Pathogen Reduction

The primary goal of any reclaimed water system is to maintain public safety. When water reuse systems became more common, the first codes and standards were performance-based, meaning that if you used certain types of filters or equipment, the system was acceptable.

Newer standards such as those developed by San Francisco's Department of Public Health Environmental Health Branch focus on measured performance by taking water samples to guarantee water safety (<https://bit.ly/31m8HxQ>, <https://bit.ly/31p91fe>). The samples

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must demonstrate compliance with log-reduction targets to reduce parasites, microorganisms and bacteria.

In large downtown city cores where different building types such as residential buildings and commercial offices are located adjacent or in close proximity, district-sized systems can be used. They allow for water to be shared across property lines to mix and match alternate water sources and end uses. This enables water balances to be taken over longer periods and to take peak loads in one building and move water to adjacent buildings for future usage.

An example of this would be collecting greywater from a hotel over the morning's showers and using that water for flushing needs in an adjacent office building.

District systems have gained traction as a way to share and conserve energy usage between buildings, such as using waste heat from a commercial office building to preheat domestic water in a residential building. As more cities struggle to keep up with skyrocketing demand for energy and clean water, district water systems can alleviate the loads on utilities and allow developers and building owners to work together to create a mutually beneficial relationship.

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March 2022



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REGION 1

NEWSLETTER

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AYP Liaisons

Hey Young Professionals!

We had a great presentation by medical gas expert, Mark Allen, last month reviewing the core changes with the release of NFPA 99, 2021. With his experience on the technical committee, he provided great detail on not only the changes, but also the reasons behind them.

Next month, we continue the conversation with a presentation on Compressed Air Systems in Hospitals presented by me.

Scroll to the next few pages for some events that the other Chapters have prepared for this month.



Nikita Patel, EIT, MBA

CASPE
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BALTIMORE

Chapter Meetings

AYP Region 1	3/16
Baltimore	3/23
Blue Ridge	3/08
Boston	3/16
Capital Region	3/17
Central NY	3/09
Connecticut	3/16
Hampton Roads	3/10
Long Island	3/16
Montreal	3/16
New Jersey	3/16
New York City	3/02
Philadelphia	3/24
Quebec City	3/08
Richmond	3/09
Washington D.C.	3/22

Have an Engineering question of your own? Send it to your AYP Liaison to be featured on our next newsletter!



SUN	MON	TUE	WED	THU	FRI	SAT
March		1	2 🚰	3	4	5
6	7	8 🚰🚰	9 🚰🚰	10 🚰	11	12
13	14	15	16 🚰🚰🚰 🚰🚰🚰	17 🚰	18	19
20	21	22 🚰	23 🚰	24 🚰	25	26
27	28	29	30	31		

A Note from the Director

As the ASPE Region 1 Director, I welcome you to the American Society of Plumbing Engineers. Your choice to become involved as an ASPE Young Professional is one of the best career choices you could have made. You will be amazed at the excitement you will go through in Plumbing Engineering.

The first plumbing apparatus was a river. In some countries, the river still serves as a kitchen, refrigerator, drinking fountain, toilet, etc. Plumbing Engineering has been a necessity since the beginning of time. This profession continued to grow and evolved to now include residential/commercial buildings, hospitals, apartments, hotels, etc. The required mediums of design include design selections, layouts, water reuse, fuel conservation, storage, net-zero buildings, and much more.

Can just anyone do that? I don't think so. You will do great things with what you learn here. This is what ASPE has to offer to all its members. As your career grows, so will your knowledge and your knowledge base of others.

Donald Keith, CPD, MSS, FASPE

ASPE Connect Corner

Hot Water Recirc Pump Sizing Method

Assume a building has five stories with 100 HW risers to the top floor. The top floor collects each riser, goes through a balancing valve set to 0.5 gpm, then connects to the HW recirc main back to the water heater on the ground floor.

Which method more accurately calculate the pressure loss through the system?

Option 1: For the pressure loss, include the length of the horizontal HW supply main on the ground floor, the vertical length of each supply riser, all 100 of them, and the length of HWR pipe back to the water heater, plus a safety factor for fittings/valves in order to come up with the pressure loss through the whole system.

Option 2: Calculate the total distance of the longest length of supply and return. That would be only down to riser #100, up to the top floor and back to the water heater, plus a safety factor for fittings and valves.

Answer: Option 2, a parallel run doesn't add to the pressure drop seen by the pump.



ASPE YOUNG PROFESSIONALS®

16 MAR | 12 PM

Guest Speaker:
Nikita Patel

Hosted By:
AYP Region 1
Teams Meeting

Compressed Air System Design in the Hospital

Attendance is **FREE** for ASPE Members, and **\$5** for nonmembers

[CLICK HERE TO REGISTER](#)



Nikita works as a Sales Engineer for Sherman Engineering Company and has over five years of experience in medical and laboratory gas/vacuum system design. She has experience with NFPA 99 Health Care Facilities Code and other laboratory design guidelines, including the NIH DRM and ISO 8573-1. She has acquired her ASSE 6005: Med Gas Generalist, and ASSE 6040: Med Gas Maintenance credentials. Nikita has aided in the design and selection of compressed air systems used in hospitals, universities, manufacturing plants, food & beverage producers, and more.

With her extensive background in these systems, she will guide viewers through not only the implications of Instrument Air Systems based on NFPA 99 2021 Code Updates, but also other systems commonly seen in a hospital. These include: medical, central sterile, dental, laboratory, control air, etc. This presentation will cover compressors, dryers and air treatment.

Nikita also serves as the Region 1 ASPE Young Professionals Liaison.

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**Christopher Imhof, PE, CPD
Education Committee Chair**

Legislative

The following are several pieces of proposed legislation that may affect the plumbing, mechanical, and fuel gas trades,

- HB 0303 – Public Safety - Maryland Swimming Pool and Spa Standards – Adoption
- HB 0806 – Building Standards and Emissions Reductions – High Performance, State, and Local Government Buildings, State Operations, and Eligible Projects
- HB 1052 – Public Safety – Gas Piping Systems – Construction Requirements
- SB 0528 – Climate Solutions Now Act of 2022
- SB 0871 – Accessory Dwelling Unit Authorization and Promotion Act
- SB 0854 – Graywater Systems – Public and Private Buildings – Authorization

You can read the legislation by visiting the Maryland General Assembly website: <https://mgaleg.maryland.gov/>

Education

It's that time of year again! The Washington DC and Baltimore ASPE Chapters are offering to its membership a virtual CPD Review Session presented by our own David Bailey, CPD, GPD, FASPE. It is scheduled for three consecutive Saturdays – February 12th, February 19th, and February 26th (if necessary). Please see the attached and information below.

As a special offer to our Baltimore Chapter members in good standing, we're offering two free meeting tickets with the purchase of the CPD Review guide, complements of the Baltimore ASPE Chapter. Just let Kathy know when registering. Each of the sessions will commence at 9:30 AM thru 3:30 PM (EST) with a 45-minute lunch break during the noon hour. If you are interested in participating in the proposed virtual CPD Review Class next month, then please forward an e-mail no sooner than the afternoon of Saturday, February 5th to either Kathy Dwyer or Ned Dwyer at the following respective addresses below to receive a link for the class.

Baltimore: kdwyer@ejdwyer.com
Washington: ndwyer@ejdwyer.com
and please CC at David.Bailey@wsscwater.com

Please have on hand the latest edition of the CPD Study Guide (2020), a calculator, pencil and paper.

Link to order CPD Study Guide through the ASPE Bookstore is as follows:

<https://www.aspe.org/product/cpd-study-guide-2020/>

We recommend the physical book as the test is open book and should order as soon as possible.

Chris Imhof, PE, CPD
Vice President – Legislative
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BACnet, that is. But Oil Minder® offers so much more. Plumbing engineers can implement newfound reliability while improving operational efficiencies and maintenance practices through Building Automation System (BAS)/Building Management System (BMS). Oil Minder® makes it possible to exceed customer expectations.

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Kathy Dwyer
Treasurer

Treasury Report

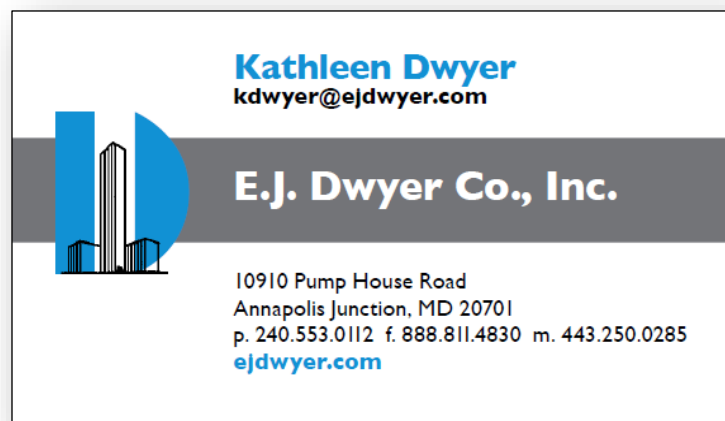
Here we are already into our March 2019 meeting. Happy Saint Patrick's Day. I wanted to thank you all for using the website and signing in/paying on the site. I feel like the check in time is much shorter and less frustrating for all of us! I am sorry to say the cost of crabmeat is going up so high it might be prohibitive for us to have crabcakes at every meeting. I hope you are all understanding. I also want to remind you to stop by the tabletops that are presenting.

We are financially sound but couldn't be that way without your support and participation.

Thanks again.

Kathy Dwyer

kdwyer@ejdwyer.com

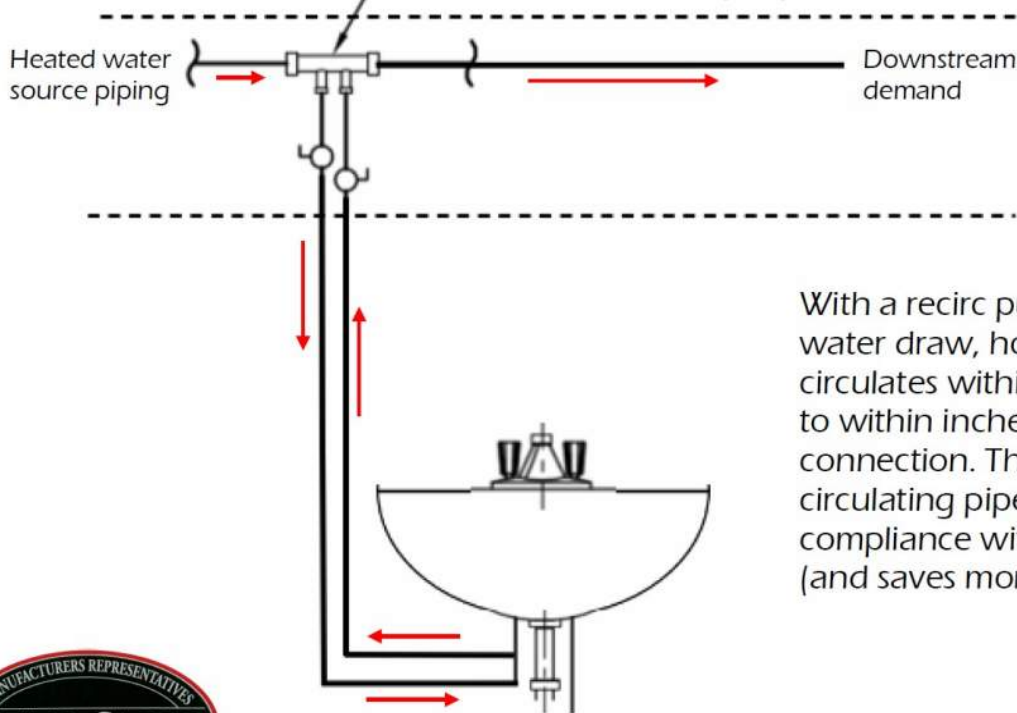


How to comply with the Energy Code C404.5.1 (requiring a maximum of only 24" of non-circulating pipe length).

The **Kemper Flow-Splitter** gives the designer the ability to route smaller circulation loops to public lavs and other fixtures from the primary heated water source. It's a 'no-brainer'.



Flow-Splitter
Figure 651 06 XXX



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Brian Crisp, CPD
Vice President - Membership

Membership Report

Hello again folks! It seems like this ASPE season is flying by. I'm looking forward to this month's meeting on Rainwater/Greywater usage. I learned a lot about the topic recently to achieve the Green Plumbing Design (GPD) certificate from ASPE. If anyone has any questions or is looking for more information about the GPD, just let me know!

As I just renewed my CPD online, I'd like to remind everyone the opportunities ASPE has to get FREE CEUs. ASPE publishes a new *Read, Earn, & Learn* (<https://education.aspe.org/RLE>) every month on their website. You can take one every month as they're published or (Ahem) do a bunch of them at once to ensure you have enough CEUs to recertify :)

Baltimore is up to 112 members thanks in part to the folks below. Please join me in welcoming them to our chapter, perhaps "buying" them an adult beverage at our upcoming meeting.

Allan Dy
James Gillin
Evan Pelfrey (AYP Member)
Mindy Miller – BKMA (AYP Member)
Adriann Grobler – James Posey (AYP Member)

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, GPD
Vice President, Membership

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2021-2022 ASPE Baltimore Chapter Meeting Schedule

Date: **September 22nd, 2021**
Speaker: Bay Associates
Topic: Heat Pump Water Heater Technology

Date: **October 27th, 2021**
Speaker: Highland Tank
Topic: Oil/Water Separators

Date: **November 17th, 2021**
Speaker: Ames
Topic: Direct Inline Pumping Systems for Sanitary and Storm

Date: **December 15th, 2021**
Speaker: Joyce Agency
Topic: Pressure Reducing Valves

Date: **January 26th 2022**
Speaker: STH
Topic: Fire Pumps

Date: **February 20-26th, 2022**
Engineer's Week—Postponed TBD

Date: **February 23rd, 2022**
Speaker: Prof. Ken Isman
Topic: ESFR and Cloud Ceilings

Date: **March 23rd, 2022**
Speaker: Jay Otto
Topic: Rainwater Use and Greywater Reuse

Date: **April 29, 2022**
Event: Annual Golf Outing

Date: **April 27th, 2022**
Speaker: Charlotte Pipe
Topic: Hands-on Starter Fittings

Date: **May 25th, 2022**
Speaker: EJ Dwyer
Topic: Emergency Fixtures



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