Chartered Sept 8th,1992 January 2024 Issue

Central Texas Circulator

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Presidents Message

ASPE American Society of Plumbing Engineers™ CENTRAL TEXAS

Greetings ASPE Central Texas! I hope you had a wonderful New Year. A heartfelt thank you to everyone who attended our Holiday party and took part in our annual Toys for Tots drive. It was fantastic to see so many familiar faces as we bid farewell to the year.

I'm pleased to inform you that I have successfully processed everyone's certifications for the November 2023 Tech seminars. If, for any reason, you haven't received your certificates, please don't hesitate to reach out.

Additionally, we value your feedback on our first tech seminar, and we're in the early stages of planning our Fall 2024 Tech Seminar in San Antonio. If you have suggestions or insights from the previous event, kindly share them with us.

Exciting news! We're kicking off the year with a bang by hosting a technical luncheon this month. Check out our event flyer for details on this month's technical luncheon dates and registration information. If you know of someone eager to speak at a technical luncheon or have a specific topic in mind, feel free to contact me directly.

Thank you all, and stay tuned for the multitude of ASPE events lined up for this year. It's shaping up to be an incredible year ahead!

REGISTER NOW

AT LAST – IT'S ARRIVED!

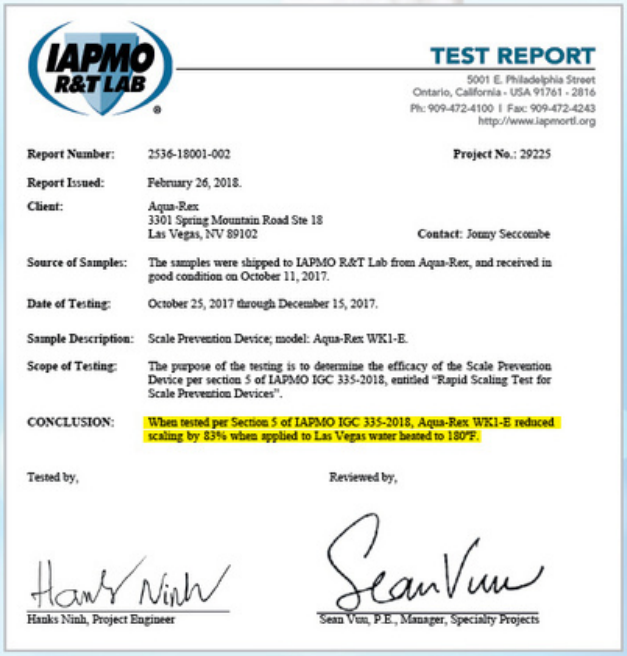
Just what you've been waiting for!

Independent third-party performance verification under a US test protocol for a Physical Water Conditioner - the alternative to the conventional water softener.

- AT LOW COST
  (You can't afford not to treat hard water anymore)
- ZERO PLANT ROOM FOOTPRINT
  (Attaches to the wall or to pipe work)
- ZERO SERVICING
  (No Salt)
- ZERO MAINTENANCE
  (Which means it is 100% reliable)
- WARRANTED FOR 20 YEARS

Case Study: Panorama Towers, Las Vegas, NV.

Cost to install:	$55,000 ✓
Savings over conventional softener in year one:	$168,000 ✓
Estimated 3-year savings:	$500,000 ✓
Annual Running Costs:	$200



IAPMO R&T LAB

TEST REPORT

5001 E. Philadelphia Street
Ontario, California - USA 91761 - 2816
Ph: 909-472-4100 | Fax: 909-472-4243
http://www.iapmortl.org

Report Number:	2536-18001-002 **Project No.:** 29225
Report Issued:	February 26, 2018.
Client:	Aqua-Rex 3301 Spring Mountain Road Ste 18 Las Vegas, NV 89102 **Contact:** Jonny Seccombe
Source of Samples:	The samples were shipped to IAPMO R&T Lab from Aqua-Rex, and received in good condition on October 11, 2017.
Date of Testing:	October 25, 2017 through December 15, 2017.
Sample Description:	Scale Prevention Device; model: Aqua-Rex WK1-E.
Scope of Testing:	The purpose of the testing is to determine the efficacy of the Scale Prevention Device per section 5 of IAPMO IGC 335-2018, entitled "Rapid Scaling Test for Scale Prevention Devices".
CONCLUSION:	When tested per Section 5 of IAPMO IGC 335-2018, Aqua-Rex WK1-E reduced scaling by 83% when applied to Las Vegas water heated to 180°F.

Tested by, Reviewed by,

Hanks Ninh, Project Engineer

Sean Vuu, P.E., Manager, Specialty Projects

Download the Engineer's Specifier Guide from www.aqua-rex.com

Scale Down. Soften Up.

aqua-rex.com 877-640-2170

AQUA REX®

January 9th at Pappadeaux

San Antonio Registration

January 10th Lupe Torillas

Austin Registration

Dear ASPE Central Texas Chapter Members,

Happy New Year! As we eagerly step into 2024, the Central Texas ASPE Chapter is excited to bring you an array of engaging technical sessions throughout the year. Our commitment to providing valuable insights and fostering professional growth continues to be our top priority.

This month, we are delighted to kick off the year with a special presentation by Aqua Rex. Join us as they share their expertise on water conditioning and strategies for dealing with hard water. This promises to be an enlightening session, offering practical solutions for challenges faced in the field.

But that's not all – we want to hear from you! Your input is crucial in shaping our monthly meetings. If you have any specific topics you'd like to see covered in our upcoming sessions, please don't hesitate to reach out. Simply email me at Zed@championsmarketing.net or give me a call at 713.425.9888. Your suggestions help us tailor our content to meet the needs and interests of our diverse membership.

Furthermore, if you have a passion for a particular subject and would like to share your knowledge with our community, we invite you to consider becoming a presenter at one of our future meetings. Your insights and experiences could greatly benefit your fellow professionals. Reach out to me, Zed Hernandez, Vice President Technical, if you are interested in taking on this valuable role.

Let's make 2024 a year of collaboration, learning, and growth within our Central Texas ASPE Chapter. Your active participation and contribution are what make our community thrive.

Looking forward to seeing you at the upcoming Aqua Rex session and many more exciting events throughout the year!

Best regards,

Zed Hernandez
Vice President Technical
ASPE Central Texas Chapter

Membership Standings
Region 5

Chapter	Full	Associate	Affiliate	**Total**	PE	CPD	CPD + PE
Arkansas	21	4	23	48	6	6	0
Central Illinois	19	3	8	31	7	7	1
Central Texas	74	25	35	**136**	29	25	2
Chicago	145	27	107	287	53	67	22
Dallas/Ft. Worth	143	67	52	271	71	51	17
Houston	106	36	86	235	33	33	13
Kansas City	69	19	29	119	42	17	7
Lubbock High Plains	7	2	0	9	5	0	0
Minnesota	91	14	39	147	42	29	6
Oklahoma	39	5	27	72	19	6	0
Omaha	49	8	13	72	14	14	1
St. Louis	73	14	41	131	34	28	7
Wisconsin	84	29	42	159	35	13	3
Region 5 Total:	920	253	502	1717	390	296	79

Greg Rodriguez ASSE 6060
AYP AUSTIN

Jacob Prado CPD
AYP SAN ANTONIO

Dear ASPE Young Professionals,

Happy New Year! As we embark on the exciting journey that is 2024, the American Society of Plumbing Engineers (ASPE) Young Professionals are thrilled to share a glimpse of what the year holds for us. It's a time to set new goals, forge ahead, and make waves in the plumbing engineering field.

Setting Sail with Scholarships: Navigating Educational Opportunities

For those diligently pursuing degrees in engineering or if you know someone on this educational voyage, we have excellent news. ASPE supports your academic aspirations through various scholarship opportunities. The Alfred Steele, PE Scholarship Program by ASPE offers up to $5,000 annually. Check out the details at ASPE Alfred Steele Scholarship Program. Additionally, the IMEG Engineering Scholarship Program provides a substantial opportunity with awards of up to $10,000 per year. Explore the possibilities at IMEG Engineering Scholarship Program.

Spotlight on Rising Stars: Young Professionals Making Waves

In our upcoming newsletters, we want to shine a spotlight on the talented young professionals making waves in the plumbing design game. If you or someone you know is contributing significantly to the field, don't hesitate to nominate yourself or a colleague. We're eager to share your stories and celebrate your achievements. Reach out to us at Jacob.e.Prado@imegcorp.com to submit your nominations.

Connect and Collaborate: Upcoming Events

As we navigate through 2024, stay tuned for a series of exciting events tailored for our community. Networking opportunities, educational workshops, and industry insights await. Engage with fellow young professionals, exchange ideas, and build connections that will shape your future in plumbing engineering.

Conclusion: Sailing Together Towards Success

Let's make 2024 a year of growth, collaboration, and success. Whether you're pursuing education, contributing to the plumbing design landscape, or simply seeking to connect with like-minded professionals, ASPE's Young Professionals community is here for you.

Wishing you a prosperous and fulfilling New Year!

Best Regards,

Jacob E Prado CPD
Mechanical Project Designer 1


BAR
EMA


MERRY
CHRISTMAS
ASPE


RESTR


Class Axe Throwing
Class Axe Throwing


Class Axe Throwing
Class Axe Throwing


Class Axe Throwing
Class Axe Throwing


BAR
HAPPY HOUR


Class Axe Throwing


BAR


Class Axe Throwing
Elves
Santa


Class Axe Throwing
Class Axe Throwing
Knives


Class Axe Throwing
Class Axe Throwing
Elves
Santa

Women of ASPE®

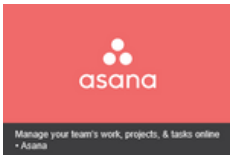
Hayley DeVilbiss
WOA Liaison CT Chapter

With the new year upon us that means setting new intentions- with the construction world showing no slowdowns and full steam ahead that leaves me questioning: what are some things we can do to get ahead and why are these things so important?

Setting clear goals, breaking them into manageable tasks, and prioritizing based on urgency can enhance planning and organization. Delegating tasks to a competent team member distributes the workload effectively, allowing you to focus on high-priority items. This structured approach not only improves time management but also reduces stress, ensuring mental well-being in the face of a demanding workload.

A few organization tools I have used that I found useful are listed below, they can be used among teams and individually:

https://clickup.com/



Also let's never forget the power of a good ole trusty planner and pen, there are many good ones available online that help you set your daily and weekly intentions and keep you on task. Here's to setting ourselves up for success in 2024!

Thank you,

Making the Most of Your Membership

MEMBER BENEFIT TIP #1 - BUILD A KILLER NETWORK

One of ASPE's greatest benefits is its members. Everyone is busy at home and at work, but members who attend Chapter meetings, Conventions & Expositions, and Symposiums are more likely to build a killer contact list. Our members are eager to help you in your next plumbing engineering problem, which undoubtedly will make you more competitive in the workforce.

Whether you are in sales or engineering, you sell yourself every day. ASPE has many networking opportunities for you to meet professionals who possess the skills and training necessary to help you out of a tight spot or put you in touch with someone who can help you. If you are outside your comfort zone, ask your Chapter Board to make the introductions. Exchange business cards and remember to follow up with a brief conversation or email thanking them for their time. Before you know it, you will be a pro in engaging other members, which will lead to career growth and prosperity. If you are not able to attend a Chapter meeting, ASPE Connect offers you a way to build your network online.

MEMBER BENEFIT TIP #2 - ASK A MEMBER FOR HELP

Being a member in ASPE enables you to call upon a friend for help. Your Chapter Officers know who does what. Call your Chapter leaders when you are stumped on the job and ask for help. More times than not, you will find a fellow member who is more than willing and able to assist you with your problem. If they can't help, kick it up to the Region Director, and they will find you the help you need. ASPE members treat other members just like family; it's our single most valuable membership benefit.

MEMBER BENEFIT TIP #3 - BOOST YOUR INDUSTRY VISIBILITY

Demonstrate your abilities to lead and boost your industry visibility by volunteering to join your Chapter Board of Directors or apply to join the Society Board of Directors. Employers, clients, and coworkers respect and look up to ASPE Chapter and Society Officers. Without our leaders, we would not have a Society; it's worth the work.

MEMBER BENEFIT TIP #4 - EXPAND YOUR KNOWLEDGE AND EARN CEUs

ASPE produces webinars for members to expand their knowledge of plumbing systems and design. Members pay about half the price as nonmembers and if the webinar is sponsored, members can participate for free, so this is a great member benefit. Hover over Education & Credentialing in the aspe.org main menu, and then click on Webinars and Workshops. You can access current webinars as well as every webinar ASPE has ever held. Don't forget to recommend these to your colleagues and clients.

Through our special Read, Learn, Earn series, ASPE also can help you accumulate the CEUs required for maintaining your CPD or CPDT credential or other regulatory agency CEU programs for your Professional Engineer license. Here is how you do it. Go to aspe.org, hover over Education & Credentialing, and in the left column you will see Read, Learn, Earn. Click on it and it will take you to a page with the active materials. This benefit is free to members and $35 for nonmembers. Download one of the articles, read, learn, and earn your CEUs. When you complete the payment screen, the system guides you through the questions and you can enter your answers directly into the system. (Note that members do NOT need to add a credit card.) Voila! If you get 90% correct, you will receive your 0.1 CEU in the email specified in your account.

MEMBER BENEFIT TIP #5 - TRACK YOUR CEUs

We've seen some extraordinary new things come out of ASPE in the past couple of years, but this benefit is as good as it gets. Did you know that you can track your CEUs in your member area on aspe.org? Well you can, and here is how:

1. Under Education & Credentialing in the aspe.org main menu, in the left column click on Continuing Education. You have now entered the ASPE Education website.
2. In the menu click on My Education. (You must be signed in to see My Education.) This takes you to your dashboard.
3. Under My Dashboard, click on Transcript/Achievements.

All of your ASPE-sponsored CEUs will already be populated in this table, but you can also add other CEUs from other sources. Simply click on the link toward the top of the table and the site will direct you to a page to add the session information and to upload a certificate.

This member benefit is invaluable in keeping your CEUs current, and it's only offered to members. Don't get caught empty-handed when the eventual audit for your credential comes around.

MEMBER BENEFIT TIP #6 - MEET POTENTIAL CLIENTS/MEMBERS

If you are an Affiliate member, in sales, who steps up and takes on a membership role, you are in a unique position to promote ASPE and your company. Your leadership role is a valuable way to place yourself in front of prospective clients and members. Talk to your Chapter Board of Directors and see what you can do to promote yourself and ASPE.

MEMBER BENEFIT TIP #7 - LEARN HOW TO MENTOR OTHERS

ASPE has mentor opportunities so you can help foster the career of another member. Opportunities are available for all members. Just click on Mentoring Program under Membership & Global Community on aspe.org for more information. Leave your mark on our Society.

MEMBER BENEFIT TIP #8 - ADD LETTERS TO YOUR NAME

We all market ourselves every day with everything we do, and ASPE can help with programs that can add letters to your name: our Certified in Plumbing Design (CPD), Certified Plumbing Design Technician (CPDT), and Green Plumbing Design (GPD) programs. These programs will help others instantly recognize your leadership and expertise in the plumbing design industry.

MEMBER BENEFIT TIP #9 - ACCESS YOUR ASPE ACCOUNT

Accessing your ASPE account has never been easier. Visit aspe.org and click on the LOGIN tab in the upper right-hand corner. If you know your username or email address and your password, enter them and you will be done. If you do not know your username and password but know your email address, click on the "Request a New Password" tab. A temporary password will be sent, but be sure to change it when you log in. If you do not know your username, you can try your last name followed by your member number, just the digits. For example: jones12345.

Having trouble logging in to your ASPE account or you can't remember your member number? No worries. Your Chapter Vice President, Membership has a roster with this information. Call or email them and they will be happy to help you access your account.

MEMBER BENEFIT TIP #10 - MEMBERSHIP RENEWAL

ASPE has made it easier than ever to renew your membership. Log in to aspe.org as you ordinarily do and then to the left of the login button is a green "Join/Renew" button. Just click and you'll be renewed in no time. NOTE: If you have lapsed for more than 90 days, your account was purged from the membership database and you will need to reapply for membership.

MEMBER BENEFIT TIP #11 - SPECIAL-INTEREST GROUPS

ASPE Young Professionals (AYP) is designed for young industry professionals looking to meet with peers to share experiences, exchange ideas about the plumbing design industry, and network with other Chapter members. The focus of AYP is to help young plumbing engineers, design professionals, and practitioners establish contacts and further the mission of the Society. ASPE members 35 years old and younger are all included in this special-interest group.

The core mission of the Women of ASPE (WOA) is to engage, retain, and advance women in the plumbing design industry, through education, leadership development, and networking opportunities. WOA is committed to bringing together women and assisting them to achieve their professional and personal goals.

MEMBER BENEFIT TIP #12 - ASPE TABLES

The ASPE Plumbing Engineering & Design Handbook of Tables is a tool to help members with pipe sizing, equations, and more. This information is available not only as a book, but it is also available in both the Apple App Store and in the Google Play Store, offering members a portable way to access these valuable tables from their phones. More recently, the tables have become available for download to your Mac or PC. Just visit the ASPE Bookstore and you can have these tables at your fingertips.

MEMBER BENEFIT TIP #13 - CAREER CENTER

ASPE's Career Center is a valuable tool for ASPE members seeking new jobs or those looking for experienced plumbing engineers to join their team. Just hover over Membership & Global Community in the aspe.org main menu and click on Career Center to get started.

CITY OF SAN ANTONIO — TEXAS —

DEVELOPMENT SERVICES

	MECHANICAL
	HVAC equipment and schedules: Show locations, type, capacity, energy efficiency, and weight/support of all heating, ventilation and air conditioning (HVAC) equipment.
	Rated Enclosures: Show or specify wall construction and opening protection where rated enclosures are required (heaters, boilers, etc., over 400,000 BTU; air conditioners over 100 HP, etc.).
	Special Equipment: Show special equipment such as kitchen hoods, garage ventilation, paint booth exhaust, automatic fire suppression, etc.
	Fire or Smoke Control: Define in specifications or on plans special use of equipment in conjunction with fire or smoke control.
	Penetrations of Rated Assemblies: Show method of opening protection and note referenced listing or refer to drawings containing same information.
	Special Requirement: Show appurtenances and required details such as flue vent type and size, expansion tanks, blow down systems, protection devices, means for combustion air and special use equipment.
	Air Distribution System: Show all duct runs, fire/smoke dampers where applicable, sheet metal gauge thickness for medium and high velocity systems, type and class of non-metallic duct, etc.
	2021 *International Energy Conservation Code* Compliance/Calculations for Mechanical/Plumbing Equipment. See Information Bulletin 221 for all mechanical requirements. Using the COMcheck software, provide Mechanical Reports/Certificate www.energycodes.gov
	ELECTRICAL
	Utility Site Plan: The site plan should include location of all electrical equipment external to the building envelope, such as: power poles, overhead or underground electric lines, service equipment, pad mount transformers, generators, signs, pole lights, and exterior building lights.
	Riser Diagram: The riser diagram should be a complete and comprehensive one-line diagram, including all service equipment, panels, transformers, generators, and fire pumps. The riser should also include all conductor sizes, over current protection sizes, conduit sizes, and ground fault protection at the service if applicable.
	Grounding Detail: The grounding detail can be incorporated in the riser or detailed separately; either format should include all conductor sizes, ground rod size, and location of bond. As a minimum the grounding electrode system shall consist of a concrete encased electrode, cold water bond, and structural steel bond and grounding electrode. All methods of grounding/bonding should be sized and installed as per NEC article 250.
	Interior Electrical Layout: The power plan should include the locations, circuiting, and wiring methods, of all electrical equipment such as panels, transformers, disconnects, elevator equipment, receptacles, etc, The lighting plan should include the location of all fixtures and switches or other method of control (occupancy sensor, contactor, photo cell, time clock, etc,). All 2009 IECC requirements such as bi-level switching, occupancy sensors, master switches, etc… will be required where applicable.
	Load Analysis: The load analysis should be calculated as per NEC article 220, and will need to include and indicate any existing load to assure adequate capacity of a common service, panel, load center, etc…
	Panel Schedules: The panel schedules should include frame sizes, main lug or main breaker, feeder size, number of circuits, all overcurrent protection sizes (including main), NEMA classification of enclosure, and indication of any arc fault, ground fault, or shunt trip type breakers.
	Fixture Schedule: The fixture schedule should include a fixture description, number of lamps, maximum lamp wattage, installed lamp wattage, and number of fixtures.
	IECC Lighting Compliance Certificate: The 2021 *International Energy Conservation Code* (IECC) is enforced. See Information Bulletin 221 for all electrical requirements. A COMcheck is also required. .

	If your project lies within five miles of one of the military bases in Bexar County, your project must conform to the outdoor lighting requirements of Ordinance 2008-12-11-1133. The Ordinance can be reviewed at: http://docsonline.sanantonio.gov/FileUploads/dsd/MilitarysOrdinanceVersion28.pdf
	Additional Electrical Notes: 1. Once CPS Energy has approved two services to one structure, the required two hour fire barrier that separates the areas served by each will need to be indicated on the appropriate architectural drawings as well as the electrical drawings. 2. Rooms containing large equipment as defined by NEC article 110.26 (c) (2) will need to indicate the correct door swing and hardware. This information will need to be shown on the appropriate architectural drawings as well as the electrical drawings. 3. Disconnecting means for heating equipment covered in article 424 of the NEC and for Refrigeration equipment found in article 440 of the NEC will be required to be independently supported off the unit. This requirement will also apply to the required servicing 120 volt receptacle outlet. Please reference Section 10-93 (1) (e) & (f) of Chapter 10 of the City Code for more details. 4. Exterior lighting designs on all commercial structures in addition to meeting NEC requirements will also need to be in accordance with section 35-392 of the Unified Development Code (UDC).
	PLUMBING
	Plumbing Fixtures: Show fixture numbers and locations. Number of fixtures is based on the Occupant Load of the building. Include water closets, urinals, lavatories and drinking fountains. Plumbing Fixtures installed are required to be on the current EPA list of WaterSense fixtures, with flow rates as per the 2018 IPC Amendments. The list of EPA WaterSense fixtures can be obtained at the EPA website: http://www.epa.gov/watersense/product_search.html
	Building Drain System: Show the under-floor system of the drain waste and soil piping, indicating pipe sizes and slope. Provide riser diagram for multiple fixtures.
	Plumbing Riser and/or Isometric: Provide diagram of installation for waste, vent, and water piping for multiple fixture installations.
	Building Utilities: Show the sanitary building sewer, storm sewer system, water service, gas service and all connections to the public utilities.
	Materials: Indicate all piping materials.
	Water System: Provide known water pressure and supply pipe sizes and calculations of water system, water heater data, and hot water system and accessories (expansion tank, vacuum relief, safety devices, etc.), backflow prevention requirements, pressure reducing valves, etc.
	Venting System: Show pipe sizes, size of vent through the roof and connection to building drains.
	Special Requirements: Show all required appurtenances, such as grease interceptors, sump pumps, sewage ejectors, sample ports, backflow preventers, backflow valves, and special fixtures. Provide appropriate calculations.
	Gas Piping System Diagram: Provide schematic diagram of gas piping system Including system operating pressure. Developed lengths, gas outlets with stated demand in CFH.
	The 2021 *International Energy Conservation Code* (IECC) is enforced. See Information Bulletin 221 for all plumbing requirements related to hot water as well as equipment efficiencies.
	ENERGY CONSERVATION
	Statement of Commissioning Requirements – If Commissioning is required. See the 2018 IECC Section C408, specifically C408.2.1 and Information Bulletin 221
	Other information as listed in Information Bulletin 221 Part III (detailed Submittal Requirements)

CITY OF AUSTIN Development SERVICES DEPARTMENT

Building a Better and Safer Austin Together

Plumbing Plan Review Commercial Checklist

DevelopmentATX.com | Phone: 311 (or 512-974-2000 outside Austin)
For submittal and fee information, see austintexas.gov/digitaldevelopment

This checklist is provided as a reference tool and it is not intended to be exhaustive of all possible plumbing requirements. It may also include more items than a specific set of plumbing plans may encompass.

Referenced Codes:

- 2021 Uniform Plumbing Code (UPC)
- 2021 International Energy Code Compliance (IECC)
- 20210603-057 City of Austin Ordinance
- City of Austin Administrative Policy (COA)
- Utilities Criteria Manual (UCM)

	Code Requirements	Code Section
	A. General	
1.	Indicate scope of work on plans.	N/A
2.	Indicate the job address on each page of the plan.	N/A
3.	Plans shall bear the registration or license number and signature of engineer, an architect, or contractor, registered by the State of Texas in the appropriate discipline.	N/A
4.	Provide drawing abbreviation and symbol schedules.	N/A
	B. Administrative	
5.	**Industrial Waste Requirements and Letter:** Provide a Trap Sizing Verification Letter from the City of Austin's Industrial Waste Division.	COA
6.	**Austin Water Utility Onsite Sewage Letter:** Obtain an approval letter from the Austin Water Utility Onsite Sewage Division stating the system is adequate to support the proposed or existing fixtures and/or additional proposed grease-producing fixtures.	COA
7.	**Swimming Pool:** If there is a plan to install a swimming pool, address the City of Austin Health Department's requirements for the outside shower and drinking fountain by providing the necessary plumbing components.	COA
8.	**Existing Water Meter Size:** Provide the existing water meter size and water service line size.	COA
9.	**Separate Meters:** Separate meters shall be used for all irrigation, swimming pools, common laundry areas, and all other common areas of each multi-family and commercial customer facilities.	AWUC 2.9.2 F 2 Water Systems
10.	**Grease Traps:** Grease traps installed in the exterior of a building must be illustrated on the utility site plan or have a site plan exemption specifically for the grease trap.	COA
11.	**SOVENT:** Projects designed with SOVENT systems are required to include an alternate method of compliance (AMC) document, a notarized deed restriction, compliance certificates for SOVENT fittings, and a list of at least three Engineers licensed in the State of Texas provided by the engineer of record.	UPC 301.3

	Code Requirements	Code Section
12.	**Water and Wastewater Holding Tank Letter:** Provide a letter of approval from Austin Water that approves the location of the proposed holding tank.	COA
13.	**Force Main and Lift Station Requirements:** Provide an approval letter from Austin Water Utility Pipeline Engineering that includes an approval of the proposed lift station hydraulics.	COA
	C. Backflow Protection	
14.	Coordinate the fire suppression backflow protection requirements with the Austin Water Utility. Provide the project name and/or site permit number for installations on the exterior of the building. The required backflow protection, location, size and type must appear on the approved, red-stamped utility site plan or in the MEP documents.	UPC 603.5.14
15.	**Backflow Prevention:** Methods of backflow prevention are required to be illustrated by size, type and location in the plan set. An approved backflow prevention assembly shall protect connections to the potable water system, which can create a cross-connection. The degree of hazard, health or non-health will be the determining factor for the method of cross-connection control. When designing a domestic water system with backflow hazards located within the system, all hazards, high and low, shall be addressed by installing a Pressure Vacuum Breaker Backflow Prevention Assembly (PVB), Pressure Vacuum Breaker Spill-Resistant-Type Backflow Prevention Assembly (SVB), Reduced-Pressure Principle Backflow Prevention Assembly (RPZA), Atmospheric Vacuum Breaker (AVB), or a Double Check Valve Backflow Prevention Assembly (DCVA), depending on the type of hazard, the location, and the piping arrangement requirements for the proposed hazard. Provide a detail that will indicate the required method of backflow protection for each hazard. • Carbonators require an RPZA. Note: A Watts 9BD is not an acceptable method of cross-connection control for this hazard. • Ice makers require an RPZA. • Coffee, juice and tea machines require a DCVA. • Water softener equipment requires a DCVA. • HVAC equipment requires an RPZA, PVB or SVB. • Fire protection requires a Double Check Detector Assembly (DCDA) or DCVA, depending on piping arrangement. • Irrigation without chemicals requires a DCVA. Note: The City of Austin requires a testable backflow preventer for most types of hazards and individual backflow preventers for each piece of equipment. However, low hazards (like hazards) may be grouped together and protected by one backflow preventer. Note: High hazards require protection by using a dedicated high-hazard backflow preventer for each hazard.	UPC 603.2; Table 603.2 Ordinance
	D. Drain, Waste, and Vent	
16.	**Independent Systems (Sanitary Sewer):** The drainage system of each new building and of new work installed in any existing building shall be separate and independent from that of any other building and, when available, every building shall have an independent connection with a public or private sewer.	UPC 311.1

	Code Requirements	Code Section
17.	**Double Wye or Double Combination**: A double wye or double combination wye and 1/8 bend fitting installed in a horizontal position does not permit the branches to maintain the same slope as the barrel of the fitting. Section 708.0 requires that all horizontal drainage piping be run in practical alignment with a uniform slope of not less than 1/4 inch per foot toward the point of disposal.	UPC 708.1
18.	**Plumbing Layout Plan:** Provide a plumbing layout or floor plan to scale that will provide locations for the building drain system and its inlets and the water distribution system and its outlets.	UPC 104.3.1
19.	**Building Sewer:** The sanitary sewer of every building shall be separate and independent from any other building.	UPC 311.1
20.	**Fire Sprinkler Drain Discharge:** Provide a fire sprinkler discharge drain to meet the City of Austin fire sprinkler blow-down.	NFPA 24 10.10.2.1.4 UPC 804.1 & 812.1
21.	**Lift Station:** The proposed ejector pump shall meet the 2021 Uniform Plumbing Code, Section 710.3, Subsection 710.3.3.	UPC 710.3, 710.3(3) 710.4, 710.7 710.9
22.	**Combination Waste & Vent System use for Grease Waste Systems:** Combination waste & vent systems are not an allowable method of piping for a grease producing area.	UPC 910.0 Appendix B
23.	**Drain, Waste and Vent Riser Diagram:** Provide a drain, waste and vent riser diagram.	UPC 701.1, 901.1
24.	**Suds Relief:** The drainage connections shall not be made into a drainage piping system within eight (8) feet of any vertical to horizontal change of direction of a stack containing suds-producing fixtures. Suds producing fixtures include bathtubs, laundries, washing machine standpipes, kitchen sinks and dishwashers.	UPC 711.0
25.	**Horizontal Venting Below the Flood Level Rim of the Fixture:** All venting of fixtures must be vertical until a point of 6 inches above the overflow rim of the fixture, at which point the vent can turn horizontal.	UPC 905.3
26.	**Combination Waste and Vent System:** Plumbing code requires a full size cleanout (same size cleanout as the building drain to which it is connected) in each vent of a combination waste and vent system.	UPC 910.6
27.	**Lift Station Venting Requirements:** Venting of a lift station shall be based on the venting requirement of Chapter 7, Section 710.10 UPC.	UPC 710.10 906.4 Table 703.2
28.	**Cleanouts Required:** Locations for cleanouts shall meet the referred code section.	UPC 707.4
29.	**Sewage Collection System Requirements:** Plumbing Plan Review will require utility plans that have slopes assigned to each portion of the sewer drainage system. This information is required as part of the review process to allow plan review to determine if the proposed private sewer distribution system meets requirements.	UPC Table 717.1
30.	**Sanitary Building Sewer and Sanitary Building Drain Location:** The sanitary sewer location as it enters the footprint of the building should be coordinated with the MEP and civil plans.	COA
31.	**Line Venting Violations:** The trap arm of every fixture shall connect to vertical vent piping, which connects to a horizontal building drain.	UPC 901.1 1002.2
32.	**Building Sewer and Building Drain:** Coordinate the building sewer location with the MEP and civil plans as it enters the footprint of the building.	COA

	Code Requirements	Code Section
33.	**Vent Convergence:** The vents from the inlet and outlet of the grease trap must run independently to the building and go from horizontal to vertical at least 6 inches above the overflow rim of the fixture before turning horizontal and connecting together.	UPC 905.3
34.	**Water Closet:** No water closet or urinal shall be installed on a combination waste and vent system. Those services should be tied in below/downstream of the CWV system.	UPC 910.7
35.	**Vent Size:** The minimum vent size for a six-unit trap and water closet is 2 inches.	UPC Table 703.2
36.	**Standpipe Receptors:** Plumbing fixtures or other receptors receiving the discharge of indirect waste pipes shall be approved for the use proposed, shall be of such shape and capacity as to prevent splashing or flooding, and shall be located where they are readily accessible for inspection and cleaning.	UPC 804.1
37.	**Vents:** Each combination waste and vent system shall be provided with a vent or vents adequate to ensure free circulation of air.	UPC 910.3
38.	**Gravity Drainage Requirement:** Where practicable, plumbing fixtures shall be drained to the public sewer or private sewage disposal system by gravity.	UPC 709.0
39.	**Walk-In Coolers:** Walk-in coolers and floor drains shall be permitted to be connected to a separate drainage line discharging into an outside receptor. The flood-level rim of the receptor shall be at least 6 inches (152 mm) lower than the lowest floor drain. Such floor drains shall be trapped and individually vented. Cleanouts shall be provided at 90-degree (1.57 rad) turns and shall be accessibly located. Such waste shall discharge through an air gap or air break into a trapped and vented receptor, but a full-size airgap is required where the indirect waste pipe is under vacuum.	UPC 801.3.2
40.	**Vertical Wet Venting:** Wet venting is limited to vertical drainage piping receiving the discharge from the trap arm of one- and two-fixture unit fixtures that also serves as a vent not exceeding four fixtures. Wet-vented fixtures shall be within the same story; fixtures with a continuous vent discharging into a wet vent also shall be within the same story as the wet-vented fixtures. No wet vent shall exceed 6 feet (1829 mm) in developed length.	UPC 908.1
41.	**Size:** The vertical piping between two consecutive inlet levels shall be considered a wet-vented section. Each wet-vented section shall be not less than one pipe size more than the required minimum waste pipe size of the upper fixture or shall be one pipe size more than the required minimum pipe size for the sum of the fixture units served by such wet-vented section, whichever is larger, but in no case less than 2 inches (50 mm).	UPC 908.1.1
42.	**Indirect Waste Connections:** Shall be provided for drains, overflows, or relief vents from the water supply system, and no piping or equipment carrying wastes or producing wastes or other discharges under pressure shall be connected directly to a part of the drainage system. The foregoing shall not apply to an approved sump pump or to an approved pressure-wasting plumbing fixture or device where the authority having jurisdiction has been satisfied that the drainage system is adequately sized to accommodate the anticipated discharge.	UPC 801.5
	E. Elevator	
43.	**Acceptable Discharge Location:** In a new elevator shaft, an elevator sump pump must discharge to the storm system outside of the building, detention pond, or other location approved for each project by the authority having jurisdiction. A hydraulic elevator must be equipped with a hydraulic oil alarm, and secondary containment must be installed and approved for each project by the authority having jurisdiction.	Ordinance 20210603-057 322.1

	Code Requirements	Code Section
44.	**Discharge Piping:** Piping must be at least one and one-half inch (1 1/2 inch) NPS. Piping must be independent and cannot connect to the storm or sub-soil piping within the building. Discharge piping must comply with Section 710.4 of the Plumbing Code. If an elevator sump pump is located below the 100-year floodplain, its piping must rise above the 100-year floodplain elevation before connecting to a gravity drainage system. Piping must be labeled as required in Section 601.2 of the Plumbing Code.	Ordinance 20210603-057 322.2
45.	Summarized to comply in the City of Austin as follows: **Elevator Sump Pumps:** 1) Must be capable or discharging 50 gallons per minute per elevator car. 2) Operation shall be automatic with no human intervention. 3) Discharge piping shall remain separate from other building piping until connection with the required sample port. 4) Discharge piping shall be labeled; also indicating car number if more than one elevator car. 5) Discharge Piping shall rise to an elevation at or above the 100-year floodplain elevation before it can be run to a gravity drainage system. 6) Discharge piping shall have a sample port at one of the following locations: a) Outside the building on private property in an accessible location. b) For buildings with a zero lot line, a sample port located inside the building in an accessible location. 7) As approved by the authority having jurisdiction, acceptable sample ports are single-riser two-way cleanouts, open grate catch basins, or other approved fittings/receptors with ability to visually see the flow line and retrieve samples. 8) If sump pump piping is connected to the sanitary sewer, an indirect waste (air gap) is required to prevent gases from building up in the elevator hoistway. 9) Elevator sump pumps, where feasible, shall discharge to the stormwater system or other location as approved by the authority having jurisdiction. 10) Hydraulic elevator sumps shall incorporate a secondary deeper sump (minimum 10 gallons liquid capacity) for the retention of oily wastes to capture and contain leaks, spills, etc. for later remediation.	Texas Dept. of Licensing and Regulations adopted elevator rules: ASME A17.1-2007/CSA B44-07
	F. Energy	
46.	**Residential Water Heating:** Residential buildings, as defined by the Energy Code, having existing or planned natural gas service or equivalent district gas service located in the adjacent right-of-way, shall not use electric resistance as the primary means for heating water. Residential buildings, as defined by the Energy Code and not having natural gas service or equivalent district gas service located within the adjacent right-of-way, may install electric resistance water heaters having a minimum efficiency of 93%, in conjunction with a preprogrammed water heater timer in lieu of gas fired water heating. The timer shall be preprogrammed to turn the water heater off between 3 p.m. and 7 p.m. from June 1 to September 30 and from midnight to 4 a.m. the rest of the year. The timer shall have a readily accessible override, as defined by the building official, capable of restoring power to the water heater for one hour when activated.	Ordinance No. 20210603-55 C404.10
	G. Fire Systems	
47.	**Fire Suppression Systems**: If any of the building's fire sprinkler system can freeze and chemicals are added to protect the piping, refer to the referenced code section.	UPC 603.5.14.2

	Code Requirements	Code Section
48.	**Water protection:** Provide an approved method to prevent water from infiltrating into the hoistway enclosure from the operation of the automatic sprinkler system outside the enclosed fire service access elevator lobby.	IBC 3007.3
	H. Fixtures and Fittings	
49.	Minimum plumbing restroom fixture count shall comply with referenced code for separate facilities required for the type of building occupancy and occupant load factors described.	Ordinance No. 20210603-057 422.0 Refers to Chapter 29 in IBC table 2902.1
50.	Plumbing fixtures shall be constructed of dense, durable, non-absorbent materials and shall have smooth, impervious surfaces, free from unnecessary concealed fouling surfaces. All fixtures shall comply, in quality and design, with nationally recognize applicable standards.	401.2 UPC, Table 1701.1
51.	**Hand Sink Locations**: A hand washing lavatory is required for each definitive area of food service and utensil washing (within 20 feet plain view of these areas.)	COA
52.	**Location of Valves and Heads:** Refer to the code section for specific information on location of valves and heads.	UPC 408.9
53.	**Family or Assisted-Use Toilet and Bathing Rooms**: In assembly or mercantile occupancies where an aggregate of six or more male and female water closets is required, an accessible or family-assisted-use toilet room shall be provided.	IBC 1110.2.1, UPC 422.1.1
54.	**Floor Drain Requirements:** Refer to the referenced code section for installation location of floor drains.	UPC 418.3
55.	**Domestic Water Fixture Analysis:** Provide a domestic water fixture analysis by using the required instructions located in Appendix A. Include the results in table format.	UPC APPENDIX A
56.	**Drainage Fixture Units Analysis:** Provide an analysis of the drainage fixture units for each multi-unit building. For the first analysis, use the 2021 UPC Table C 303.1(2), titled, "Drainage Fixture Unit Values (DFU) for Bathroom Groups." Table C 303.1(2) is only for sizing the sanitary sewer for the entire sewer system as the individual building sewers intersect throughout the property and eventually terminate into the City sewer utilities. For the second analysis, use the 2021 UPC Tables 702.1 & 703.2 for sizing all drain, waste and vent piping within the footprint of the building. Tables 702.1 & 703.2 are used for the sole purpose of sizing the plumbing drain, waste and vent piping within the footprint of the building. Provide the data on the pertinent MEP drawings for each multi-unit building at key intersection points within the footprint of the building.	UPC Table 702.1, 703.2, APPENDIX C C303.3
57.	**Drinking Fountain Required:** Occupancies shall have one drinking fountain per 100 occupants for public and employee use per table 422.1. B occupancies over 3,000 square feet are required to have one drinking fountain for every 100 occupants. The first required fountain for any occupancy is to be a high-low fountain, and any subsequent fountains can substitute up to 50% of required fountains for bottle filling stations or accessible break room sinks.	Ordinance 201200603-057 422.0 Refers to IBC Chapter 29 Table 2902.1
58.	**Service Sink Required:** Occupancies shall have one service sink per table.	Ordinance 201200603-057 422.0 Refers to IBC Chapter 29 Table 2902.1

	Code Requirements	Code Section
59.	**Accessible Route:** The route to the public toilet facilities shall not pass through kitchens, storage rooms or closets. Access to the required facilities shall be from within the building or from the exterior of the building. All routes shall comply with the accessibility requirements of the IBC**.** The public shall have access to the required toilet facilities at all times that the building is occupied.	UPC 422.4.1
60.	**Substitution:** Where restaurants provide drinking water in a container free of charge, drinking fountains shall not be required. In other occupancies where drinking fountains are required, water dispensers shall be permitted to be substituted for not more than 50 percent of the required number of drinking fountains.	UPC 415.2
	I. Gas	
61.	**Elevated Gas Pressure Request:** Provide an Elevated Gas Pressure Request from Texas Gas Service. Send Elevated Gas Pressure Request inquiries to Texas Gas Service at slimgas-metroaustin@onegas.com. NOTE: Provide emailed confirmation letter from Texas Gas Service.	UPC 1215.6
62.	**Boiler Requirements:** Provide a diagram of the proposed boiler that includes gas vent size and penetration through roof, gallon capacity, and Btu Input. Note: If check valves or other devices that create a non-return barrier are used, the diagram must meet the requirements in the 2021 Uniform Plumbing Code Section 608.3, which includes the installation of an expansion tank or other approved device.	UPC 501.1
63.	**Natural Gas Riser Diagram:** Provide a gas riser diagram that includes the following information: • Total Btu/h or Cubic Feet per Hour for the entire system downstream of the pertinent gas meter • The Btu/h or Cubic Feet per Hour for each appliance • Total developed length of piping, from the gas meter to the most remote outlet, along the centerline of the pipe and fittings and sizes for all sections of the piping system • Refer to the referenced table for low-pressure system. Note: Provide a statement of the pressure of the proposed system. If the proposed system is a two-stage system five-pound-gas with a regulator reducing the system to inches of water column, the information listed above must be included for the medium-pressure system and for the low-pressure system.	UPC Table 1215.2 (1), UPC 104.3.1
	J. Storm Water	
64.	**Storm Drainage Riser Diagram:** Provide a riser diagram for the storm drainage system that includes the following information: • Square footage of area drained per drainage inlet • Desired horizontal slope of the storm drain piping (1/8, 1/4, or ½ inch) • Termination point of primary and secondary drain if applicable. Note: Storm drainage piping must terminate outside of the footprint of the building and to a point approved by the authority having jurisdiction. The roof drain termination point shall not terminate over a public way. Note: The size of the system will be based on five (5) inches/hour of rainfall per the 100-year 60-Minute Rainfall Rate.	UPC 104.3.1
65.	**Primary Roof Drainage:** Roof areas of a building shall be drained by roof drains or gutters.	UPC 1101.12.1
66.	**Secondary Drainage:** Secondary (emergency) roof drainage shall be provided by one of the methods specified in referenced code.	UPC 1101.12.2.1, 1101.12.2

	Code Requirements	Code Section
67.	**Roof Scuppers or Open Side:** Secondary roof drainage shall be provided by an open-sided roof or scuppers where the roof perimeter construction extends above the roof in such a manner that water will be entrapped.	UPC 1101.12.2.1
68.	**Secondary Roof Drain:** Secondary roof drains shall be provided and located at least 2 inches (51 mm) above the roof surface. The maximum height of the roof drains shall be a height to prevent the depth of ponding water from exceeding the capacity for which the roof was designed, as determined by Section 1101.12.1. The secondary roof drains shall connect to a piping system in accordance with code.	UPC 1101.12.2.2.1, 1101.12.2.2
69.	**Rainwater Sumps:** Rain sumps in a public use occupancy are required to be duplex.	UPC 1101.14
70.	**Discharge:** Subsoil drains shall be piped to a storm drain, to an approved water course, to the front street curb or gutter, or to an alley. Alternately, the discharge from the subsoil drains shall be conveyed to the alley by a concrete gutter. Where a continuously flowing spring or groundwater is encountered, subsoil drains shall be piped to a storm drain or an approved water course.	UPC 1101.6.1
	K. Water	
71.	**Domestic and Fire Main Services and Domestic Building Branches**: Coordinate the domestic water and fire line sizes and locations with the MEP and civil plans.	COA
72.	**Potable Water Riser Diagram:** Provide a potable water riser diagram.	UPC 104.3.1, COA
73.	**Total Water Supply Fixture Unit Count:** Provide a water fixture unit count. An MEP Engineer will provide a total water fixture unit count of existing tenant spaces that are supplied from the same water meter.	UPC 610.4
74.	**Hot Water Boiler/Domestic Water Heater Expansion Control:** A check valve is installed on the cold supply to the water heater in as much, the check valve has created a non-return barrier.	UPC 608.3
75.	**Pressure Loss:** No water filter, water softener, backflow prevention device, or similar device regulated by this code shall be installed in a potable water supply piping where the installation of such device produces an excessive pressure drop in such water supply piping.	UPC 610.2
76.	**Water Systems:** All fire lines shall have a gate valve on the line at the connection to the main line and a backflow preventer inside the property line, but accessible for inspection by City personnel. All unmetered fire lines shall have a flow-detection device approved by Austin Water. This flow detection service shall be located so no more than 100 gallons of *water* is contained between the device and the point where the fire line is connected to the City's main. Note: The distance exceeds the 100 gallon rule.	2.9.2 UCM

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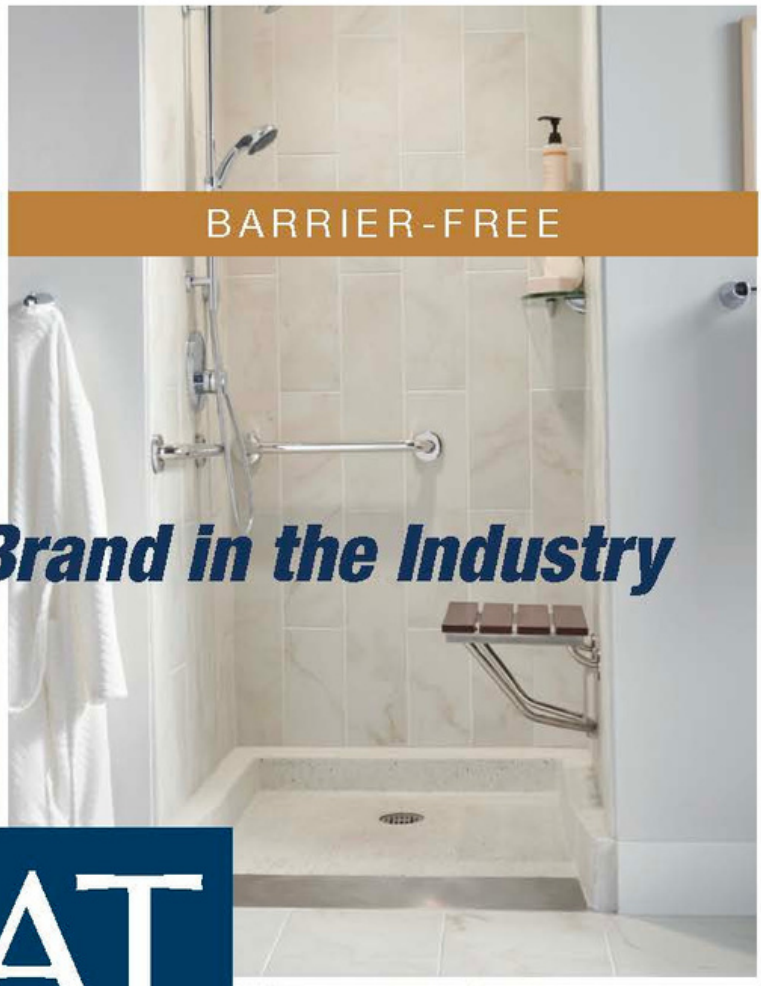

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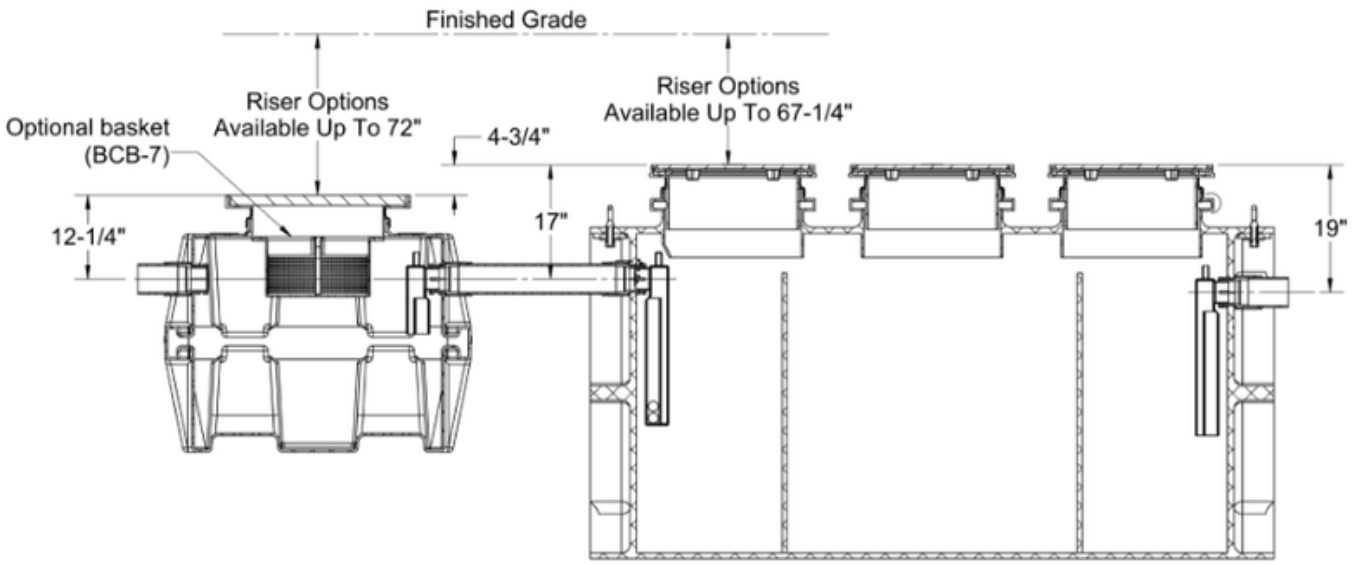

*Sand/oil interceptor size requirement is 250 gal. for five or fewer drains, and 500 gal. for six or more drains.

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HOW THE CPDT CREDENTIAL CAN ACCELERATE YOUR CAREER IN PLUMBING ENGINEERING

Due to its niche nature, plumbing engineering offers a long, stable, and profitable career, but breaking into the profession can be challenging if employers aren't aware of your unique skills. That's where the Certified Plumbing Design Technician (CPDT) credential can help. As the only credential specific to plumbing system designers early in their careers, the CPDT provides immediate recognition of individuals skilled in this trade. That's why Ashley Turlington, CPDT, recommends earning the designation. "Companies seek candidates with credentials pertinent to their field," she says. "The CPDT can open up a lot of professional opportunities."

DEMONSTRATE YOUR TECHNICAL KNOWLEDGE

Administered by the American Society of Plumbing Engineers (ASPE), the CPDT program provides a standard of professional competence in the practice of plumbing design at the technician level. Employers are assured that designers who have earned the CPDT credential have the requisite knowledge and skills to excel in their company. This is one of the primary reasons individuals pursue the designation. "I earned my CPDT credential to demonstrate my technical knowledge of plumbing, and it has given me better recognition as a well-rounded plumbing designer," says John Lansing, CPDT, LEED Green Associate.

VALIDATION OF YOUR ACCOMPLISHMENTS

Through its rigorous processes, the CPDT program identifies professionals who have demonstrated their expertise and abilities in the field of plumbing design. The certification exam tests an individual's proficiency in skills that employers desire, such as laying out systems, sizing calculations, selecting equipment, and preparing documentation. The test specifications and content reflect the abilities essential to performing at the technician level of a plumbing designer.

The CPDT credential gives you "more respect, validation of your accomplishments, and [subsequently] more compensation," says Justin Wroblewski, CPDT.

IMPROVE YOUR VALUE TO YOUR COMPANY

The CPDT program's recertification requirement means that CPDTs must stay current on new techniques and technologies through continuing education, which is a desirable trait to employers who are looking for an edge in the competitive MEP market. Having CPDTs on their staff showcases a firm's expertise and their commitment to maintaining the highest, most up-to-date design standards.

"My CPDT credential has allowed my company to get better jobs because clients view us as more knowledgeable," Turlington says.

And the benefit is mutual. "Taking the step to improve your value to your company will also benefit your career," says Wroblewski.

HOW TO ACCELERATE YOUR CAREER

The CPDT program is designed for plumbing system designers with less than eight years of professional experience, and the exam is held annually at online testing sites around the world. If you are planning on achieving ASPE's internationally renowned Certified in Plumbing Design (CPD) credential, the CPDT is an excellent starting point.

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Report Number:	2536-18001-002 **Project No.:** 29225
Report Issued:	February 26, 2018.
Client:	Aqua-Rex 3301 Spring Mountain Road Ste 18 Las Vegas, NV 89102 **Contact:** Jonny Secombe
Source of Samples:	The samples were shipped to IAPMO R&T Lab from Aqua-Rex, and received in good condition on October 11, 2017.
Date of Testing:	October 25, 2017 through December 15, 2017.
Sample Description:	Scale Prevention Device; model: Aqua-Rex WK1-E.
Scope of Testing:	The purpose of the testing is to determine the efficacy of the Scale Prevention Device per section 5 of IAPMO IGC 335-2018, entitled "Rapid Scaling Test for Scale Prevention Devices".
CONCLUSION:	When tested per Section 5 of IAPMO IGC 335-2018, Aqua-Rex WK1-E reduced scaling by 83% when applied to Las Vegas water heated to 180°F.

Tested by, Reviewed by,

Hanks Ninh, Project Engineer

Sean Vue, P.E., Manager, Specialty Projects

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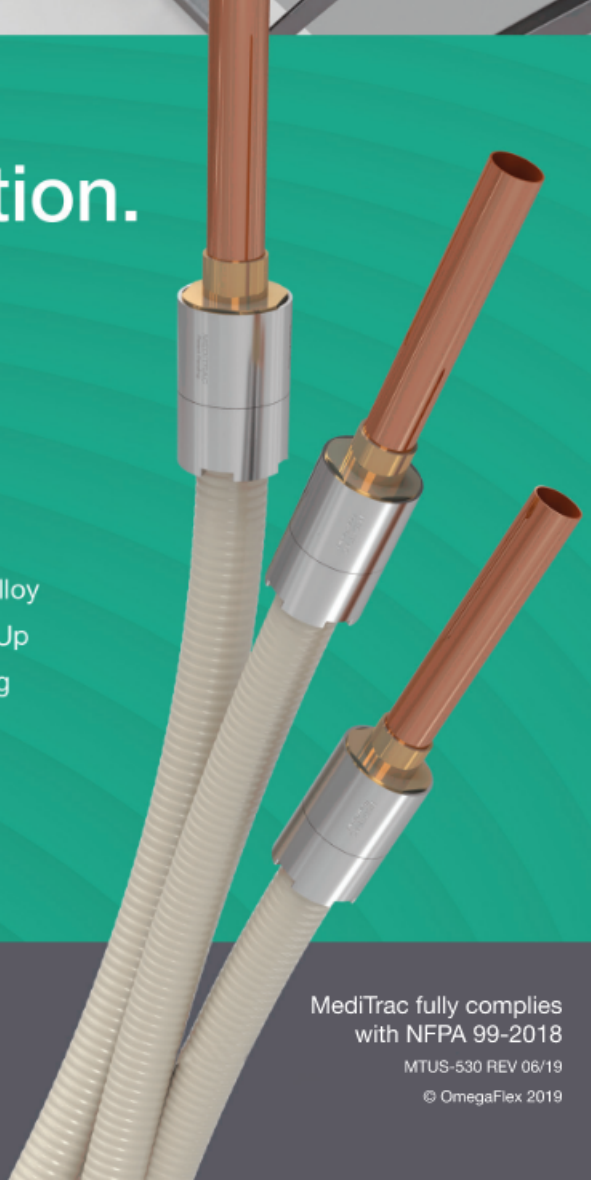

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General exam FAQs
Exam open book policy FAQs
2023 CPD Bulletin
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