You Fix Your Pipes, 'Til Then, I'll Water My Lawn

By Mick Pattinson

The English get as much rain as we in California get sunshine. So it was with some surprise that on a recent trip to the land of my birth, English authorities were issuing "hose pipe bans," urging residents not to water their lawns, wash their cars, or take long showers.

They have tons of water, we know that. So water is not the problem. What they don't have is good pipes. In parts of England as much as 60 percent of treated water escapes from bad pipes before it reaches the home.

When my brother said I should be thankful that we did not have that problem in California, I smugly congratulated myself — too soon, it turns out.

I was not off the plane for two hours before hearing a similar plea for water conservation. They said the California snow pack is at a 20-year low. But in contrast to England, here is what water authorities did not tell us: California water mains are in such bad shape that in parts of the state, as much as 30 percent and more of our clean, treated water leaks from lousy pipes before it reaches our faucets.

An obscure paragraph on the state's own web site gives the rest of the story:

"A detailed water audit and leak detection program of 47 California water utilities found an average loss of 10 percent and a range of 30 percent to less than 5 percent of the total water supplied by the utilities. The July 1997 *Journal [of the] American Water Works Association* cites examples of more than 45 percent leakage."

If your tire leaks, surely you would fix the hole before adding more air. But water is different. It supposedly is cheap. So instead of repairing the holes spewing more than 50 billion gallons a year from California pipes alone, we just force more water down there, and hope the day of reckoning comes on someone else's watch.

That day is today. Our pipes are bad. And getting worse.

Those bad pipes are often costing us in unexpected ways: If we are pumping 45 percent more water than we should, that means homebuilders are paying 45 percent more in developer fees for water hook-ups than we should.

And water availability is now a standard for new home development. The same people who do not take care of their water mains are now telling us we need to guarantee more sources of water before they allow us to build a new home.

Same with sewer pipes — a sewer pipe filled with holes often lets in more water than it lets out sewage. Fixing the holes can reduce by 60 percent the flow into a sewage treatment plant. So here's the choice: Hit developers up for the money for bigger sewage treatment plants that are not necessary. Or fix the pipes.

It's a choice people around the world are having to make.

UN scientists say global warming will damage our water supply in 20 years. True enough. But we don't have to wait — bad pipes are putting our water supply in jeopardy right now. And it is happening all over the world.

In Auburn, New York, city officials are losing 50 percent of what industry insiders call unaccounted for water or non-revenue water. In Philadelphia and Pittsburgh and other large eastern cities, the number is between 30 percent and 40 percent. In Kansas, 61 water districts lose 30 percent or more of their water. In Manila, New Delhi, and other large cities in the developing world, 75 percent of the water is lost to bad pipes.

American pipes alone leak enough water to supply all of California all of the time. Admittedly, by comparison, we are water spendthrifts in California, with most places losing somewhere around 20 percent, plus or minus a few points.

Auburn, California loses 25 percent. Fresno is near 20 percent. San Francisco is 16 percent. That is still twice as high as water experts recommend as the maximum level of leakage. And information about non-revenue water or unaccounted for water, to use the industry lingo, is painfully difficult to find.

Water leaks in California even have their own lawyers and lobbyists, as is the case with the All American Canal in the Imperial Valley. It loses 25 billion gallons of water every year — enough for millions of people.

Most pipes leak through negligence. Same with the canal. But lots of people in Mexico and a few on this side of the border like it that way. Thirteen years ago residents of Mexico sued the federal government to stop it from fixing the leaks because they depended on the water for farming. Fixing the leaks would ruin Mexican farms, American habitat, and just about everything else in between. So they say. So for the last 13 years, 25 billion gallons of water leaked out of the canal — each and every year.

In April, a court ruled water officials could start fixing the leak. One down, millions more to go. But it's a start.

There's more good news: It used to be the only way to repair a pipe was to "patch and pray" or dig it up and replace it with a new pipe. The first fix was a short-term solution and the second was expensive and disruptive.

Now there's another choice: In April, city officials in Monroe, Michigan were among the first to fix water leaks using a new technology that allows pipes to be repaired from the inside without digging *(see page 18 for more on trenchless "no dig" methods)*.

This so-called trenchless technology has been used on sewer and oil pipes for decades but, until now, has not been available for water pipes. That is all changed now, reducing both the expense and disruption of fixing and maintaining water pipes.

That makes it a new day for water pipes. Before officials start asking us to tolerate dirty cars, brown lawns, and empty pools, perhaps they can do something for themselves that would be even more effective: Call a plumber.

About the Author

Mick Pattinson is the former president of the California Building Industry Association. He is currently president and CEO of Barratt American, a California homebuilder and is also the president and CEO of McCanna Water Company, a small utility that serves one of the Barratt American master planned communities.

‘No Dig’ Techniques Gaining Popularity

By Jane Lee

Once upon a time, plumbers and contractors used to dig up roads, driveways, and landscaping to reach pipes that were hidden underground. Homeowners, property owners, and people who lived in areas that were disrupted by the long, deep trenches were dismayed at the inconvenience and cost of these excavations. But one day, hope arrived.

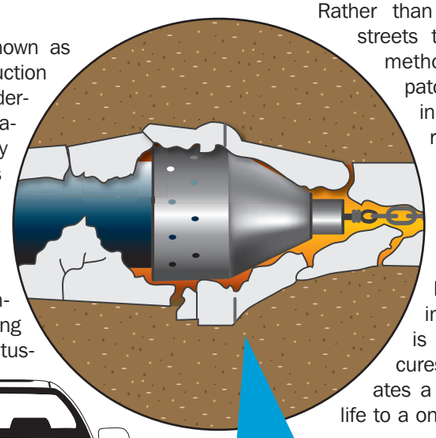
Enter trenchless technology, also known as “no dig,” a rapidly growing sector of the construction and civil engineering fields that accesses underground pipes and cables with minimal excavation. Trenchless technology encompasses many different procedures and methods, but is essentially divided into two primary types: trenchless installation and trenchless rehabilitation, each employing multiple techniques.

Trenchless installation uses such methods as tunneling and horizontal directional drilling to install pipes and other underground apparatuses. Trenchless rehabilitation uses methods like cured-in-place piping and pipebursting to repair damaged existing pipes.

All of these installation and rehabilitation methods can be likened to performing surgery with only a small incision; the amount of excavation is kept to a minimum in order to reduce the amount of traffic disruption and environmental impact.

For example, horizontal directional drilling enables trenchless installations up to 500 meters long. After determining the underground bore path, engineers create a “pilot bore,” or first pass, along the route, using high thrust and tension forces to push through rock and soil. Bore paths created by horizontal directional drilling can extend under buildings, complexes, and even rivers. Once the drilling head makes its way the length of the path and surfaces on the other side, it is replaced with a back reamer, a cutting head that is used to enlarge the pilot bore when pulled back along the same path. After the bore is complete and the path is fully reamed, pipe can be pulled in. Pipes can be made of plastic, steel, or cast iron, and can be either single or bundled. By using this method, only the entrance and exit points of the drill head need to be disturbed, leaving the rest of the surface intact.

There are also several methods for repairing existing pipes, one of the more common being cured-in-place piping. Rather than demolishing entire floors or streets to exhume broken pipes, this method offers localized repair by patching cracks, fractures, or holes in pipes with a formulation of resins that cure over the damage. Once the problem area is located, a plumber fills a liner with epoxy resin, then snakes it to the damaged part of the pipe using a winch cable. The liner is then filled with air, making it expand to fit the pipe, and is left in place until the resin cures. Once cured, the epoxy creates a smooth patch that gives extra life to a once doomed pipe.



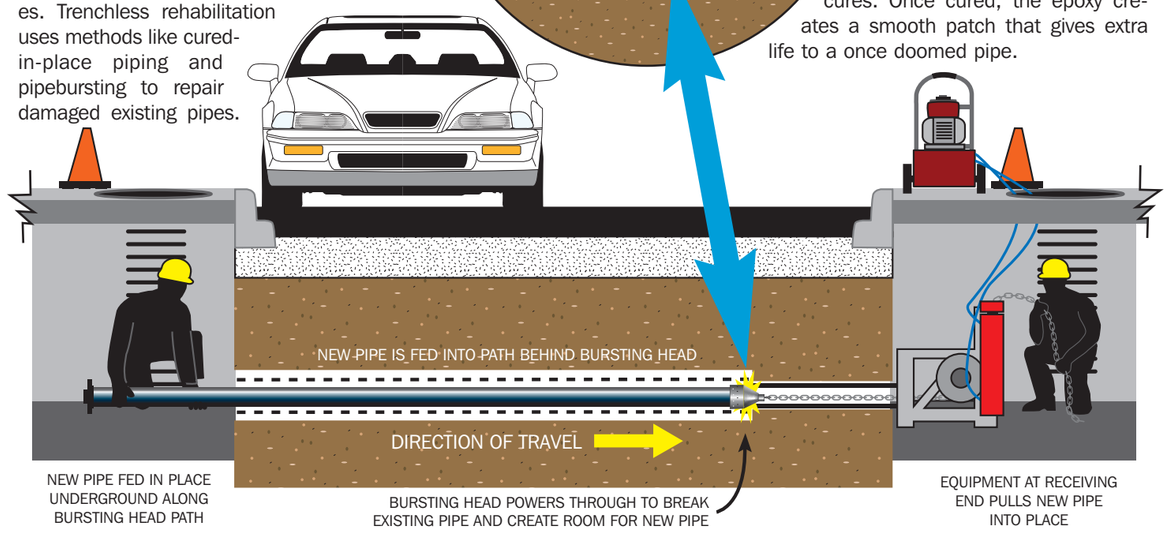
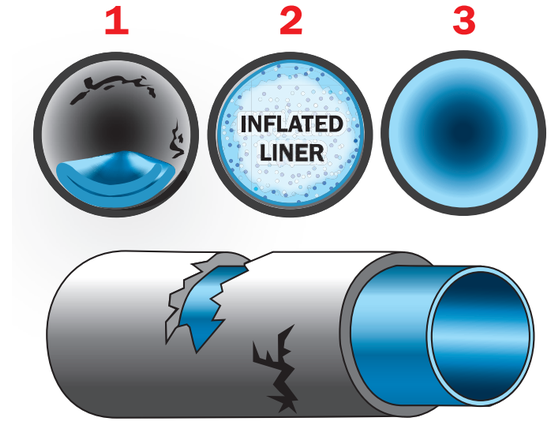


Photo courtesy of Nu Flow Technologies 2000 Inc.

Trenchless technology installers pour resin into a liner that will be positioned into place inside the damaged area of the pipe.

Pipe bursting, illustrated in the diagram to the left, is another commonly used trenchless method. A conical bursting head is used to fracture an existing, damaged pipe while a new pipe follows behind. Beginning at the insertion pit, the new pipe is fed into place behind the bursting head, which is pulled by a cable from the receiving pit. Since the bursting head must be larger than the inside diameter of the pipe in order to break it away, the technique is used to replace existing pipes with ones of the same size or larger.

Despite these advances in technology, some critics are concerned that the decreased disruption to our daily lives comes at the cost of an increased risk of accidents. Since trenchless digging relies on blind machines to tunnel and pull pipes underground, the potential to puncture gas and sewer lines shoots upward. The Associated Press reported in March 2005 that a directional drilling project punctured a gas line and caused a suburban Pittsburgh home to explode, leaving a man hospitalized.



The cured-in-place process is illustrated in three steps: 1) Epoxy-filled uninflated liner inside damaged pipe. 2) Liner inflates until resin is cured. 3) New cured-in-place pipe.

As with any sort of technological progress, the convenience afforded by advances in trenching methods must be tempered with thorough planning and safe implementation. With the proper safety procedures in place, trenchless technology has the potential to make everyone’s life a little easier.

A video inspection is performed to determine the exact location of the damage to the pipe.

Photos courtesy of Nu Flow Technologies 2000 Inc.

A liner is prepared for installation.

Devastation in Greensburg

By Bill Schweitzer

The human spirit often shines brightest in the wake of natural disasters as communities work to rebuild their lives both physically and emotionally. Plumbing and mechanical work is an essential part of restoring normalcy to devastated areas, and IAPMO members and staff have a long history of volunteering their services following hurricanes, tornados, and other disasters. The following is an account from IAPMO Regional Manager Bill Schweitzer, who went to Greensburg, Kansas in the aftermath of the recent tornado that killed nine people in that city alone.

Bill Schweitzer inspects the sewer installation and hook-up of the Mennonite Disaster Service bunk house following the tornados that ravaged Kansas in May.

On May 4th 2007 at 8:30 pm, the city of Greensburg, Kansas was almost totally wiped out by a category F5 tornado, the highest level classified by the National Weather Service. The tornado was clocked at speeds of more than 200 miles per hour, and tore through the city in about 15 minutes. Shortly afterward, I called and spoke with the Greensburg city manager to find out how IAPMO could help in the wake of the destruction, and he informed me that the city would like to adopt the *2003 UPC*. Furthermore, he asked if it would be possible for me to come out for a week and help with setting up their inspection department and perhaps perform a few inspections. I assured him that IAPMO would gladly provide as many code books as they needed and that I would be there to help in the rebuilding efforts.

A snapshot of the destruction caused by winds that tore through the city at more than 200 miles per hour.

Greensburg's temporary City Hall, where officials and volunteers set up camp to begin rebuilding. The actual building had been destroyed by the tornado.

Robert Brunell, Jr. inspects the framing of the only house left standing in the area. The front portion of the house was torn off by the tornado.

Given the nature of the work that I would be doing in Greensburg, I needed a vehicle with towing capabilities. Unfortunately, my Jeep didn't have a hitch attached, and the parts were not immediately available locally. I called around and found that a company called Roadmaster, Inc. in Portland, Oregon had the mounting bracket kit I needed. When the kind people at Roadmaster discovered where I was going and why, they offered to donate the equipment. They said that they had read about the tornado and were looking for a way to help. And what a help they were: Roadmaster shipped the bracket at no charge to Gary Hardy Chrysler Dodge Jeep Inc. in Holton, Kansas, where Gary Boyle set an appointment for me on the day the parts were to arrive. Once the dealership learned about the work I would be doing in Greensburg, they waived the shop fees and charged me only for the mechanic's wages. I would like to extend a big thank you to both Roadmaster and Gary Hardy Chrysler Dodge Jeep for their generous contributions and their help.

I headed to Greensburg on Memorial Day so I could get our motor home set up and be in the city office first thing Tuesday morning. I arrived in Greensburg on Monday afternoon and found a place to park, but there were no hookups for water, electricity, or sewer facilities. The one motel in Greensburg had no water or bathroom facilities and nothing in nearby Pratt or Dodge City was available either. The Federal Emergency Management Agency (FEMA) rented 17 rooms for a month in the motel, but there was no water or electricity — the rooms were just a place for people to sleep.

I arrived at City Hall at 7:30 am to find that temporary trailers had been set up because City Hall didn't exist anymore. There were two volunteer ladies from the Baldwin City Building Inspection Department helping with organizing the office. Ron Worley (representative of the 30th district/former building inspector in Kansas City), a woman named Christy (clerk of the District Court of Greensburg), and I were the officials for Greensburg. We set up building, plumbing, electrical, and mechanical permits for the folks who needed them. Everyone coming into the city had to register before they could do any work. This was the only way to keep out those who would take advantage of a situation like this. I attended the council meeting Tuesday evening to get a better handle on what was being required so I could inform those who were coming into the office with questions.

On Wednesday, contractors were coming in and getting registered to start working in the city. The clean up for this city is going to be a horrendous job; contractors had already made several hundreds of trips hauling off debris and still have an unbelievable amount left to go. I found out that there were 120 houses that had not been touched. The city gave the owners two weeks to clean up or else city officials would clean it up and charge the property owner on their taxes. At this time, they could have the debris moved to the street and it would be hauled off at no cost. Most of the untouched houses were rentals.

On Thursday, Robert Brunell, Jr. (secretary of the IAPMO MO/KAN Chapter) came in and helped me with roof and gas inspections. I would like to extend a heartfelt thank you to Robert for his assistance. We did around 40 inspections that day and he was a tremendous help to both the city of Greensburg and me.

On Friday, Joe McLaughlin, a building official from Dodge City, came in to replace Ron Worley. Joe told me that Dodge City is currently on the *1997 UBC* and *1997 UPC* and *UMC*. He said that the city was considering changing codes and asked for my opinion. I let him know that if they stayed with the *Uniform Codes*, IAPMO would supply books and training at no cost for the city enforcement people.

Saturday, we were informed that gas was to be restored by the 11th of June in the eastern part of the city, which had received mostly roof damage. This consisted of about 60 houses, so everyone was trying to get their gas tested and inspected so that the gas company could hook up a meter.

About 90% of Greensburg was destroyed, with 99% of the businesses in the city being wiped out. This city had not issued a building permit for the past four years and had no Inspection Department. There have been only about five houses built in the past 15 years. Needless to say, they have a lot to do in the next few weeks when the cleanup is done and construction begins. I hope they follow the guidelines that everyone has tried to help them set for inspections and with the Building Department. This process will take about five to eight years to finish, or more, to get Greensburg back on its feet and running up to par.

The Salvation Army, FEMA, and other relief agencies mobilized to deliver emergency supplies and services to Greensburg residents.

IAPMO employees Tony Ambriz and John Camacho pack up code books and clothing to ship to Greensburg. Helping restore plumbing and mechanical services is an essential part of bringing back a sense of normalcy following major disasters.

Code Development Technical Committee Meeting Wrap-Up

St. Louis, Missouri April 23-27, 2007

By Lynne Simnick

Looking back over the past year we have seen many changes in the plumbing and mechanical industries, from the possibility of a joint venture to develop a single plumbing and mechanical code to water conservation strategies and efficiency standards.

Discussions between IAPMO and ICC last year resulted in the development of a new procedure, which both organizations hoped would be acceptable to ANSI and the members of both organizations. This additional procedure would include an assembly consideration session. It certainly gives everyone interested a chance to participate and voice their respective views in the code. Even though ICC pulled out of the joint venture discussions, the process was so worthwhile that IAPMO went ahead and used it in the development of the 2009 codes. Our perspective on being ANSI-accredited is that without standards accredited to the ANSI process and their vital work, codes would be so mired in past practices, specifications, and administrative review as to stymie innovation and development within the plumbing and mechanical industries. Codes have their unique effective and mutual interactive roles in attaining public health and safety. This process seeks to ensure that there is an opportunity for all those who are interested in and affected by a standard to participate in its development and ensures that an opportunity exists for the voices of all stakeholders to be heard. IAPMO's mission reflects this with the development of the 2009 codes as indicated by the call for task groups reflecting on current and past technology, industry responsiveness, and willingness to contribute to water conservation strategies and efficiency standards.

The purpose of the task groups was to review existing codes and bring forward new information to develop proposed changes based on current and past technology within the plumbing and mechanical industries. A call for task group participants brought forward individuals with expertise in their respective fields. Four task groups were formed to address issues within the *2006 Uniform Plumbing Code* and two task groups for the *2006 Uniform Mechanical Code*. Each task group was assigned a scope along with goals and objectives.

The scope of the *UPC* and *UMC* Correlation Task Group includes identifying technical and editorial inconsistencies and the inclusion of proposed text where provisions should be addressed within each respective code. To provide consistency and correlation, the inconsistencies were identified and recommended as proposed changes.

The scope of the *UPC* FOG task group includes reviewing existing requirements for the design, installation, sizing and performance of FOG disposal systems and gravity grease interceptors, and identifying requirements to recommend as proposed changes.

The scope of the *UPC* DWV Task Group is to evaluate the sizing tables for drainage, waste, and vent piping for plumbing systems. The objective includes reviewing the current sizing methods used for drain, waste, and vent piping and making recommendations based on past and present research and technology.

The scope of the *UPC* and *UMC* Standards Task Group includes adding cross-references to Table 14-1 of the *2006 Uniform Plumbing Code* and Table 17-1 of the *2006 Uniform Mechanical Code*, to suggest where such references are applicable to the referenced standard and to update the format of standards based on materials and products.

Many of the proposed changes clarified the intent of the existing text and served to correlate, format, and update existing provisions by providing easy-to-use tables and place standards in the body of the code.

The following is an overview of the actions taken on the proposed changes to the *Uniform Plumbing Code* and *Uniform Mechanical Code* during the Technical Committee Meetings held in April 2007 in St. Louis, MO.

Tim Collings, chair of the Plumbing Technical Committee, listens as another committee member discusses a proposed subsection.

IAPMO support staff Bob Shepherd, Anthony Mancha, Lynne Simnick, Gaby Davis, and Neil Bogatz assist Chairman Tim Collings (third from right) in moderating a Plumbing T.C. meeting.

Code change proposal meetings that are open to the public are a significant step in IAPMO's ANSI-approved code development process. Both proponents and opponents come forward to address the committee.

A speaker from the audience takes the podium to address the committee with a proposed code change.

UNIFORM PLUMBING CODE (UPC)

Out of 294 proposed changes to the *UPC*, 178 were approved as submitted or as amended by the Technical Committee (60 percent), including the following changes:

Nonwater Urinals (item #37)

A recommendation for accepting the proposal as submitted that provides for the inclusion of an American National consensus standard ASME A112.19.19 for Vitreous China Nonwater Urinals and additional language that mandates specific requirements for the installation of nonwater urinals. These installation requirements provide an additional level of health and safety by the installation of water supply rough-in for each urinal location to allow for the installation of an approved backflow prevention device in the event of a retrofit.

Water temperature control devices (item #54, item #56, item #57, item #59, item #60)

A recommendation for accepting the proposals as submitted and amended for five code changes that provide an additional level of safety for the inclusion of specific temperature-limiting devices for public lavatories, shower and tub-shower combinations, gang showers, bathtubs and whirlpool bathtubs, and bidets. The first proposed change limits hot water delivered from public use lavatories to a maximum temperature of 120°F (49°C) by a device that conforms to ASSE 1070. This provides the installer with specific guidance on the approved type of temperature-limiting device to install based on the type of plumbing fixture and its application.

The second proposed change regulates the discharge water temperature from a bathtub fixture fitting to a maximum temperature of 120°F (49°C) by a device that conforms to ASSE 1070. This provides clarification as to the correct temperature-limiting devices based on its use and application.

The third proposed change adds new language for the limitation of water temperature for bidets. The maximum hot water temperature discharging from a bidet fitting is 110°F (43°C) by an approved water temperature-limiting device conforming to ASSE 1070.

The fourth proposed change adds specific language for temperature-limiting devices for gang showers. When supplied with a single temperature-controlled water supply pipe, temperature-limiting devices for gang showers may be controlled by a mixing valve that conforms to ASSE 1069 in lieu of individually controlled pressure balance, thermostatic, or combination pressure balance/thermostatic mixing valves.

The fifth proposed change adds an additional referenced standard for individual control valves for shower and tub/shower combination control valves that conforms to ASME A112.18.1/CSA B125.1. This provides the installer an option for the installation of automatic compensating valves for individual showers and tub/shower combinations as ASME A112.18.1/CSA B125.1 and ASSE 1016 as provisions are technically harmonized.

Hot and Cold Water Required (item#72)

A recommendation from the Correlation Task Group for accepting the proposal as submitted to add language for requiring hot water in private and public occupancies. This provides for hot water to plumbing fixtures that require such installation for their proper use and function. In addition, for sanitary purposes and for the comfort of the user, hot water should be required. However, this requirement does not supersede the requirements for temperature limitations for public lavatories, bathtubs and whirlpool bathtubs, and shower control valves. There are climatic conditions and installations where jurisdictions should have the authority to amend this requirement based on their specific location and conditions; however, the requirement for hot water should be the minimum level for health, sanitation, and comfort for the public.

Table 6-2 Backflow Prevention Devices, Assemblies, and Methods (item #77)

A recommendation from the Correlation Task Group for accepting the proposal as amended to add additional backflow prevention devices, specific applicable standards and installation methods in order to correlate with Chapter 6 based on the degree of hazard. The proposed applicable standards and installation methods provides the user with the necessary information to identify the correct device for installation and their applicable standards.

Table 6-4 Materials for building water supply piping (item #84, item #85, item #87, item #94)

A recommendation from the Correlation Task Group for accepting the proposal as submitted to revise existing Table 6-4 for building water supply and distribution piping to add additional approved materials and their respective standards to provide the necessary information to assist the user and to correlate with Chapter 6 materials requirements.

In addition, the following materials were added to Table 6-4 for use in water supply and distribution systems:
(1) Polypropylene (ASTM F2389) and its applicable joining methods of heat-fusion and mechanical and compression sleeve joints.
(2) Stainless steel (ASTM A269 and ASTM A312).

Table 7-1 Materials for drainage piping (item #111)

A recommendation from the Correlation Task Group for accepting the proposal as amended to create a table for approved drainage piping based on aboveground applications, underground applications, and building sewer, which correlates with existing material requirements. In addition, their respective standards were added based on material and application to provide the necessary information to assist the user in identification of the approved materials for installation.

Maribel Campos, IAPMO standards manager, helps Susan McCarthy of CSA Int'l. locate the relevant code section.

IAPMO President Ron Rice thanks the committee members for the hard work and long hours they have each put into the code development process.

After a long debate, Michael Wynne and John Taecker cast their vote on a proposal.

Plumbing Technical Committee members Joe Sternola, Jeremy Brown, and Arnie Rodio prepare to hear more proposals from the audience.

Plumbing Technical Committee: (Top row, l-r) Rickey Fabra, Scott Hamilton, Arnie Rodio, Rand Ackroyd, Sylvanus "Roots" Bloice, Michael Cudahy, Michael Wynne, Larry Brown, James Walls, Bill LeVan, Bob Adler. (Middle row, l-r) Lynne Simnick, Joe Brown, Paul Cabot, Jeremy Brown, Jullius Ballanco, April Trafton, Pennie Feehan, Thomas Pape, Dick Church. (Front row, l-r) Tony Scarano, Nasrin Kashefi, Neil Bogatz, Ted Lemoff, Tim Collings, Gaby Davis, John Taecker, Joe Sternola.

Horizontal Wet Venting for Bathroom Groups (item #135)

A recommendation from the Correlation Task Group for accepting the proposal as submitted to revise provisions to clarify the intent of this section for private use bathroom groups may be vented by a wet vent.

The following revisions provide further clarification as to this type of venting method as follows:

- Each fixture drain/trap arm must connect independently to the horizontal wet vented branch in the horizontal plane to prevent S-traps and disruption of flow;
- One wet-vented fixture drain is permitted to discharge upstream of the dry vented fixture drain. This will prohibit additional fixtures discharging upstream from the protecting vent; and
- Specifically referencing Table 10-1 that requires the trap to vent distance must be maintained as the horizontal wet vent is considered the vent therefore, distances from the trap to vent must be maintained.

Siphonic Roof Drainage System (item #157)

A recommendation for accepting the proposal as submitted to add a referenced standard (ASPE 45) for the design criteria that must be followed for the proper operation of a siphonic roof drainage system. This information provides the necessary requirements to follow when evaluating such system.

Drainage System Sizing Appendix L 5.0 (item #235)

A recommendation from the DWV task group to accept the proposal as submitted for the addition of a new section for drainage and vent system sizing requirements in the appendix for alternative plumbing systems. Such systems are based on the drain, waste, and vent requirements in the ASPE Data Book.

Air Admittance Valves Appendix L 9.0 (item #239)

A recommendation for accepting the proposal as submitted for the addition of a new section for vent systems to utilize stack type, individual, and branch type air admittance valves for engineered design systems. The proposed text is consistent with both ASSE 1050 and 1051, as well as ASPE design criteria for location, access, ventilation, and sizing requirements.

At the conclusion of the Technical Committee meeting the *UPC* TC recommended the formation of a task group to study the proposed changes for reclaimed water systems as follows: definition, pipe material and pipe identification, installation, signage, location of reclaimed water requirements, and approved uses of reclaimed water.

Mechanical Technical Committee Chair April Trafton (right) listens to comments from the floor.

IAPMO general council Neil Bogatz addresses a question about the ANSI procedures used in the code development process.

Hands raised, Harvey Kreitenberg and Marty Strub cast their votes on a proposal.

Technical Committee members debated and discussed all proposed changes throughout the week. Here, Pennie Feehan offers input on comments from another committee member.

UNIFORM MECHANICAL CODE (UMC)

Many of the proposals would clarify the intent of the existing text and serve to make the *UMC* consistent with recent revisions to NFPA 54, "National Fuel Gas Code," and NFPA 96, "Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations." Out of 161 proposed changes to the *UMC*, 135 were approved as submitted or as amended by the Technical Committee (84 percent), including the following changes:

Field Applied and Factory Built Grease Duct Enclosures (item #48)

A recommendation for accepting the proposal as submitted for the inclusion of ASTM E 2336 as well as technical updates related to the test methods for testing grease duct enclosure materials and systems. In addition, the requirements to fire stop around the exterior of the grease duct enclosure are added for consistency.

Table 11-1 Refrigerant Groups, Properties and Allowable Quantities (item #84)

A recommendation for accepting the proposal as submitted for the addition of several refrigerants that are currently being used in air conditioning and refrigeration equipment. The proposal corrects and updates some of the data in the table and correlates with ASHRAE Standard 34, Designation and Safety Classification of Refrigerants.

Materials and Construction for Hydronic Piping (items #94 and #97)

A recommendation for accepting the proposal as submitted for the inclusion of polypropylene (PP) and polyethylene/aluminum/polyethylene (PE-AL-PE) pipe and fittings for acceptable materials of the hot water piping systems. The proposed text provides joining methods and references standard specifications for each material along with temperature and pressure ratings.

Stationary Engine Generators (item #104)

A recommendation for accepting the proposal as submitted for the addition of requirements for stationary engine generators that correlate with stationary fuel cell power plants. The proposed text identifies UL 2200 as the appropriate standard used to evaluate engine generator assemblies and NFPA 37 standard for the installation and use of stationary combustion engines and gas turbines.

The next step in the code development process is that Plumbing and Mechanical Technical Committees are balloted and results are indicated in the *Report on Proposals*. A two-thirds majority is required to confirm action taken at the meeting.

Mechanical Technical Committee: (Tow row, l-r) Steven Taylor, Ted Lemoff, Michael Cudahy, Marty Strub, Paul Cabot, Denise Beach, Harvey Kreitenberg, Tony Scarano, James Pavesic. (Middle row, l-r) Dick Church, Pennie Feehan, Wes Davis, Timothy Orris, Sid Cavanaugh, April Trafton, Neil Bogatz, John Taecker, Richard Vrana, Dave Mann, Lynne Simnick. (Front row, l-r): Michael Wynne, Vickie Lovell, Gaby Davis.

Bob Adler voices his opinion on a hot button issue as Leonard Ramociotti waits his turn to speak.

After weighing all relevant issues presented, Mechanical Technical Committee members Wes Davis and Richard Vrana cast their votes.

Vickie Lovell moves from her seat on the committee to present her unbiased position from the floor.

This program is preliminary and subject to change.

PRELIMINARY Program

Saturday, September 22

2:00pm – 5:00pm
Registration desk open

3:00pm – 7:00pm
Exposition set up

Sunday, September 23

5:30am
Golfers depart for annual golf tournament
Meet in hotel lobby.

6:00am
Annual golf tournament continental breakfast
Boulder Creek Golf Club
1501 Veterans' Memorial Drive
Boulder City, NV

7:00am
Tee off
Scramble format.

9:00am – 12:00pm
Registration desk open

9:00am – 2:00pm
Exposition set up

2:00pm – 6:00pm
Registration desk open

3:00pm – 6:00pm
Conference exposition

6:30pm – 8:30pm
Western States Pipe Trades cocktail reception
All registered members and registered guests are invited.

Monday, September 24

7:00am – 12:00pm
Registration desk open

8:00am – 10:00am
Conference expo continental breakfast

8:00am – 9:45am
Chapter photos at expo

9:30am – 10:00am
Previous day's conference photo highlights

10:00am
Opening session

Call to order
Ronald Rice, President

Invocation
Father Richard Rinn

Color Guard

Pledge of Allegiance
Bill Laub Jr., Conference chairman

Welcome to Las Vegas
Jordan Krahenbuhl, Conference host

Welcoming speakers
Mayor Oscar Goodman, City of Las Vegas

Paul Wilkins, Director of Building and Safety

Response
Ronald Rice, President

Appointment of conference committees
Ronald Rice, President

Award presentations
American Flag Award, Industry and Government Persons of the Year, and George Kauffman Lifetime Achievement Award

11:30am – 12:45pm
Luncheon for honored guests
By invitation only.

1:00pm – 4:00pm
Registration desk open

1:00pm
Call to order
Ronald Rice, President

Introduction of keynote speaker
Ronald Rice, President

1:00pm – 2:30pm
Keynote speaker
Alan Thicke

Coffee break

2:30pm – 4:00pm
Seminar: *UPC* Chapter 10: The Evolution of Grease Interceptors
Understanding the new grease interceptors and the necessary criteria for sizing, application, and installation of FOG disposal systems. Please bring your 2006 UPC. *Presented by Pennie Feehan.*

Door prizes

4:15pm – 5:45pm
Seminar: *UMC* Chapter 7: Combustion Air and Venting
The new and various methods for sizing combustion air will be covered. The effective uses of these methods and the logic and engineering behind them will be discussed. Requirements and use of the gamma tables relative to UMC *Chapter 7 and* UPC *Chapter 5 will be briefly addressed. Please bring your* 2006 UMC. *Presented by Tim Collings.*

Door prizes

7:00pm
Dinner and dance reception honoring first-timers and committee members
All registered members and registered guests are invited (badges required).

Announcement of golf tournament winners

Tuesday, September 25

7:00am – 12:00pm
Registration desk open

7:30am – 8:00am
Continental breakfast and previous day's conference photo highlights

8:00am – 12:00pm
Call to order
Ronald Rice, President

IAPMO R&T presentation: Fast and Flexible Product Certification
This comprehensive presentation describes the history of, need for, and procedures for product certification. You'll also learn the reasons why certification through IAPMO R&T is of more significance to Authorities Having Jurisdiction. Presented by Tricia Schwenke and Dene Andrea.

IAPMO Assembly Consideration Session

Door prizes

12:00pm – 1:15pm
President's Luncheon
By invitation only. All past presidents, current committee chairs, and current chapter chairs are invited.

1:30pm – 5:00pm
Registration desk open

1:30pm
Call to order
Ronald Rice, President

IAPMO Assembly Consideration Session

Coffee break

Door prizes

Evening open

Wednesday, September 26

7:30am – 8:00am
Continental breakfast and previous day's conference photo highlights

8:00am – 12:00pm
Registration desk open

8:00am
Call to order
Ronald Rice, President

Credentials Committee and Nominating Committee reports

8:10am – 9:45am
***Uniform Plumbing Code* workshop**
Please bring your 2006 UPC. *Presented by the* UPC *Workshop Committee*

10:00am – 11:30am
Panel discussion: The Ripple Effects of Code Adoptions
Issues and aspects impacting code adoptions such as compatibility issues with other adopted codes, training challenges, certification and licensing differences, and chapter relationships will be discussed in a panel format. Panelists: Various member representatives from IAPMO, PHCC, and MCAA.

Door prizes

12:00pm – 2:00pm
3rd Annual Chapter Leadership Summit Luncheon
By invitation only.

1:30pm – 5:00pm
Registration desk open

2:00pm
Call to order
Ronald Rice, President

2:00pm – 3:00pm
***Uniform Mechanical Code* workshop**
Please bring your 2006 UMC. *Presented by the* UMC *Workshop Committee.*

Coffee break

3:45pm – 5:00pm
Seminar: New Venting Methods in the *2006 UPC*
Interactive participation is welcomed as the following topics are discussed: Bathroom Wet Venting, Section 908.4, Appendix L 7 Circuit Venting, and L 8 Single Stack Venting Systems. Presented by David Straub.

Door prizes

Thursday, September 27

5:45pm
Meet in hotel lobby
Evening outing is only a short walk from the Flamingo Hotel. Shuttle service will also be provided.

6:00pm – 10:00pm
Depart for evening outing to Harley Davidson Café
All registered members and registered guests are invited (badges required).

Rev up your inner biker on the Wednesday Evening Outing to the fantastic Harley-Davidson Café. More than 15 custom motorcycles are on display throughout the restaurant — even one of Elvis's bikes!

The restaurant features an elaborate conveyor belt system that showcases seven classic Harleys, and also houses display cases that exhibit notable Harley memorabilia. Guests can pose for a picture on a replica Captain America bike ridden by Peter Fonda in the film "Easy Rider" and can bring home a unique souvenir from the Harley-Davidson Merchandise Shop.

But don't let all the motorcycle mania distract you from what the Harley-Davidson Café is really all about: the food! Featuring classic American cuisine from across the country, you won't want to miss the Harley-Davidson's signature barbeque dishes or any of their legendary entrees.

Always a highly anticipated event, our Wednesday Evening Outing is sure to please, so don't miss out!

All registered members and registered guests are invited (badges required).

7:30am – 8:00am
Continental breakfast and yesterday's conference photo highlights

8:00am – 10:00pm
Registration desk open

8:00am – 9:30am
Call to order
Ronald Rice, President

Treasurer's report
Ken Carlson, Treasurer

President's report
Ronald Rice, President

Executive Director's report
GP Russ Chaney, Executive Director

Standing Committee reports and conference resolutions

Coffee break

9:45am – 1:45pm
***Uniform Solar Energy Code* and *Uniform Swimming Pool, Spa and Hot Tub Code* Committee meeting**

9:45am – 12:30pm
Seminar: Installation of Backflow Preventers
Installing the correct backflow preventer consistent with the hazard is specified by the plumbing code. Making sure the backflow preventer will continue to function correctly when installed is essential. There are a number of installer- and inspector-related concerns not identified in the plumbing code. This is a common sense presentation that will make you think about your next backflow preventer installation. Presented by Dr. Stuart Asay, P.E.

Door prizes

2:00pm
Call to order
Ronald Rice, President

Election of officers

Unfinished business

New business

2:45pm – 5:30pm
Tour and open house at Pipe Trades Training Center

Door prizes

6:30pm
Cocktail reception

7:00pm – 10:00pm
Installation of Officers dinner
All registered members and registered guests are invited (badges required).

IAPMO Las Vegas 2007 Education and Business Conference

This program is preliminary and subject to change.

IAPMO

PRELIMINARY Program

Companions' Program

Monday, September 24

11:30am – 1:00pm
Companions' hospitality suite open
A light lunch will be provided.

7:00pm
Dinner and dance reception honoring first-timers and committee members
All registered members and registered guests are invited (badges required).

All registered companions are heartily welcome to take part in any of the events or sessions listed in this program. The Companion Committee has also created a program full of interesting speakers and activities. Come and enjoy them with us!

We look forward to seeing you at conference!

Tuesday, September 25

10:30am
Companions' Outing: Margaritaville and the Price is Right

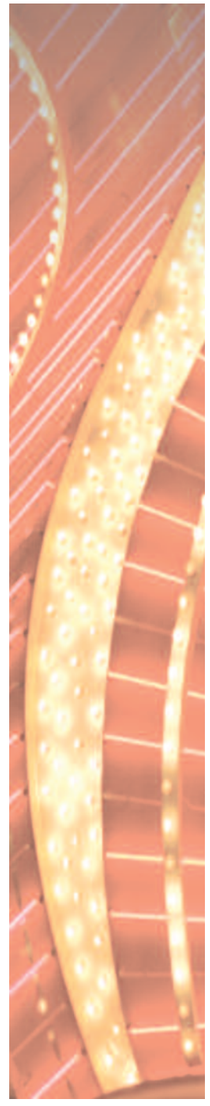
Each year, the Companion Committee works hard to make conference a resounding success. From hosting a hospitality suite and the first-timers' dinner to planning entertaining outings, the Companions Committee is the welcoming face of IAPMO.

This year's Tuesday Companions' Outing kicks off with a delicious luncheon at Jimmy Buffett's Margaritaville at the Flamingo. The tropical-themed restaurant offers "Floribbean" fare, a unique blend of Key West cooking and Caribbean cuisine. Try the delicious fresh catch of the day or sample the mouth-watering jerk chicken fresh from the grill.

After lunch, we'll take a fun-filled trip to the Price is Right at Bally's. That's right, guests can "come on down" for the chance to win prizes at the interactive stage version of the popular long-running game show. Come play all your favorite games like Plinko, Hole in One, and of course, the Big Wheel and the Showcase Showdown. Though this Price is Right isn't televised, you'll still have a chance to have fun and win big!

All registered members and registered guests are invited (badges required).

**Please note: All scheduled activities are subject to change.*



Wednesday, September 26

9:00am – 12:00pm
Companions' hospitality suite open
A light breakfast will be provided. Guest speaker TBA.

5:45pm
Meet in hotel lobby
Evening outing is only a short walk from the Flamingo Hotel. Shuttle service will also be provided.

6:00pm – 10:00pm
Depart for evening outing to Harley Davidson Café
All registered members and registered guests are invited (badges required).

Harley Davidson Café – Las Vegas

Rev up your inner biker on the Wednesday Evening Outing to the fantastic Harley-Davidson Café. More than 15 custom motorcycles are on display throughout the restaurant — even one of Elvis's bikes! The restaurant features an elaborate conveyor belt system that showcases seven classic Harleys, and also houses display cases that exhibit notable Harley memorabilia. Guests can pose for a picture on a replica Captain America bike ridden by Peter Fonda in the film "Easy Rider" and can bring home a unique souvenir from the Harley-Davidson Merchandise Shop. But don't let all the motorcycle mania distract you from what the Harley-Davidson Café is really all about: the food! Featuring classic American cuisine from across the country, you won't want to miss the Harley-Davidson's signature barbeque dishes or any of their legendary entrees.

Always a highly anticipated event, our Wednesday Evening Outing is sure to please, so don't miss out!

All registered members and registered guests are invited (badges required).

Thursday, September 27

Free Day

6:30pm
Cocktail reception

7:00pm – 10:00pm
Installation of Officers dinner
All registered members and registered guests are invited (badges required).

Recommended Conference Attire

Golf: Soft spikes only. Collared shirts and slacks or shorts.

Business sessions: Business casual.

Monday evening: Business casual, sports jacket. Tie not required.

Wednesday Outing: Conference T-shirt *(to be provided on-site)*. Casual.

Thursday evening: Evening attire.

**Las Vegas weather in late September is usually warm. Bring a sweater or lightweight jacket for the evening.*

Conference Hotel

Flamingo® LAS VEGAS

Located at the four corners of Las Vegas Boulevard and Flamingo Road, the Flamingo Hotel and Casino sits at the heart of the world famous Las Vegas Strip. The iconic hotel, built by Bugsy Siegel himself, is a mainstay of the Las Vegas landscape and is a destination in and of itself. Guests can do everything from seeing exotic animals at the hotel's wildlife habitat to taking a dip in one of the four pools in the onsite tropical retreat. Staying at the Flamingo is an experience not to be missed!

Flamingo Las Vegas

3555 Las Vegas Boulevard South
Las Vegas, NV 89109

Tel: (800) 732-2111
Web: flamingolasvegas.com

Reservations and Room Rates

Take advantage of the special IAPMO group rate by booking your reservation online at: http://publications.iapmo.org/conference2007/.

Accommodations

Newly renovated, the Flamingo's standard rooms are spacious and comfortable. Each comes equipped with an entertainment center, high-speed Internet access port, work desk, voicemail, in-room safe, and lots of additional individual amenities to make your stay more convenient. In addition, the hotel has a 24-hour automated business center equipped with a Pentium computer, Internet and e-mail access, laptop port, HP printer, copier, and fax machine.

As a destination hotel, the Flamingo also offers a fully equipped fitness center as well as a full-service beauty salon and spa.

Alexandra Salon

Monday-Saturday, 9:00am-6:00pm
Sunday, 10:00am-4:00pm

Business Center

Third floor, Corporate Convention Center