ICC 815 Sizing Water Distribution, Drainage and Venting Standard Consensus Committee (IS-SWDDV)

Meeting 22 - Minutes

December 9, 2024

Chair: Gary Klein
Vice Chair: Philip Parisi
Secretariat- Ramiro Mata

Meeting 22 of the ICC 815 Sizing Water Distribution, Drainage and Venting Standard Consensus Committee (IS-SWDDV) was held virtually on December 9, 2024. The meeting was conducted in accordance with ICC's Consensus Procedures. https://www.iccsafe.org/wp-content/uploads/ICC-Consensus-Procedures-ANSI-approved-8_2_21-BOD-apprvd-8_27_21.pdf

1. Welcome – Chairman, Gary Klein, convened the meeting and welcomed attendees at 1:08pm Pacific time along with Staff Secretariat, Ramiro Mata. Mata reminded attendees about the ICC Code of Ethics and the Anti-Trust Policy, both of which can be found on the ICC 815 (IS-SWDDV) webpage.
2. Roll Call – Klein called the meeting to order with a roll call of ICC 815 (IS-SWDDV) committee members – Symbol ☑ indicates present, ☐ indicates absent.

Committee Members

Regulator		User		Manufacturer		Builder	
☐	Jim Richardson	☐	Esber Andiroglu PhD, PE	☐	Marcus Elmer	☑	Dan Buuck
☑	Richard Grace	☑	Gary Klein	☐	Dave Parney		
☑	Terry Haughn	☑	John Lansing	☑	Lance MacNevin PE	**Consumer**	
☐	Ross Wakefield	☐	Philip Parisi Jr. PE	☑	Kyle Thompson PE	☐	Tim Keane
		☑	Tom Wise			**SDO/Test Lab**	
						☑	Kathryn (Katie) Foster

ICC Staff – Tom Roberts
Interested Parties and Guests – Drew Rich, Frank Schmidt, Dan Cole, Nhat Nguyen, Toju Omaghomi, Mary Kimlinger, Peter Mayer, David Nickelson, Adam Smith, Lavanya Muttayan

3. Quorum and Membership Review - With nine committee members in attendance, Mata announced the threshold for quorum was met.
4. Approval of meeting minutes from November 4, 2024 – Motion by MacNevin, seconded by Lansing. Motion carried.
5. Approval of December 9, 2024 Meeting Agenda – Motion by Foster, seconded Lansing. Motion carried.
6. Pipe Sizing Methodology Presentation – Rich
    a. The approach uses stochastic simulations and aims to be an international framework that can account for differences in water use patterns across locations.

b. The methodology involves defining project parameters like location and building type, which then populate equations and graphs for water use duration, frequency, etc., specific to that area.
c. A network layout tool allows users to add fixtures and create hot/cold water system diagrams. The simulation then runs to estimate flow rates through each pipe over time.
d. Advantages of this approach include the ability to simulate entire building networks at once, account for local fixture flow rates and regulations, and provide statistical distributions of flow rates for each pipe to inform sizing decisions.
e. However, more work is needed to handle complex system configurations like recirculation loops.

7. Working Groups – Meeting Updates and Work Plans
    a. Measurement – Lansing
        i. There was extensive discussion about the need for water use data specific to different locations, building types, and fixture types to properly calibrate demand estimation models.
        ii. Studies in Australia found the Water Demand Calculator (based on US data) underestimated demands there, highlighting this issue.
        iii. Participants emphasized that both the probability of fixture use (P) and flow rates (Q) can vary significantly between regions due to cultural differences, fixture efficiency standards, etc.
        iv. Using local data is critical for accurate estimates.
        v. More research is needed on water use patterns in larger multi-family buildings, as most existing data is from single-family homes.
        vi. This could reveal important differences as systems scale up in size.
    b. Water Service – Wise
        i. Shared a graph comparing ten different water supply peak demand estimation methods which showed wide variation in results between approaches.
        ii. This highlights the need for methods based on current, location-specific flow data.
        iii. There was debate about appropriate safety factors and percentiles (e.g., 99th) to use for sizing. Some participants felt the 99th percentile may be overly conservative given how rarely those peak flows occur.
        iv. Participants discussed the tradeoffs of over vs. under sizing pipes.
        v. Oversizing can lead to stagnation and water quality issues, while under sizing risks pressure/flow problems. Finding the right balance is key.
        vi. Current pipe sizing practices often result in very low water velocities most of the time, which can contribute to water quality issues.
        vii. However, occasional higher velocity flows during peak usage may help flush pipes. There was discussion about potentially targeting higher average velocities to improve water quality, while still accommodating peak flows. More research is needed on the impacts of different velocity profiles.
    c. International Encyclopedia of Plumbing (IEP) – MacNevin

i. Worked with Mata to draft a project charter for ICC's IT department to use as justification for moving forward. Will be scheduling a meeting with ICC IT to discuss the charter and next steps.

d. Drain, Waste and Vent – Lansing
   i. Reported that the working group has not been able to meet but he has submitted a work plan to Mata and will work with him to schedule a working group meeting to discuss.

8. Information Engine - Wise
   a. Presented data from an Information Engine, focusing on a Legionella-prone building. The engine displays temperature data, water meter pulses, and flushing activity.
   b. The Information Engine will incorporate additional data such as solar information from local weather stations, outdoor temperature, wind, and rainfall days.
   c. This comprehensive data set aims to help building owners predict situations where their building might enter problematic conditions based on simple data inputs.
   d. Described the limitations of their current sensor, which operates at 128Hz and recommended sensors with capability of collecting data at about 200Hz for more accurate readings.
   e. Current wireless sensor, while convenient, quickly fills its memory card due to the high frequency of data collection, lasting only about six hours.
   f. Mentioned purchasing 200Hz sensors for less than $200Aus, which include a wireless data logger and LCD display.
   g. Suggested using a Raspberry Pi to handle the large amounts of data generated by pressure transient measurements.
   h. Mentioned plans to use a Raspberry Pi solution for data collection in a hospital setting, with a master clock for flow meters to synchronize data across multiple floors.
   i. Emphasized the importance of accurate timestamping, especially when correlating pressure transient data with flow meter and sewer flow data.
   j. Lenger advised against using cloud-based timestamps due to potential delays and recommended using the real-time clock on the Raspberry Pi 5 for accurate timing.
   k. Described various data logging equipment, including a wireless APR 1000 device that stores data on internal memory and easily downloads to a computer.
9. New Action Items
   a. Submit Working Group Goals – WG Chairs
   b. Develop draft of scope - ALL
   c. Schedule Water Service WG meeting in late January or early February – Mata
   d. Schedule DWV WG meeting in early January - Mata
10. New Business
11. Old Business
12. Next Meeting – January 21, 202, at 2pm-4:30pm Eastern. Virtual format.
13. Adjournment