

## **PozLok**

Lake Forest Condominium complex has two different fire suppression systems within six buildings. Buildings A, B, E, and F have a system called PozLok that uses steel pipe with a unique male/female slip/compression fitting. The pipes were unique as well, having non-standard outside diameters as compared to PVC or standard steel pipe. Buildings C and D have standard CPVC fire suppression piping which does not have any unusual materials or components.

PozLok had manufacturing and installation problems soon after it was developed and installed nationwide. Because of the unusual piping and couplings used in PozLok and the propensity to fail after it was installed, a class action lawsuit was filed in the early 2000's. A settlement was agreed on, but was only available to buildings where the system or components had failed and did not allow for funds to be distributed to complexes with PozLok systems that had not failed.

In the mid 2010's the Board became aware of the Lake Forest PozLok system and the class action lawsuit. Board members investigated getting funds from the class action settlement but because Lake Forest had not had a failure, money was not available for our HOA.

In the past three years, there has been one leak in a PozLok system in Building B. That leak was caused by an elbow that was located near an outside wall where cold air, poor insulation, and an under heated unit caused the elbow to freeze, the joint to expand, and leak. The Lake Forest insurance company (at that time) contracted a Denver engineering firm, Advanced Engineering Investigation, (AEI), to investigate the cause of the leak. AEI found that the leak was because of a frozen pipe (as described above) – the elbow, and not because of a PozLok system failure.

The repairs to the B building water damage were paid for by the insurance company, but a stipulation in performing the repair damage was to investigate replacing the PozLok systems in all four buildings at Lake Forest.

Additionally, because parts are no longer available to repair PozLok systems, the insurance company paid to replace the entire fire suppression system with all new pipes and sprinkler heads in the affected B stack. That work was done by Western States a national company with offices in Summit County.

Two Board members and a Lake Forest owner took it upon themselves to tackle the problem of finding a company willing to remove and replace the PozLok in the four buildings. Their conclusions were to begin a replacement program in spring 2024 taking four years to do the project; doing one building per year until completed.

When this information was presented to HOA members at the 2023 annual HOA meeting, there were questions about the need to replace PozLok, the timing of

replacement, owners' inconvenience, how to do the work, what materials to use, and the cost to do the replacement project.

The 2023/2024 Board reviewed the proposal and HOA members concerns and voted to delay beginning replacement until further information could be investigated.

This paper informs the HOA of my discovery work.

In the meantime, Lake Forest complex had two additional non-PozLok related water damage events in late 2023 due to frozen water pipes. The first leak occurred in the same B building unit as the first PozLok elbow freeze (but not the same elbow or location). The second happened several weeks later caused by the freezing and rupture of a domestic water line. Both leaks caused extensive damage to the all three units in the respective stacks. Repairs are ongoing and we hope the owners will have their units back to livable condition shortly. Repairs of these units are estimated to cost the HOA \$600,000.

The Board contracted with AEI to investigate the cause of the B-Building fire sprinkler leak. AEI concluded that the line to the sprinkler head or the sprinkler head froze and was not a result of a poorly designed or installed sprinkler head. The frozen pipe or head was possibly from cold air entering an unconditioned attic or wall space near the sprinkler line. AEI recommended additional insulation in the unconditioned space.

The added insulation work is part of the repairs underway in the B-stack.

### **PozLok investigation:**

I contacted several fire suppression companies and have done some internet searches for information about PozLok systems and how to replace those systems and I am including some of their information in this paper. Contact information is available at the end of this paper.

There are four materials which are currently used in fire suppression systems piping. The materials starting at the most expensive are: copper, black iron pipe, CPVC, and PEX.

### **COPPER:**

Copper seems to be the best piping system to use in sprinkler systems. It is relatively easy to install and holds up for a long time. However, due to the very high cost of copper, it is rarely used except in very high end homes or a few commercial buildings.

### **PEX**

PEX plumbing tubing is a relatively new product compared to the other three materials. It is a more flexible, used in commercial and residential plumbing and fire suppression systems, easy to install; but does not have a long term track record for reliability history as the other three materials. Two of the companies I spoke with said that they would

refuse to bid or do a replacement job using PEX. So, for the two reasons stated above, I have not included PEX as an alternative material for Lake Forest PozLok replacement.

### BLACK IRON STEEL

Black iron pipe is one of the two most utilized pipe products in fire suppression systems. It is very reliable, and holds up for years and years of service. Some communities and cities only allow black iron pipe to be used for sprinkler systems. Black iron pipe is a more costly product to purchase and takes more time and labor to install. Some offsite pre-manufactured longer runs can be done, but most fittings and shorter pipe runs would need to be cut onsite. The companies that do this work do it on a regular basis and delays would be uncommon.

Advantages for black iron steel pipe are:

1. Less likely to be accidentally damaged by wall and ceiling anchors used to support TVs, pictures, and ceiling and wall fixtures.
2. No limitations with contact from other building materials.
3. Historically, steel pipe is expected to have the longest life expectancy compared to CPVC or other materials except copper.

### CPVC

CPVC is also widely used in sprinkler systems. It is significantly less expensive than iron pipe for material and installation labor costs. But CPVC comes with drawbacks as well.

Precautions must be taken to avoid direct sunlight - damage to the pipe and connectors can occur because UV rays may degrade or damage CPVC. It does not require offsite pre-manufacturing because all lengths can be cut and installed at the jobsite. While connections are faster and easier, highly trained installers are a must because poorly fitted or glued connections could result in an immediate or post completion failure and leak.

CPVC cannot come into contact with TV cables, HVAC flex duct, caulk, petroleum based items, antifreeze, and a list of other potential products that could degrade the pipe over time. So, a post installation inspection must be done to insure HVAC, cable companies, electric companies, and other contractors do not place their items over, under or close to the CPVC pipes.

Extreme caution is required so nails, screws, bolt anchors, or other items used to penetrate walls and ceilings to avoid puncturing the CPVC pipes. (We have seen wallboard screwed into PVC pipe – not the fire suppression system - in one of the water damaged units).

NOTE: CPVC is used in high altitude environments like Summit County and it is my understanding that there are no restrictions from Summit County Fire Management.

## Installation Options:

System installation options in order of least costly to most costly:

- a. Install system exposed below ceilings and outside of walls.
  - i. Would have steel piping in exposed applications
  - ii. Piping would be installed approximately 6" centerline below ceilings
- b. Install system next to wall, below ceiling
  - i. Will require construction of soffits to conceal pipes.
  - ii. Certain locations may require dropped ceiling or other enclosure where piping needs to cross open area where a wall is not available.
  - iii. New systems may be CPVC or steel piping.
- c. Install piping inside gypsum board ceilings and walls.
  - i. This requires opening drywall ceilings and some walls to install new piping system. Openings could be limited to 12" wide 'trenches' to avoid removal of the entire ceiling.
  - ii. This requires opening drywall ceilings at upper levels to supply sidewall sprinklers.
  - iii. New system may be CPVC or steel piping.

All work requires:

- a. Begin all system replacements after first fitting past the existing backflow preventer.
  - i. Install new valve header.
- b. Demolition of existing fire sprinkler system
  - i. NFPA and local standards do not specifically indicate that concealed, abandoned systems must be removed; however,
  - ii. Best practices would indicate all unused systems be demolished and removed from the jobsite.
  - iii. If the concealed and unused portions of the system are abandoned in place the following actions must be performed:
  - iv. Remove and plug sprinkler head locations.
  - v. Disconnect and cap abandoned piping.
  - vi. Demolish any exposed, unused sections.

## Other Considerations:

1. Timing: Should the retrofit take place over one, two, or four years?
  - a. A contractor suggested that his company might want to do the work in one year because working during the winter months doesn't matter because the water for the building(s) would be turned off and his crew would have the continuity experience working from one building to the next. Whereas doing the work over several years he would lose the crew's experience and training. This approach also avoids multiple mobilization and demobilization expenses.
  - b. Another contractor suggested doing two buildings in one season for similar reasons as above.

- c. No contractor indicated that doing the retrofit over four years would deter them from bidding the work.
- 2. Why fix it if it ain't broke?
  - a. A vocal group of HOA owner questioned why the Board wanted to replace PozLok if there aren't any leaks and to set aside funds to replace a stack if and only if a leak occurs.
    - i. While this is a valid question, there are several factors involved if a leak is found or a catastrophic event happens (as in the recent B and D buildings' floods costing about \$300,000 per stack).
    - ii. First is the availability of money to remove and replace a PozLok system. Unless the HOA members vote to prefund in excess of \$500,000 it is doubtful that Lake Forest would have enough money to remove, replace, and repair the affected units. Remembering that this wouldn't be just a replace one stack, but the need to put the units back to livable condition.
    - iii. Second, finding a sprinkler installation company willing to quickly respond for a project to replace four or six units' sprinkler system. (One stairwell).
    - iv. Finding product availability on short notice.
    - v. An emergency evacuation of owners making their condo unusable for up to six months (as we have seen in the last three water leak episodes).
    - vi. Putting potential income from rentals at risk.
    - vii. Putting resale values at risk. Would you buy at Lake Forest knowing that there's a fire suppression system that might have a catastrophic event which would keep you from using your unit, renting it, and causing substantial outlay of your personal money to bring your unit back to original condition?
- 3. Fix it now because the system is old, and there's a very real risk of having a leak.
  - a. This statement speaks for itself!
  - b. I have had, over the past several weeks calls from owners, realtors, about a PozLok related assessment if and when Lake Forest decides to move forward with replacing this system.
    - i. Can we afford to wait? The statements above (#2) explain why waiting could be detrimental to owner's ability to use or rent and the loss of not only income but dealing with your insurance company and your out-of-pocket expenses to pay for incidentals.
    - ii. Are you willing to gamble that your unit won't be the source of a leak?
    - iii. Will the Summit County Fire Marshall ultimately require Lake Forest to replace PozLok or shut the complex down? Unlikely?
    - iv. Will our current insurance company continue to insure Lake Forest unless we take a proactive roll to replace PozLok?

- v. Will you be able to sell your unit when a buyer might see the risk of owning a unit at Lake Forest with the potential of not having availability to use or rent their property?
- vi. It's just the responsible thing to do.

### **HOW DO WE PROCEED?**

The decision to move forward to replace PozLok is ultimately a Lake Forest Board decision. However, buy-in from homeowners should be considered because of all the factors listed above.

Once a decision to move forward is reached a small number of Board and homeowners should form a PozLok replacement committee. Should the committee take on the responsibility to interview both general and fire suppression contractors or hire a construction management company?

A management firm should compile a scope of work, detailed timeline, preliminary cost or pricing valuation, interview and qualify contractors, provide options for contractors to the Board, review contracts, provide a final cost summary, and manage the construction project.

### **OTHER CONCERNS**

1. Disruption of owners' use of units for personal living, short and long term rent.
2. Removing ALL furniture and some fixtures from units.
3. Mover costs.
4. Storage availability and cost.
5. Construction equipment and personnel onsite for extended periods of time.
6. One, two, or all buildings done in one year?
7. One or more contractors to do the work?
8. Hiring a General Contractor to oversee the tear out and repairs to ceilings and walls.
9. Can you do updates or replacement work in your unit not within the POZLOK replacement project while this work is on going?
10. THE COST!!!
  - a. How will we fund the replacement project?
  - b. Will we have a one-time assessment or multiple assessments over several years?
  - c. Can we build up a replacement reserve account to pay for this through our monthly dues?
  - d. Can we borrow the money from a bank and pay for a loan over time?
  - e. Can you claim the assessment against your HO6 policy?
  - f. How will this affect you unit's value?
  - g. How will this affect the resale of your unit?
  - h. Who pays for your mover and storage cost?
  - i. Will your unit be returned to you in the shape it is when the repairs begin?
  - j. So many questions!

References:

AEI reports, February 2022, December 2023

Jared Hogue, Element Fires Sprinkler Service – phone calls and e-mail.

Frontier Fire (Denver), Todd Feneis, February 2024 letter

BlazeMaster Fire Sprinkler Systems – webpage