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Reply added at bottom 07.05.04

Using LDH to Supply Fire Department Connections

This article presents a question posed to Battalion Chief Mark Davis, Montgomery County, MD Fire & Rescue along with his answer. At the end TinHelmet adds a few thoughts to the mix. As always TinHelmet welcomes your responses both positive and negative to all things printed here.

Question:

Wondering if you can clear something up for me. Have recently been debating the use of 3" and 4" hose for connecting to standpipe and sprinkler connections. Have heard that 4" is better because of the volume capacity and conversely 3" is better because it can handle higher pressures than LDH (12th floor of high-rise, for example) and that the higher weight in 4" hose would put more pressure on FDC connections.

What's the truth and the right hose to use?

Answer:

Most of our rubber 4-inch hose has an annual service test pressure of 200 psi which gives us a 185 psi working pressure. So in certain elevation situations (say over 15 stories) the discharge pressure could become an issue concerning the working pressure of the hose. If using the Neidner fabric 4-inch – your working pressure is 270 psi. Big city departments like FDNY and LA City use even higher service test pressure hose – of course they have 60 and 80-story structures.

Flow is not that big of an issue because fixed-fire protection systems are designed based upon predetermined flows. As long as there are adequate FDC outlets for the system design and as long as a hydrant is nearby, 3-inch hose should work fine in most all of our applications here in Montgomery County. Just make sure that a 3-inch line goes to each FDC outlet. For example, many standpipes are designed

to flow 500 gpm at the top of the riser – a two-outlet FDC supplied by dual 3-inch lines should work okay.

I would be hesitant to connect a 4-inch line to a FDC if the FDC was loose or moveable in its wall mount. There could be a weight issue. Without knowing the stability of connection from inside the wall – I might defer to the 3-inch lines. One way to fix that is to use a 30-degree turn down elbow similar to what we use on a pump panel.

As you travel across the country you will find that certain municipalities use storz connections on the FDC. Go to Dover racetrack in DE and you will see a single, Storz LDH fitting on the FDC's. In parts of northern NJ, you find 5-inch Storz fittings on the FDC.

Tinhelmet says:

I agree with this discussion but I would like to add that for the average job in a highrise a 2 1/2" line to the connection will work just as well. Most everyone now has a 2 1/2" pre-connected to their engine and having this really simplifies the process of "hitting" the connection. I have seen many people struggling with the 4" and a 4" to multiple 2 1/2" wyes while a simple pre-connected 2 1/2" was available.

Another consideration when using the 4" is that if the connection itself is compromised it will be exponentially harder to stretch a long 4" line inside the building to an open riser.

For the guys and girls working down in the lower east side of the county there are still many highrise building without sprinkler or standpipe connections, 8500 N.H. Ave, 666 and 676 Houston Ave. to name a few. In such cases one of the best ways to get water to the upper floor is with a "flying standpipe." Of course you could run the line up an aerial but then you lose the aerial. You can try hoisting the 4" up to the upper floors but once you fill it with water you have created a beast.

I personally suggest using 4" hose as supply line and relying on the 2 1/2" or 3" hose to make the connections and for use in the flying standpipe evolution.

As a side note the hose manufacturers that I contacted did not want to lend their support to the practice of the flying standpipe. Their concern is that the coupling are designed to be stressed longitudinally and not in a vertical situation. They say

that if you use the hose in this fashion they strongly suggest tying off the hose behind a coupling, placing as little stress on the couplings as possible and well they make no promises after that.

WHAT CAN YOU ADD TO THE DISCUSSION?

08.14.04

Charles, I am glad you chose this particular subject on 4 inch and FDC's. Lets not argue about hose sizes. I hope we remember why we supply a FDC with fire hose. We are there to ensure adequate amount of water and pressure to crews on the attack lines in the buildings. If we are talking about a single 4inch or 5inch line to the FDC and our single line of 4inch breaks we are in danger on the attack lines of loosing water. Not sure if you or the others who commented about the subject are talking about a single line to the FDC. With two 3inch lines if one breaks we still have water.

I fail to accept an explanation from these companies out here who supply a FDC with one 4 inch line. Some are in the 1st Battalion with us. I know of 2 companies in the 1st Battalion who run one 4inch line to a gated-wye with two 3 inch lines to the FDC (same exact problem here). Everyone wants the easy way out or because they never experienced a situation refuse to accept this could happen to them. I think we call that complacent. Some may call it overkill on my part or unnecessary, whatever. This subject is not different than us laying out with one 4inch line now days. Where is our 2nd supply line when the 4inch breaks?

We are on this big safety push in DFRS right now with driving and other station safety practices. If this practice of supplying fire grounds or FDC with one line isn't unsafe then please convince me otherwise. Also Charles, most 1st due companies supplying a FDC have their own hydrants out front close tot he FDC. I hope the 2nd due companies are in practice of not just parking the engine but ensuring and expanding water supply. Please don't think i am completely against 4inch hose. If that hose can handle the pressure like the synthetic 4inch then have at it. I am more concerned about that 2nd supply line. And I don't want to wait until it breaks to have a 2nd line.

Thank you Charles and the others for the discussion,

Captain

Craig Clemens, 15A

06.08.04

> ... I just read your post on standpipe connections for 3" vs. 4" hose. I have seen some departments run a 4" line with a wye on the end with 2 3" short (4' to 6') sections to make the connections. I suppose allows one trip to the connections with LDH line and still allows 3" to the connections. John Patton Sta. 29A.

07.05.04

The two photos show a 5-inch Storz fire department connection (FDC) used to support a Super Target Store's sprinkler and standpipe system in Clifton, New Jersey. The Clifton FD runs 5-inch supply line, as do many companies in the North Jersey urban area (THEY understand the need for big flows). Because of the sheer size of the structure (sorry no photo) – the single, 5-inch Storz connection will supply the fire flow design demand of the system – otherwise six, 2-1/2-inch connections would be needed. Note the 30 degree turn-down elbow built-in to relieve the weight stress. BC Davis

