Running Conduit - Tips

Steak Electronics

1   Overview

I recently took up running conduit for cable runs at the office. This is used for ethernet runs: CCTV, IoT, or general LANs. Here's what I learned early on.

2   Conduit

Here's general tips on Conduit:

Where conduit is hard: Adding cabling to existing conduit, doing unusual bends, using thicker pipes (harder to bend)

Where conduit is easy: The opposite: Cabling as you put up the conduit, doing only straight runs, 90 degree bends, and offset bends, and using 1/2" conduit.

Types of Pipe

There are different kinds of conduit, based on the size of the pipe. The price increases with size.

1/2" pipe is good for one or two ethernet runs.
3/4" pipe is good for 3 ethernet cables.
1" pipe can run say, 6 ethernet cables.

Now, you can get away with more, but it's best to underspec, so you have room in case of future expansion. However, it's recommended to not add additional cables to the conduit afterwards, and instead use ethernet switches.

How to Fish Conduit

Ethernet cable should be led through conduit with steel fish tape. You can't use nylon string on existing conduit, unless you are going through small sections of straight conduit - fishing the string as you put up the conduit (new installs). For existing installs, or if you already put up some conduit and just need to get the wire through, use steel fish tape. The steel, allows you to pull AND push the ethernet cable, should it get stuck. However, let me say this: **fish the cable through each piece of conduit you put up as you go**. It's faster, and easier. This also means that future expansion is not nearly as practical.

Couplers

The ideal coupler has the pipes inside sitting flush against each other, but some couplers have a notch in the middle between them. Those aren't as good, as the notch is a gap where ethernet cable will catch when pulling through. Not an issue if you cable as you go, but a problem for running cable through existing conduit.

Boxes

Use the deeper, larger electrical boxes. They usually come in a few sizes. The additional space, makes everything easier. Use frequent boxes if you plan to expand more cables later, so you can access everything inside. Use boxes where you will have an ethernet switch or outlet, or need to branch out...

Bendy Conduit

Bendable or Bendy conduit is sized one size bigger than it's listed. So if you buy 3/4" conduit, you get a 1" size bendable pipe, with 1/4" the bendy part. This means you must size boxes accordingly. Supposedly, you must buy the specific bendy conduit connectors, but you can fit a 3/4" bendy conduit, in a 1" hole in an electrical box in a pinch. You can also use a coupler (for standard pipe) sized one size bigger, in a pinch. Not as professional looking, but it works.

Grease

They sell grease, but its a mess, and I wouldn't use it. Not only will it

get all inside the pipe, but all over your hands as you pull the wire through. You shouldn't run new wires through existing conduit. One of the problems is that you might wrap the ethernet cable in electrical tape, but tape is rubber, and sticks to the metal. What you want is some kind of slidy, metal surface that doesn't stick to metal on the front of the ethernet cable.

Fish Tape and Plastic Ends

There is a little piece of plastic on my fish tape at the end. When running through existing small conduit, that plastic is a problem, as it hits wires, and couplers, catching. Solution: Remove the plastic piece. However, there are times when you want something plastic at the end of the metal fish tape. I.e. when you are running fish tape through the bendable conduit. In that case, put some electrical tape at the end of the conduit. This little trick can be the difference between barely fishing, and not getting through the pipe. The idea is, it's removable depending on your need. This is primarily for fishing through existing conduit. Again, you can't use nylon string to pull wire through conduit, you need metal fish tape. That is because metal fish tape can be pushed back and forth, but nylon string can only pull.