Structure Wiring Standards

Introduction

Yadkin Valley Telecom's (YVT) desire is to ensure that homes constructed in the YVT serving area have a structured wiring system that will allow for the deployment of voice, data and video services. It is important that wiring standards be followed to take advantage of the offerings provided by the fiber to the home architecture being deployed across the area.

Facilities Entrance

Each home will have a fiber optic cable placed to it by YVT. This fiber cable will terminate at the side of the home in a Network Interface Device (NID) where the electronics for the fiber to the home system will be placed. This will also be the location where the wiring contractor will run (2) 1 inch flex conduits from the Internal Communications Distribution Panel (ICDP) located in the residence.

Internal Communications Distribution Panel (ICDP)

Each home is required to have an ICDP (enclosed panel/panels or [preferred] 4' X 4' X 3/4" smooth finish plywood) located in the homes utility room/ basement/ garage. This distribution panel will serve as the hub for the home network. Termination will be placed on the ICDP for Cat5e Data cables, Cat5e Voice cables and RG-6 quad shield coax cables for video. A power supply/battery back-up will also be located at the ICDP and will need an AC power source. The AC outlets should be (2) single gang and marked for the use of the telecommunications system only. Access to a common power ground is also required by the telecommunications company. The distribution panel should also be able to accommodate other electronics for the data, television and telephony network.

Figure 1 **(Plywood example – not a Fiber-to-the-Home configuration)**

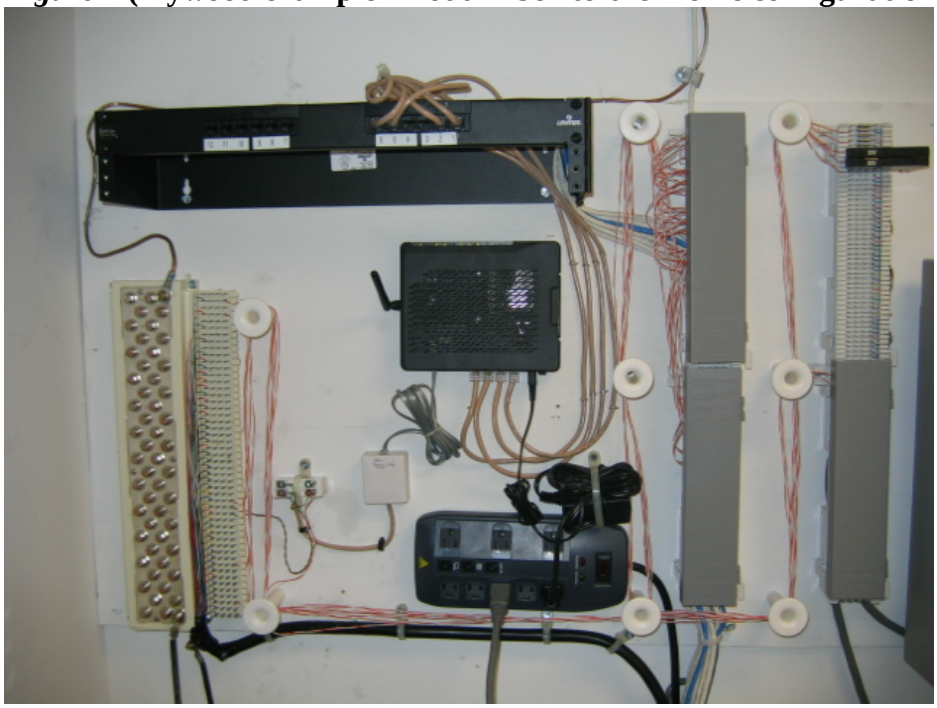


Figure 2 (panel box example -not YVT preferred)

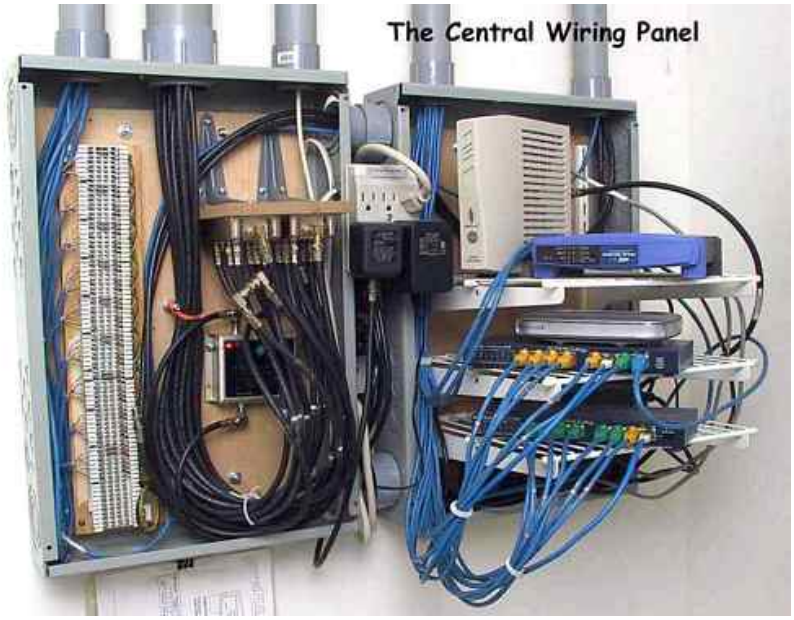


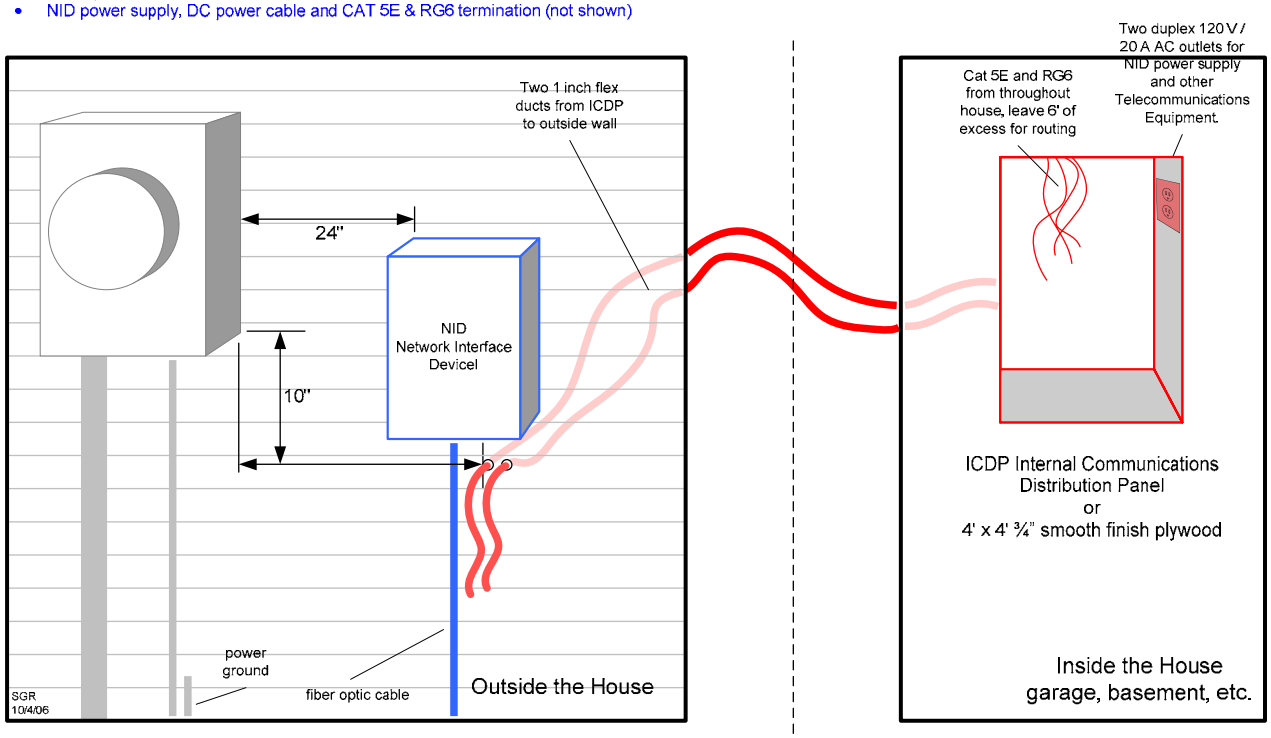
Figure 3 (Builder Requirements for Telecom Access)

New House Construction Homeowner / Contractor Responsibility (RED)

- Install ICDP (Internal Communications Distribution Panel) Enclosed panel or 4' x 4' ¾" smooth finish plywood with (2) duplex 120 V / 20 A AC outlets
- Install Cat 5E and RG6 communications wiring from rooms throughout house to ICDP, leaving 6' excess in ICDP
- Install two 1 inch flex conduits with pull strings, no greater than 90 feet in length with 36" extending through outside wall

YVT Responsibility (BLUE)

- NID installation
- fiber optic cable installation
- NID power supply, DC power cable and CAT 5E & RG6 termination (not shown)

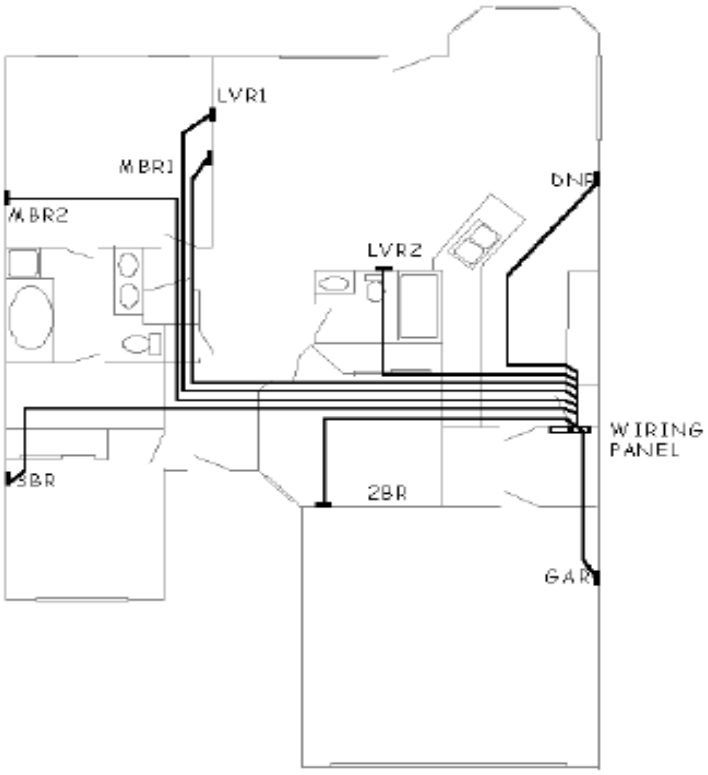


Distribution Cabling
Primary living areas (Bedrooms, Family Room, etc.) are required to have a multimedia port that will terminate (2) CAT5E cables (for voice and data) and (2) RG-6 quad-shield coax cables.

Figure 4 **(example of multi-wire bundle)**

RJ11 Jacks will be used for voice termination and RJ45 jacks for data termination. This allows for maximum flexibility for future services. Other rooms may have different configurations based upon homeowner needs. Each cable must be home run back to the distribution panel with no daisy-chained or looped wiring. In other locations where coax cable is placed for video needs an additional Cat5e cable must also be run for IP and Interactive Video systems.

Figure 5 **(single level structure)**



This floor plan can also help for identifying areas where the builder may need to make a space accommodation to allow the large diameter cable bundles to get from one floor to the next.

Housekeeping and Standards
Each cable will be labeled at the jack location and also at the termination point at the distribution hub. The wiring contractor will provide documentation to the homeowner and/or communications company including the wiring system overview, wiring diagram and any tests completed.

Start with your floor plan. Determine the location of your ICDP and each of your outlet plates. Remember that a key part of a structured wiring system is running ALL of the cables from each outlet plate back to the ICDP. This is the 'Home Run' configuration.

Having labels for your cables is very important. When you end up with 30 or 40 cables coming into the ICDP you'll be lost without some form of label to know where the cable goes to.

Give each outlet plate a short name. This short name should be somewhat descriptive of the outlet's location. Keep the name short because this name will be used to label each end of the cables running to and from that outlet. Here is an example (reference figure 6):

Figure 6 **(Structure Overview)**

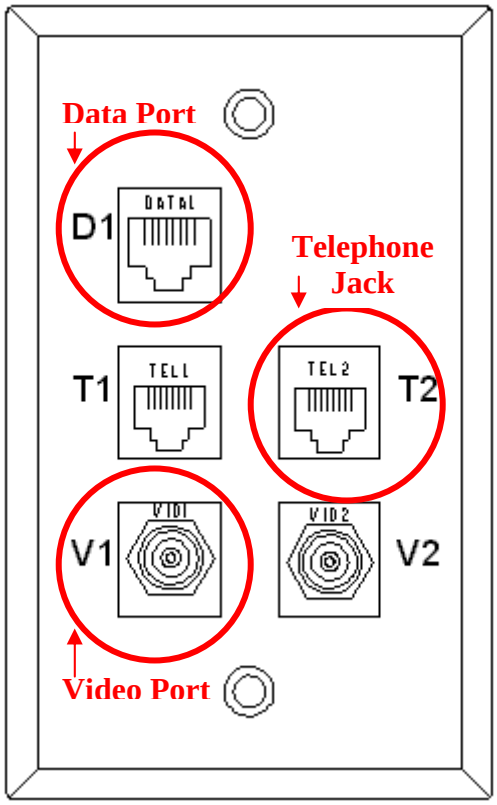
OUTLET PLATE NAME	**OUTLET LOCATION**
DNR	Dining Room
LVR1	Living Room 1
LVR2	Living Room 2
MBR1	Master Bedroom 1
MBR2	Master Bedroom 2
3BR	Bedroom 3
2BR	Bedroom 2
GAR	Garage

Now that every outlet plate has a name, we need to give each port or jack on the outlet plate a short name (figures 7 & 8). Remember that the goal here of all these names is to be able to label each cable on BOTH ends of every cable so that you know where every cable goes.

Figure 7 **(Outlet Plate Layout)**

PORT NAME	PORT DESCRIPTION
D1	DATA 1
T1	TELEPHONE 1
T2	TELEPHONE 2
V1	VIDEO 1
V2	VIDEO 2

Figure 8 **(Outlet Plate Example)**



Now we combine the outlet plate name with the port/jack name to make up a cable name. For example:

- DNR-D1 indicates the cable going to the dining room (DNR) outlet plate's data 1 port (D1).
- 3BR-V1 indicates the cable going to the bedroom 3 (3BR) outlet plate's video 1 port (V1).

A spreadsheet or site detail will show which type of ports/jacks are included in each of the outlet plates. In the examples above, all of the outlet plates have the same ports/jacks on them. If a different set of ports/jacks is used on each of the outlet plates the spreadsheet or site detail can be a great deal of help when the services are installed.

Home Network Options
Depending on the sophistication of the home buyer, other network options might be considered, including:

- Spare conduit from NID to ICDP
- Spare conduit from ICDP to Attic for future wiring needs
- Wireless Network-would not take the place of the wired network but would be seen as an enhancement to wired network
- Entertainment options
- Security options

The Internal Telecommunications Network
These specifications allow all homeowners in the area to have access to advanced telecommunication services. The builder, along with their wiring contractor, can customize a system to meet any homeowner's unique needs. By following the standards in this document developers and builders can see a significant return on the investment in structured wiring. One survey of the FTTH market states "The average homeowner sees FTTH being worth $4,000 - $7,000 per home".

Links
Good FTTH overview - http://www.data3.data3m3.com/UserFiles/File/FTTHQ&A.pdf

Home value information - http://www.corning.com/docs/opticalfiber/R6314.pdf

Lots of information - http://www.americantechsupply.com/fibertothehome.htm

STRUCTURE OVERVIEW		
Outlet Plate Name		**Outlet Location**

Outlet Plate Layout

Outlet Plate Name:

Port Name		Port Description

Outlet Plate Name:

Port Name		Port Description

Outlet Plate Name:

Port Name		Port Description

Outlet Plate Name:

Port Name		Port Description

Outlet Plate Name:

Port Name		Port Description