Creating multicolored wiring diagrams in Visio 2013

You can use this wiring diagramming functionality in Visio based on the Custom Line Patterns I created in Visio 2013: (some features are not present in Visio 2010)

Download: Master Wiring Colors with Tracers.vsd from my Google Drive. Save it somewhere on your computer then copy it to a new file name to use it on your own drawings. Use the copy you created deleting the example pages and creating new ones that meet your needs. The custom patterns exist in the vsd document you download, and within the copy you make of it. It is not made native to Visio itself. The download link for that file appears later in the document.

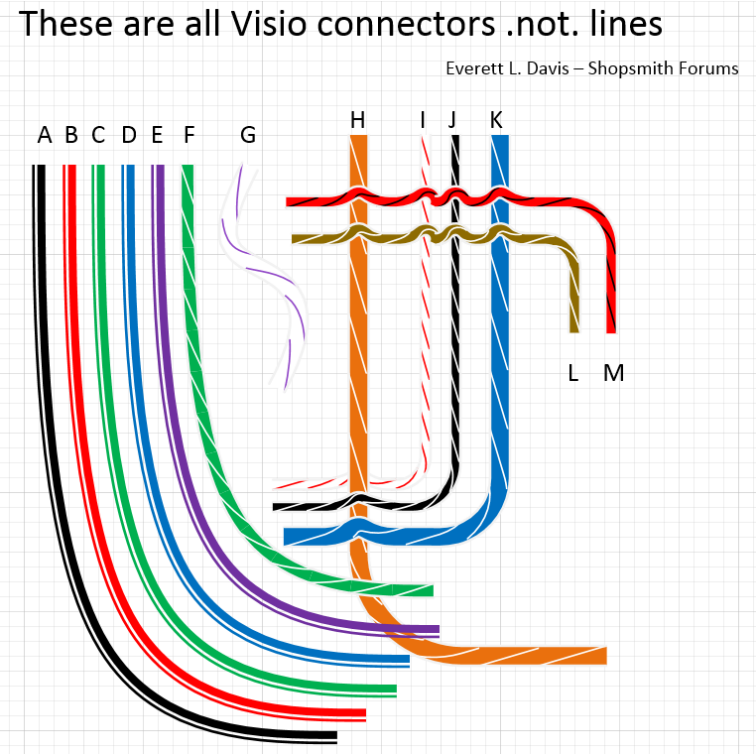
I left the actual connector drawings I created in the actual file so you can play with them in your copy and see how the various settings and options effect change in the drawing.

There will be two pages in the "Master Wiring Colors with Tracers.vsd" Page one (1) is the examples, and page two (2) is a resource page that I created that you may find helpful to use in a manner that I will describe later to create your drawings.

There are three sections to this document

- An explanation of Page 1 with the illustrations, indicating how they were drawn
- An explanation of how you can use Page 2 as a ready to use resource for your drawing creations
- An explanation of how I actually created the Line Patterns themselves and the thought processes and credits for what I used to build upon from research of others that led me to this approach.

Section 1 - explanation of Page 1



A) Solid Black 'Connector' with straight white line

Began as a connector that was inserted on the drawing, then modified by right clicking and converting to a *'Curved Connector'*. The line *'Color'* was left at default Black, resized to *'Width'* 4 pt, and had the *'Compound Type'* set to the middle option with thicker side to top and thin line below, and the *'Cap Type'* set to Flat. I have found no way to change the stripe or secondary color.

B) Solid Red 'Connector' with straight white line actually began as "A" which was right clicked, copied and pasted. The line 'Color' was changed to Red

C) Solid Green 'Connector' with straight white line actually began as "A" which was right clicked, copied and pasted. The line 'Color' was changed to Green

D) Solid Blue 'Connector' with straight white line actually began as "A" which was right clicked, copied and pasted. The line 'Color' was changed to Blue

E) Solid Purple 'Connector' with straight white line actually began as "A" which was right clicked, copied and pasted. The line 'Color' was changed to Purple in the color field

F) Solid Green 'Connector' with twisted white line actually began as "A" which was right clicked, copied and pasted. The line 'Dash Type' was changed by setting a "Dash Type" to one of the custom Line Patterns I created – [19 Green with twisted White Stripe] which Visio adds to the bottom of the Dash Type Option window where the built in dash type options for various line dash presets exist.

G) Solid White 'Connector' with twisted Violet line began as a new connector that was inserted on the drawing, then modified by right clicking and converting to a *'Curved Connector'*, then modified and twisted by adjusting the small connection points within the curve to 'reshape' it, then the *'Cap Type'* was set to Flat, and the 'Dash Type' (where my custom Line Patterns exist) set to 25 White with twisted Violet Stripe. It was then resized to *'Width'* 5.25pt.

H) Solid Orange 'Connector' with twisted White line began as a new connector, and was resized to *'Width'* 6pt. The Square corner was converted to the most rounded corner type by setting the *'Rounding Presets'* to the one on the bottom right most rounding. Finally, the 'Dash Type' (where my custom Line Patterns exist) set to 12 Orange w twisted White Stripe.

I) Solid White 'Connector' with twisted Red line began as a new connector, and was resized to 'Width' 3pt. The Square corner was converted to the large rounded corner type by setting the 'Rounding Presets' to the one third down on right large rounding. . Finally, the 'Dash Type' (where my custom Line Patterns exist) set to 07 White w twisted Red Stripe.

J) Solid Black 'Connector' with twisted White line began as a copy of (I above) then the 'Dash Type' (where my custom Line Patterns exist) set to 01 Black w twisted White Stripe. Using the selection on the Home Menu under the Arrange field, object was set to "Bring to Front" placing in on top of the large orange/white object. (Note the Rounding Preset selection affects the appearance of the cross-over arc)

K) Solid Blue 'Connector' with twisted White line began as a copy of (I above) then the 'Dash Type' (where my custom Line Patterns exist) set to 22 Blue w twisted White Stripe. It was then resized to *'Width'* 6pt.

L) Solid Brown 'Connector' with twisted White line began as a copy of (I above) then the 'Dash Type' (where my custom Line Patterns exist) set to 04 Brown w twisted While Stripe. It was moved into its position over the other connectors, then was resized up to 'Width' 3.5pt.

M) Solid Red 'Connector' with twisted Black line began as a copy of (L above) then the 'Dash Type' (where my custom Line Patterns exist) set to 08 Red w twisted Black Stripe. It was moved into its position over the other connectors.

Section 2 - explanation of Page 2

Page 2 is simply a series of straight connector lines with the format colors applied. Use the format painter to apply the format to your connector, then resize and reassign them to your connectors as you place them on your drawing – changing to Right Angle Connector, Straight Connector, Curved Connector etc. as desired.

Section 3 - explanation of how I actually created the Line Patterns themselves – if you want to go there

First of all over a good bit of time, I read everything I could find on various features in Visio and learned that some who approached it from a fill 'pattern perspective' would work to an extent, but within selected versions or releases of Visio.

When I later upgraded my Visio the functions I had been developing and exploring trying to achieve the functionality that capability I had been exploring went away completely. Blank lines.

I went back to the approach of using Custom 'Line Pattern' opposed to Fill Pattern which I had tried earlier.

I re-searched Microsoft Visio forums and found one of many write ups on how others had attempted to do it, including me, over a year before.

One I reviewed that you can still find out there is http://answers.microsoft.com/en-us/msoffice/forum/msoffice_visio-mso_winother/line-tool-for-striped-line-visio-2010/08584170-c637-437e-b996-d2f1497d5f27

There is a foundation where one of the participants in the thread 'Schmidtfamily6' posted how they did something that worked for them. I use the reference above so that you can go look at what I saw in that thread, and

I wanted more granularity and scalability so I chose to ignore statements that said *"Very important here notice how my rectangles are larger than the page, it doesn't matter how much larger just need to go past the beginning and the end."* I totally disagreed. I made mine exact size and my line is corner to corner. You will find out later about that.

I did use the ½" x 1½" custom page size as my heaviest welding cable is about ½" diameter, and I wanted it to scale, on my building drawings.

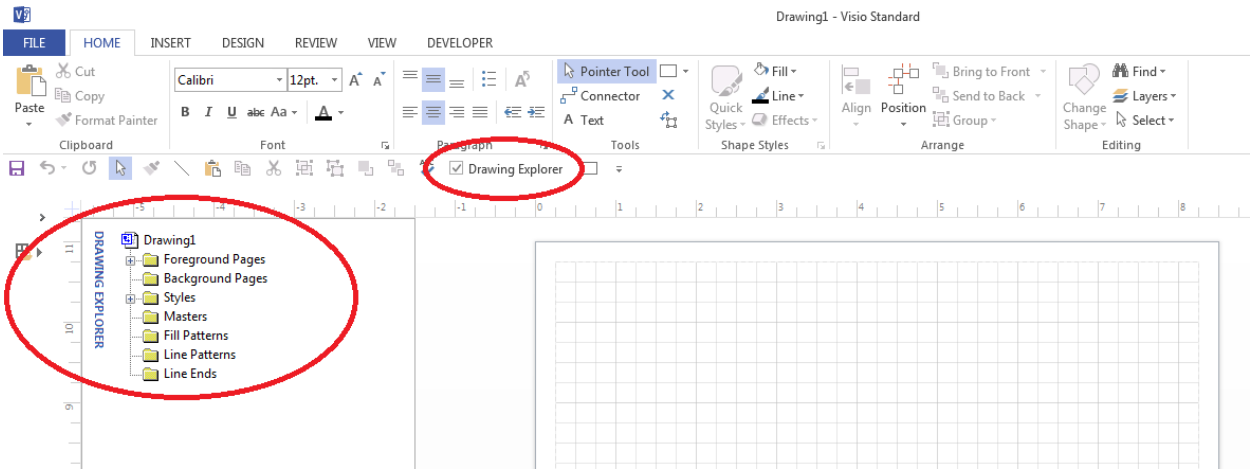
Here's what I did.

Opened Visio 2013

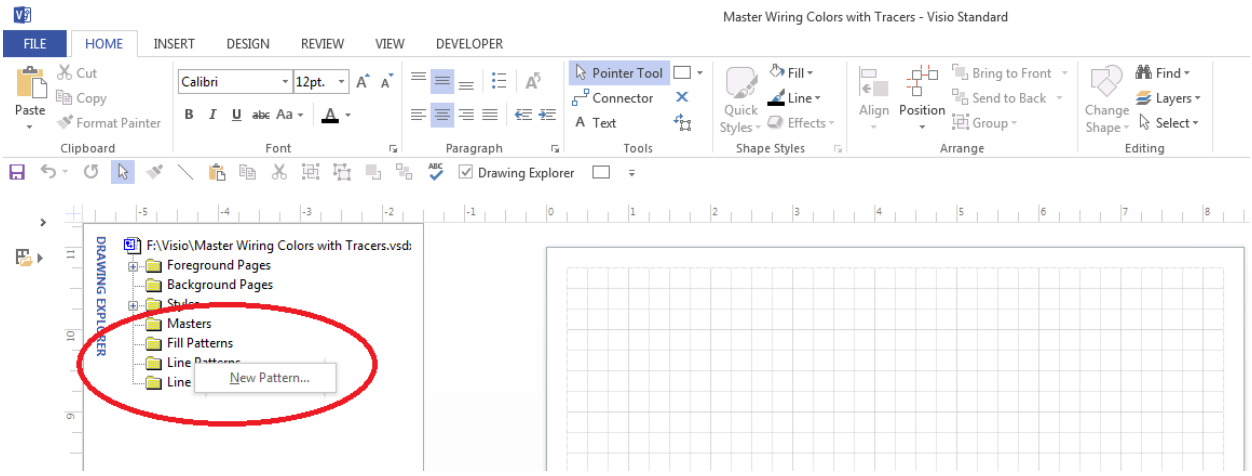
I created a Blank Document.

My Visio did not have the Drawing Explorer option on my Quick Access Toolbar after my upgrade to 2013, and having access to Drawing Explorer is the pathway one uses to access the features of Fill

Patterns or Line Patterns, so I went on-line to Microsoft Visio Support to find out how to access it and put in on the Quick Access Toolbar. (See below)

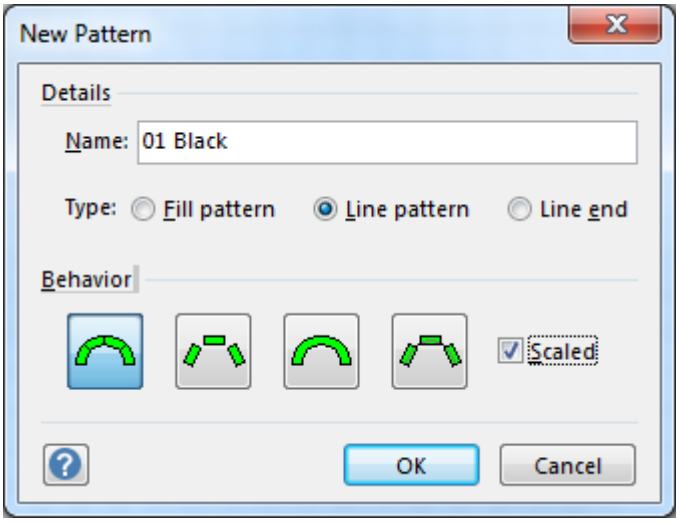


Next I named the file Master Wiring Colors with Tracer (see below)



Right Clicking on Line Pattern, I selected New Pattern as shown above.

Now I am ready to create my first custom wire, which will show up under the predefined line patterns which you cannot edit or view in this screen. More on that later.



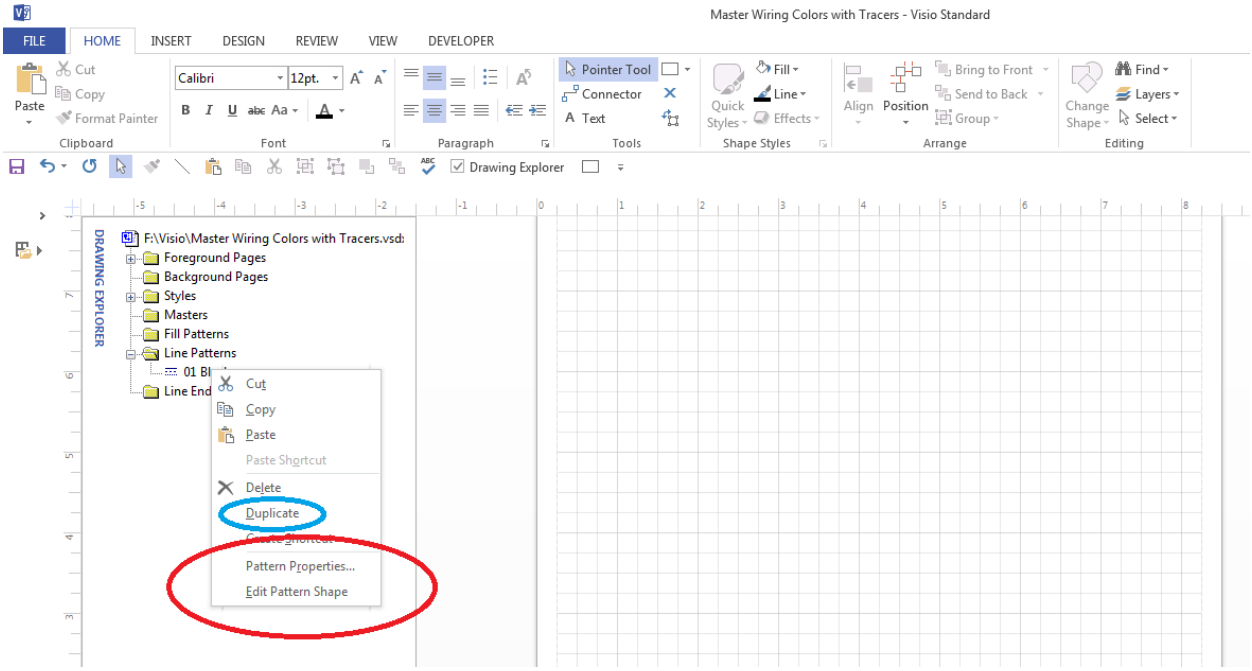
I start with 01 Black. This will be the first of many that I create.

The core elements of this pattern will be discussed in detail as to why decisions were made.

Note that the line pattern button is selected by default, as well as the behavior on the left.

I had to select Scaled.

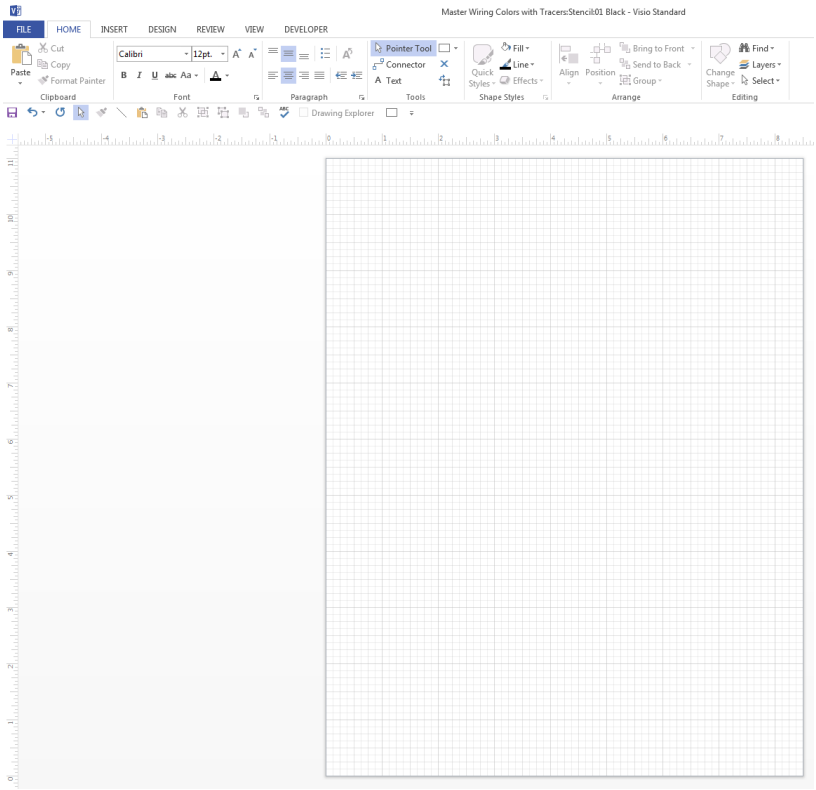
When I press OK the Line Pattern 01 Black appears as shown below. It will need editing.



Now we must select 01 Black and Edit it to give it the characteristics we need to apply to a Visio Connector later as we create a drawing. If within the Red Oval, we select Pattern Properties, we can change the name of the Pattern.

When we finish one we will use that feature later to rename other patterns we created by using the Duplicate function illustrated with the Blue Oval, but for now, we need to edit the pattern shape and enter the colors we need for the Black pattern.

Ok, I clicked on the Edit Pattern Shape and something went wrong. I have a new blank drawing and lost everything I just did.



No, it just appears that way at first glance.

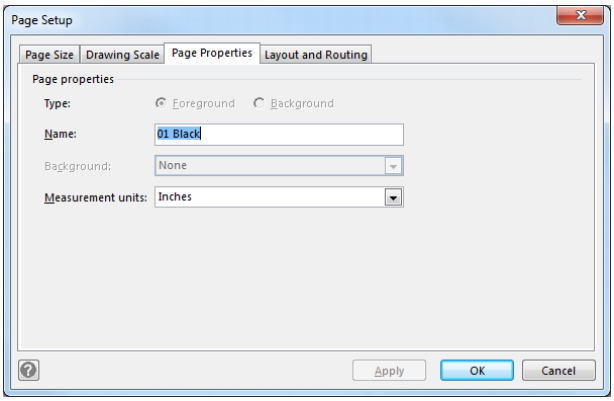
Visio will use a Visio Blank Page to allow you to create that pattern. It is an 8½ x 11 page for a wire that we want that may be 1/8" wide. It needs to be smaller…. Much smaller

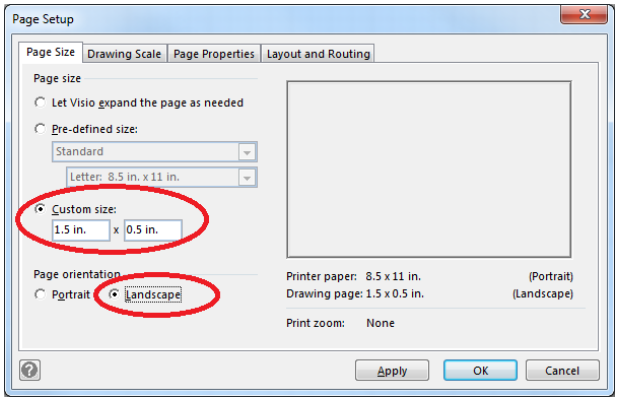
We need a really small 'Page' for the pattern. ½" x 1½" is a gum wrapper compared to letter size page, but that's what we need.

How? Same function as in any drawing in Visio ….

Page Setup under the Size button on the Design Tab. (See below)

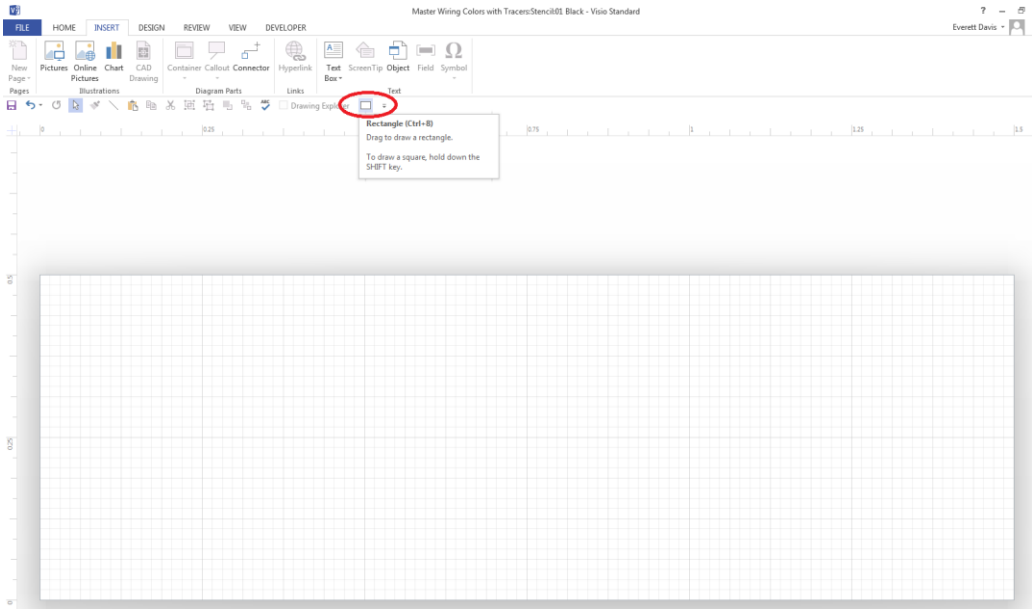
Select More Page Sizes and the Page Setup menu comes up. (Below Left) Select Page Size (Below Right)





Select Custom Size and click Landscape. Set size to 1½ x ½ as shown

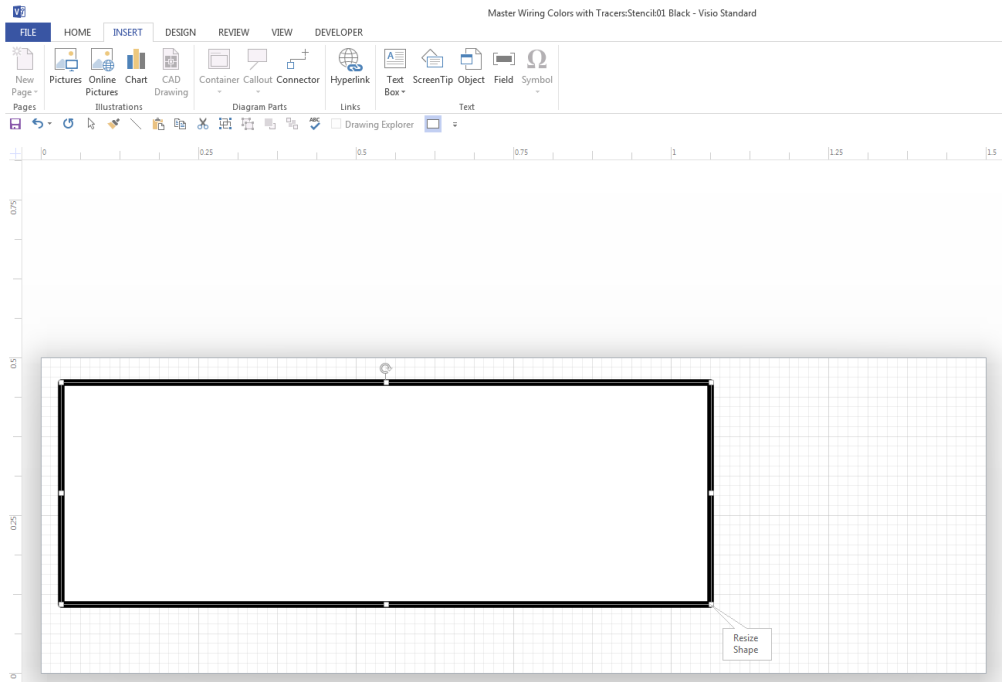
When you click OK it will change to what you see below. That is the size of the new Line Pattern we are about to create.



Now we have to create a rectangle to completely fill (not exceed) this page, with a Black Background, and at first you would think we are done, but there is an issue as we transition to other colors in other patterns such as a White wire on a White screen or white paper. More on that in a minute…

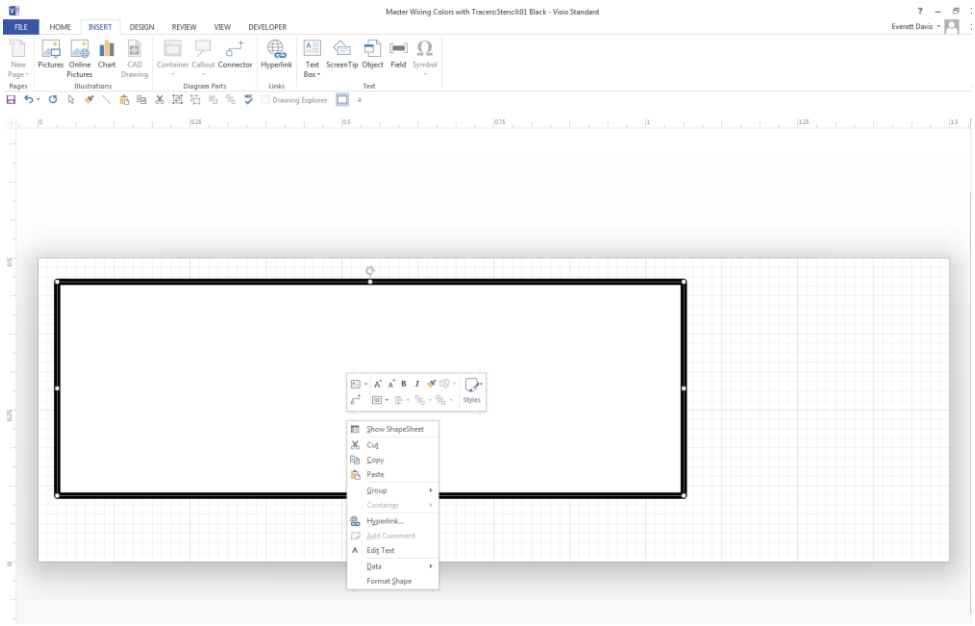
Click on the Rectangle button (Ok Ctrl+8) for a keyboard shortcut…. And you thought Microsoft took all that out when MS-DOS went away almost 20 years ago…. Draw a rectangle. You can stretch it to fill the page afterward, using the Resize Shape buttons.

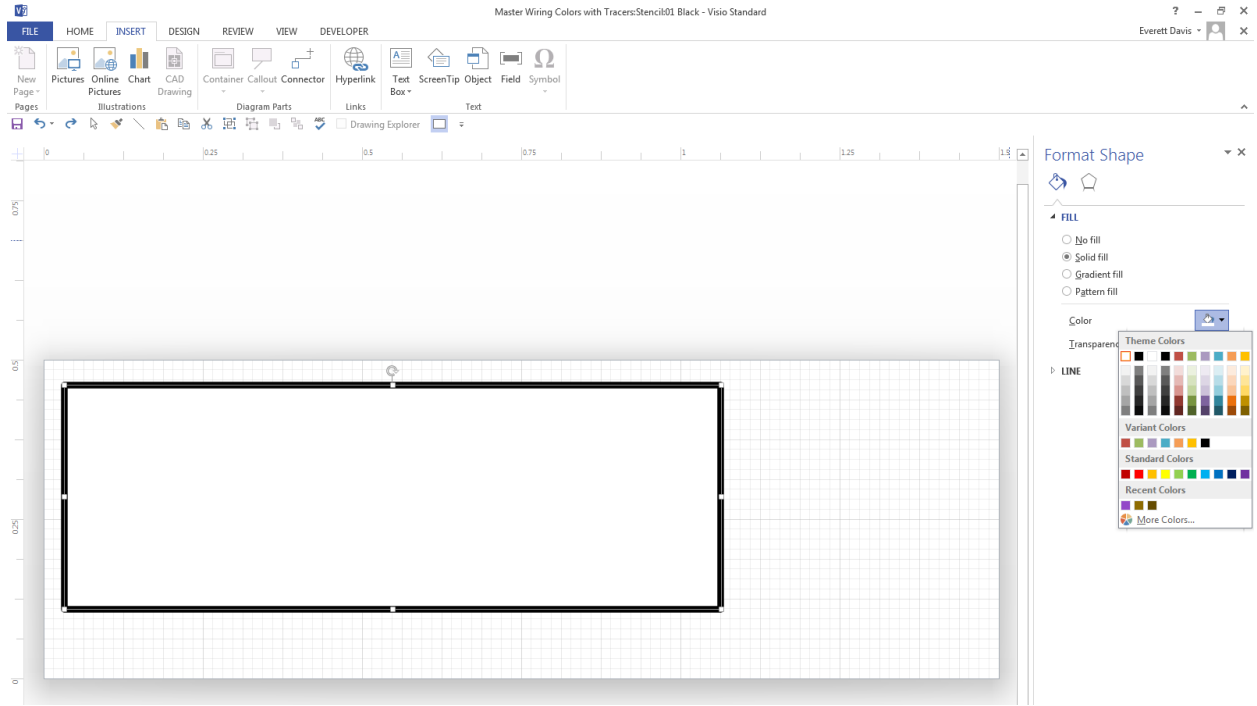
You will have to change the fill properties so just drop this on the 'gum wrapper sized page'

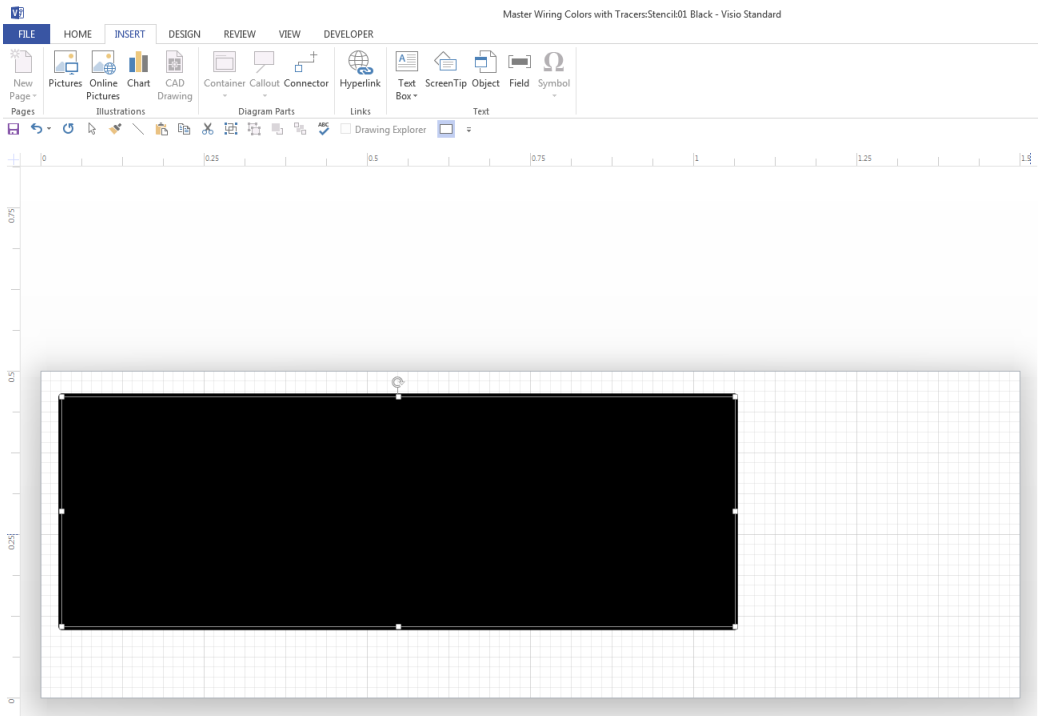


Ok, we now have a rectangle.

Right Click in the middle of the rectangle and select Format Shape which will allow you to change the Fill Colors and other features as you need.



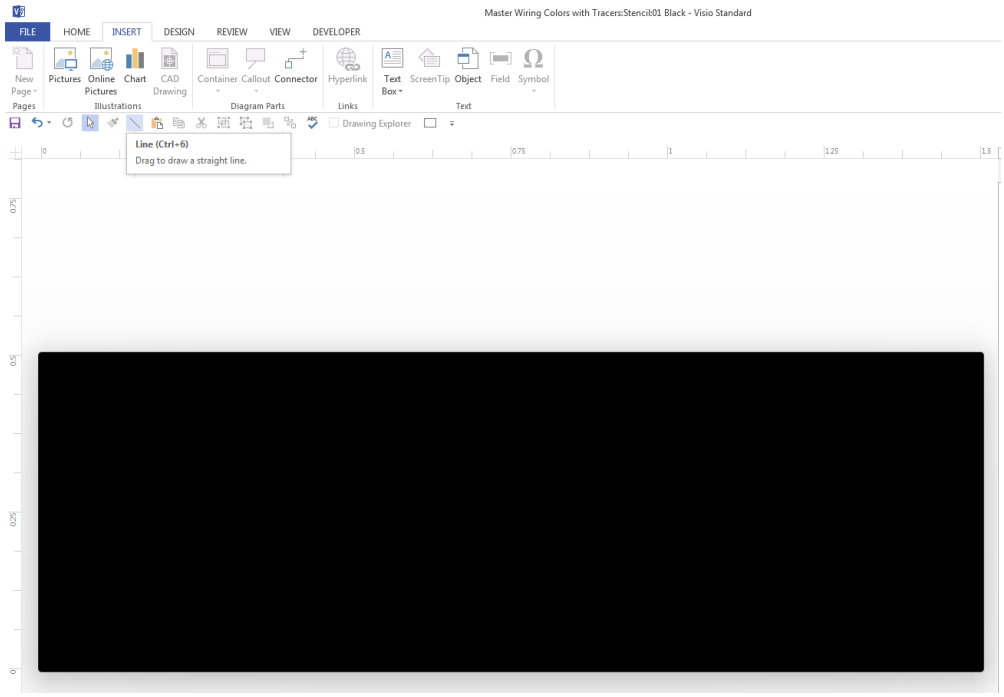




Now it is solid Black

We need it to fill the page

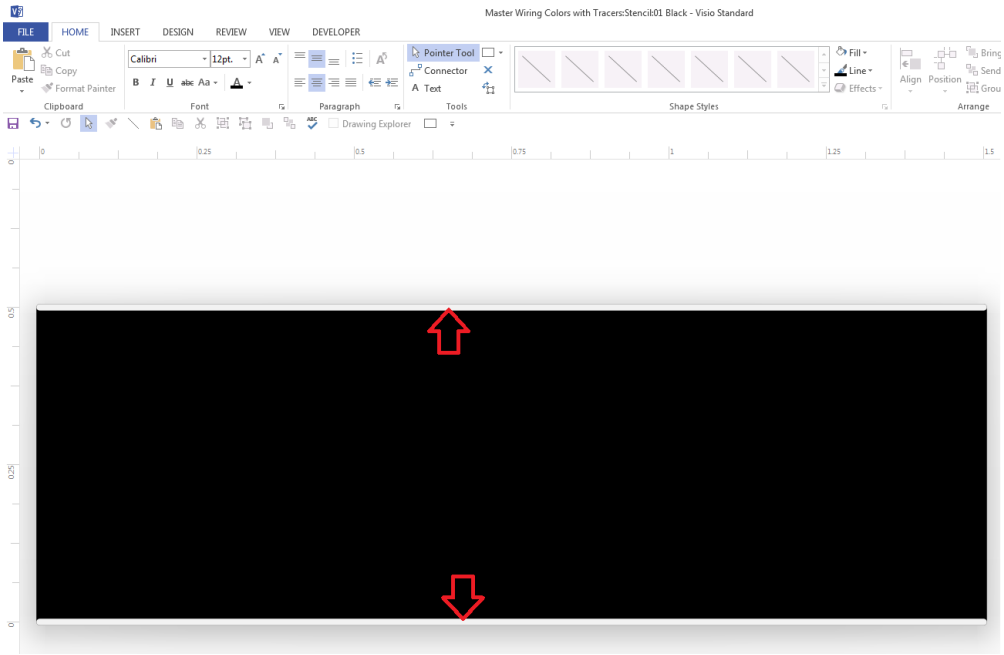
Use buttons shown to drag the edges to fill the page



Now we are almost there.

This looks like it would work just fine, and for a Black cable it would be ok, but 'what if' the wire color were White or white with a stripe?

We need some wire edge definition.



Draw a light grey line at the Top and Bottom and set them to be in front of the background so they are slightly visible.

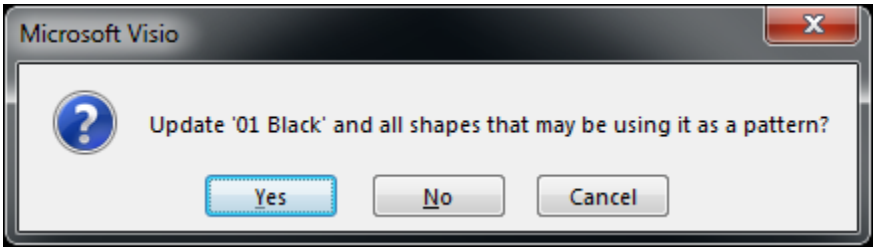
Note the two red arrows illustrate those lines.

See the 'G' example above.

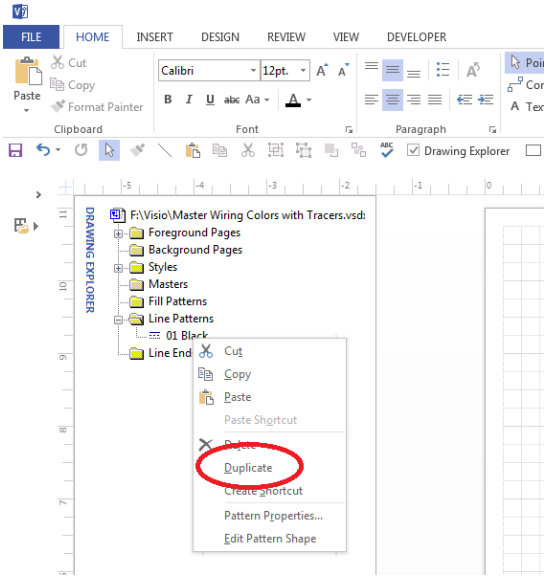
Now we need to save this new Line Pattern which we do by exiting the Shape (not the Visio drawing itself) there may be two X's in the upper right hand of the page; select the bottom one and the following pop-up will come up.

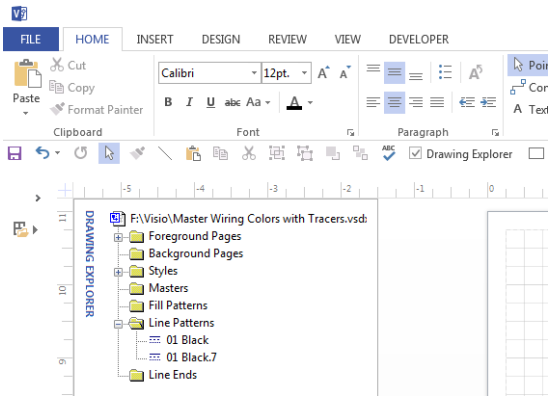
Select the lower one. . Choose Yes

If you select yes to the top X, you will still see the pop-up, but when you answer - Yes, you will have saved the changes to the Line Pattern, but you will also close the file it is in, and you will have to re-open the file to continue editing. You can well imagine how I know that. You cannot fathom 'how well' I know that.



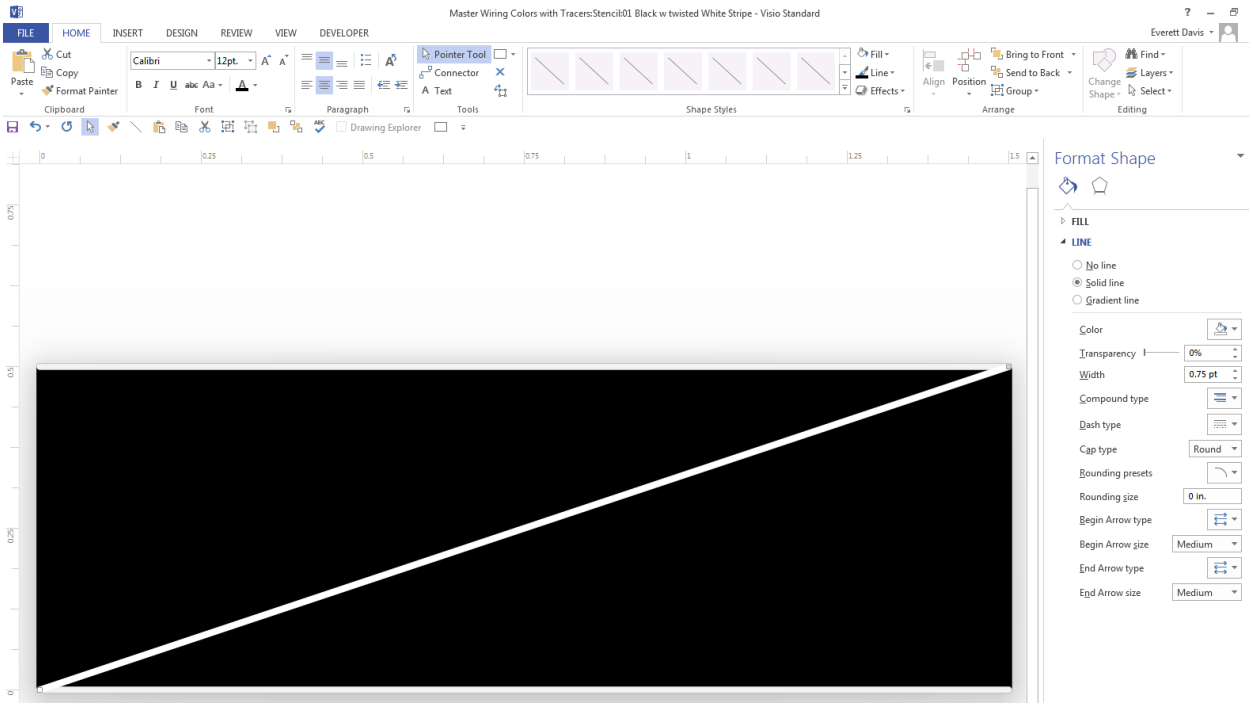
Next we will begin to use that first Line Pattern, to make the rest of them by right clicking on the Line Pattern we want to use and select Duplicate.





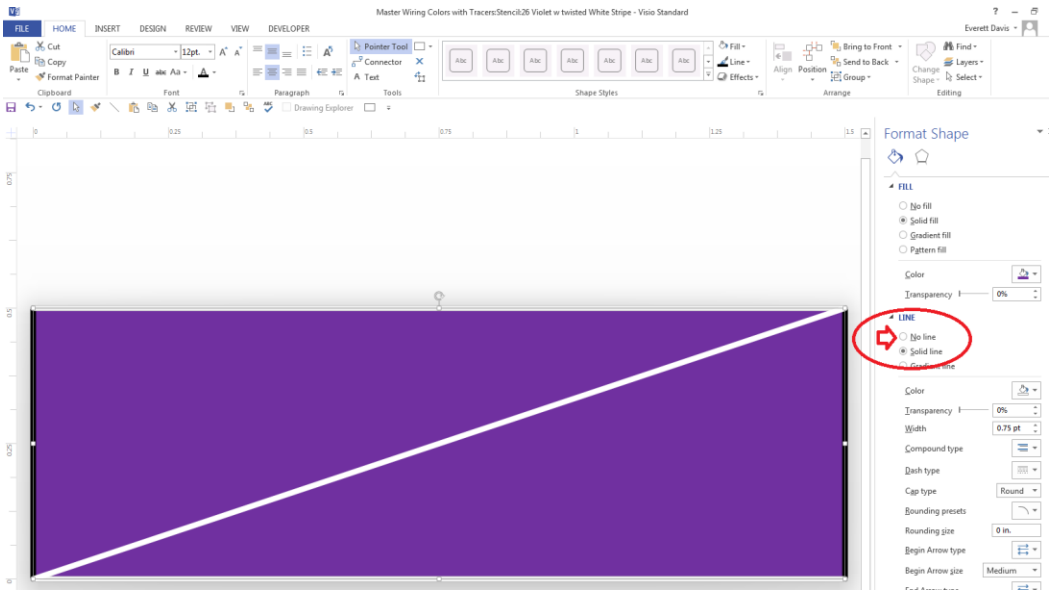
The system then creates a duplicate with a name and a modifier. In this case 01 Black.7 (above)

Will right click on that copy and use the 'Pattern Properties' option to change its name to - '01 Black w twisted White Stripe' - We will then use the Edit Pattern Shape to add a diagonal line from the lower left corner to the upper right corner, and change the line color to White as shown below. Cap Type - Flat



Now we can use the two Line Patterns we have; 01 Black and 01 Black w twisted White Stripe to duplicate and use to make the others.

To illustrate that process, I will create the ‘G’ Example that is 26 Violet w twisted White Stripe by simply changing the Black fill to the Violet color. I would be remiss not to point out that in the color palate the color is listed as Purple opposed to Violet. I chose the name Violet to match the IEEE traditional wire coloring naming scheme which is mirrored in the Resistor Color Code: Black Brown Red Orange Yellow Green Blue Violet Grey White.

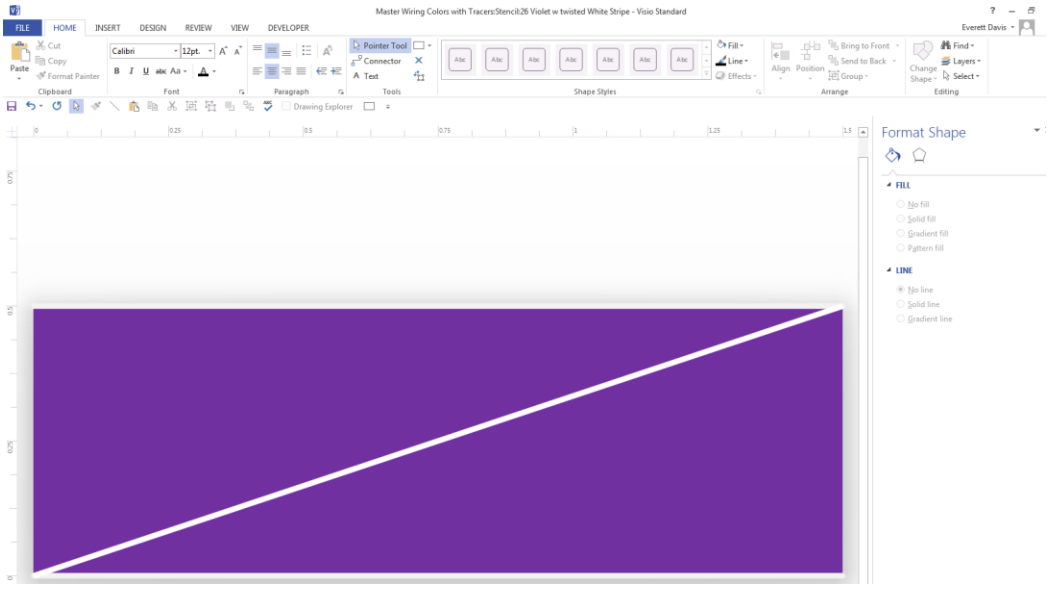


Ok, but what are those two black lines at the end now?

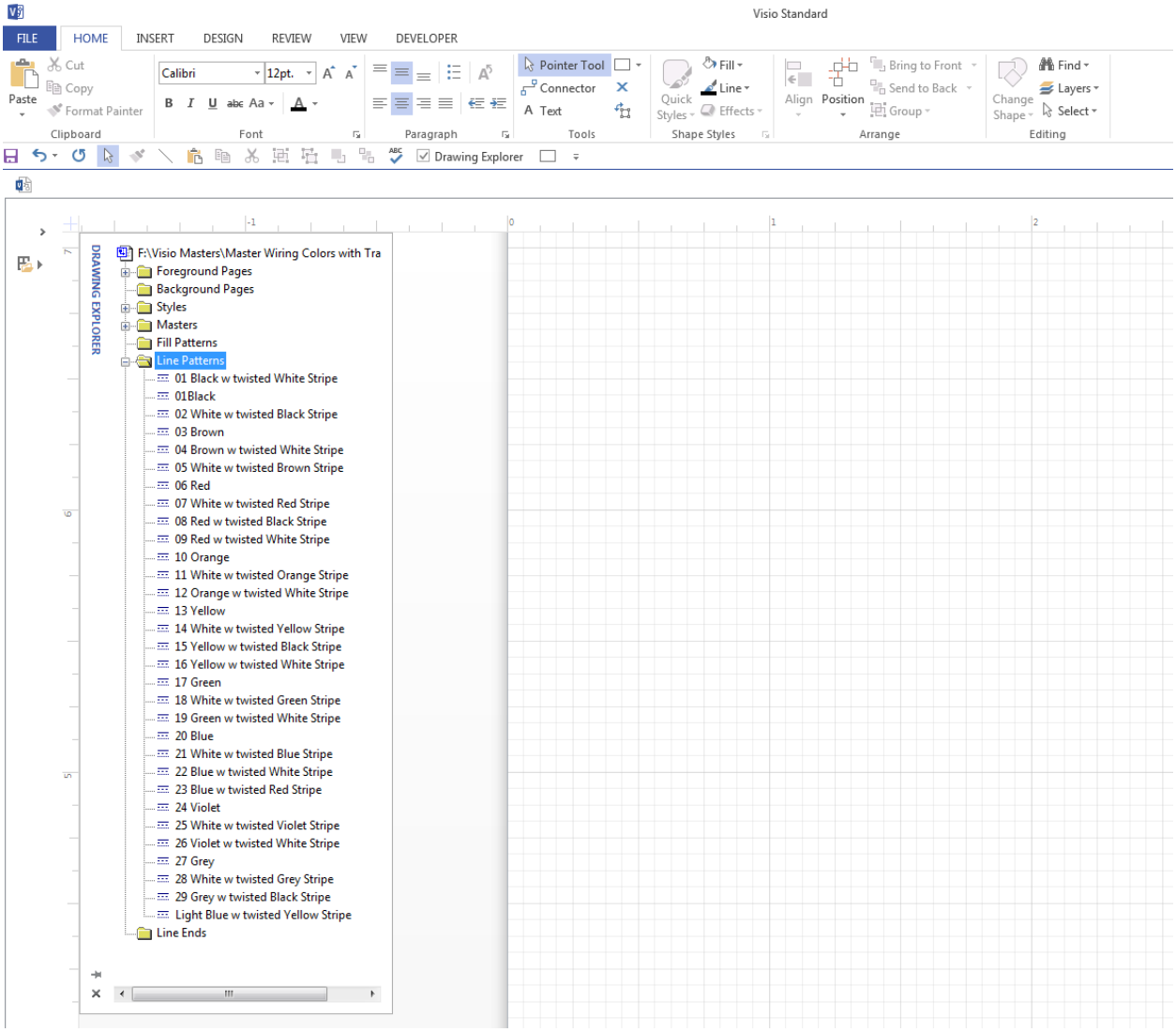
Remember the Black rectangle we drew to start with for 01 Black?

It’s just that so let’s turn it off by selecting No Line.

You can’t delete it as that is your rectangle. Yes I will also go back and turn it off in the Black Pattern too so I don’t have to manually edit it every time I copy it for a solid Line Pattern



There…. Now we are cooking



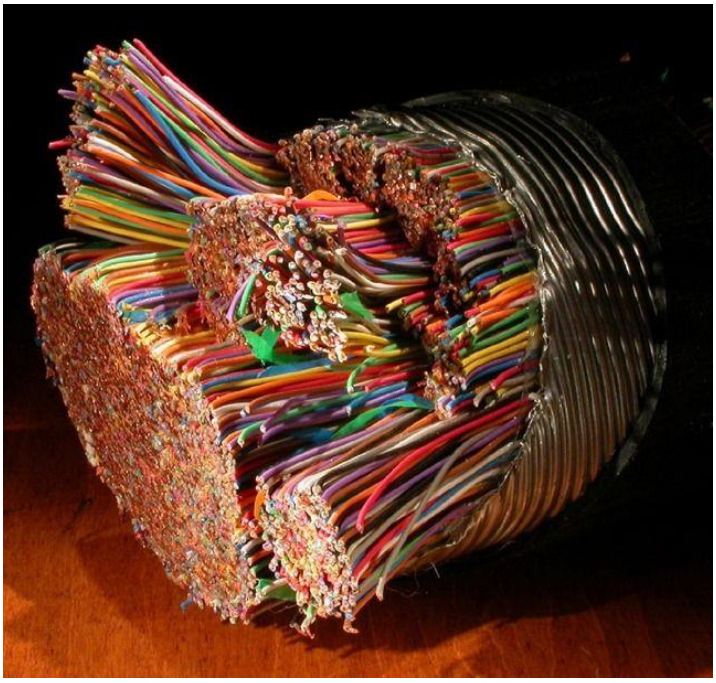
OK, now we can use them. Remember, they are part of the Visio 2013 file Master Wiring Colors with Tracers.VSDX You may download it from:

https://drive.google.com/open?id=0B1p8_ycx_8A0Vk95Wnk1ZVl5eU0

Copy this Master file and rename it to what you need to create your own wire representations using Visio Connectors to apply these Line Patterns to.

You certainly can take it further if you choose. What if you had dozens or even hundreds of wires?

Many times there is a collection of collections if you will. Within the bundle of wires that follow much of the scheme I have used, there could be more than one wire stripe color, and those collections contained in a Black bundle, a Brown bundle, a Red bundle or so on. There can be straight lines, spiral lines, dotted lines, dashed lines, even multiple line colors and or patterns. See the next page.

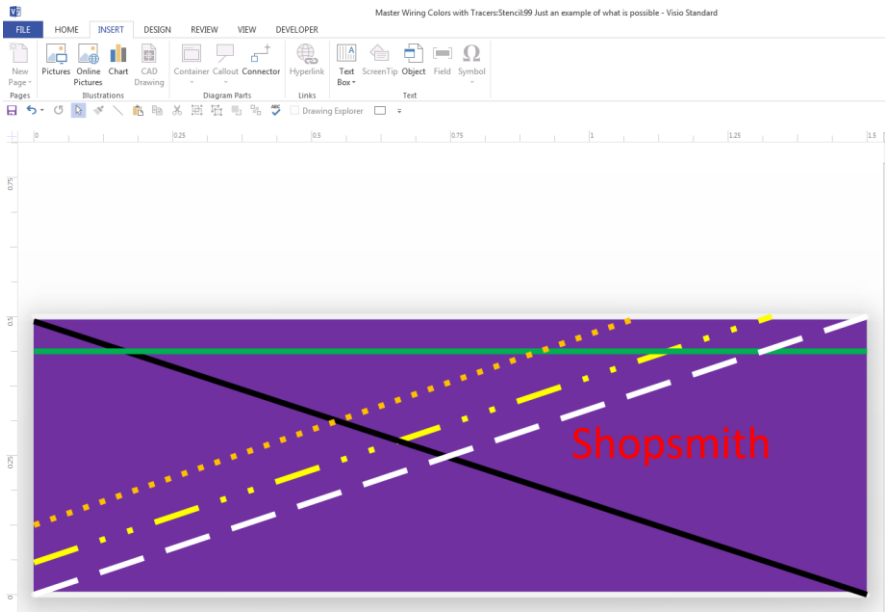


The make-up of these cables can and do vary industry by industry, and application to application.

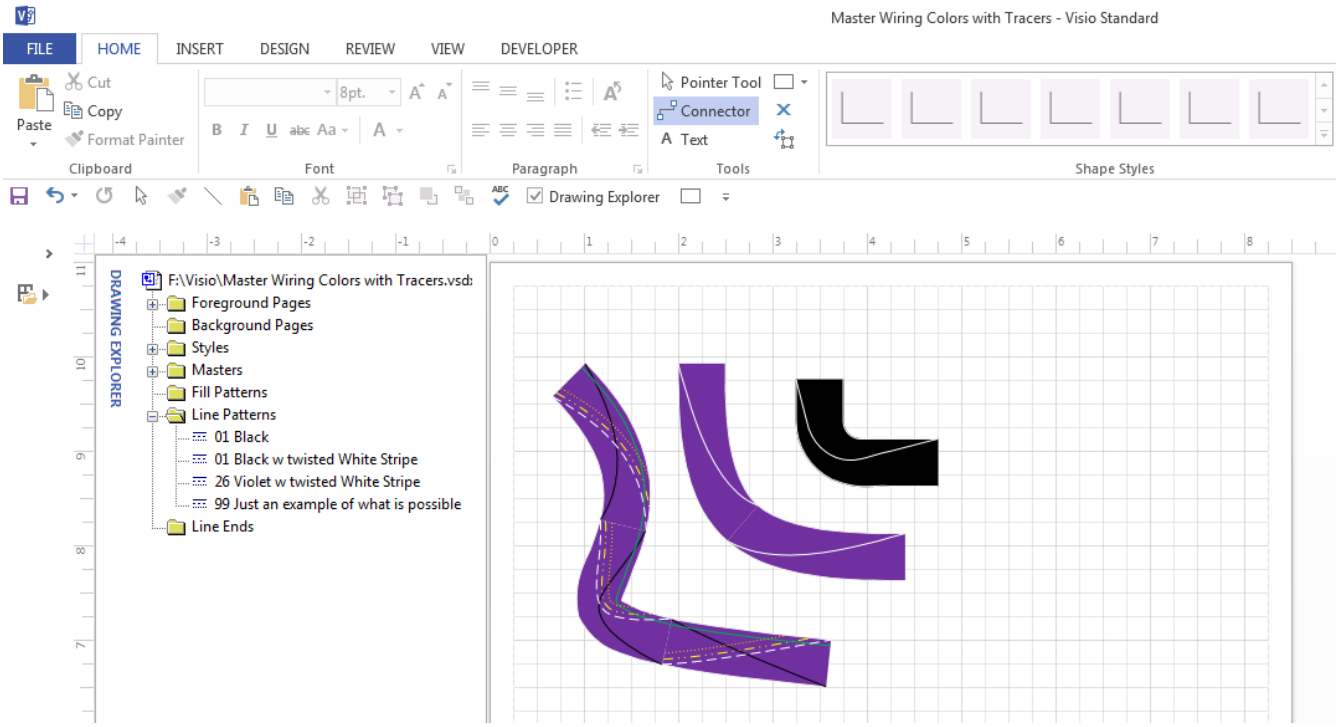
Today more modern implementations use fiber optics and digital data to segment data into logically manageable opposed to physically manageable connections.

Yet some among us are tasked with documenting wiring diagrams for very old vintage equipment.

How might one change the appearance of what I have done in Visio? Remember the Light Gray line we added at the top and bottom? You can add more lines of different colors inside them, and even change other characteristics to try and represent a myriad of variances. I will show you one radical example below of what that might resemble, then I will draw a complex line with it.



Now is that Radical enough for your needs?



So, what you want, you can likely get….. Except of course the Text which is not supported in Line Pattern, even though you can apparently design with it.

Kindest regards everyone,

Everett L. Davis
For Shopsmith Forums
Lubbock, Texas