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**Making Your Label Styles Work For You in C3D**

## **Making Your Label Styles Work For You in C3D**

Mark Hultgren – Smith Engineering

**CV110-5** Once you have completed this course, you'll understand and be able to apply the methods for developing a complete set of label styles for a typical civil-engineering design project. You'll also get tips on how and when to use ByLayer or ByStyle methodologies to develop labels, and how to maximize the use of your labels.

### **About the Speaker:**

My name is Mark Hultgren and in case you wanted to know a little about my background, I have been working with AutoCAD and vertical applications since 1982, and have developed, prepared and provided several CAD training and upgrade courses throughout my 20+ year career in civil engineering. For at least the last ten years I have had the good fortune to have been an integral part of developing and implementing CAD standards for companies such as Arcadis, Geraghty and Miller, and PSOMAS, and currently am employed as the Company CAD Manager for Smith Engineering Company. Some of the duties that I enjoy are; leading a team responsible for developing CAD standards and Civil 3D styles for our company's five offices and constantly learning more about the software through AU, AUGI, the Autodesk Newsgroups and other users. The program is massive and there is always something you can learn from others. If you need to contact me, you are most welcome to send an email to [admin@mkw-ind.com](mailto:admin@mkw-ind.com).



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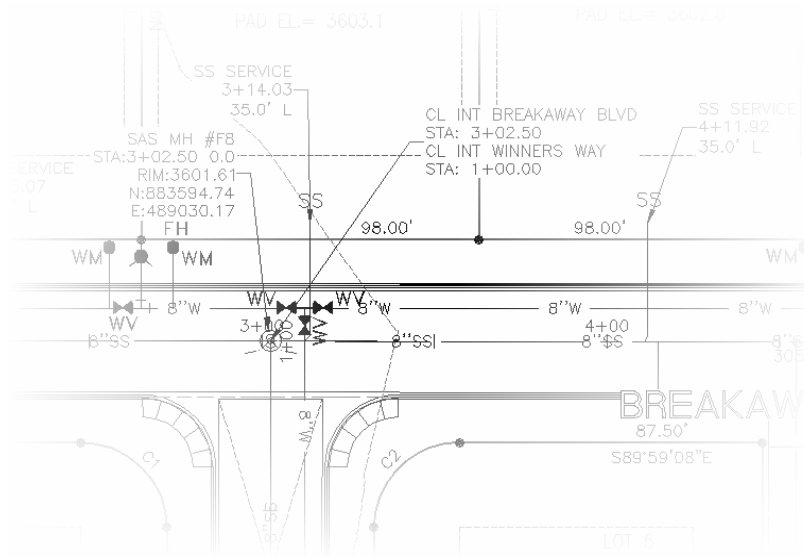
## **Making Your Label Styles Work For You in C3D**

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The first thing I would like to do is let you know what this class is and what it isn't. This class is NOT going to show you step by step how to create a label style. There are some great classes on the schedule for Style creation and all the instructors are well qualified. We WILL look at the options available during the Style creation process, and we will be focusing more on how to apply these options to adhere to your existing CAD Standards (or one that you are developing).

The primary goal of this class is to allow you to return home with a better understanding of which approach you want to implement in your Styles. Do you want to force everything to use a ByStyle approach, will a ByLayer direction be more beneficial, or is the optimum approach a combination of the two. These are questions that you and your firm will need to answer, I would just like to show you some of the benefits (and pitfalls) of using each. I would like to ask that you write down any questions that you have and we will try to save about 15 minutes at the end of the session for a short Q&A. I will also be available after the session for any questions once I have cleared the area for the next presenter.



The Key Topics we will be discussing are as follows:

- How to get your label style strategy to work with your existing CAD standards
- Deciding between ByStyle or ByLayer label styles and the pros and cons of each approach
- Maximizing the effectiveness of your label use and implementation
- Tricks for creating impressive label styles
- Use of reference objects and labels using the Project approach and Autodesk Vault



So let's get started!

First, we can look at how to implement your existing Standards into your Label Styles, for the examples in this class; I will be using Smith Engineering Company Standards (which are loosely based on the National CAD Standards [NCS]).

*A few questions to consider when creating your Styles:*

Will you be using Viewport Based Layer settings in your plans?

Will you be creating your plansets using multiple layout tabs or individual DWG files for each sheet?

How disciplined are your drafters and CAD technicians at following standards? Do they place things on the correct layers or do they have a habit of changing the color and linetype settings to 'hardcoded' overrides?

Depending on how you answer these questions may help determine which method you want to implement in your Style development. We will start with the first one.

If you are currently or plan to use VPORT dependant layer overrides (a great feature introduced in 2008) then you will NOT want to use any type of overrides. In order to use the VPORT dependant settings EVERYTHING needs to be created using ByLayer settings for colors and linetypes. If you have objects 'hardcoded' with either of these settings, your VPORT overrides will NOT work. This can get even trickier when using ByStyle settings inside your Label Styles.

When using the ByStyle approach, you can actually create overrides inside your label style that creates different portions (or components) of your Label Style with different settings. This is similar to how a 'Nested Block' works, the label itself resides on a single layer and individual components of the label have colors and linetypes defined within the Label Style.

So you could create a Style that inserts everything in the label on a single layer (e.g. C-PROP-LABL) and within that label have certain objects that are created using 'hardcoded' settings such as color or linetype, so the line drawn under the Top part of the label could be set to always be Yellow and have a dashed linetype and the annotation could be two or three other colors. Once you set these properties inside the label style, you cannot apply a VPORT override to that part of the label. You can see how this could become a real difficult situation to deal with quite easily when looking at using a VPORT override.

So the first question you will need to answer when looking at developing your Labels is, how do we currently prepare our Plans and will implementing a New approach help us or cause more grief and headache than it's worth. From my own personal experience, I have to say that once you have made it over the 'Adoption' hurdle, the users seem to prefer the ByStyle approach for a few different reasons.



Some of these include:

- I (the CAD Tech) no longer have to be overly cautious about making sure things are drawn or labeled on the correct layer (That one alone can save hours when it comes to plan checks!)
- I no longer have to remember what scale my plans are going to be plotted at and calculate the text height to match the Plot Scale – even when the planset needs to change from a 1"=50' to 1"=40'
- I no longer have to worry about making sure I have the correct linetype or color settings for my linework or labels.
- I don't have to search through our entire symbol library to find the correct symbol and if the standards change (and THAT never happens!) I make the change in one location instead of digging through possibly hundreds of sheets to find where the old symbols are and replace them manually or by using Lisp or VBA.

### Layer Settings

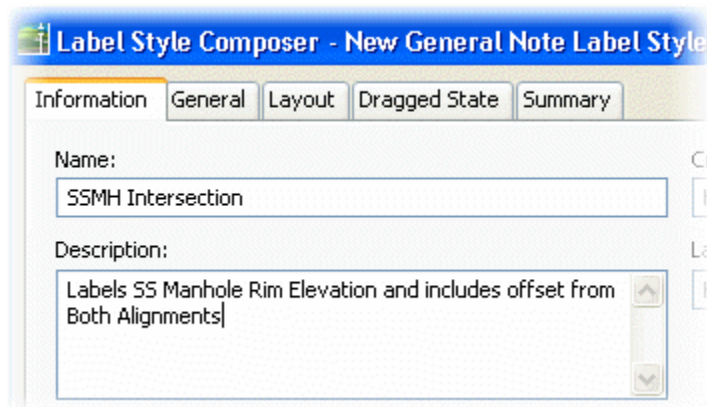
Now that you know you can control the layer settings for different components of the label inside the label styles, how do you want to approach implementing your standards? By Layer Settings, I am not just talking about the Layer Name, but also the color, style (Font) and linetype. Given the time, you can create a set of styles that can do about 90 to 95% of what you used to do manually, automatically!

So to begin this segment of the discussion, we will look at using the ByStyle approach for all of our Styles. While we go through the process, we will be incorporating our existing Layer and Font Standards into our Styles. Since we do much of our work with outside consultants and like to make the data exchange easy in both directions, we have been in the habit (and a good one in my own opinion!) of using ByLayer settings for everything!

ByStyle will throw a bit of a twist into this approach since you can define a component of a Style as ByLayer and then another component with Hard Coded settings (all in the same Style). This is one item that you will really need to look at in depth when you begin to create your own Styles. Otherwise, you may send a file to a consultant or client with everything just the way you like it and when they send it back, all of your info will be exploded (so they could make any changes they needed to) and your data will need to be updated or rebuilt.

Depending on which Style you are building, you can set components to different settings. Since the Title of this class concerns Label Styles, we will start with one of the General Note Label Styles.

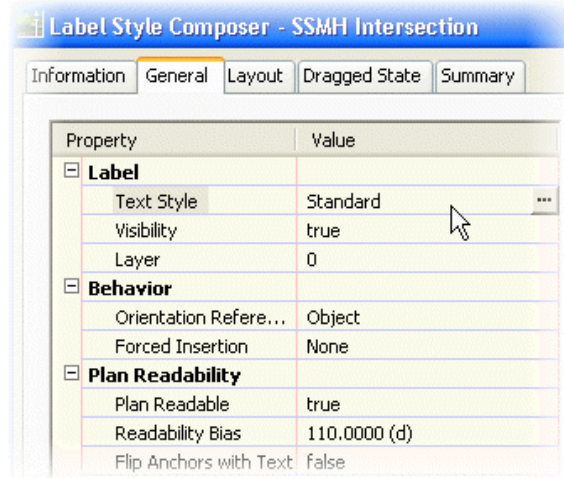
The Template that I am using in the images in this handout is the default ACAD.dwt, which has nothing more than a Standard Style listed under every category. Whenever you begin building your own Styles, you will want to keep them in a DWT file. This way, you will be able to have access to them when you use that template to start a new drawing (or as a base when you insert a file from outside the company). In Our General Note Label, I want to include a couple different Reference Text components. We will be building a Sanitary Sewer Callout that will include a Rim elevation, and two Station callouts. This Label style would be used for a Junction Manhole located near an intersection, and we want to label the Station and Offset from each alignment along with The Rim Elevation. We will set our Color for the Main Alignment annotation to Green and the intersecting alignment to Red just so we know which is which, And as an added color for the Rim Elevation we will set it to blue. I am using the General Note as an example, if you were to actually build this Label Style, you would want to use a Pipe Network Style to pull the manhole information in and have it automatically update. General Note Label Styles do not always automatically update (as of 2008 - SP1). OK on to the Style Editor. Open the Settings tab in Prospector and then click on the + sign next to General, then Right Click on Note and select New. This will open the Styles Editor so you will fill in the name of your new style and a description telling other users what your new style will do.



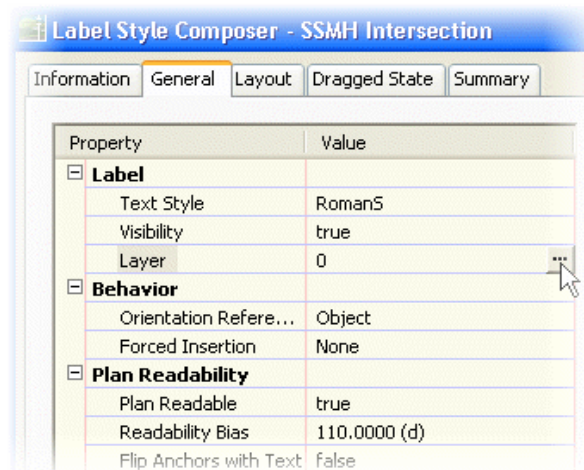
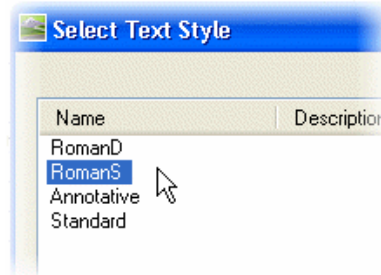
Now, select the General Tab and this is where we will define the Text Font to be used, the Layer to place it on, if and when the label should automatically rotate in a viewport, and what will determine when it rotates (if this option is enabled). First thing we want to do is set our text Font. The reason I am referring to the text 'style' as Font is because your Text Height is determined in the Label Style and your Viewport Scale. This can be confusing to LDT users who have been taught that the Text Style is based on height.

OK, to set our Text Font, we will click in the area next to Text Style where it says Standard and you will see three ellipses show up, click on these and the Text Style Selection box will open listing all the Existing Text Styles defined in your current drawing (or DWT in this case). Select the Font or Style you want to use (I have defined two Text 'styles' based on the Font used, RomanS and RomanD and the two default styles that are automatically created when you open a blank drawing. I use RomanS for all of my notes and Labels but you can create any Text Style

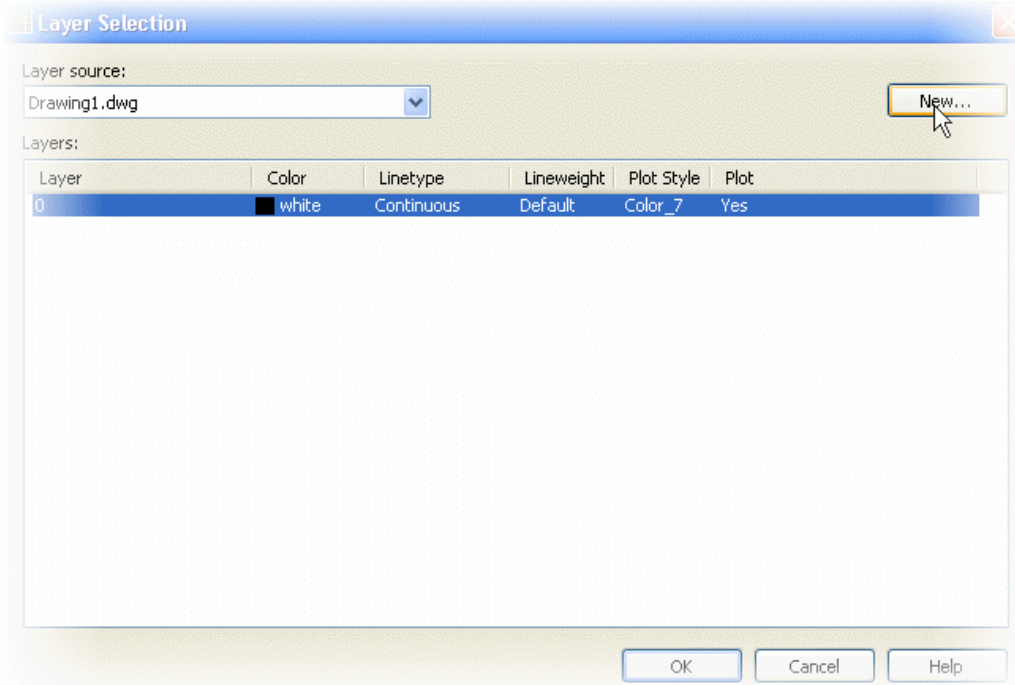
you want and it will show up in this dialog, as long as you create them BEFORE you open the editor.



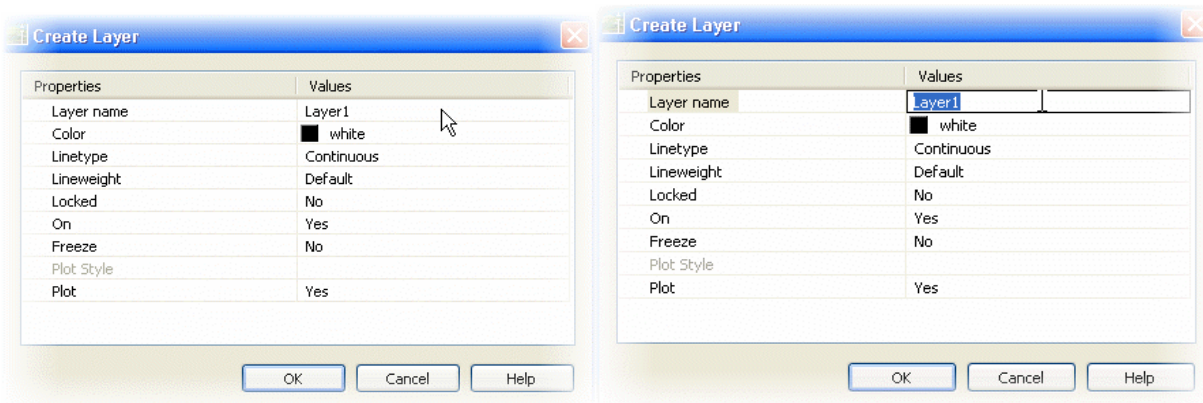
So, I will select the RomanS Style in the selection box, change my Layer that I want my label to be created on to C-ANNO-SSMH and set my Layer color to CYAN. First, I need to create the new layer by clicking on the ellipses to open the Layer Selection dialog where it is now showing the default layer 0.



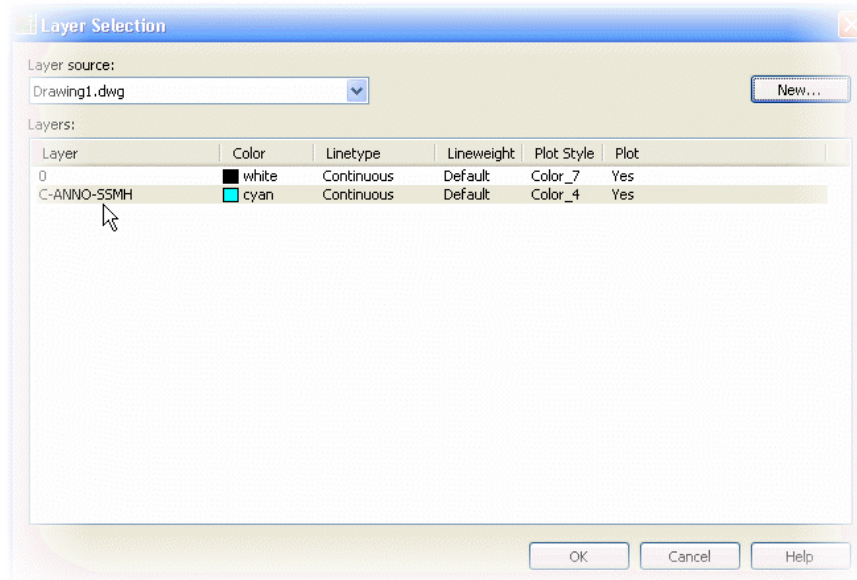
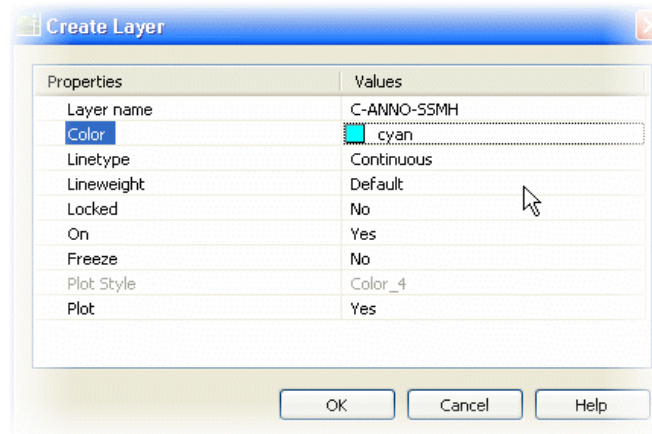
This will open the Layer Selection Dialog where I have only got one choice Layer 0! So, I click on the New... button in the top right corner and I am greeted by a smaller Create Layer dialog.



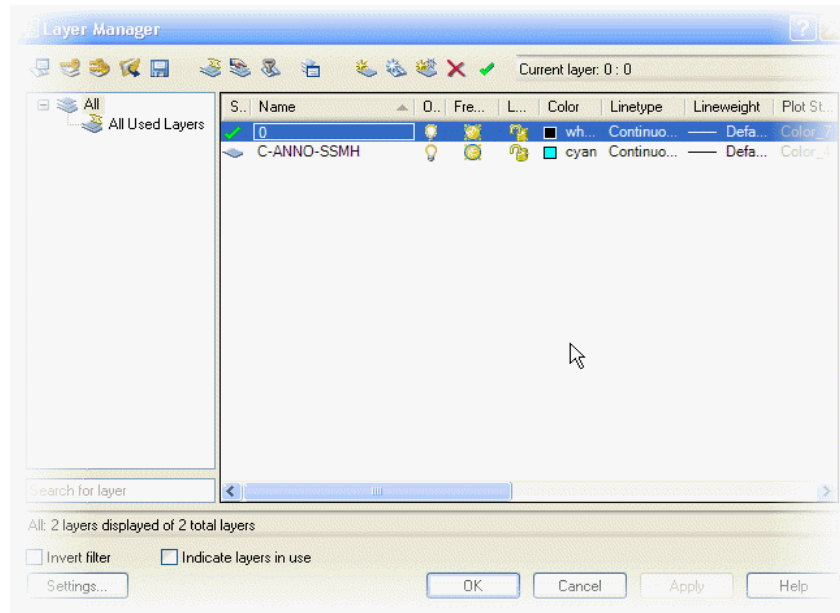
Since I don't want my Label to be created on Layer1, I select the box that currently says Layer1 and Type in my new Layer Name



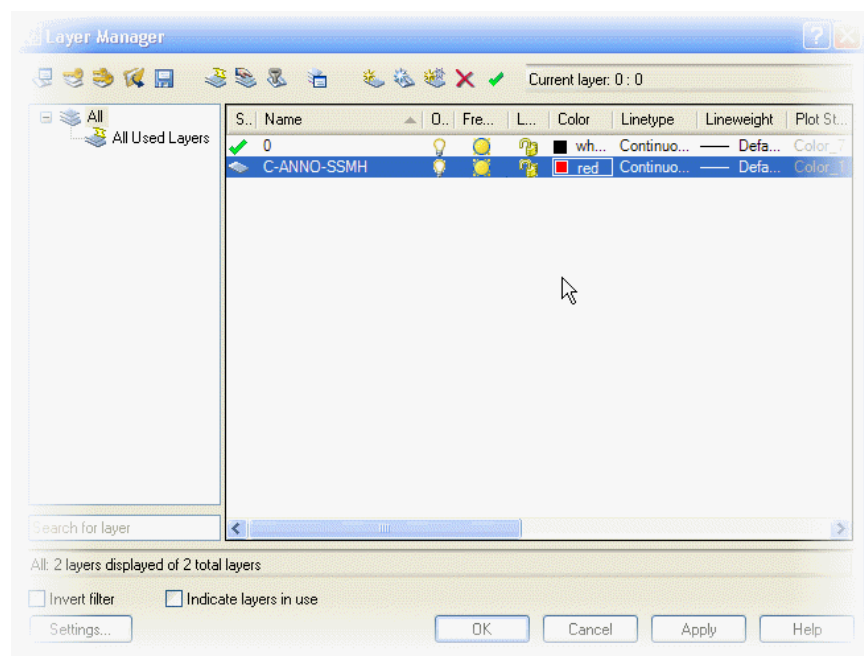
I then change the Layer Color from white to CYAN by clicking in the Color box and selecting the color from the color chart, the rest of the settings are additional layer settings available in the Layer manager dialog such as Linetype, Locked, ON/OFF Freeze/Thaw and Plot/NoPlot (if this drawing had been created using a Named Plot Style DWT, you would also be able to select the Plot Style Name for the label).

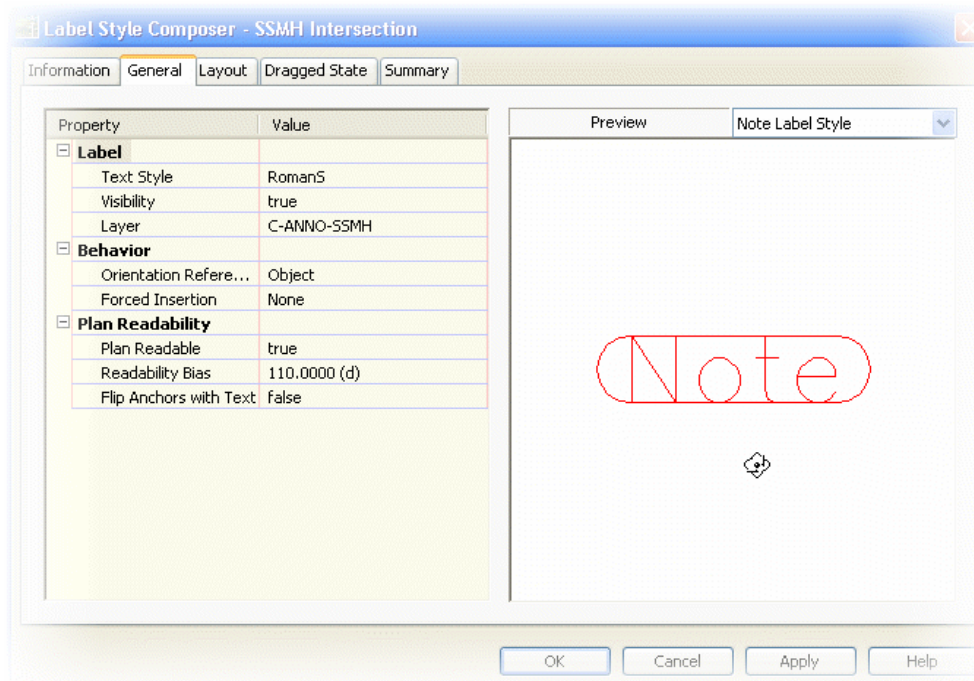


So, I have my Layer settings all ready to go, and my Layer is selected in the Layer Selection Dialog. Click OK to select C-ANNO-SSMH as your Label Layer and then click on the Layout Tab at the top of the Label Style Editor dialog. Now it's on to building my Label components. My Label Style will consist of Four components, the default one that is created when we opened the Editor by selecting New in the Settings tab will need to be modified to suit our purpose, then we will add our Main Alignment Station component (which will include the Offset distance and the side of the offset), our Rim Elevation Component, and our Secondary Alignment Label.

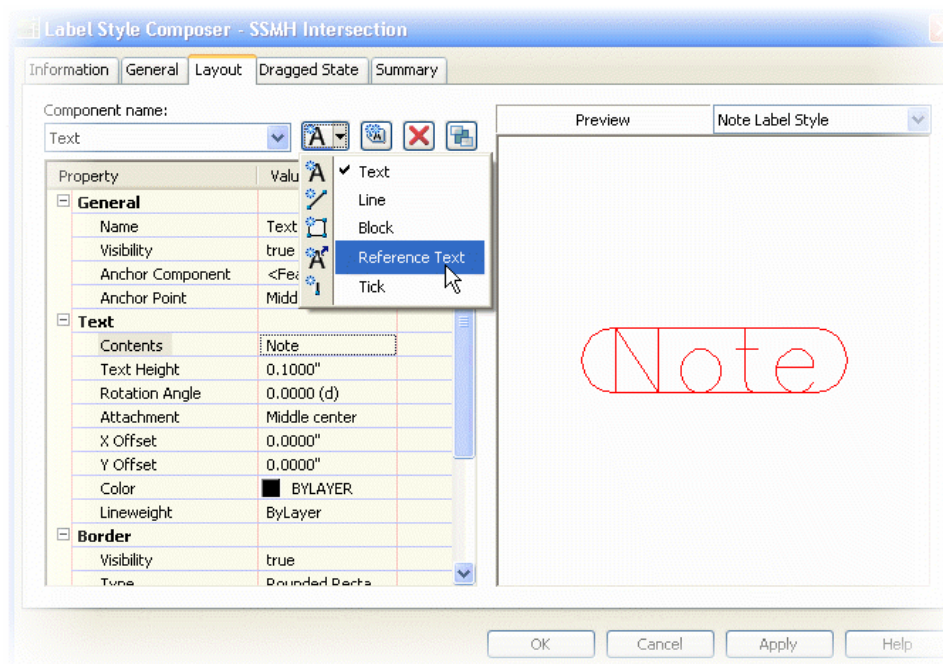


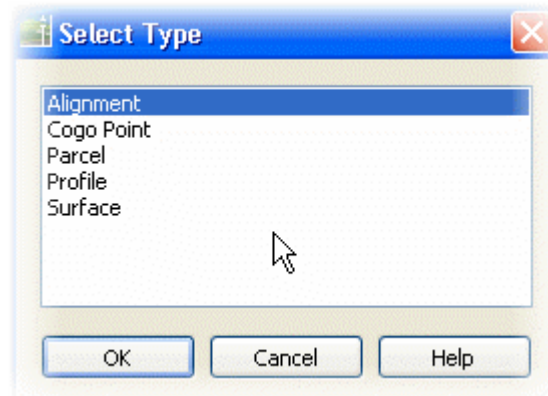
A quick check of our Layer Manager Dialog and we see our new layer with the settings we defined. Now, when we look at our Label Style, we see the Note is now Cyan (instead of White/Black as before) but it still has that pill shape border around it. I set the color to CYAN to show you how the Style Layer creation dialog will define your layer settings and then unless you define an override in the editor, your label components will take on the settings of the defined layer. Since we want our Note to be Red in color, we can change the Layer Color in the Layer manager to Red and our note will change to Red as shown



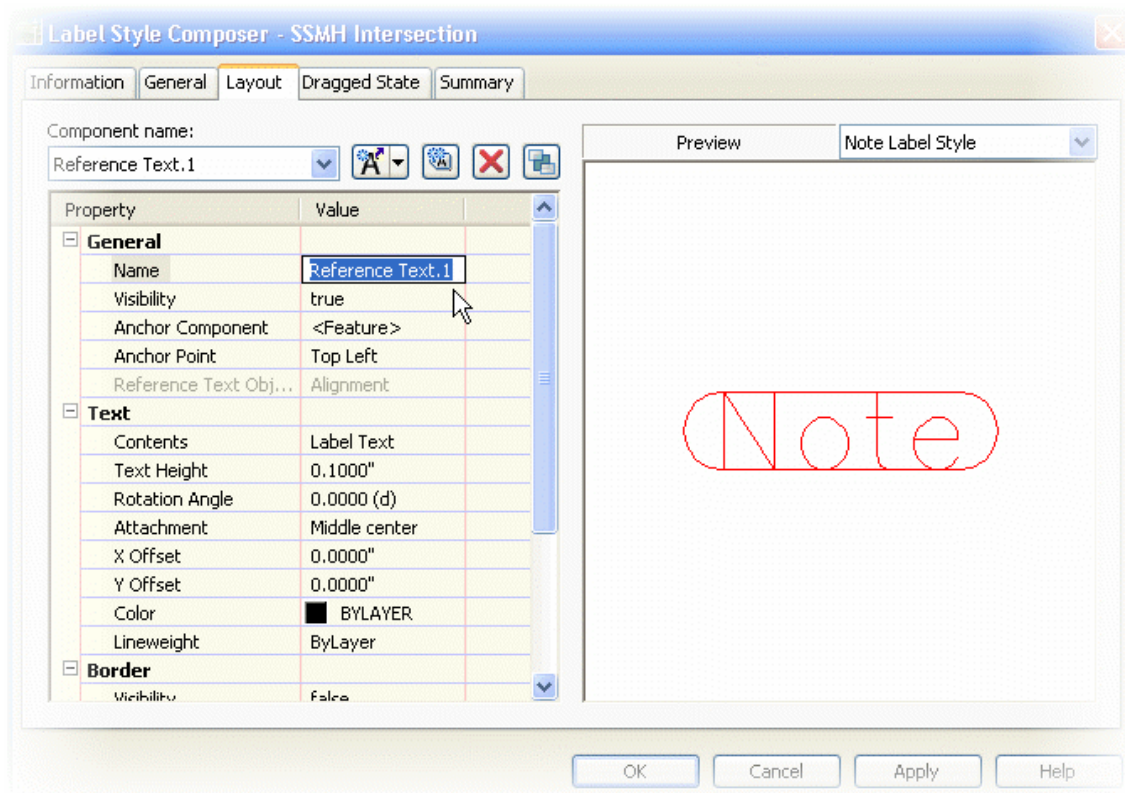


Now we are finally ready to begin creating our Label! We want to leave the existing text just like it is for the time being, we will come back and change it once we have a few things set up using the text as our starting point. So, click on then black down arrow next to the A icon to open the selections available, we want to select Reference Text from the list. When the dialog opens asking us what Type, select Alignment and click OK.

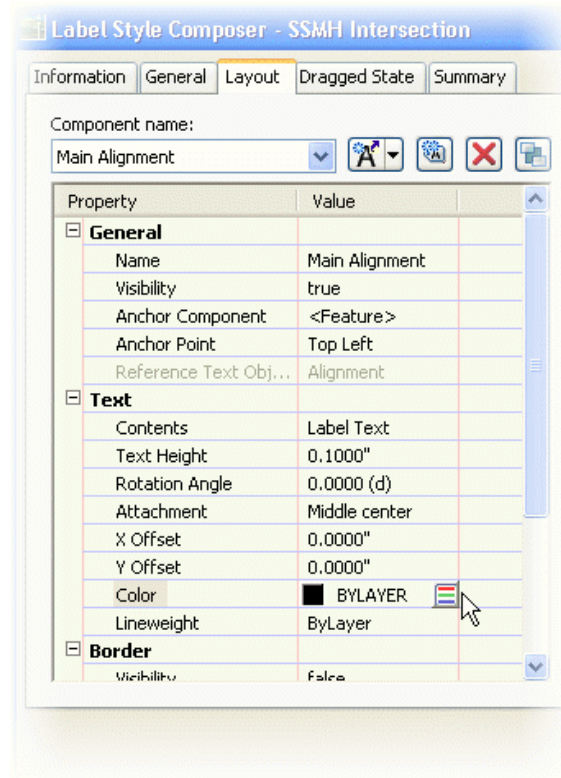




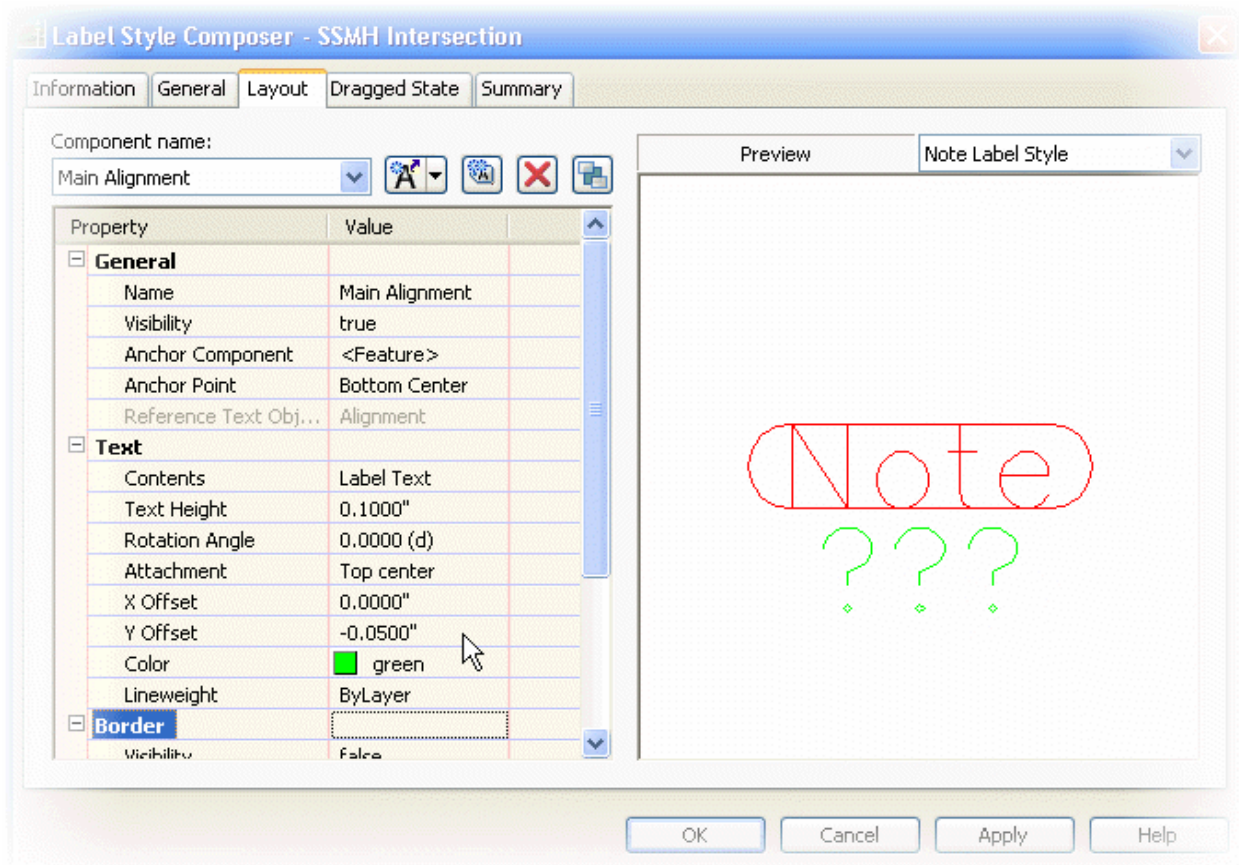
This will create a New Label component that will be used to define the pointer to our Main Alignment. In the Name Field we want to change Reference Text.1 to Main Alignment.



Then, we wanted to make our Main alignment Annotation Green so change the color for the reference Text Component to Green by clicking in the Color box and selecting Green from the dialog.



You will notice three ??? in green overlapping our Note text so we need to adjust where the two are associated with each other by changing the anchor point (in the General area at the top) to Bottom Center and the Attachment in the Text area to Top Center.

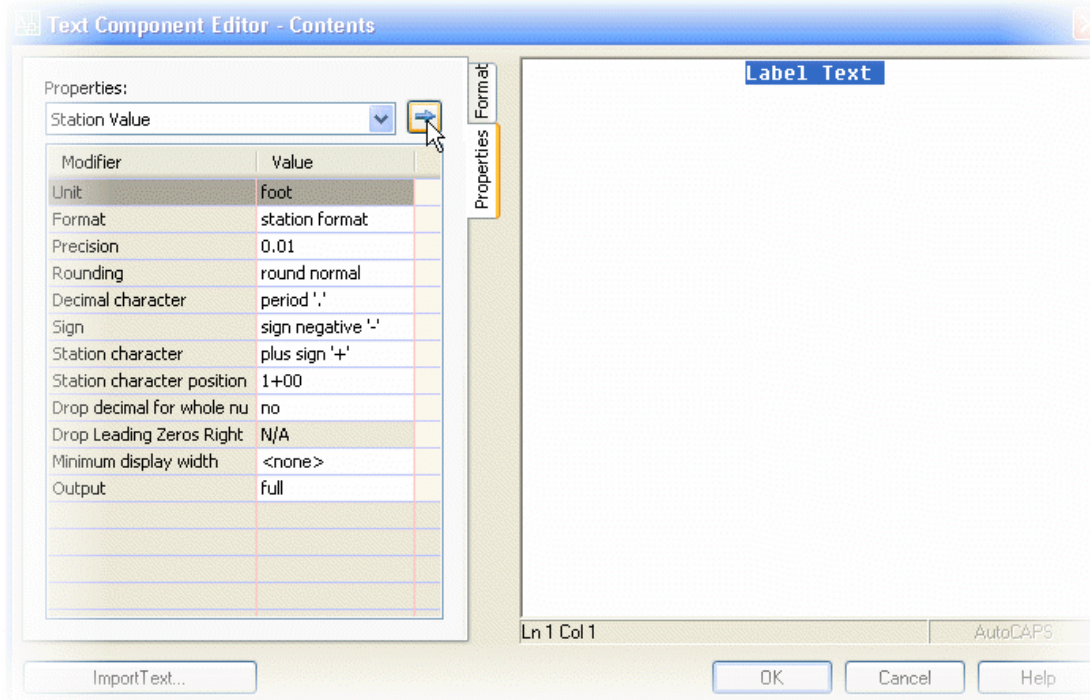
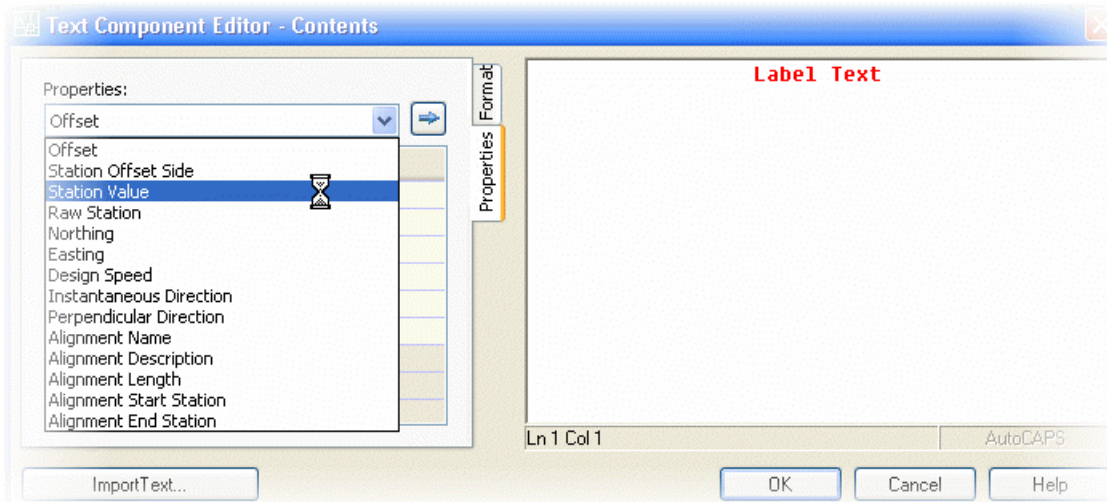


Since our text size is set to .1000" we can start with a -.0500" Y offset (this can and will be modified later to adjust the spacing to match the rest of the label). Now our ??? is located below our NOTE text. Let's define what our Main Alignment component will say. Click in the area where it says Label Text next to Contents in the Text area and open the editor.

We want our Label to read like this below

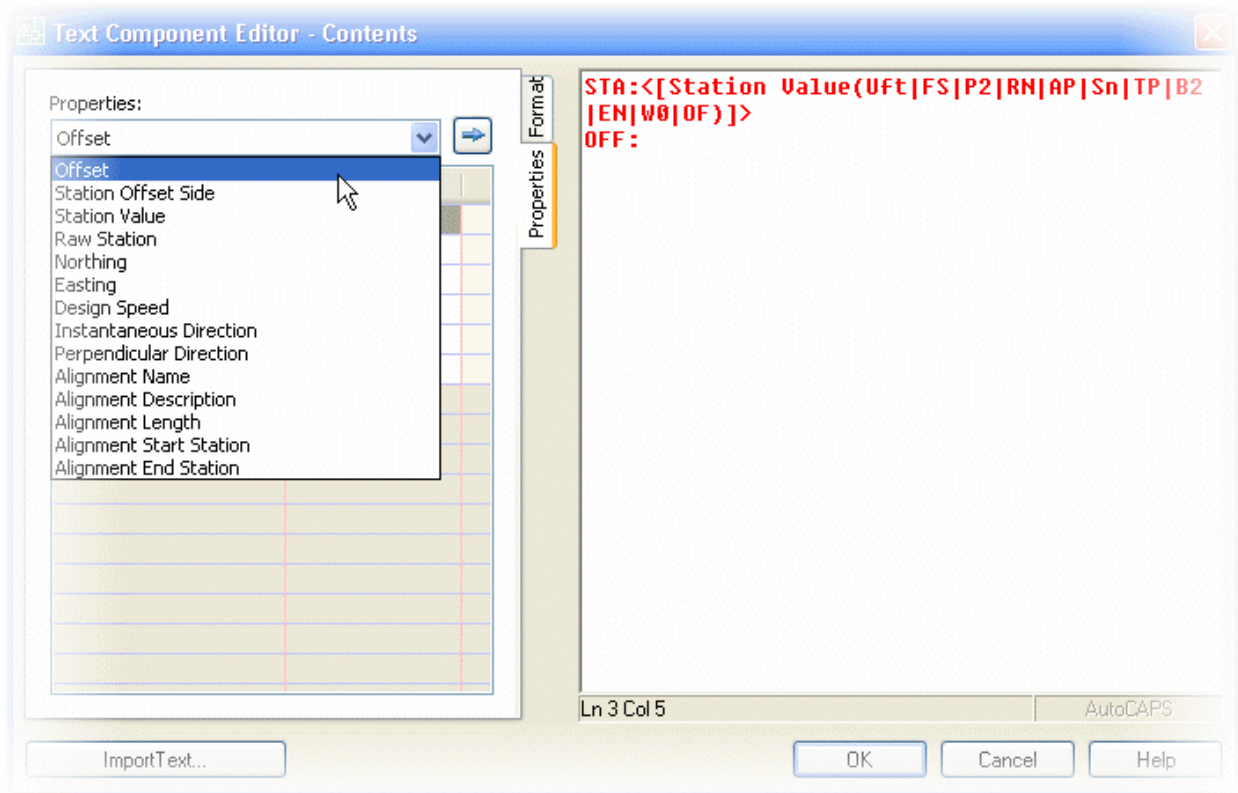
```
SSMH RIM EL:XX.XX
STA:XX+XX.XX
OFF:20.25' LT
STA:XX+XX.XX
OFF:5.25' RT
```

So the first thing we need to add is our Main Alignment Station and Offset. In the editor, select Station Value from the dropdown. Check the settings available in the list below the dropdown to make sure the format you want will be applied to the option.

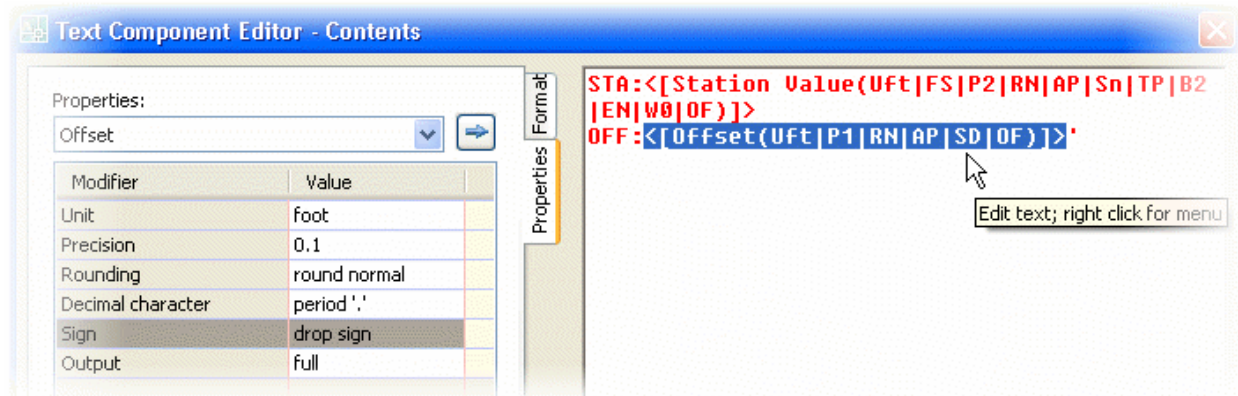


Once you have those settings ready, click on the Blue arrow to push the contents into the editor window. Now, we need to add our Text strings in the editor. Place the cursor in front of the first < and type in STA:

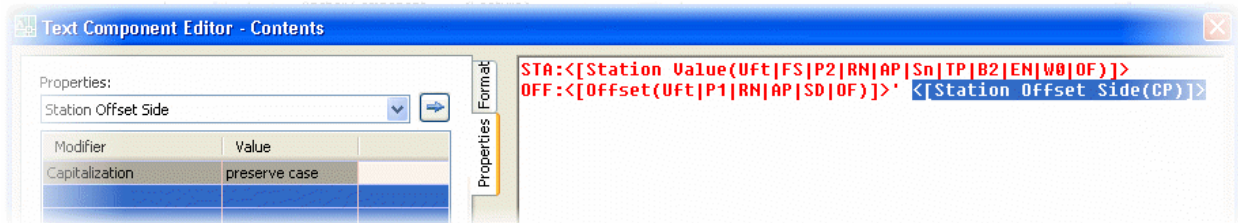
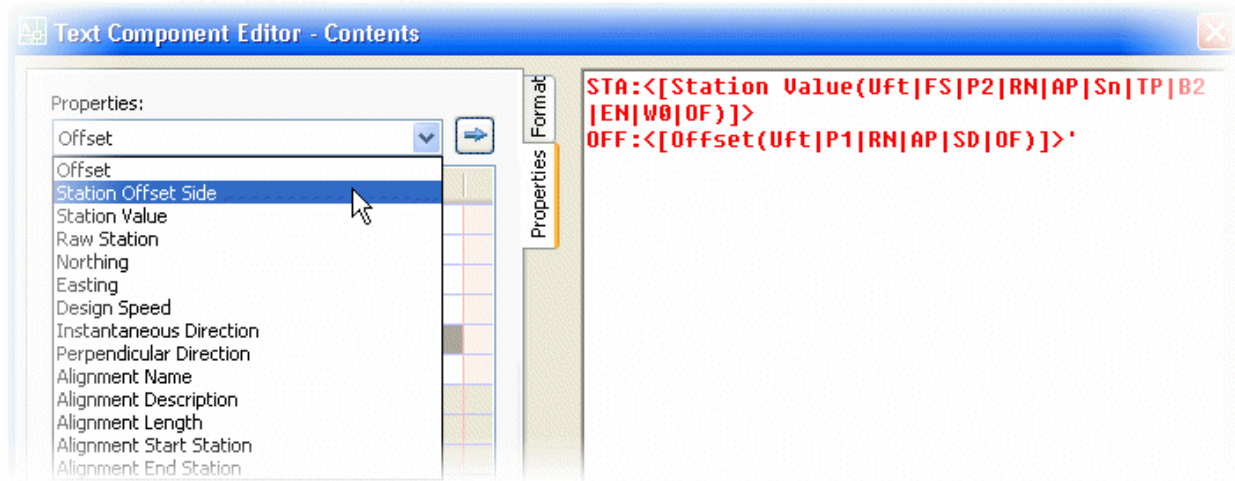
Then, click on the area behind the > and hit enter, make sure that the text inside the two <> is NOT highlighted when you do this or you will delete the information. Then type in OFF: and go back to the Properties dropdown and select Offset.



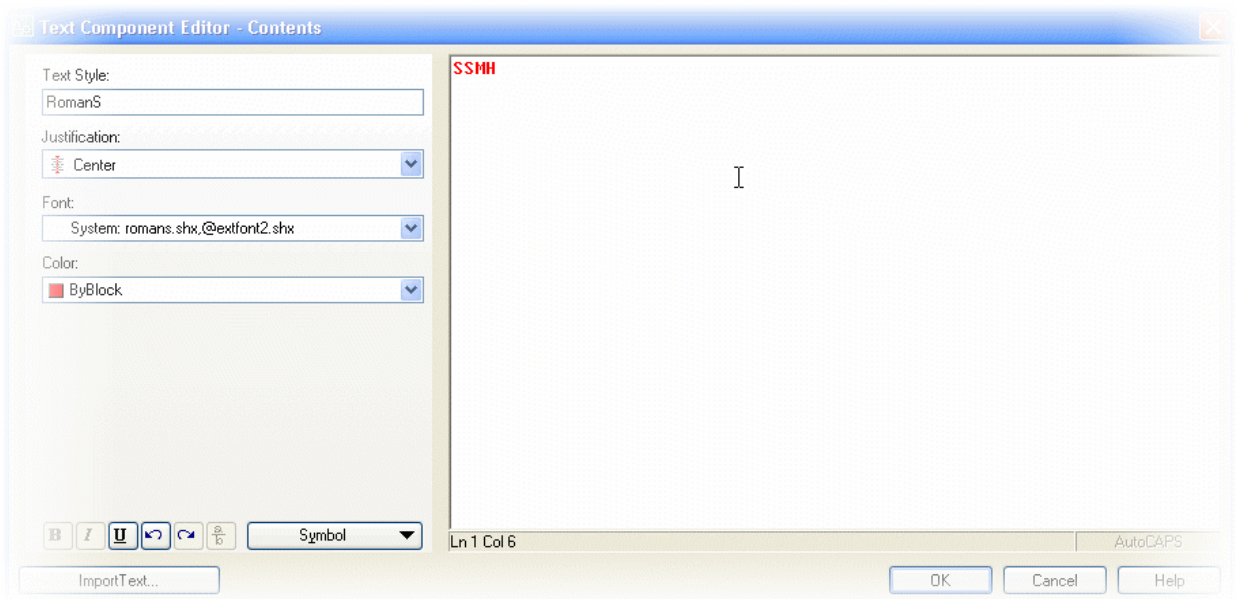
Check your settings (you will want to change the Sign section to Drop Sign unless you want your Left offsets to be a negative number). Once you have your settings the way you want them, push the component settings into the editor using the Blue arrow.

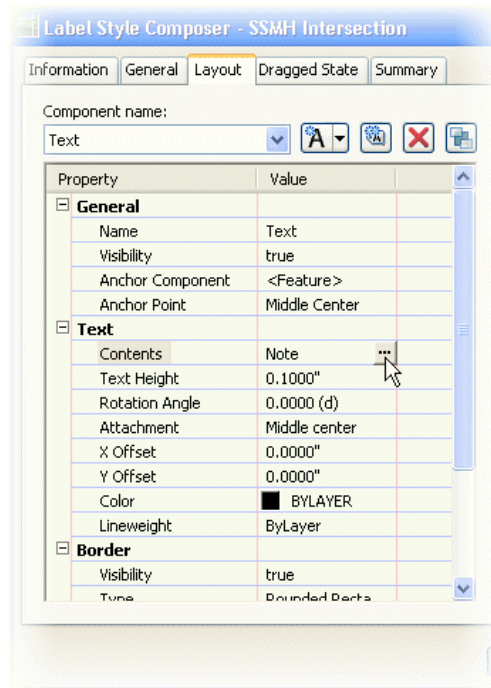


Now add your ' mark a space and then select the Station Offset Side from the properties and push it into the editor

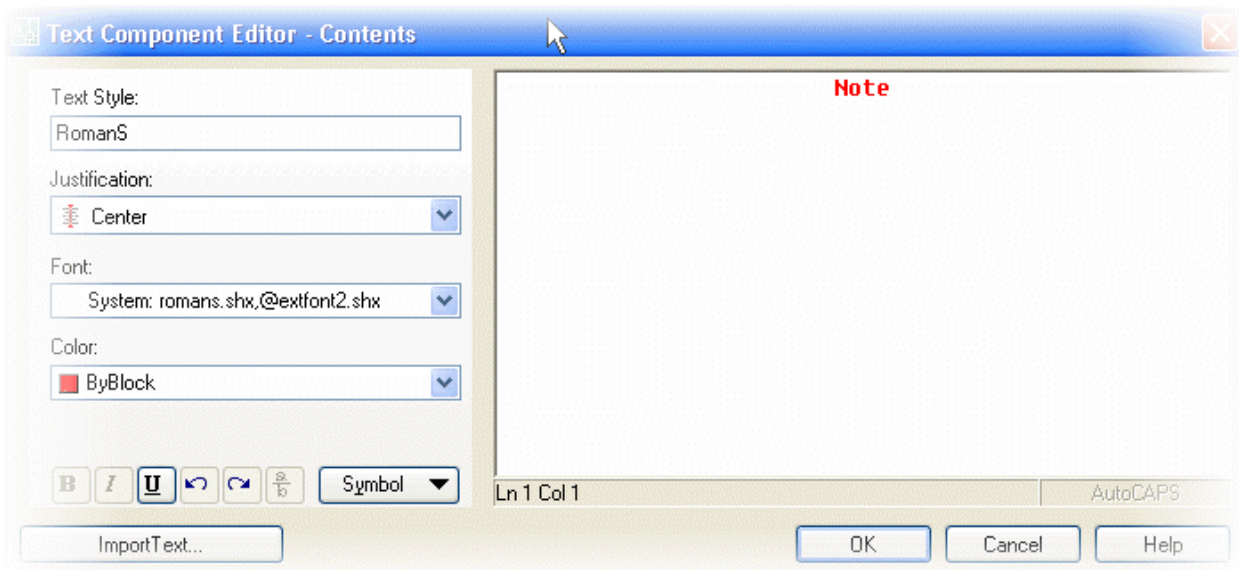


Now that we have some information to work with, we will want to change the text where it currently says NOTE and we want it to read SSMH, so we click on the Content area and then select the ellipses to open the text editor.

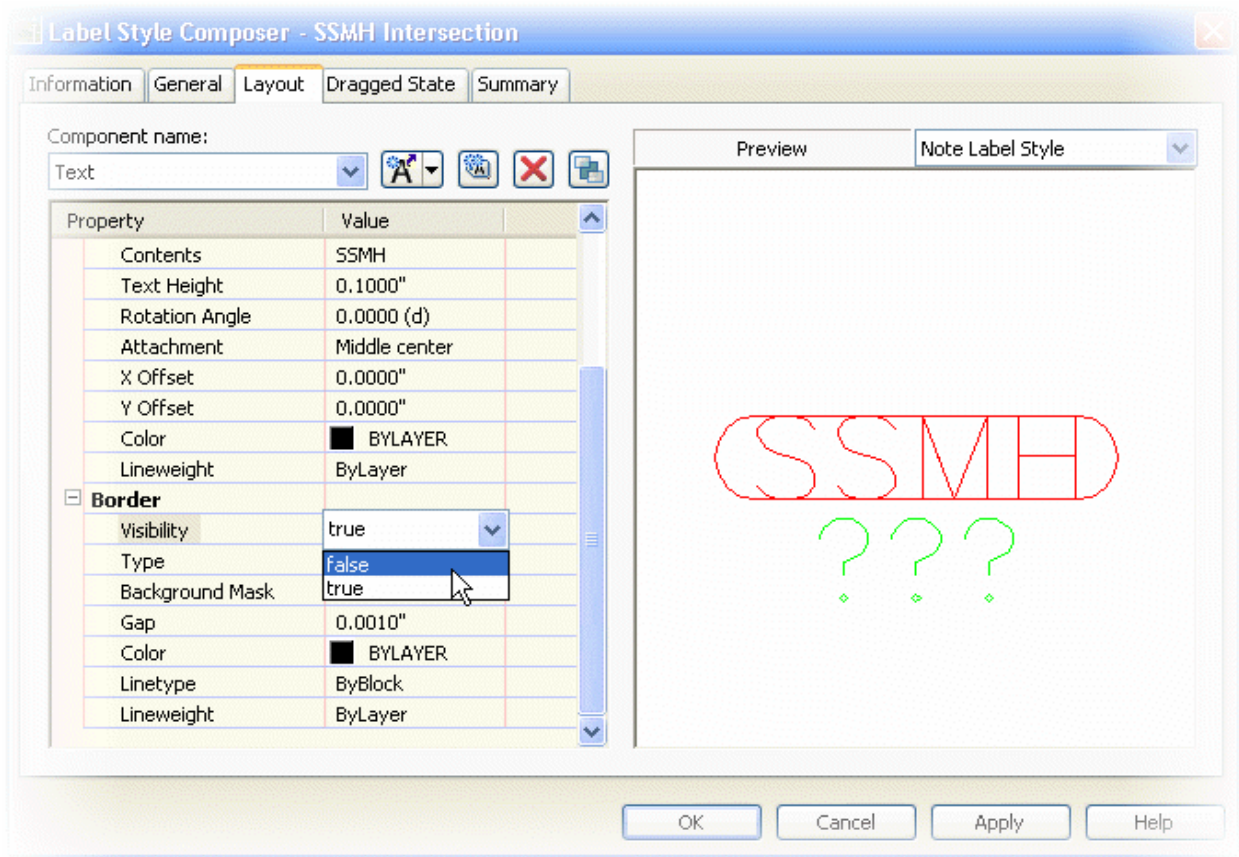




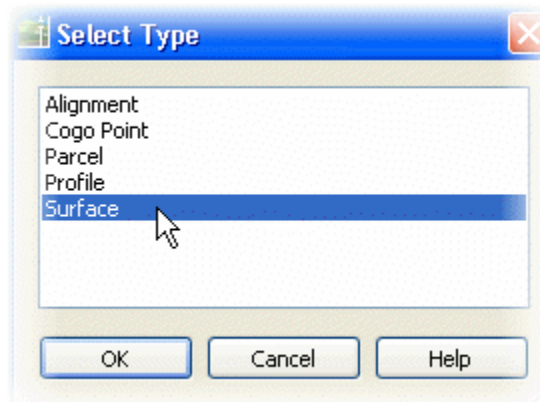
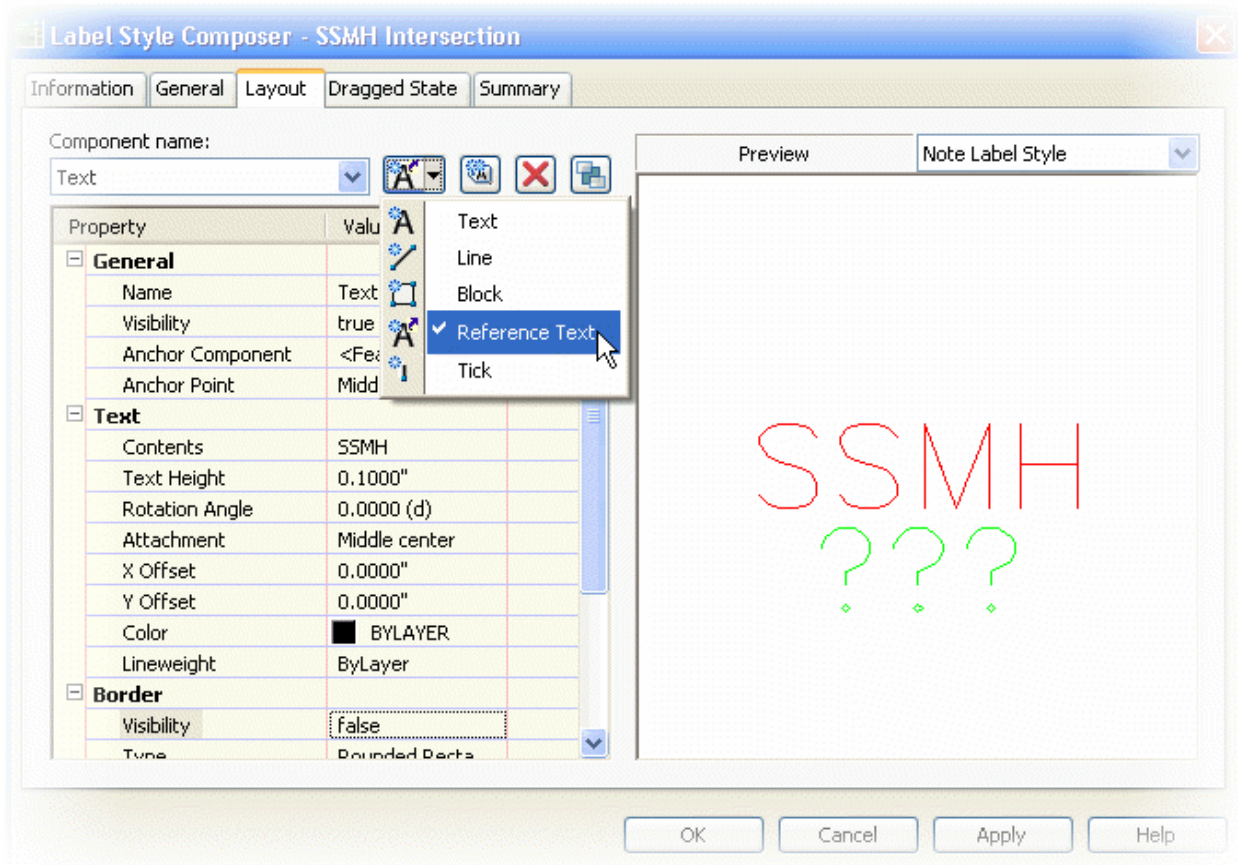
Highlight all of the text in the editor by click and drag or triple clicking and then type in SSMH. Click OK to dismiss the editor. Our boundary shape is still there and we will get rid of that next.



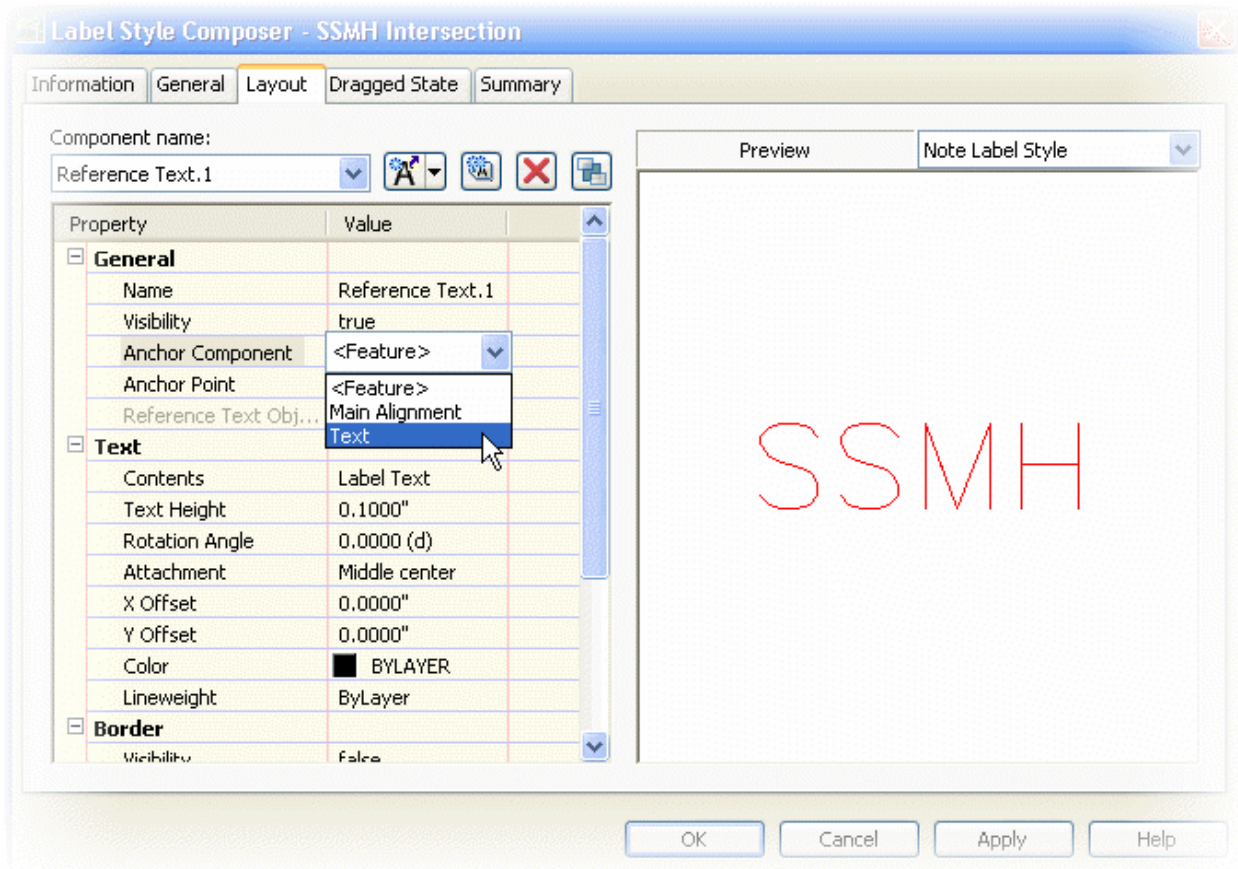
We can quickly dispose of that by selecting False in the Border settings so we should now only see the word NOTE in the preview screen on the right side of the editor dialog.



Now we want to add our next piece of Reference Text to our Label. This will be our Rim Elevation. Repeat the steps to add the Reference text by clicking on the Black down arrow next to the A icon and select Reference Text, only this time when the window opens asking us to select a reference object, we are going to select Surface for our Rim elevation.



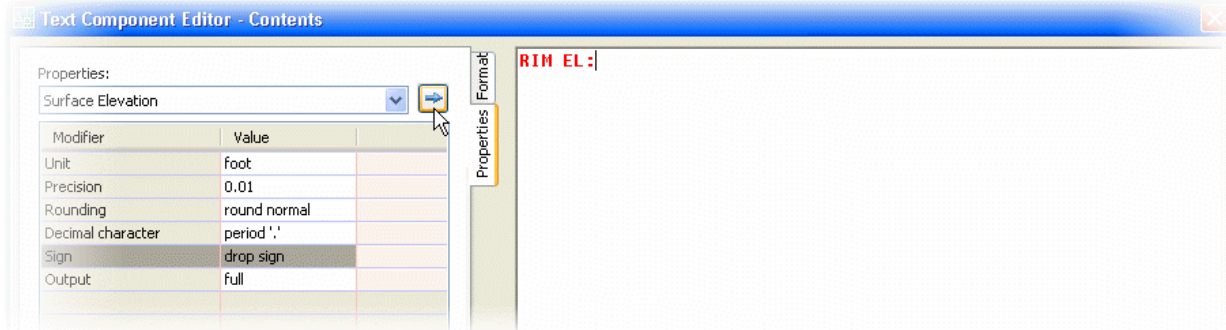
We want to line this up to the right of our SSMH text, so we need to change the Anchor Point and Anchor Component along with our Attachment location.



This reference component will be anchored to the Text component, and the Anchor Point will be Middle Right and the Attachment will be Middle Left.

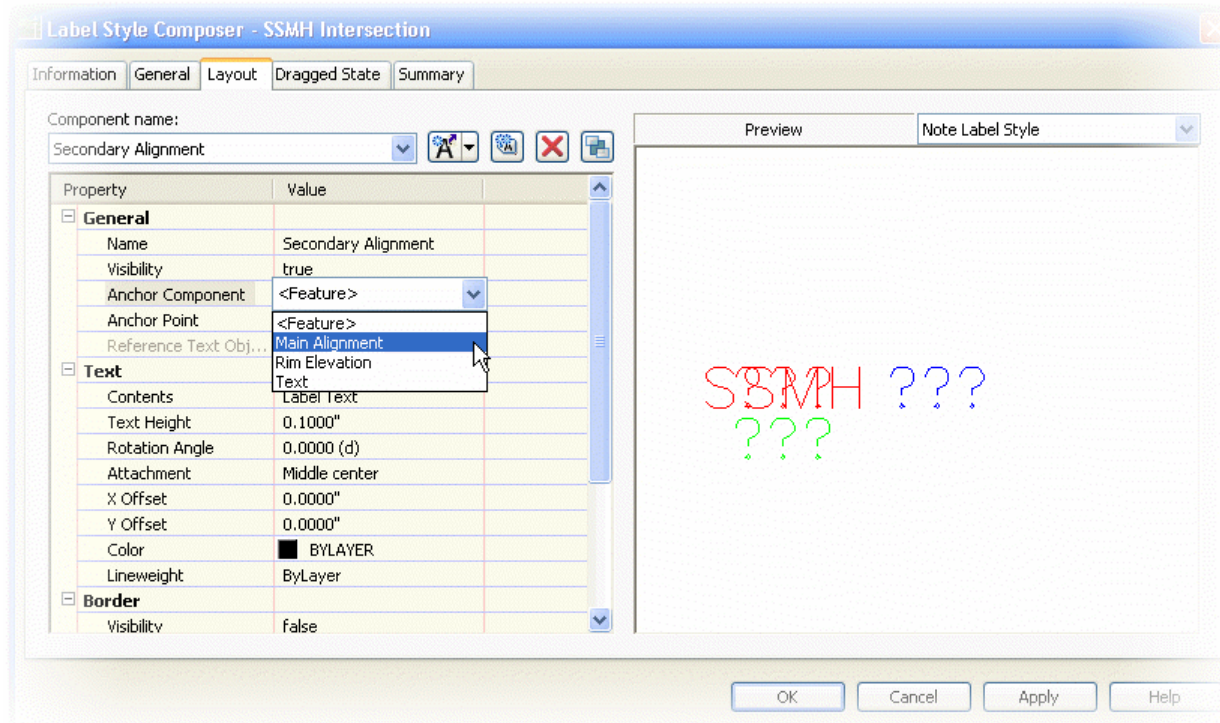


Remember to change the Sign setting to drop sign unless you want to possibly see a negative elevation.

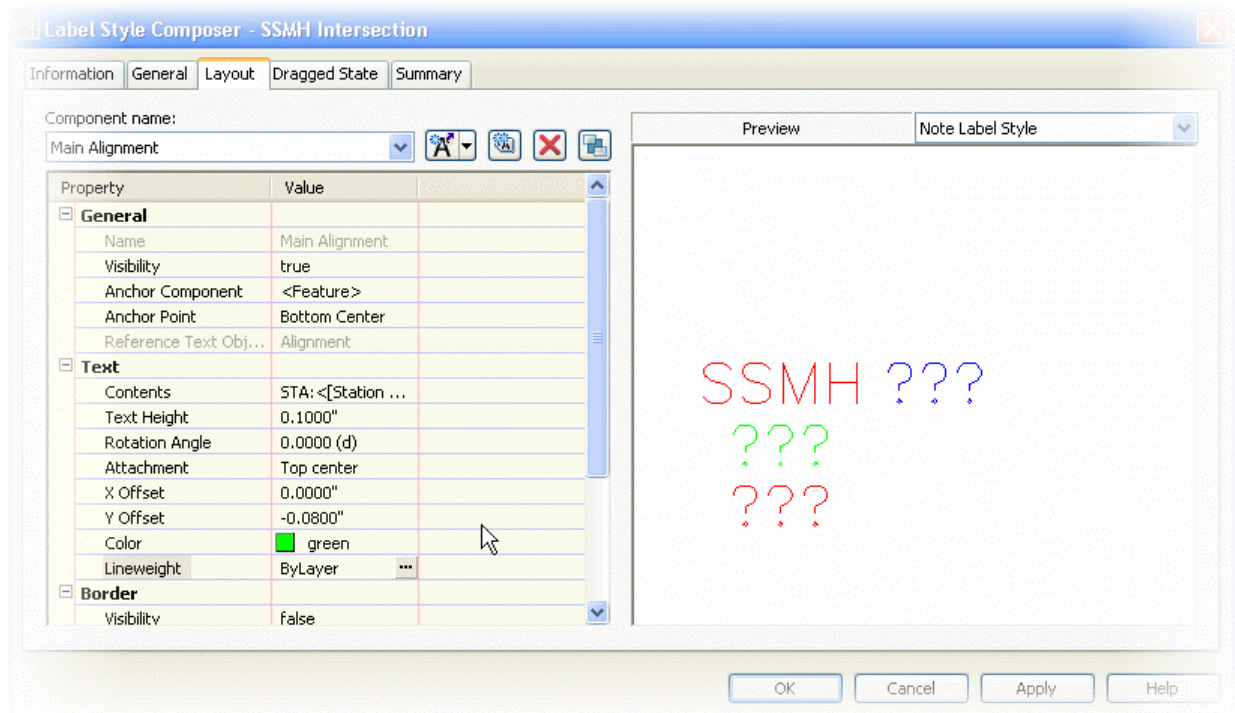


Now, we will set our Rim Elevation Text to Blue by selecting the Color button and selecting Blue from the color chart. Now we can add our Intersecting alignment information. This is done using the same steps and settings as our Main alignment with the following exceptions:

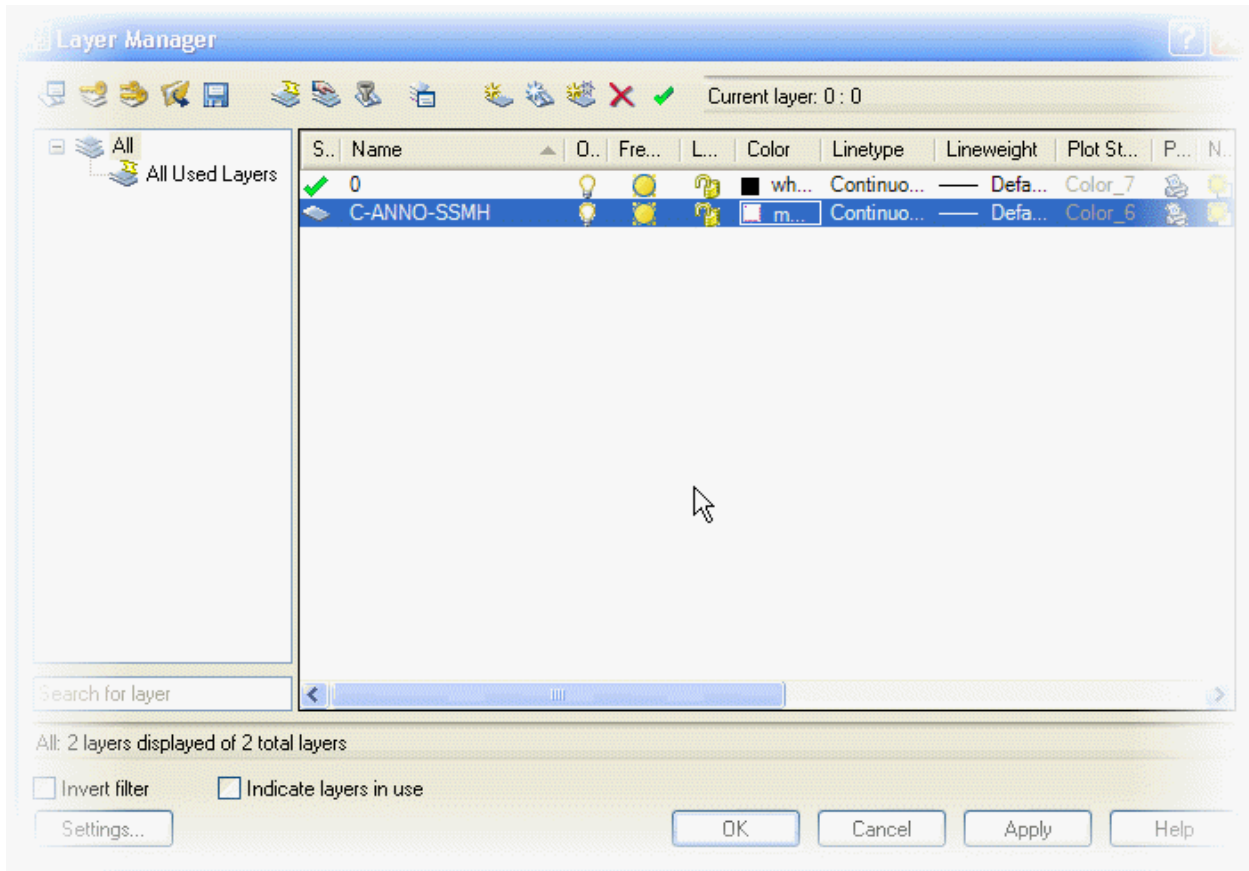
First, we need to set our Main Alignment component as the Anchor Component and set the color for this component to Red.



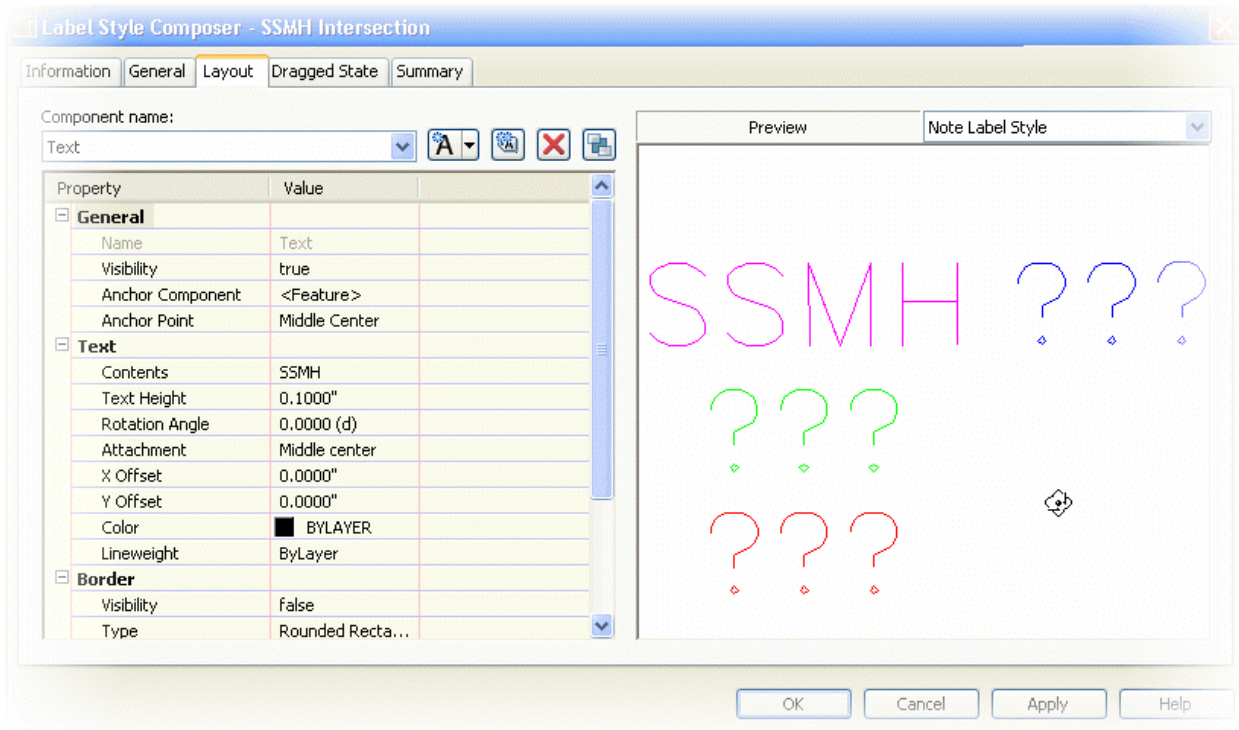
Our end product should look something like this when we are done.



Now to show you the effect of setting the colors in the editor when you change Layer settings. We will open the Layer Manager and change our C-ANNO-SSMH layer to Magenta and then take a look at our Label style to see what happens.



And now we will open the editor to take a look at our Label.



Notice that all the components that we set a color on have remained the color we set but the SSMH text itself changed to match the layer settings? This is an example of where Styles can really trip you up when defining them and applying overrides inside the editor.

## Expressions

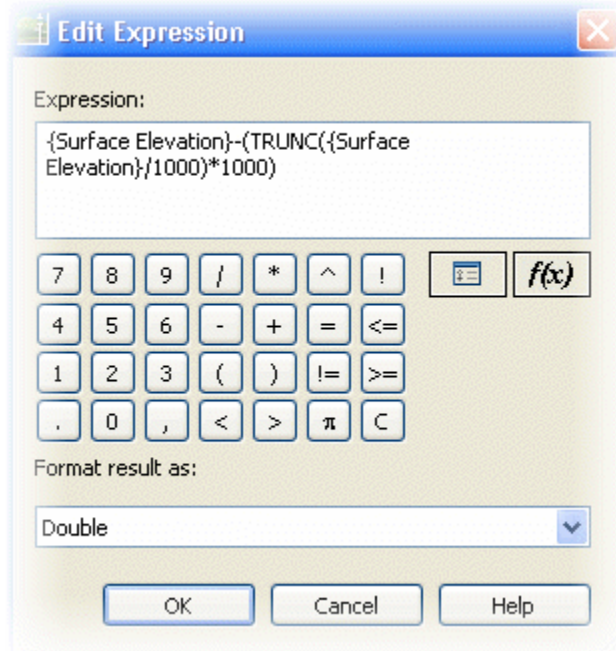
Label Styles can be quite intricate in what type of data is included in them too. You can perform some fairly complex calculations within your label automatically through the use of Expressions.

For this demonstration, we will just focus on trimming the first two numbers off our Rim elevation in the Label we just created.

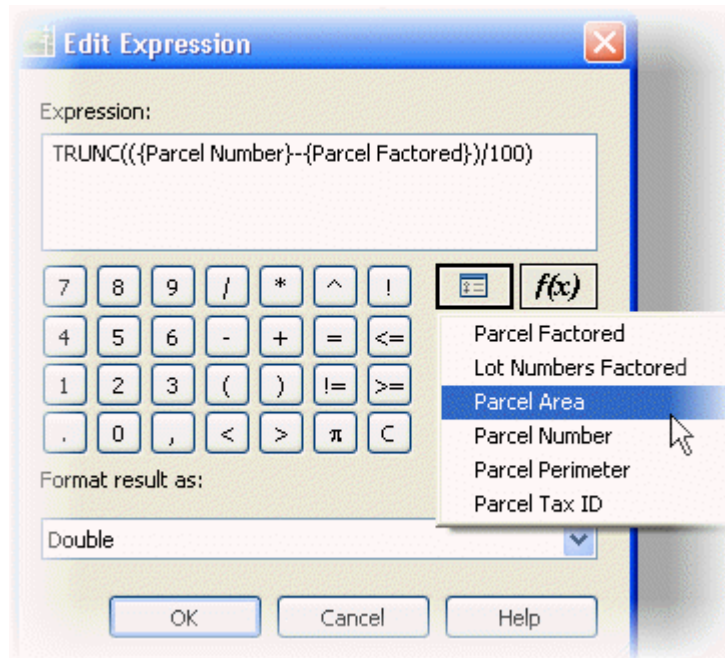
Expressions will ONLY work on the group of Styles they are associated with, so if you want to define an expression to trim a surface elevation label, you would define the expression under Surface Label Styles. Since we created our Style as a General Note, we would need to define our Expression under General Notes as well. But there is no option for expressions under General (yet!).

To define an expression you simply select the category of Style you want to use the expression on, open the editor and build your expression. Once you have the expression completed, it will show up as one of the Properties in the dropdown for your Style in the Style Editor.

You can even call other expressions as part of a new expression. Below are a couple examples of an expression. The first one will strip off the first two numbers of an elevation (over 1000 feet)



And the second one is an example of one expression calling a previously defined expression as a component of it, using the data from that expression as a value in it.





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