

# **FDOTSS4 SURVEY LABELS & POINT FEATURE ROTATION MACROS**

Bentley OpenRoads Technology



# IN THIS WEBINAR

- Survey Settings in the fdotseed3d.dgn
- SURVRD.dgn File Initial Setup
- VBA Project Manager
- FDOT\_Survey\_Objects.mvba (Macro Project)



# IN THIS WEBINAR

- Load and Unload FDOT\_Survey\_Objects.mvba
- Shortcut to Load and Unload Survey Macros
- Survey Objects Macros and What They Do
- The Macro calls



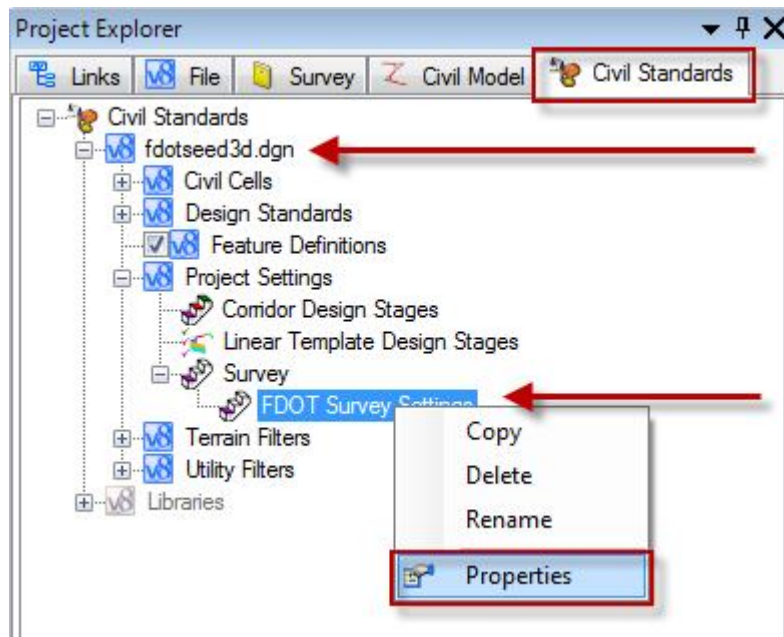
# IN THIS WEBINAR

- Adding Macro Calls to the Survey Database
- The Catch 22
- Catch 22 Solved
- Macro Generated Text Meet QC Standards



# fdotseed3d Survey Settings

## PROJECT EXPLORER



## FDOT SURVEY SETTINGS

- In the Civil Standards tab of the Project Explorer under fdotseed3d.dgn choose...
- Project Settings
  - Survey
    - ✓ FDOT Survey Settings
      - Right Click and show Properties

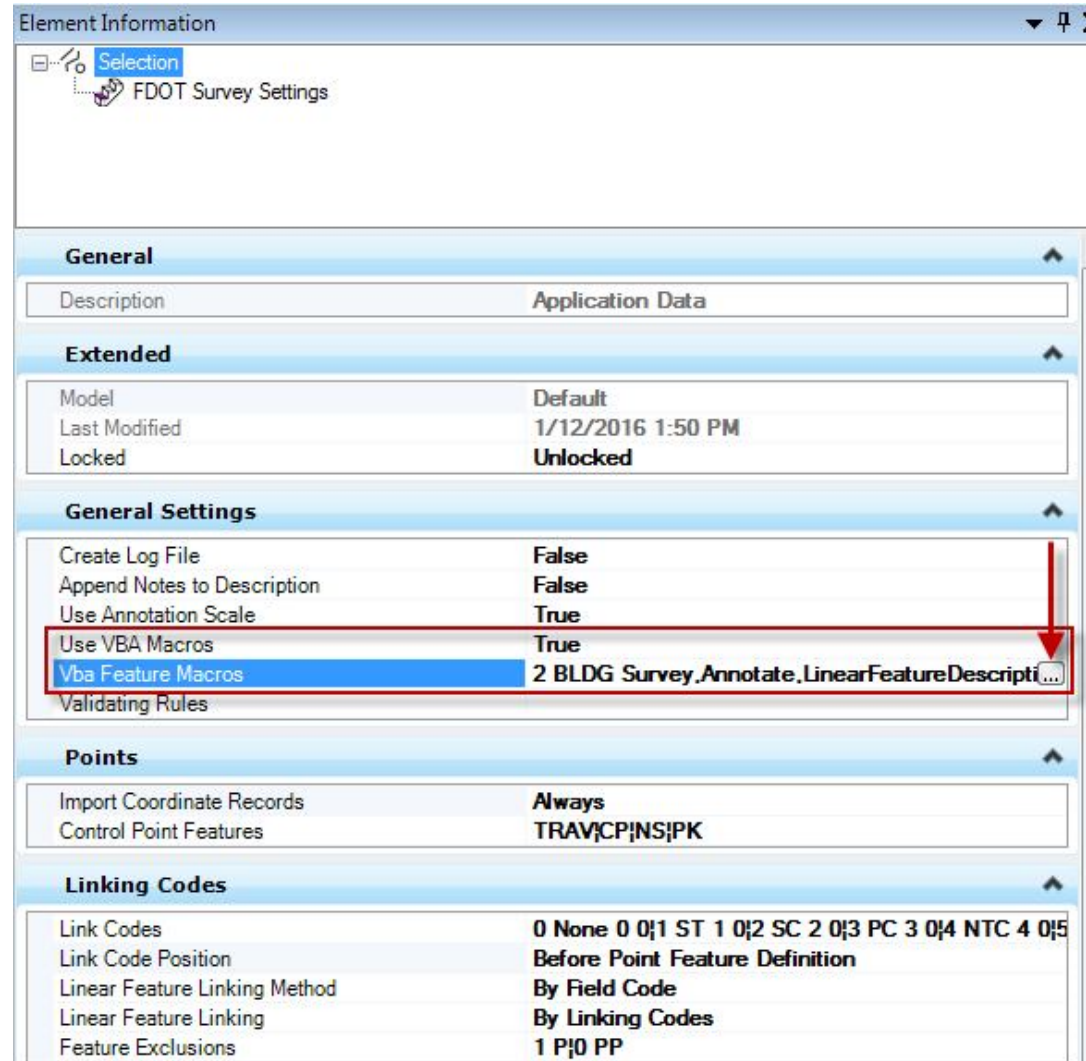


## fdotseed3d Survey Settings

The Element Information (Properties) dialogue box will show the current survey settings.

To use VBA Macros with Point Features and Linear Features, the "Use VBA Macros" must be set to "True".

To view/edit point and linear macro calls for a limited selection of features, select the ellipsis at the end of the "Vba Feature Macros" line.



Element Information

Selection  
FDOT Survey Settings

General	
Description	Application Data

Extended	
Model	Default
Last Modified	1/12/2016 1:50 PM
Locked	Unlocked

General Settings	
Create Log File	False
Append Notes to Description	False
Use Annotation Scale	True
Use VBA Macros	True
Vba Feature Macros	2 BLDG Survey,Annotate,LinearFeatureDescripti...
Validating Rules	

Points	
Import Coordinate Records	Always
Control Point Features	TRAV CP NS PK

Linking Codes	
Link Codes	0 None 0 0;1 ST 1 0;2 SC 2 0;3 PC 3 0;4 NTC 4 0;5
Link Code Position	Before Point Feature Definition
Linear Feature Linking Method	By Field Code
Linear Feature Linking	By Linking Codes
Feature Exclusions	1 P;0 PP



## fdotseed3d Survey Settings

The VBA Feature Macros dialogue box contains sample VBA macro calls. Not all features are represented, only a limited selection for the user to have easy access to the calls.

There are four different types of macro calls included in the fdotseed3d.dgn.

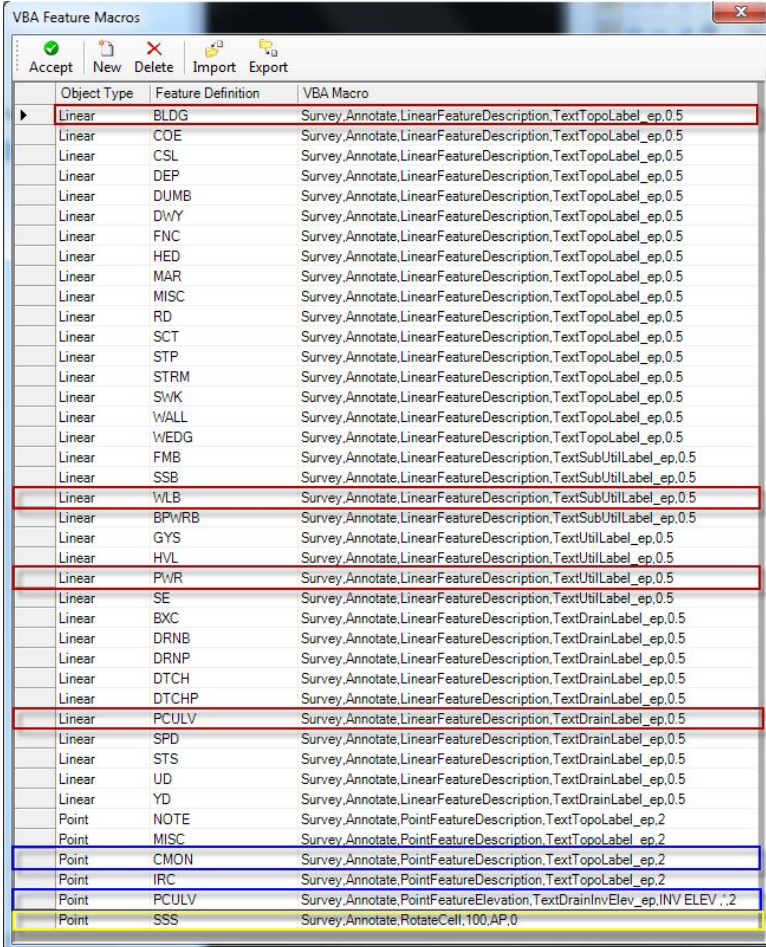
- The ones marked in **RED** are for labeling linear features (chains) with the field description and putting the text on a selected level.
- The calls marked in **BLUE** are for labeling point features either with the field description or the point elevation and putting the text on a selected level.
- The call marked in **YELLOW** is for rotating a point feature perpendicular to a selected linear feature.

Object Type	Feature Definition	VBA Macro
Linear	BLDG	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	COE	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	CSL	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	DEP	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	DUMB	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	DWY	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	FNC	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	HED	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	MAR	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	MISC	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	RD	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	SCT	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	STP	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	STRM	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	SWK	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	WALL	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	WEDG	Survey,Annotate,LinearFeatureDescription,TextTopoLabel_ep,0.5
Linear	FMB	Survey,Annotate,LinearFeatureDescription,TextSubUtilLabel_ep,0.5
Linear	SSB	Survey,Annotate,LinearFeatureDescription,TextSubUtilLabel_ep,0.5
Linear	WLB	Survey,Annotate,LinearFeatureDescription,TextSubUtilLabel_ep,0.5
Linear	BPW/RB	Survey,Annotate,LinearFeatureDescription,TextSubUtilLabel_ep,0.5
Linear	GYS	Survey,Annotate,LinearFeatureDescription,TextUtilLabel_ep,0.5
Linear	HVL	Survey,Annotate,LinearFeatureDescription,TextUtilLabel_ep,0.5
Linear	PWR	Survey,Annotate,LinearFeatureDescription,TextUtilLabel_ep,0.5
Linear	SE	Survey,Annotate,LinearFeatureDescription,TextUtilLabel_ep,0.5
Linear	BXC	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5
Linear	DRNB	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5
Linear	DRNP	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5
Linear	DTCH	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5
Linear	DTCHP	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5
Linear	PCULV	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5
Linear	SPD	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5
Linear	STS	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5
Linear	UD	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5
Linear	YD	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5
Point	NOTE	Survey,Annotate,PointFeatureDescription,TextTopoLabel_ep,2
Point	MISC	Survey,Annotate,PointFeatureDescription,TextTopoLabel_ep,2
Point	CMON	Survey,Annotate,PointFeatureDescription,TextTopoLabel_ep,2
Point	IRC	Survey,Annotate,PointFeatureDescription,TextTopoLabel_ep,2
Point	PCULV	Survey,Annotate,PointFeatureElevation,TextDrainInvElev_ep,INV ELEV , ; 2
Point	SSS	Survey,Annotate,RotateCell,100,AP,0



# fdotseed3d Survey Settings

- When a new file is created with the fdotseed3d.dgn file these survey macro calls will be embedded.
- Additional features can be added or deleted with the New/Delete buttons.
- Also the list can be exported to a text file, edited and reimported using the Import/Export buttons.



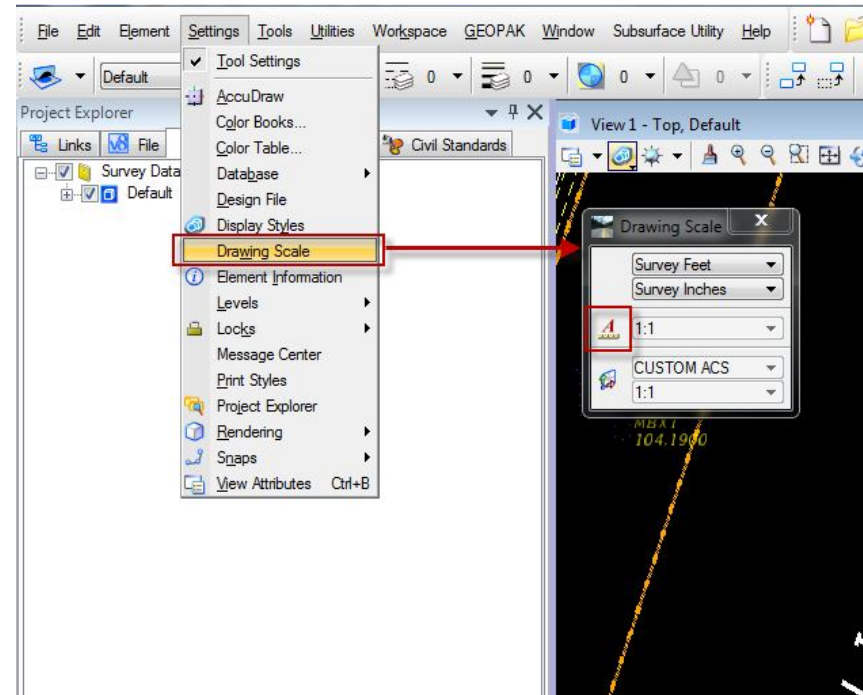
Object Type	Feature Definition	VBA Macro
Linear	BLDG	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	COE	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	CSL	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	DEP	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	DUMB	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	DWY	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	FNC	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	HED	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	MAR	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	MISC	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	RD	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	SCT	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	STP	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	STRM	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	SwK	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	WALL	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	WEDG	Survey.Annotate.LinearFeatureDescription.TextTopoLabel_ep,0.5
Linear	FMB	Survey.Annotate.LinearFeatureDescription.TextSubUtilLabel_ep,0.5
Linear	SSB	Survey.Annotate.LinearFeatureDescription.TextSubUtilLabel_ep,0.5
Linear	WLB	Survey.Annotate.LinearFeatureDescription.TextSubUtilLabel_ep,0.5
Linear	BPWRB	Survey.Annotate.LinearFeatureDescription.TextSubUtilLabel_ep,0.5
Linear	GYS	Survey.Annotate.LinearFeatureDescription.TextUtilLabel_ep,0.5
Linear	HVL	Survey.Annotate.LinearFeatureDescription.TextUtilLabel_ep,0.5
Linear	PWR	Survey.Annotate.LinearFeatureDescription.TextUtilLabel_ep,0.5
Linear	SE	Survey.Annotate.LinearFeatureDescription.TextUtilLabel_ep,0.5
Linear	BXC	Survey.Annotate.LinearFeatureDescription.TextDrainLabel_ep,0.5
Linear	DRNB	Survey.Annotate.LinearFeatureDescription.TextDrainLabel_ep,0.5
Linear	DRNP	Survey.Annotate.LinearFeatureDescription.TextDrainLabel_ep,0.5
Linear	DTCH	Survey.Annotate.LinearFeatureDescription.TextDrainLabel_ep,0.5
Linear	DTCHP	Survey.Annotate.LinearFeatureDescription.TextDrainLabel_ep,0.5
Linear	PCULV	Survey.Annotate.LinearFeatureDescription.TextDrainLabel_ep,0.5
Linear	SPD	Survey.Annotate.LinearFeatureDescription.TextDrainLabel_ep,0.5
Linear	STS	Survey.Annotate.LinearFeatureDescription.TextDrainLabel_ep,0.5
Linear	UD	Survey.Annotate.LinearFeatureDescription.TextDrainLabel_ep,0.5
Linear	YD	Survey.Annotate.LinearFeatureDescription.TextDrainLabel_ep,0.5
Point	NOTE	Survey.Annotate.PointFeatureDescription.TextTopoLabel_ep,2
Point	MISC	Survey.Annotate.PointFeatureDescription.TextTopoLabel_ep,2
Point	CMON	Survey.Annotate.PointFeatureDescription.TextTopoLabel_ep,2
Point	IRC	Survey.Annotate.PointFeatureDescription.TextTopoLabel_ep,2
Point	PCULV	Survey.Annotate.PointFeatureElevation.TextDrainInvElev_ep,INV ELEV.,2
Point	SSS	Survey.Annotate.RotateCell,100,AP,0





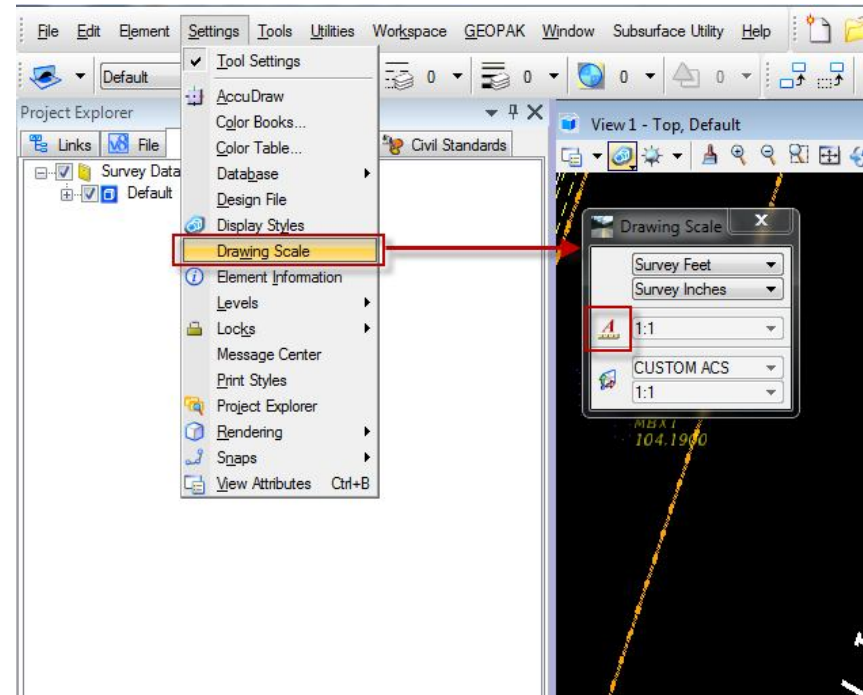
# SURVRD.dgn INITIAL SETUP

- When a new file is opened it is critical that Annotation Scale is turned off. All text initially imported into the SURVRD.dgn must have the "Is Annotation" attribute set to "False"
- Open the Drawing Scale and Turn off the annotation scale lock



# SURVRD.dgn INITIAL SETUP

- When the “A” is highlighted the lock is ON when it is not the lock is OFF.
- **IMPORTANT:** Always close the Drawing Scale dialogue box after making a change. There is a Bentley Bug in the original SS4 release that causes random crashes if the Drawing Scale is open.

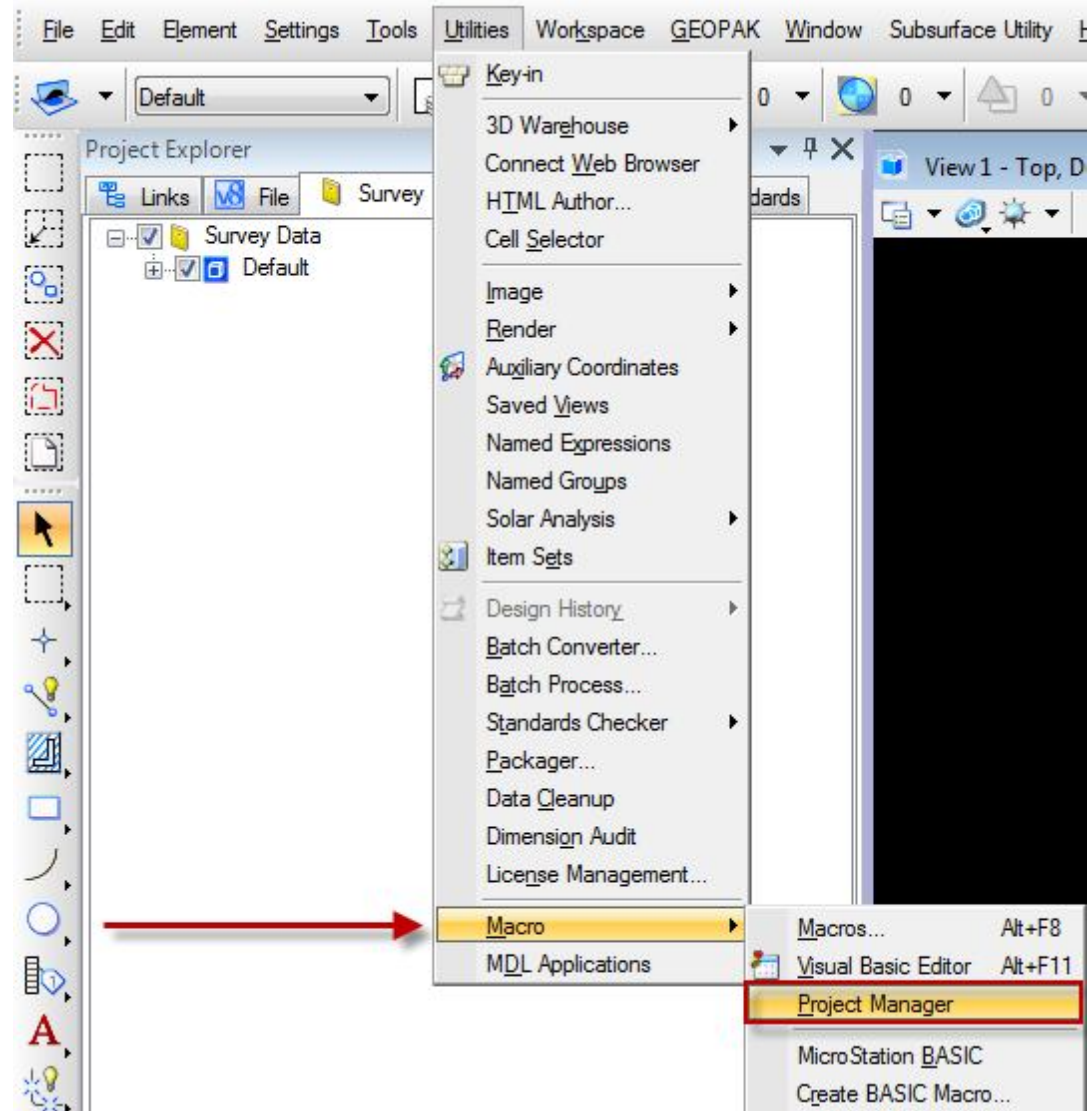


## BENTLEY MACROS

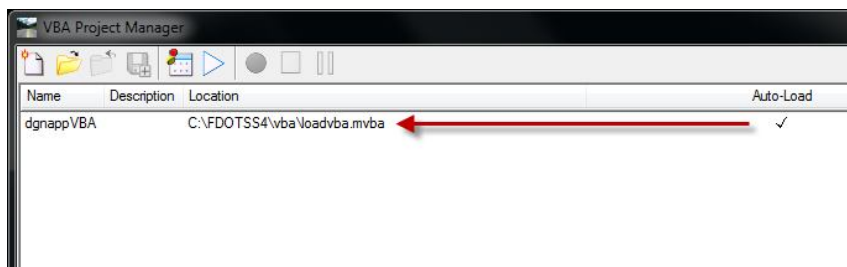
MicroStation Menu > Utilities > Macro  
> Project Manager

Opening the Macro Project Manager  
allows access to the VBA Project  
Manager dialogue box

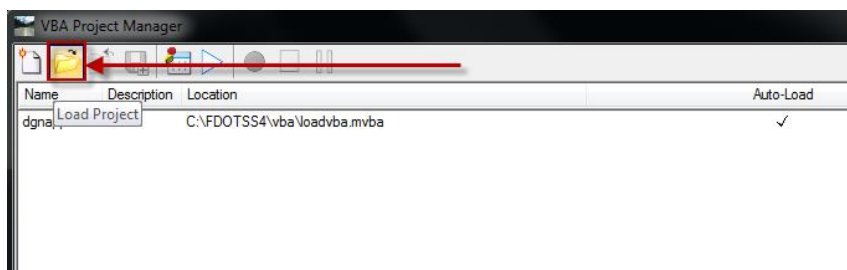
This is where the macro project file  
“FDOT\_Survey\_Objects.mvba” will  
show when it is loaded. This mvba file  
contains a number of macros including  
the point/linear feature labeling and  
point rotation macros. When the  
FDOT\_Survey\_Objects.mvba is loaded,  
all macros within are available for use.  
The name of this project when loaded  
is “Survey”.



# BENTLEY MACROS

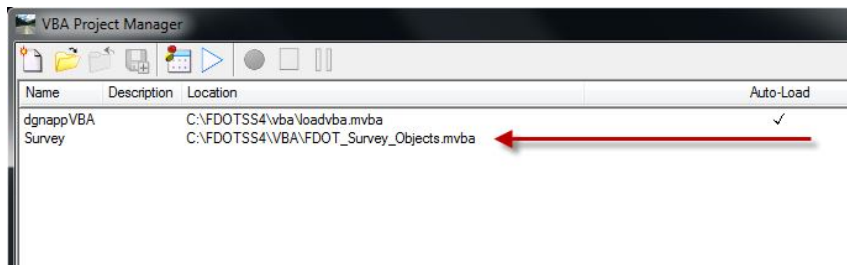


➤ Note by default the dgnappVBA is always running.



➤ Select the Load Project button and choose under FDOTSS4\VBA\...

**"FDOT\_Survey\_Objects.mvba"**

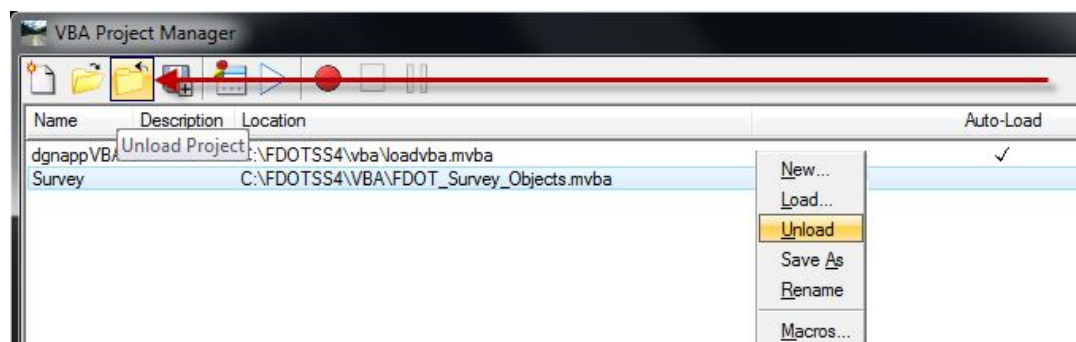


➤ When the **"Survey"** macro project is active it shows in the VBA Project Manager dialogue box.



# BENTLEY MACROS

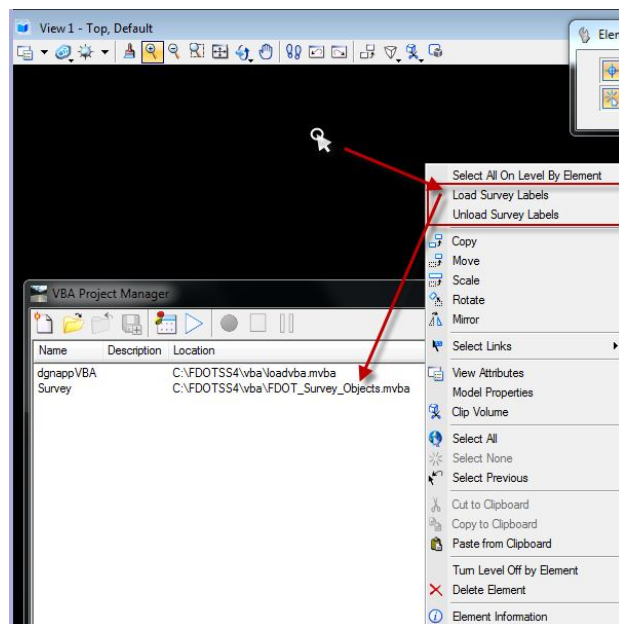
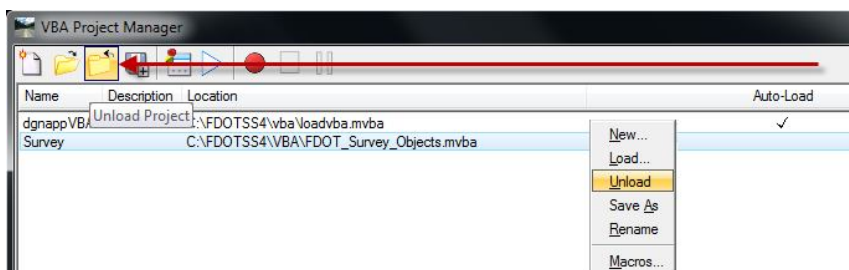
- To deactivate the Survey Macro Project select the Survey Macro and click on the Unload Project button or right click and select Unload.



- **It doesn't matter if the VBA Project Manger dialogue box stays open or not.** Closing the box has no effect on the operation of the Survey VBA.



# BENTLEY MACROS



- Now that you know how to load and unload the Survey macro
- **There is an easier way.** The ECSO has added right click functionality when right clicking in the View.
- Simply **right click in the view** and choose:
  - **Load Survey Labels**
  - **Unload Survey Labels**
- This will load or unload **FDOT\_Survey\_Objects.mvba**



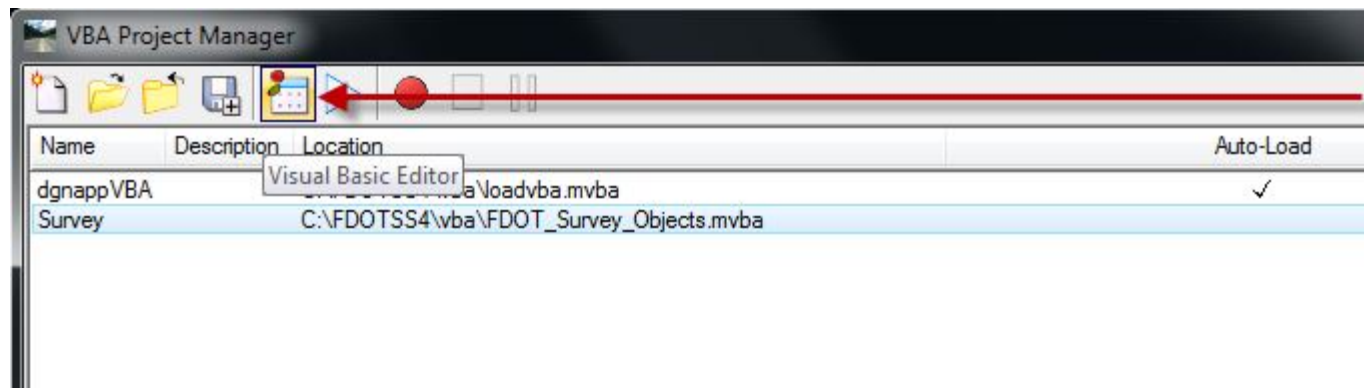
# BENTLEY MACROS

- Survey Macros are active when the “Survey” Macro Project is loaded in the VBA Project Manager
- Right Click in the View and choose Load or Unload to load or unload the “Survey” Project
- There is no need to ever open the VBA Project Manager



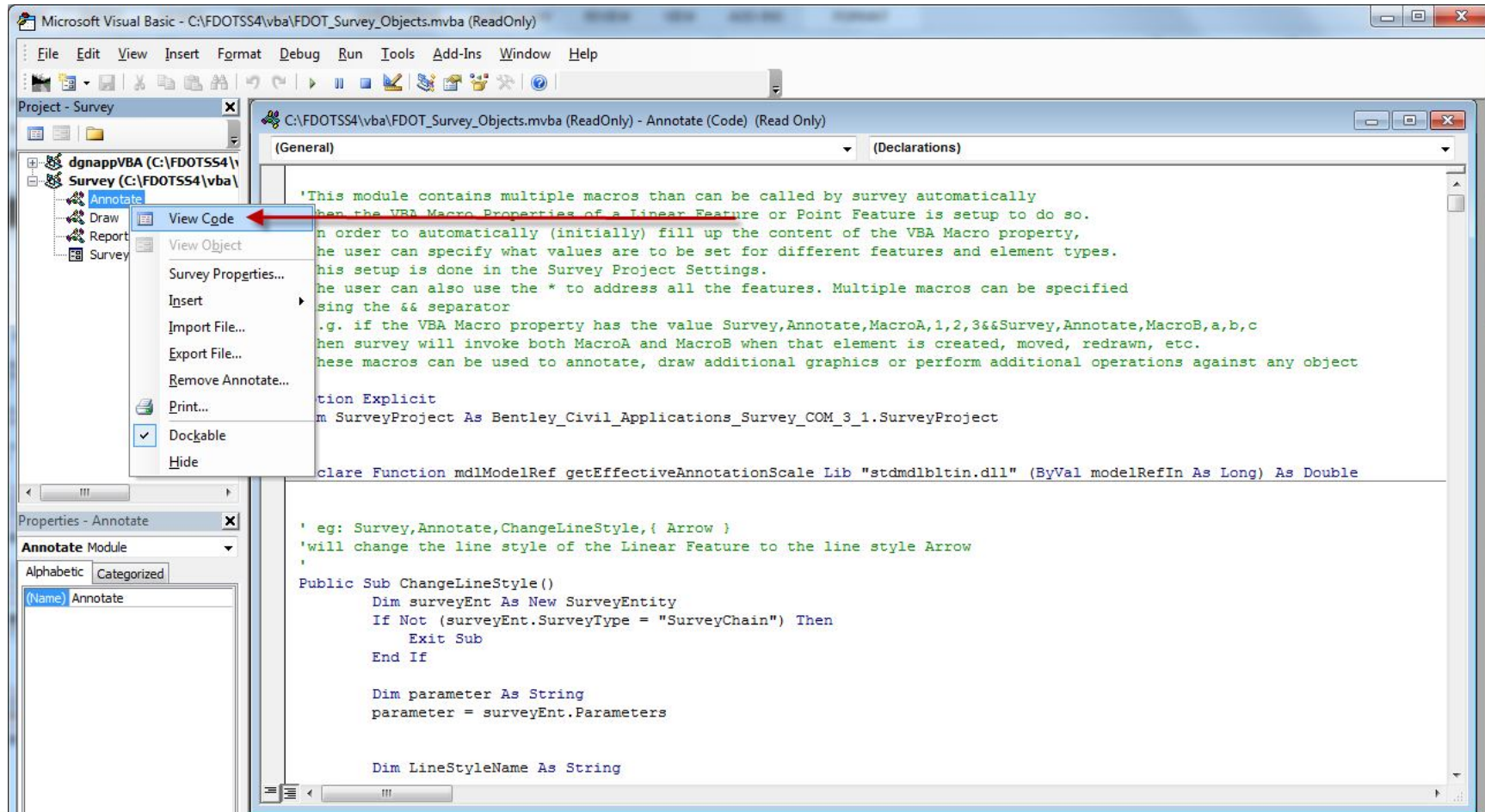
# SURVEY OBJECT MACROS

- There are a number of macros within the Survey Macro Project, FDOT\_Survey\_Objects.mvba to view the macros select Survey Project and then click the Visual Basic Editor button in the VBA Project Manager dialogue box activating Microsoft Visual Basic





# SURVEY OBJECT MACROS



# SURVEY OBJECT MACROS

```
CA:\FDOTSS4\vba\FDOT_Survey_Objects.mvba (ReadOnly) - Annotate (Code) (Read Only)
(General)
' This module contains multiple macros than can be called by su
' when the VBA Macro Properties of a Linear Feature or Point Fe
' In order to automatically (initially) fill up the content of
' the user can specify what values are to be set for different
' This setup is done in the Survey Project Settings.
' The user can also use the * to address all the features. Mul
' using the && separator
' e.g. if the VBA Macro property has the value Survey,Annotate,
' then survey will invoke both MacroA and MacroB when that elem
' These macros can be used to annotate, draw additional graphic

Option Explicit
Dim SurveyProject As Bentley_Civil_Applications_Survey_COM_3_

Declare Function mdlModelRef getEffectiveAnnotationScale Lib

' eg: Survey,Annotate,ChangeLineStyle,{ Arrow }
' will change the line style of the Linear Feature to the line style Arrow
'
Public Sub ChangeLineStyle()
    Dim surveyEnt As New SurveyEntity
    If Not (surveyEnt.SurveyType = "SurveyChain") Then
        Exit Sub
    End If

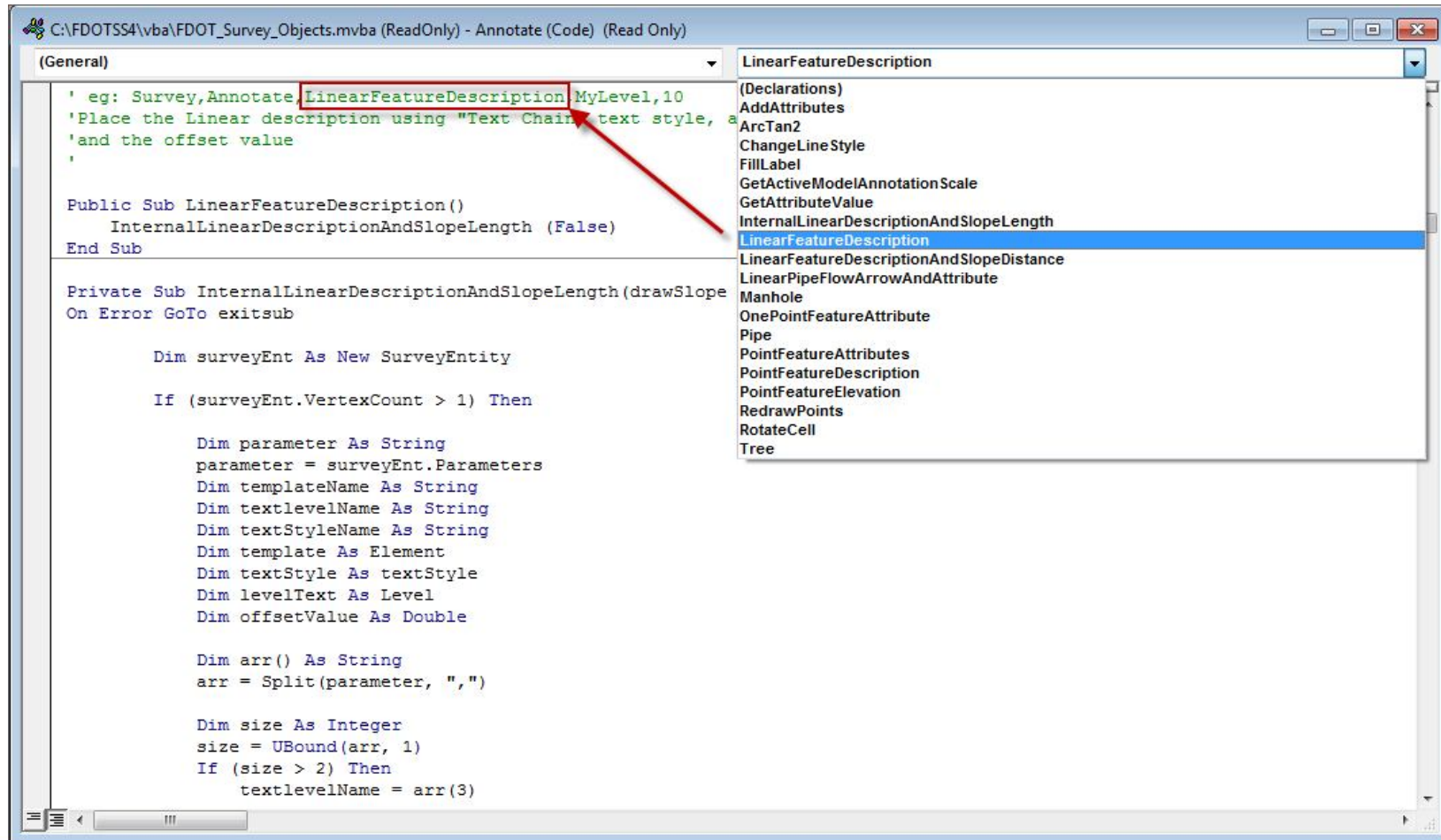
    Dim parameter As String
    parameter = surveyEnt.Parameters

    Dim LineStyleName As String

(Declarations)
(Declarations)
AddAttributes
ArcTan2
ChangeLineStyle
FillLabel
GetActiveModelAnnotationScale
GetAttributeValue
InternallinearDescriptionAndSlopeLength
LinearFeatureDescription
LinearFeatureDescriptionAndSlopeDistance
LinearPipeFlowArrowAndAttribute
Manhole
OnePointFeatureAttribute
Pipe
PointFeatureAttributes
PointFeatureDescription
PointFeatureElevation
RotateCell
Tree
```



# SURVEY OBJECT MACROS



```
C:\FDOTSS4\vb\fdot_Survey_Objects.mvba (ReadOnly) - Annotate (Code) (Read Only)
(General)
' eg: Survey,Annotate,LinearFeatureDescription,MyLevel,10
'Place the Linear description using "Text Chain" text style, a
'and the offset value
'
Public Sub LinearFeatureDescription()
    InternalLinearDescriptionAndSlopeLength (False)
End Sub

Private Sub InternalLinearDescriptionAndSlopeLength(drawSlope
On Error GoTo exitsub

    Dim surveyEnt As New SurveyEntity

    If (surveyEnt.VertexCount > 1) Then

        Dim parameter As String
        parameter = surveyEnt.Parameters
        Dim templateName As String
        Dim textlevelName As String
        Dim textStyleName As String
        Dim template As Element
        Dim textStyle As textStyle
        Dim levelText As Level
        Dim offsetValue As Double

        Dim arr() As String
        arr = Split(parameter, ",")

        Dim size As Integer
        size = UBound(arr, 1)
        If (size > 2) Then
            textlevelName = arr(3)
        End If
    End If
End Sub
```

LinearFeatureDescription

(Declarations)

- AddAttributes
- ArcTan2
- ChangeLineStyle
- FillLabel
- GetActiveModelAnnotationScale
- GetAttributeValue
- InternalLinearDescriptionAndSlopeLength
- LinearFeatureDescription**
- LinearFeatureDescriptionAndSlopeDistance
- LinearPipeFlowArrowAndAttribute
- Manhole
- OnePointFeatureAttribute
- Pipe
- PointFeatureAttributes
- PointFeatureDescription
- PointFeatureElevation
- RedrawPoints
- RotateCell
- Tree



# SURVEY OBJECT MACROS

```
C:\FDOTSS4\uba\FDOT_Survey_Objects.mvba (ReadOnly) - Annotate (Code) (Read Only)
(General) InternalLinearDescriptionAndSlopeLength

' eg: Survey, Annotate, LinearFeatureDescription, MyLevel, 10
'Place the Linear description using "Text Chain" text style, along every line segment of the linear feature using the level designated as MyLevel
'and the offset value
'

Public Sub LinearFeatureDescription()
    InternalLinearDescriptionAndSlopeLength (False)
End Sub

Private Sub InternalLinearDescriptionAndSlopeLength(drawSlope As Boolean)
    On Error GoTo exitSub

    Dim surveyEnt As New SurveyEntity

    If (surveyEnt.VertexCount > 1) Then

        Dim parameter As String
        parameter = surveyEnt.Parameters
        Dim templateName As String
        Dim textlevelName As String
        Dim textStyleName As String
        Dim template As Element
        Dim textStyle As textStyle
        Dim levelText As Level
        Dim offsetValue As Double

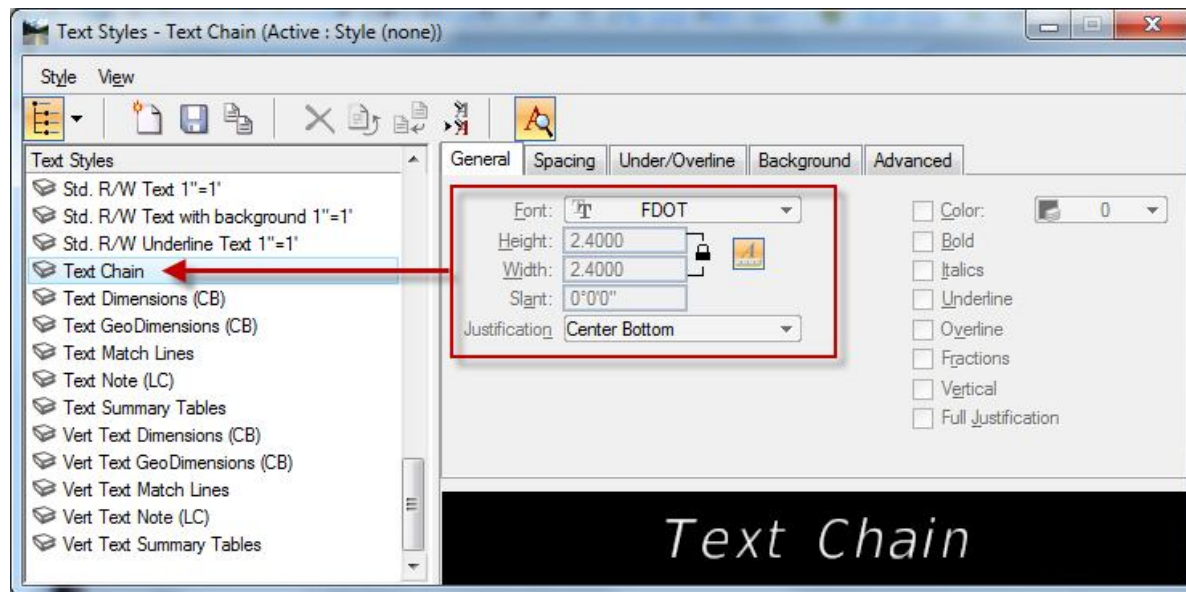
        Dim arr() As String
        arr = Split(parameter, ",")

        Dim size As Integer
        size = UBound(arr, 1)
        If (size > 2) Then
            textlevelName = arr(3)
            textStyleName = "Text Chain"
            Set levelText = ActiveDesignFile.Levels.Find(textlevelName)
            Set textStyle = ActiveDesignFile.TextStyles.Find(textStyleName)
        End If
        If (size > 3) Then
            offsetValue = CDb1(arr(4))
        End If
    End If
End Sub
```



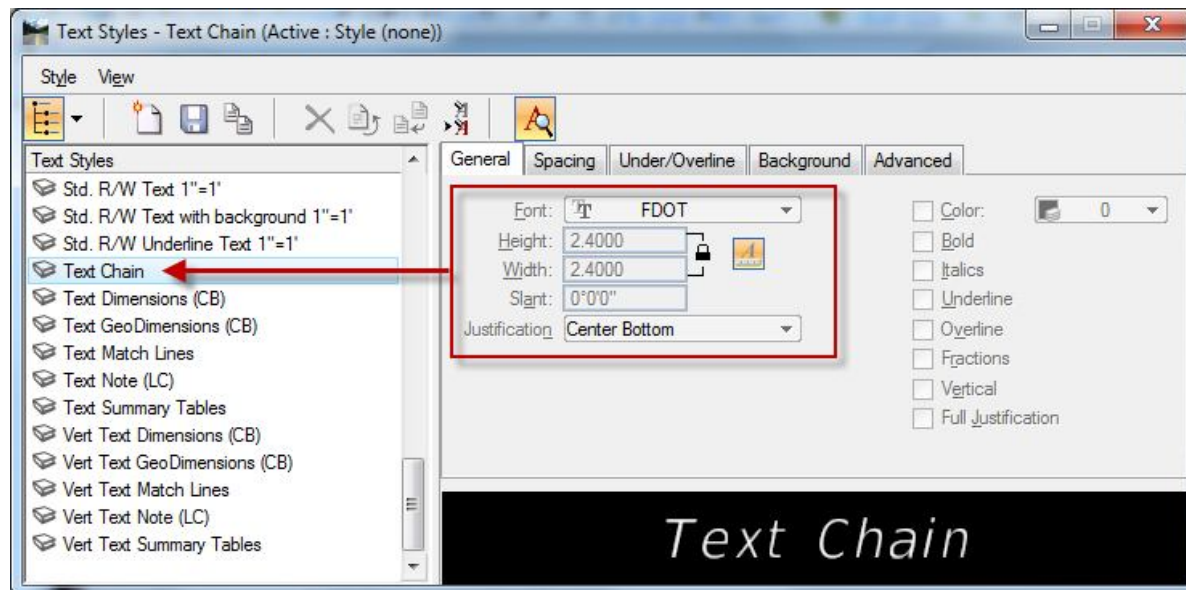
# SURVEY OBJECT MACROS

- Note that the text style is hard coded to the style "Text Chain"



# SURVEY OBJECT MACROS

- The text height has been set to 2.4' (somewhat of an unofficial standard)



# MACRO CALLS

- The header will contain the macro “call” which also identifies the macro
- Each call has a set of parameters separated by a comma
- The last two parameters “Mylevel,10” represent variable parameters (level and offset) the user must set.

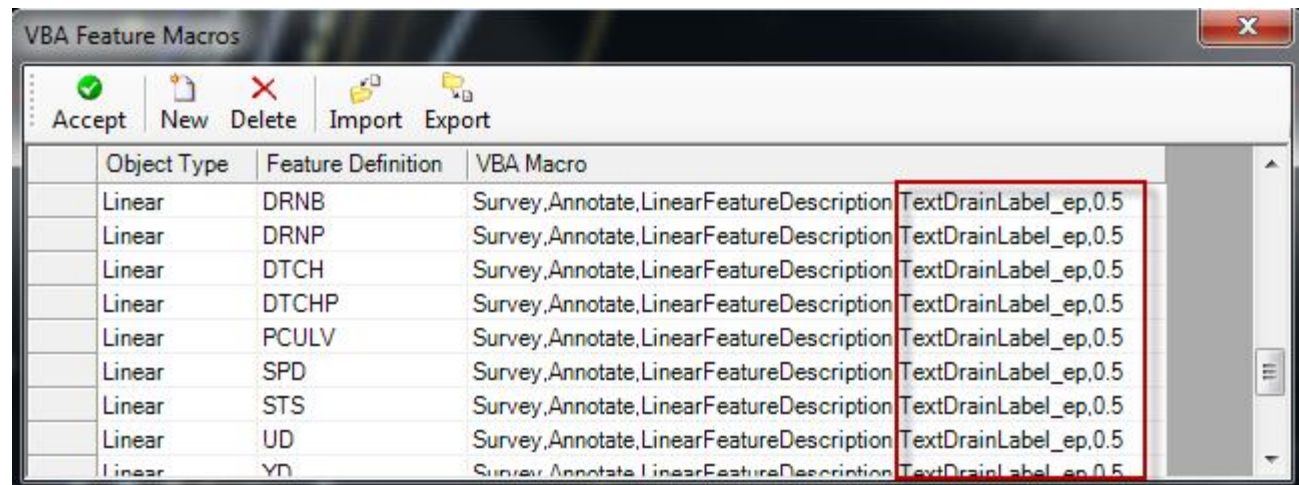
```
C:\FDOTSS4\vba\FDOT_Survey_Objects.mvba (ReadOnly) - Annotate (Code) (Read Only)
(General)

' eg: Survey,Annotate,LinearFeatureDescription,MyLevel,10
'Place the Linear description using "Text Chain" text style,
'and the offset value
'
Public Sub LinearFeatureDescription()
|   InternalLinearDescriptionAndSlopeLength (False)
End Sub
```



# MACRO CALLS

- Recall the fdotseed3d.dgn – FDOT Survey Settings and the embedded VBA Feature Macros
- A set of sample calls were already in the seed file with the correct level for MyLevel and the offset values set at 0.5 feet.
- In this case for the below drainage structures the text label level replacing MyLevel is “TextDrainLabel\_ep”



The screenshot shows the 'VBA Feature Macros' dialog box with a table of macro calls. The table has four columns: Object Type, Feature Definition, VBA Macro, and a fourth column containing the macro call text. The macro call text for all rows is 'TextDrainLabel\_ep,0.5'. A red box highlights the macro call text in the fourth column.

Object Type	Feature Definition	VBA Macro	
Linear	DRNB	Survey,Annotate,LinearFeatureDescription	TextDrainLabel_ep,0.5
Linear	DRNP	Survey,Annotate,LinearFeatureDescription	TextDrainLabel_ep,0.5
Linear	DTCH	Survey,Annotate,LinearFeatureDescription	TextDrainLabel_ep,0.5
Linear	DTCHP	Survey,Annotate,LinearFeatureDescription	TextDrainLabel_ep,0.5
Linear	PCULV	Survey,Annotate,LinearFeatureDescription	TextDrainLabel_ep,0.5
Linear	SPD	Survey,Annotate,LinearFeatureDescription	TextDrainLabel_ep,0.5
Linear	STS	Survey,Annotate,LinearFeatureDescription	TextDrainLabel_ep,0.5
Linear	UD	Survey,Annotate,LinearFeatureDescription	TextDrainLabel_ep,0.5
Linear	YD	Survey,Annotate,LinearFeatureDescription	TextDrainLabel_ep,0.5





# MACRO CALLS

- When data is brought into a Field Book, for each point and linear feature that matches a point or linear feature in the embedded VBA Feature Macros list, the associated macro call is automatically put into the point or linear feature's VBA Macro attribute field.
- The Macro will act upon (label or rotate) the individual point or linear feature whenever the associated macro call is executed. Some of the ways include:
  - New Field Book data added
  - Macro Call in the database is added/revised
  - Survey Redraw is run



# MACRO CALLS

The screenshot displays a software interface with three main components:

- Project Explorer:** A tree view on the left showing a hierarchy of survey data. Under 'Field Books' > '8888888', 'ALL Linear Features' is expanded to show a list of feature types including AC, AP, BL, BLC, BLDG, BRDG, BTB, CG, CGB, CGF, FNC, FOT, FOUB, HNDRL, PCULV (highlighted in blue), PWR, REFL, RETW, SLP, STS, WLB, XSC, and YD.
- View 1 - Top, Default:** A top-down view of a survey plan showing various lines and points. A 'Move Element' dialog box is visible in the top right corner.
- Survey Details:** A table window showing the properties of a selected element. The table has columns: Name, Dis..., Feature Definition, Z..., Description, Ter..., Att..., Len..., Da..., and VBA Macro. The row for 'PVC3' is highlighted, with 'PCULV' in the Feature Definition column and 'Survey,Annotate,LinearFeatureDescription,TextDrainLabel\_ep,0.5' in the VBA Macro column. A red arrow points from the VBA Macro cell to a text label 'Text: 4" PVC' on the survey plan below.

Name	Dis...	Feature Definition	Z...	Description	Ter...	Att...	Len...	Da...	VBA Macro
PVC3	True	PCULV	2	4" PVC	Dete...		108...	888...	Survey,Annotate,LinearFeatureDescription,TextDrainLabel_ep,0.5



# MACRO CALLS

The calls for the four modified macros are below:

1. Survey,Annotate,LinearFeatureDescription,MyLevel,10
2. Survey,Annotate,PointFeatureDescription,MyLevel,10
3. Survey,Annotate,PointFeatureElevation,MyLevel,ABC,xyz,3
4. Survey,Annotate,RotateCell,100,AP,10



# MACRO CALLS

The first three sets of macro calls are for labeling. The fourth is for rotating cells.

1. Survey,Annotate,LinearFeatureDescription,MyLevel,10
2. Survey,Annotate,PointFeatureDescription,MyLevel,10
3. Survey,Annotate,PointFeatureElevation,MyLevel,ABC,xyz,3
4. Survey,Annotate,RotateCell,100,AP,10



# MACRO CALLS

This macro call will rotate a point feature cell such as a SSS perpendicular to a linear feature also in the call. So in the call below:

1. Survey,Annotate,RotateCell,100,AP,10

It means to rotate the point feature perpendicular to the AP feature that is within 100' and then add 10 radians to the rotation (realistically start with zero).



# MACRO CALLS

The screenshot displays the AutoCAD interface with a survey drawing. On the left, the Project Explorer shows a tree view of data files and field books. The main drawing area shows a road layout with a 'SLOW' sign and a '21.9'' dimension. A 'Survey Details' table at the bottom lists elements SSS1, SSS2, and SSS3, with SSS3 highlighted. A 'Linear Feature' information box is also visible.

Name	Di...	Feature Definition	Lin...	Zo...	Description	Terrai...	At...	C...	East...	North...	El...	Dat...	VBA Macro
SSS1	True	SSS	None	1		Determi...			1763...	67301...	104...	8888...	Survey.Annotate.RotateCell,100,AP,0
SSS2	True	SSS	None	1		Determi...			1763...	67307...	103...	8888...	Survey.Annotate.RotateCell,100,AP,0
SSS3	True	SSS	None	1	SLOW	Determi...			1763...	67324...	103...	8888...	Survey.Annotate.RotateCell,100,AP,0



# MACRO CALLS

- Point or Linear features in a Field Book will contain a macro call, if the features in the VBA Feature Macro table of the seed file matches the point or linear features when they were created in the Field Book
- Right Click in the View and choose Load or Unload to load or unload the “Survey” Macro Project
- Executing the macro call (Survey Redraw) will act upon the point or linear feature it is associated with



# ADDING MACRO CALLS

- Macro calls can be manually added to point and linear features
- Use the “Show Details” dialogue box to view the features in the database and:
  - Add them one at a time directly to the VBA Macro attribute field of a feature
  - Select a group of features and add them using the “Edit selected items” functionality





# ADDING MACRO CALLS

The screenshot illustrates the process of adding macro calls in a survey software environment. The Project Explorer on the left shows a tree view of survey data, with 'GYA' selected under 'ALL Point Features'. The main view displays a survey plan with labels like 'ELEC' and 'OE'. The Survey Details window is open, showing a table of elements and a context menu for 'Edit selected items'. The 'VBA Macro' option is selected in the menu, and the 'Survey.Annotate.RotateCell.100.AP.0' macro is being assigned to the selected elements.

Name	Di...	Feature Definition	Lin...	Zo...	Description	Terrai...	Att...	C...	East...	North...	Ei...	Det...	VBA Macro
GYA1	True	GYA	None	1					1763	67324	104	8888	Survey.Annotate.RotateCell.100.AP.0
GYA2	True	GYA	None	1					1763	67316	104	8888	Survey.Annotate.RotateCell.100.AP.0



# ADDING MACRO CALLS

- Note that when adding macro calls to the survey database the macro gets executed (Survey Redraw)
  - the point features get rotated as per parameter
  - the text labels get regenerated to their original position



# ADDING MACRO CALLS

- Macro calls can be directly added to a point or linear feature just by selecting it and adding the macro call to the VBA Macro attribute field of the element information (properties) dialogue box
- Note that entries in the properties directly edits the database and the macro is executed



# ADDING MACRO CALLS

The screenshot shows a CAD application window titled 'View 1 - Top, Default'. The main workspace displays a road layout with a dashed yellow centerline and a solid red edge line. A point feature is highlighted with a red triangle. The 'Element Information' panel on the right shows the following details for the selected 'Point Feature':

General	
Description	Cell: GYA
Cell Name	GYA
Cell Type	Graphic
Class	Primary
Number of elements	7
Template	None
Annotation Purpose	False

Geometry	
Origin	1763272.7746,673167.9811,104.1000
Angle	0°0'0"
Orientation	Top
Scale X	1.00000
Scale Y	1.00000
Scale Z	1.00000

Point Feature	
Name	GYA2
Display	True
Feature Definition	GYA
Link Code	None
Zone	1
Description	GUY ANCHOR
Terrain Model Attribute	Determine By Feature Definition
Attributes Pair	
Control Codes	
Easting	1763272.7746
Northing	673167.9811
Elevation	104.1000
Data File Name	8888888
VBA Macro	
Field Book Name	8888888
Style Name	GYA
Media File	
Time Stamp	N/A

Extended	
Model	Default
Last Modified	3/7/2016 9:01 PM
Modified	
New	New
Locked	Unlocked
Display Style	<input type="checkbox"/> From View



# ADDING MACRO CALLS

The screenshot displays a CAD software interface with a central workspace showing a point feature. The point is labeled "Determine By Feature Definition" and "None". A red arrow points from the "VBA Macro" field in the "Point Feature" section of the "Element Information" panel to the point feature in the workspace. The "Element Information" panel is open, showing the following data:

General	
Description	Cell: GYA
Cell Name	GYA
Cell Type	Graphic
Class	Primary
Number of elements	7
Template	None
Annotation Purpose	False

Geometry	
Origin	1763272.7746, 673167.9811, 104.1000
Angle	161°49'54.77256997"
Orientation	Top
Scale X	1.00000
Scale Y	1.00000
Scale Z	1.00000

Point Feature	
Name	GYA2
Display	True
Feature Definition	GYA
Link Code	None
Zone	1
Description	GUY ANCHOR
Terrain Model Attribute	Determine By Feature Definition
Attributes Pair	
Control Codes	
Easting	1763272.7746
Northing	673167.9811
Elevation	104.1000
Data File Name	88888888
VBA Macro	Survey,Annotate,RotateCell,100,AP,0
Field Book Name	88888888
Style Name	GYA
Media File	
Time Stamp	N/A

Extended	
Model	Default
Last Modified	3/7/2016 9:00 PM
Modified	Modified
New	New
Locked	Unlocked
Display Style	<input type="checkbox"/> From View



# ADDING MACRO CALLS

The screenshot displays a CAD application window with a top toolbar and a main workspace. The workspace shows a point feature labeled 'Determine By Feature Definition None' with a red arrow pointing to its 'VBA Macro' property in the 'Element Information' panel. The 'Element Information' panel is open to the 'Point Feature' section, showing various properties including Name, Display, Feature Definition, Link Code, Zone, Description, Terrain Model Attribute, Attributes Pair, Control Codes, Easting, Northing, Elevation, Data File Name, VBA Macro, Field Book Name, Style Name, Media File, Time Stamp, Model, Last Modified, Modified, New, Locked, and Display Style. The 'VBA Macro' property is highlighted with a red box and contains the text 'Survey.Annotate.RotateCell,100,AF,0.3'. The main workspace also shows a point feature labeled 'MISC1 + 100.8000 100' FLAG POLE' and a large text label '100' FLAG POLE'.

General	
Description	Cell: GYA
Cell Name	GYA
Cell Type	Graphic
Class	Primary
Number of elements	7
Template	None
Annotation Purpose	False

Geometry	
Origin	1763272.7746,673167.9811,104.1000
Angle	179°1'14.21444465"
Orientation	Top
Scale X	1.00000
Scale Y	1.00000
Scale Z	1.00000

Point Feature	
Name	GYA2
Display	True
Feature Definition	GYA
Link Code	None
Zone	1
Description	GUY ANCHOR
Terrain Model Attribute	Determine By Feature Definition
Attributes Pair	
Control Codes	
Easting	1763272.7746
Northing	673167.9811
Elevation	104.1000
Data File Name	8888888
VBA Macro	Survey.Annotate.RotateCell,100,AF,0.3
Field Book Name	8888888
Style Name	GYA
Media File	
Time Stamp	N/A

Extended	
Model	Default
Last Modified	3/7/2016 9:05 PM
Modified	Modified
New	New
Locked	Unlocked
Display Style	<input type="checkbox"/> From View



# THE CATCH 22

- Unfortunately there is a catch 22
  - the point features get rotated as per parameter
  - the text labels get regenerated to their original position
- So if you move text for clarity, the next Survey Redraw the text will be moved back to its original position
- There will always be another Survey Redraw



# THE CATCH 22

- If we Unload the Survey Macro Project (right click and Unload Survey Labels) text labels and point feature rotation will be undone.
- If we deactivate the Use VBA Macros in the FDOT Survey Settings (change to false) the text will stay but the point feature rotation will be undone





# CATCH 22 SOLVED

- The solution is to copy all the macro generated text to the design file and then comment out or remove the point and linear feature text labeling macros in the database
- Turn off all levels except the macro generated text label levels and copy them in place
- Use the Survey Database to Isolate and remove or comment out all text generating macros



# CATCH 22 SOLVED

Survey Details

Element List Message Center

Name	Di...	Feature Definition	Lin...	Zo...	Description	Terrai...	Att...	C...	East...	North...	El...	Dat...	VBA Macro	Field Book Name	Style Name
GYA2	True	GYA	None	1	GUY ANCHOR	Detemi...			1763...	67316...	104...	8888...	Survey,Annotate,RotateCell,100,AP,0.3	88888888	GYA
SSS1	True	SSS	None	1		Detemi...			1763...	67301...	104...	8888...	Survey,Annotate,RotateCell,100,AP,0	88888888	SSS
GYA1	True	GYA	None	1	Guy Anchor	Detemi...			1763...	67324...	104...	8888...	Survey,Annotate,RotateCell,100,AP,0	88888888	GYA
SSS2	True	SSS	None	1	SLOW	Detemi...			1763...	67324...	103...	8888...	Survey,Annotate,RotateCell,100,AP,0	88888888	SSS
SSS2	True	SSS	None	1	SLOW	Detemi...			1763...	67307...	103...	8888...	Survey,Annotate,RotateCell,100,AP,0	88888888	SSS
PVC1	True	PCULV	None	2	Invert Elev	Detemi...			1763...	67311...	103...	8888...	Survey,Annotate,PointFeatureElevation,	88888888	PCULV
PVC2	True	PCULV	None	2	4" PVC	Detemi...			1763...	67313...	100...	8888...	Survey,Annotate,PointFeatureElevation,	88888888	PCULV
CMON3	True	CMON	None	6	Found 4x4 CMON	Detemi...			1763...	67296...	103...	8888...	Survey,Annotate,PointFeatureDescription,	88888888	CMON
REF4	True	IRC	None	6	Reference Point	Detemi...			1763...	67294...	105...	8888...	Survey,Annotate,PointFeatureDescription,	88888888	IRC
REF3	True	IRC	None	6	Reference Point	Detemi...			1763...	67280...	103...	8888...	Survey,Annotate,PointFeatureDescription,	88888888	IRC
CMON4	True	CMON	None	6	Found 4x4 CMON	Spot			1763...	67287...	103...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	CMON
MISC1	True	MISC	None	1	100' FLAG POLE	Detemi...			1763...	67313...	100...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	MISC
NOTE2	True	NOTE	None	1	RESOLVE CROSSI...	Detemi...			1763...	67297...	0.0...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	NOTE
REF1	True	IRC	None	6	Reference Point	Detemi...			1763...	67283...	103...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	IRC
REF2	True	IRC	None	6	Reference Point	Detemi...			1763...	67296...	106...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	IRC
TXT3	True	NOTE	None	1	BUILDING	Detemi...			1763...	67309...	105...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	NOTE
CMON1	True	CMON	None	6	Found 4x4 CMON	Detemi...			1763...	67320...	102...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	CMON
A3	True	IRC	None	5	Set IRC	Detemi...			1763...	67292...	105...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	IRC
CMON2	True	CMON	None	6	Found 4x4 CMON	Detemi...			1763...	67310...	102...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	CMON
A2	True	IRC	None	5	Set IRC	Detemi...			1763...	67305...	106...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	IRC
A1	True	IRC	None	5	Set IRC	Detemi...			1763...	67322...	103...	8888...	Survey,Annotate,PointFeatureDescription,Text TopoLabel_ep,2	88888888	IRC
AL102	True	DEFAULT	None	1		Spot			1763...	67301...	104...	8888...		88888888	DEFAULT
CL102	True	DEFAULT	ArcPC	1		Spot			1763...	67300...	104...	8888...		88888888	DEFAULT
AL103	True	DEFAULT	None	1		Spot			1763...	67325...	104...	8888...		88888888	DEFAULT
AL101	True	DEFAULT	None	1		Spot			1763...	67285...	104...	8888...		88888888	DEFAULT
BLD3	True	DEFAULT	None	1		Spot			1763...	67307...	105...	8888...		88888888	DEFAULT
BLD4	True	DEFAULT	None	1		Spot			1763...	67307...	105...	8888...		88888888	DEFAULT

Row: 1 of 309

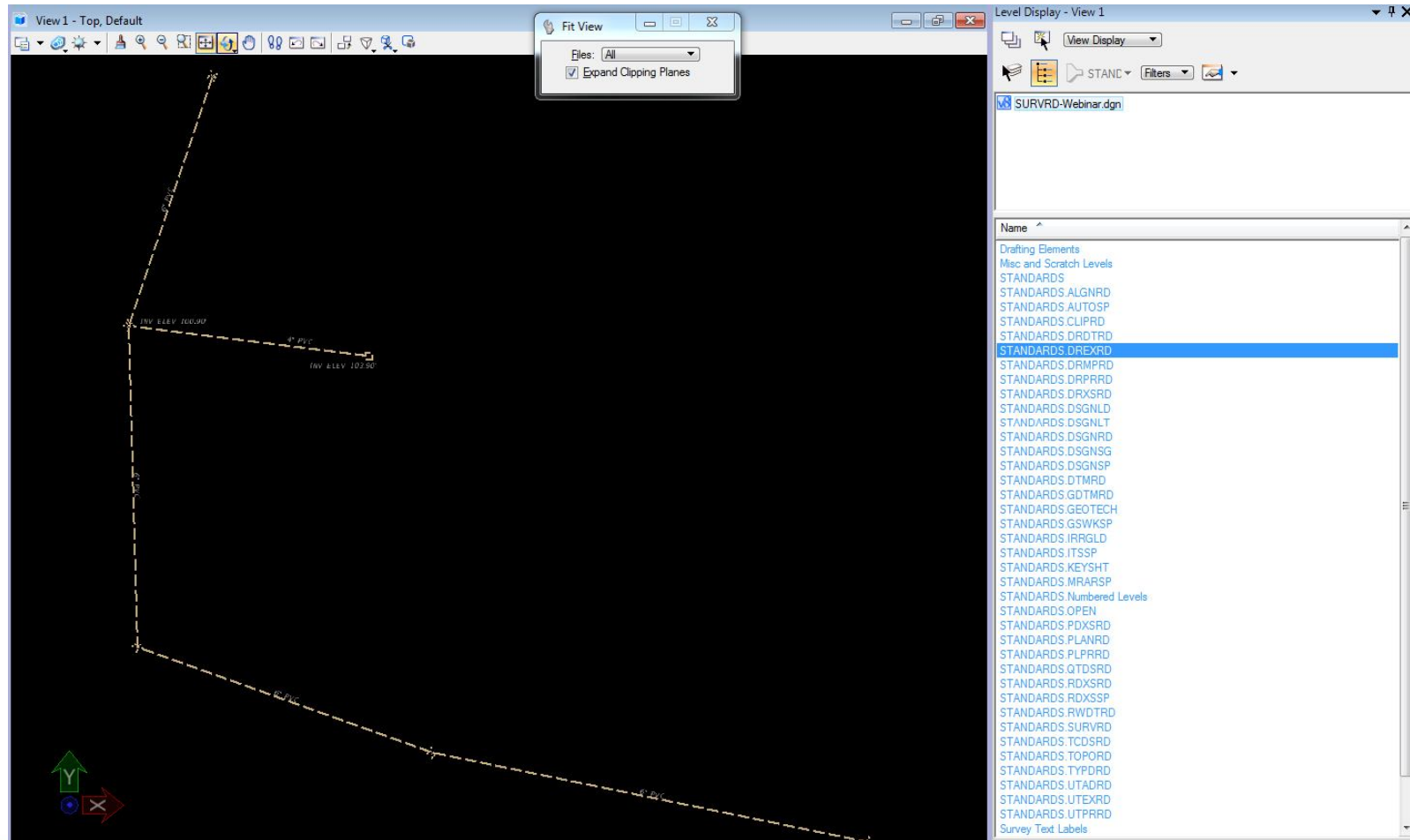


# CATCH 22 SOLVED

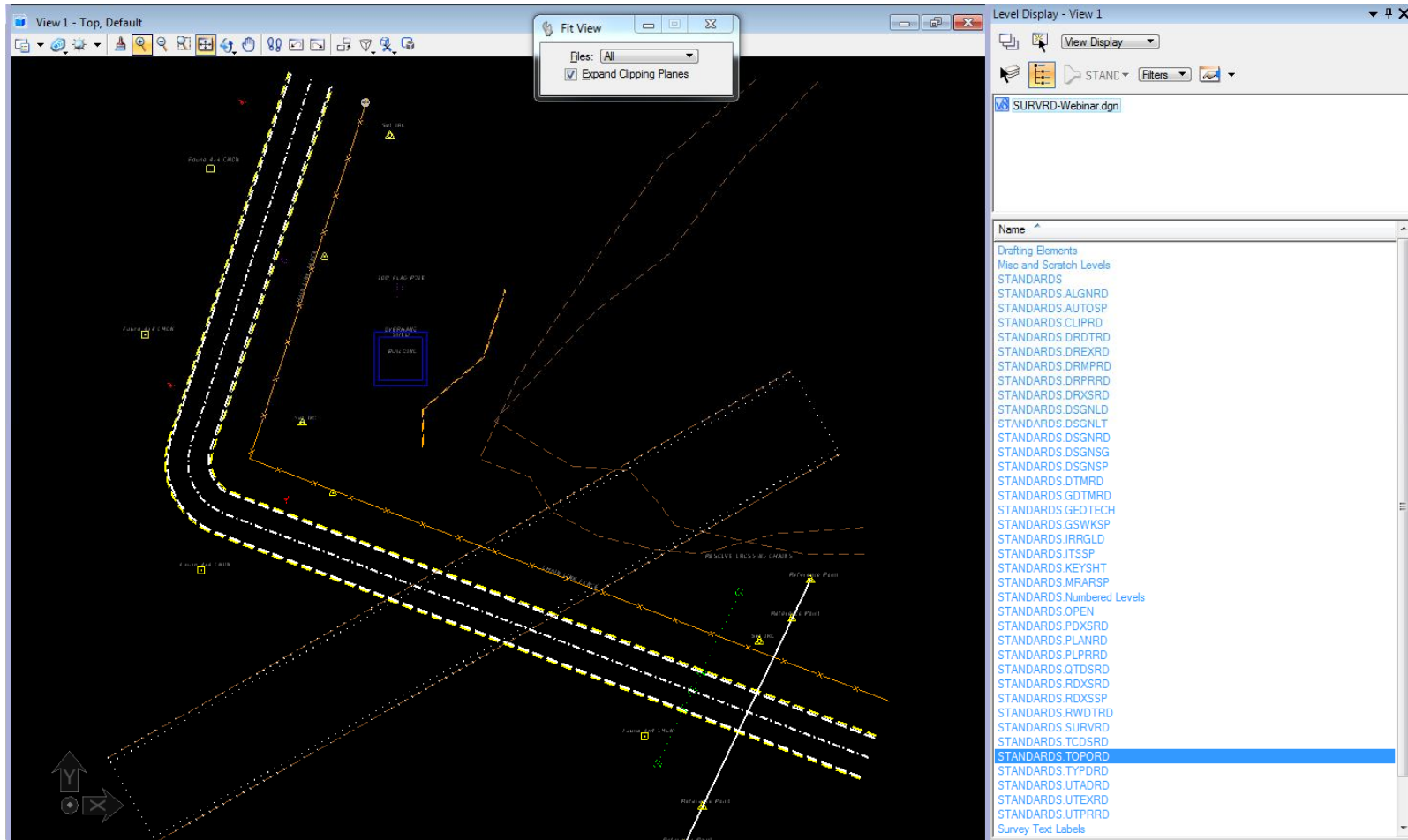
- Make sure both point and linear feature text labeling macros are removed or commented.
- Once the text has been copied to the design file and the text macros removed, all Survey Redraws will continue to keep the text rotated however, all labeling will continue manually from the copied text



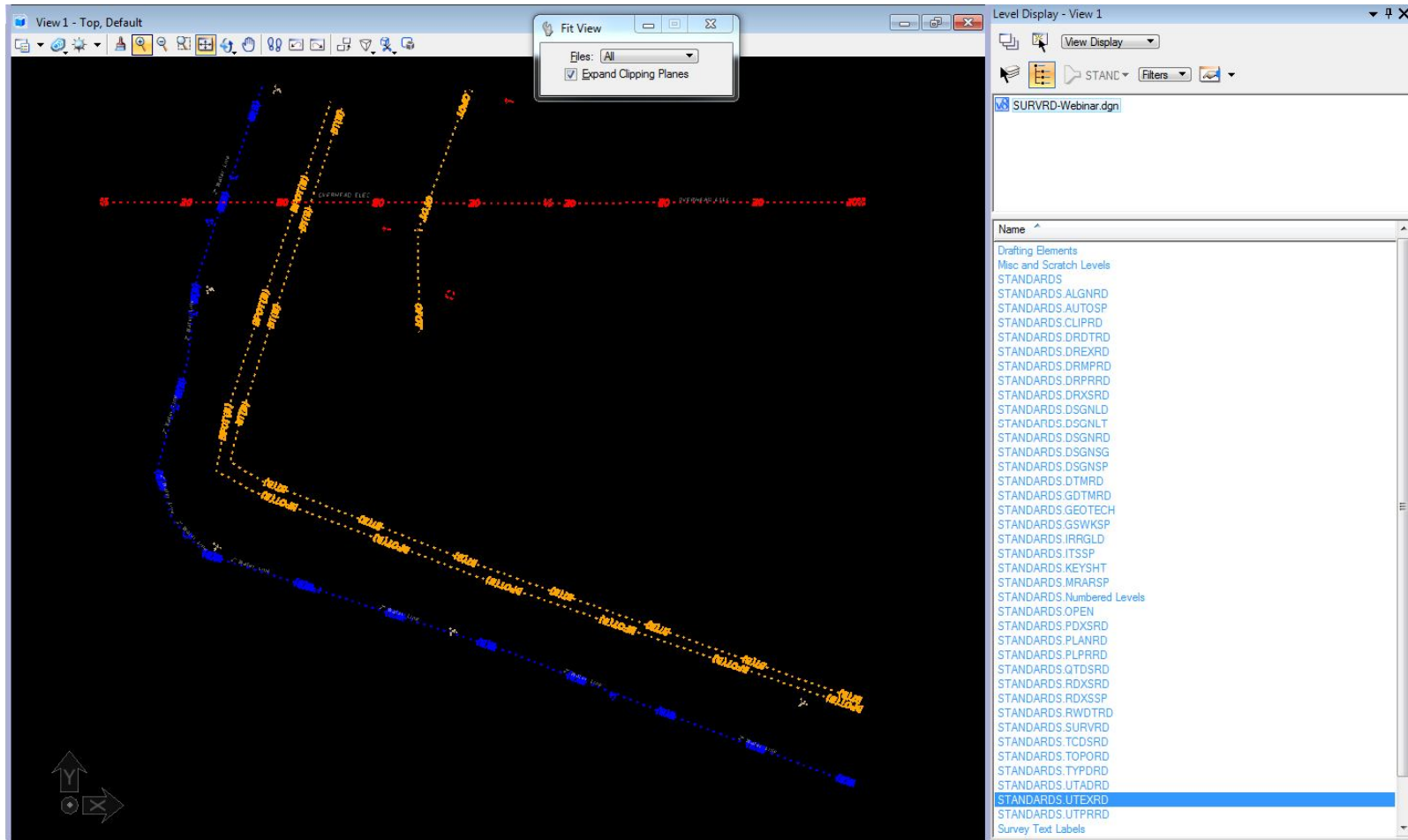
# TEXT MEETS QC STANDARDS



# TEXT MEETS QC STANDARDS



# TEXT MEETS QC STANDARDS



# QUESTIONS?

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