

# Using Crystal Reports with Lucity

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## *Advanced - 1*

The fifth of a seven-part series, this workbook is designed for Crystal Reports® users with some experience, who wish to explore the power of adding graphics to their reports.

Graphs help you visualize data. They show patterns and trends at-a-glance. In addition, they add impact to your ideas.

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# Developing a Graphical Report

Crystal Reports allows you to add graphs in the Report or Group Header and Footer sections of a report. In the following step-by-step example, we'll create a report showing the Sewer Work Orders grouped by categories. We'll add a bar graph showing number of Work Orders for each Sewer category and a pie chart to show percentage of Work Orders for each category.


1. We will modify the Sewer Work Orders By Category Report (**WOCatSum.rpt**) from the Work Order module. From the Work report folder open **LC\_WOCatGraph.rpt**.
2. Change the Title to “**Sewer Work Orders by Category Report.**”
3. Next, we will limit the work orders to those for Sewer assets.
  - a. Open *Select Expert*.
  - b. Open the **WKORDER** table.
  - c. Highlight **WO\_INV\_ID** and click *OK*.
  - d. Select “is between” from the drop down box and type in 2 and 6 (2:Structure, 3:Pump Station, 4:Pump, 5:Service Lateral, 6:Pipe).
  - e. Then, click *OK*.
    - These numbers come from the **WKCATINV** table.
  - f. The *Select Expert* formula now looks like this:  
{WKORDER.WO\_INV\_ID} in 2 to 6

## Preview

| <b>Sewer Work Orders By Category Report</b> |               |               | 7/2/2014     |
|---|---------------|---------------|--------------|
|   |               |               | 9:28 AM      |
| Category                                    |               | Count of WO's | * Total Cost |
| 21100                                       | Sewer Manhole | 3             | \$0.00       |
| 21200                                       | Sewer Pipe    | 5             | \$580.27     |

4. Use the *Insert Section Below* option to add an additional *Report Footer* section.
5. Increase the new section (*Report Footer b*) size to about 3 inches to make room for the graph.

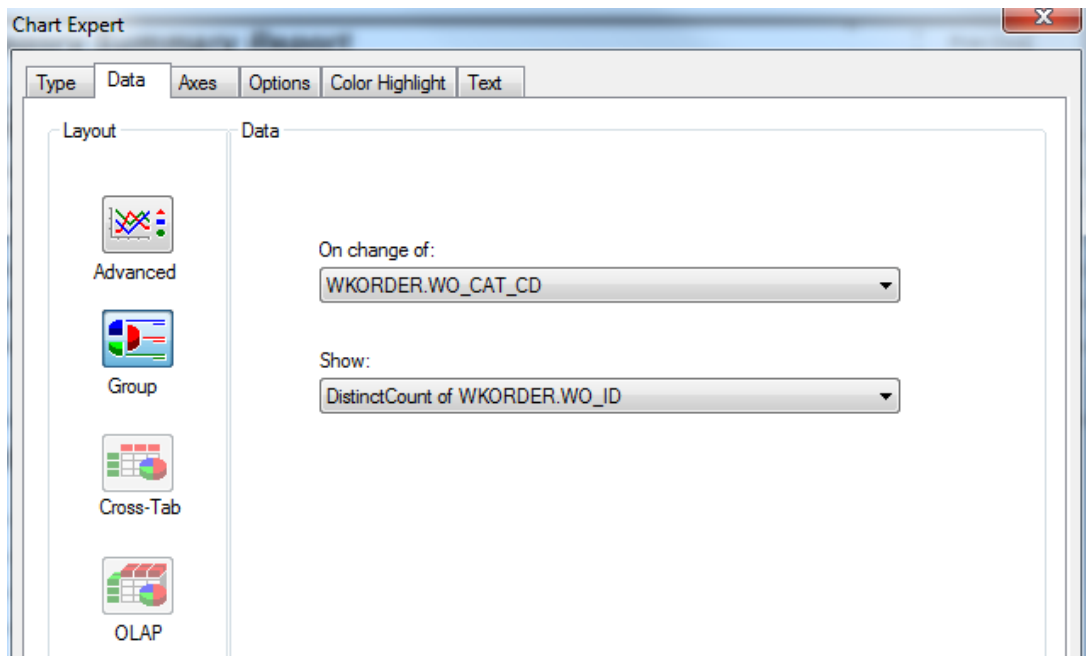
## Inserting a Graph

1. Click Insert Chart .
2. Place the “box” where the graph is to be located in the *Report Footer b* section.
3. The *Chart Expert* may automatically open, where you will proceed with the Data tab.

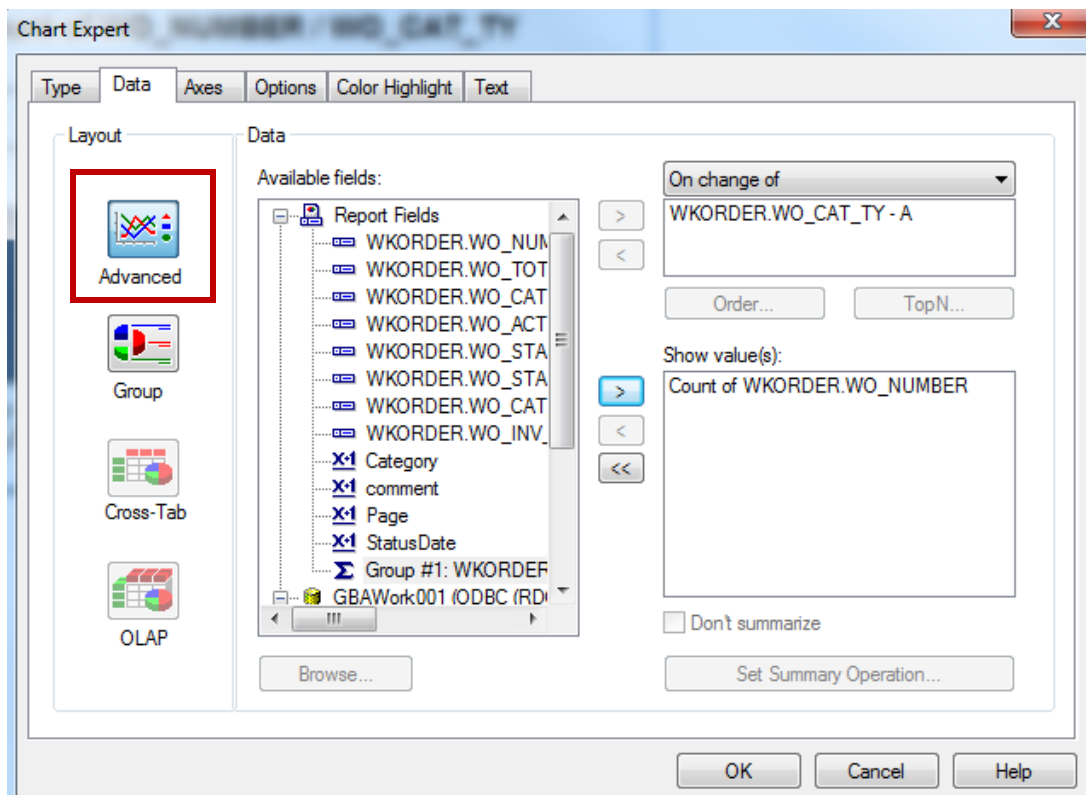
OR - Crystal may guess what data and type of graph you wish to use and drop the graph in. If the graph shows up then you will need to right click in the graph box and select *Chart Expert* to make any revisions.

## Chart Expert, Data tab

If Crystal has guessed on your data, the following should appear:

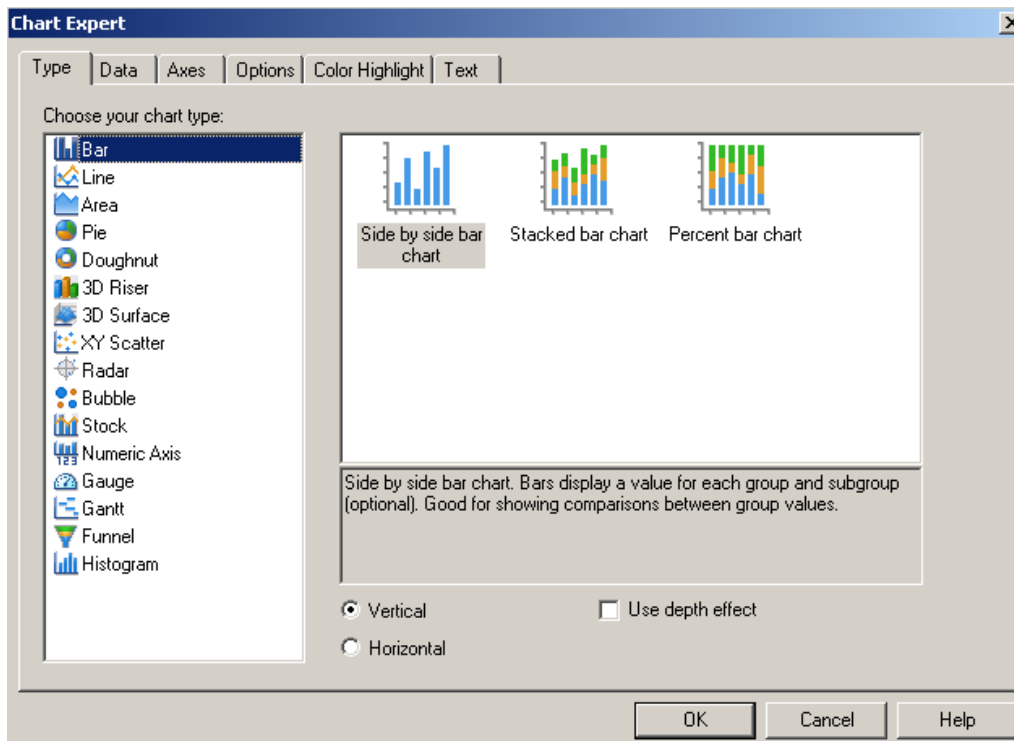


4. If this is correct, then you should look at the options within the other tabs to modify as needed. If this isn't correct, then click on **Advanced** and set up the data as follows:

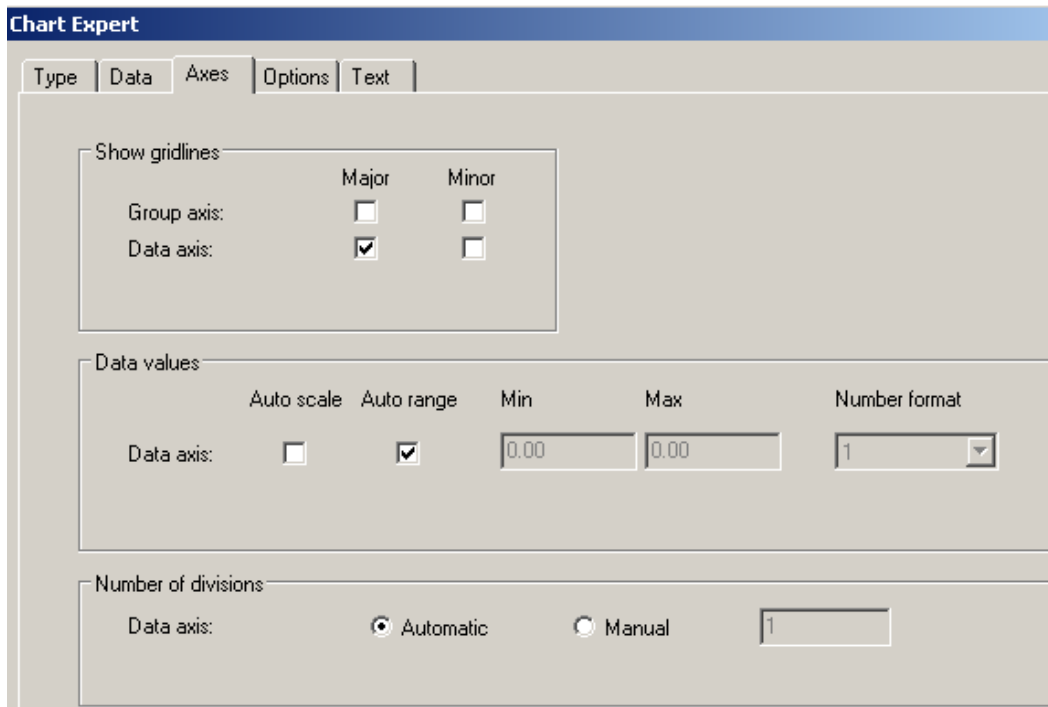


## Chart Expert, Type Tab

Highlight the “Side by side bar chart” option.



## Chart Expert, Axes tab



## Chart Expert, Options tab

The screenshot shows the 'Chart Expert' dialog box with the 'Options' tab selected. The dialog is divided into several sections:

- Chart color:** Radio buttons for 'Color' (selected) and 'Black and white'. A 'Format' button is to the right.
- Data points:** Checkboxes for 'Show label' and 'Show value', both unchecked. A 'Number format' dropdown menu is set to '1'.
- Customize settings:** A 'Transparent background' checkbox is unchecked. 'Marker size' is set to 'Medium' and 'Marker shape' is set to 'Rectangle'. 'Bar size' is set to 'Large'.
- Legend:** A 'Show legend' checkbox is checked. The 'Placement' dropdown menu is set to 'Right'.

## Chart Expert, Text tab

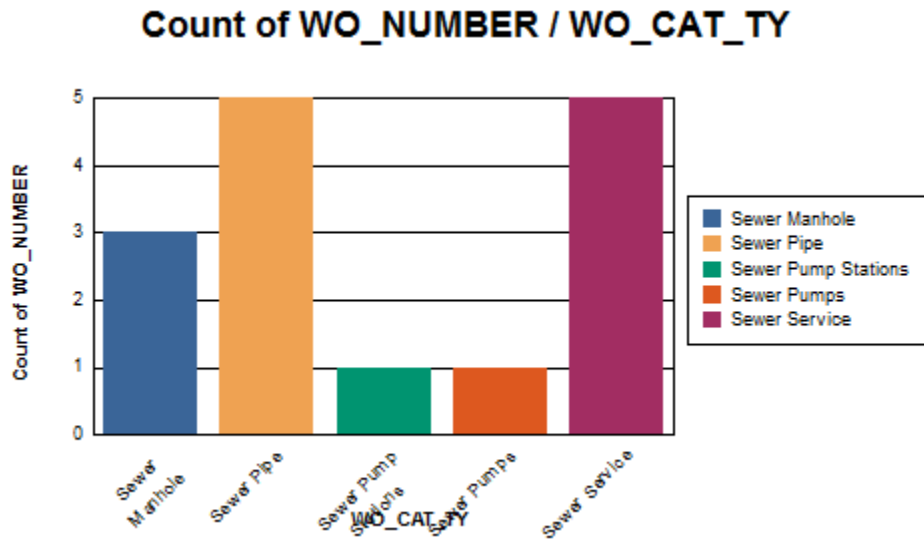
The screenshot shows the 'Chart Expert' dialog box with the 'Text' tab selected. The dialog is divided into two main sections:

- Titles:** A table for configuring auto-text for various titles. All checkboxes are checked.

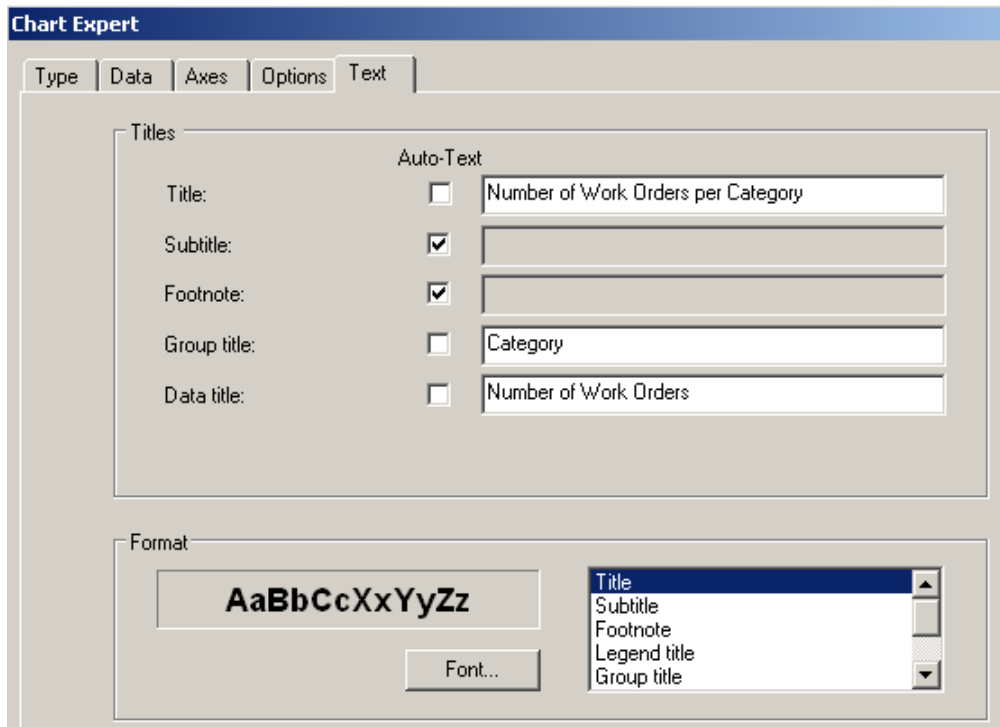
|              | Auto-Text                      |
|--------------|--------------------------------|
| Title:       | Count of WO_NUMBER / WO_CAT_TY |
| Subtitle:    |                                |
| Footnote:    |                                |
| Group title: | WO_CAT_TY                      |
| Data title:  | Count of WO_NUMBER             |

- Format:** A preview box shows the text 'AaBbCcXxYyZz'. A 'Font...' button is below it. To the right is a list box containing: Title, Subtitle, Footnote, Legend title, and Group title.

The graph should look similar to the following with the current titles:

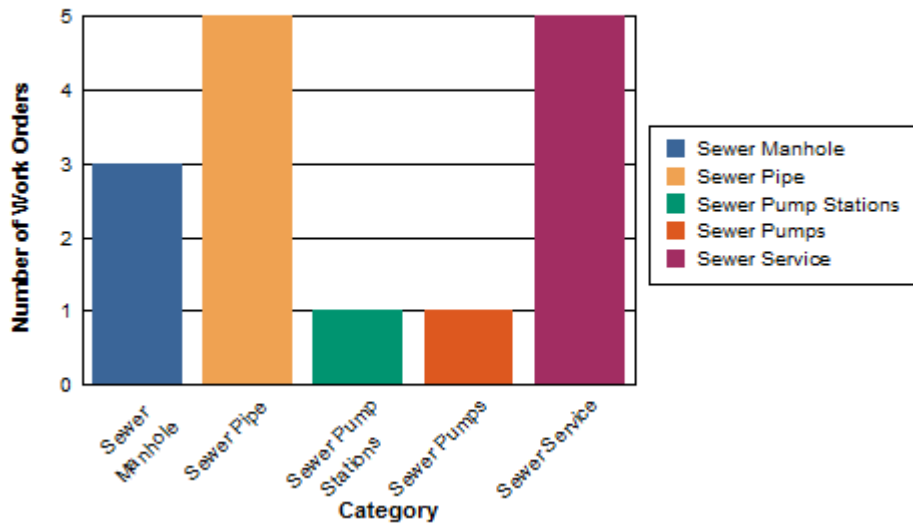


5. To modify the report, right click on the graph and select *Chart Expert*.
6. Change the names in the Text tab to clarify the graph titles.
  - o Uncheck the Auto-Text boxes to allow modification of the text in the associated field.



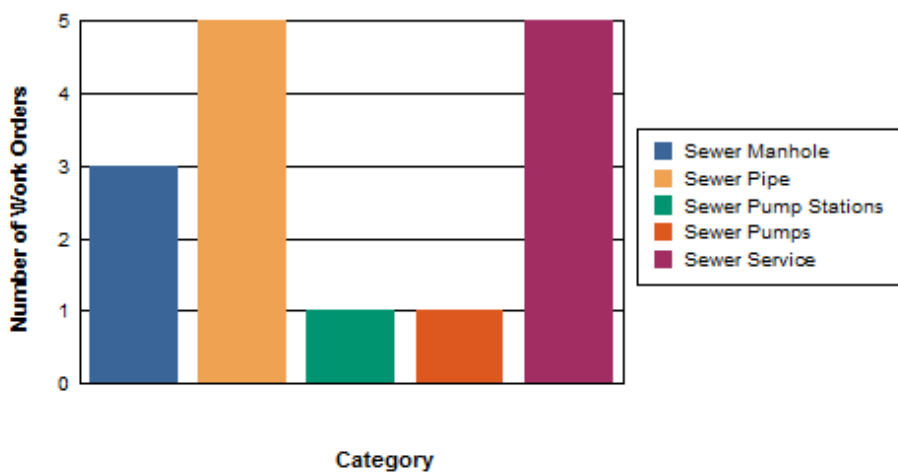
7. There may be an issue with overlapping of the Group axis title and the axis labels. One option to correct this is simply to move the Group axis title (Category).
  - a. Click on the axis title (Category) which activates black dots around the edges.
  - b. Click and drag the title to the new location.

## Number of Work Orders per Category



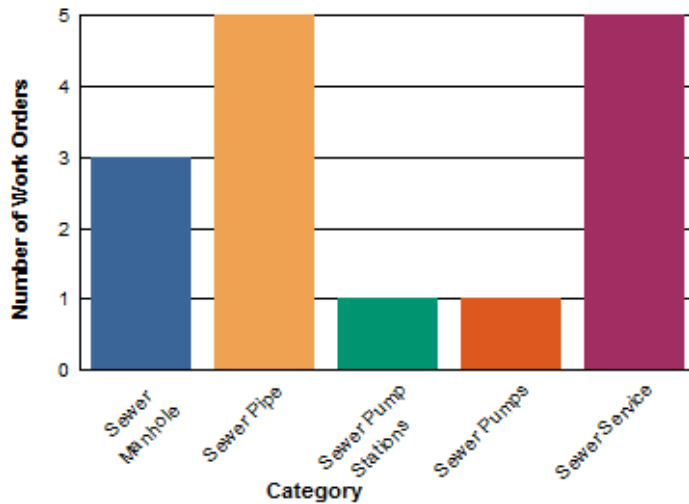
8. Another option would be to remove the axis values and let the legend suffice.
  - a. Click on one of the Group axis labels (such as Sewer Pipe) until it has the dotted box around it. (It may take multiple clicks)
  - b. Right click within this box and select *Format Axis Label...*
  - c. Under Color select "Transparent" and then *OK*.
  - d. Now the Legend will explain the categories.

## Number of Work Orders per Category



9. If the graph works better with Group Axis values, then the legend is redundant information and could be removed. (Of course the Group Axis Label color would need to go back to black.)
  - o To remove the Legend open the *Chart Expert - Options tab*.
  - o Uncheck the “Show legend” box. Then *OK*.

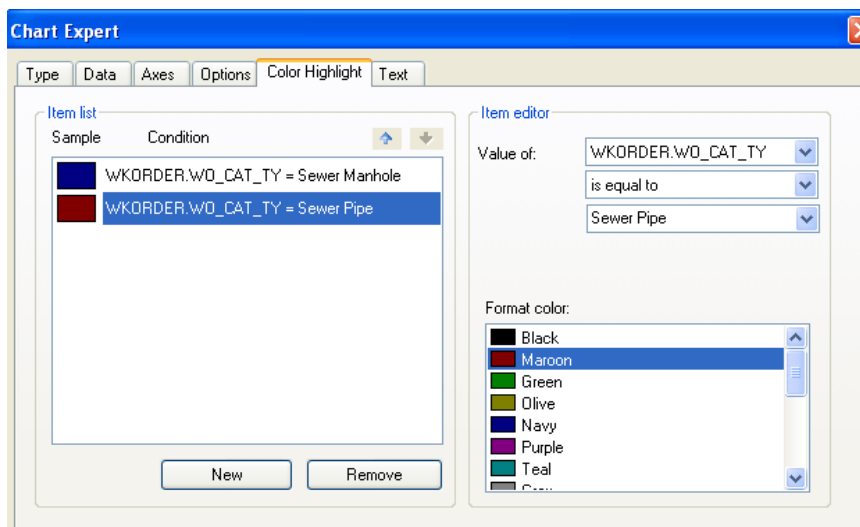
## Number of Work Orders per Category



### Chart Expert, Color Highlight

Sometimes it is helpful to use specific colors for certain groups. These can be set up in the Color Highlight tab using the drop down boxes to select the values.

- a. Click *New*
- b. Select the values and color in the *Item editor* section.
- c. Repeat *New* and *Values* for each Category that needs a specific color.
- d. Select *OK*.

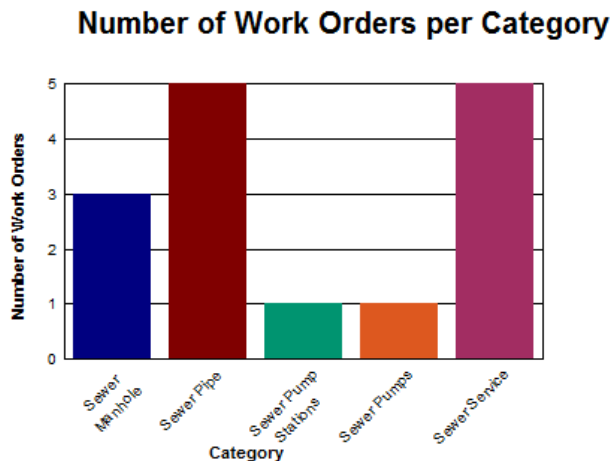




| Sewer Work Orders By Category Report |   |            | Print Date |          |                       |      |     |      |     |      |     |
|--------------------------------------|---|------------|------------|----------|-----------------------|------|-----|------|-----|------|-----|
| Report Subtitle                      |   |            | Print Time |          |                       |      |     |      |     |      |     |
| Category                             | Count of WO's   | Total Cost |            |          |                       |      |     |      |     |      |     |
| GH1                                  |   |            | @Zs1a      |          |                       |      |     |      |     |      |     |
| GH2a                                 | Group #2 Name   |            | @Zs1a      |          |                       |      |     |      |     |      |     |
| GH2b                                 | WO NUMBER   | WO_ID      | @Zs1a      |          |                       |      |     |      |     |      |     |
| D                                    |   | TOTCOST    | @Zs1a      |          |                       |      |     |      |     |      |     |
| GF2a                                 |   |            | @WOC's     |          |                       |      |     |      |     |      |     |
| GF2b                                 |   | COST Tot   | @TotSum    |          |                       |      |     |      |     |      |     |
| GF1                                  | WO_CAT_CD, WO_CAT_TY  | DER.WO_ID  | @Task Tot  |          |                       |      |     |      |     |      |     |
| RFa                                  | Grand Totals:   | RDER.WO_ID | @Total     |          |                       |      |     |      |     |      |     |
| RFb                                  | <h3>Number of Work Orders per Category</h3> <table border="1"> <caption>Number of Work Orders per Category</caption> <thead> <tr> <th>Category</th> <th>Number of Work Orders</th> </tr> </thead> <tbody> <tr> <td>2000</td> <td>100</td> </tr> <tr> <td>2001</td> <td>200</td> </tr> <tr> <td>2002</td> <td>290</td> </tr> </tbody> </table> |            |            | Category | Number of Work Orders | 2000 | 100 | 2001 | 200 | 2002 | 290 |
| Category                             | Number of Work Orders   |            |            |          |                       |      |     |      |     |      |     |
| 2000                                 | 100   |            |            |          |                       |      |     |      |     |      |     |
| 2001                                 | 200   |            |            |          |                       |      |     |      |     |      |     |
| 2002                                 | 290   |            |            |          |                       |      |     |      |     |      |     |

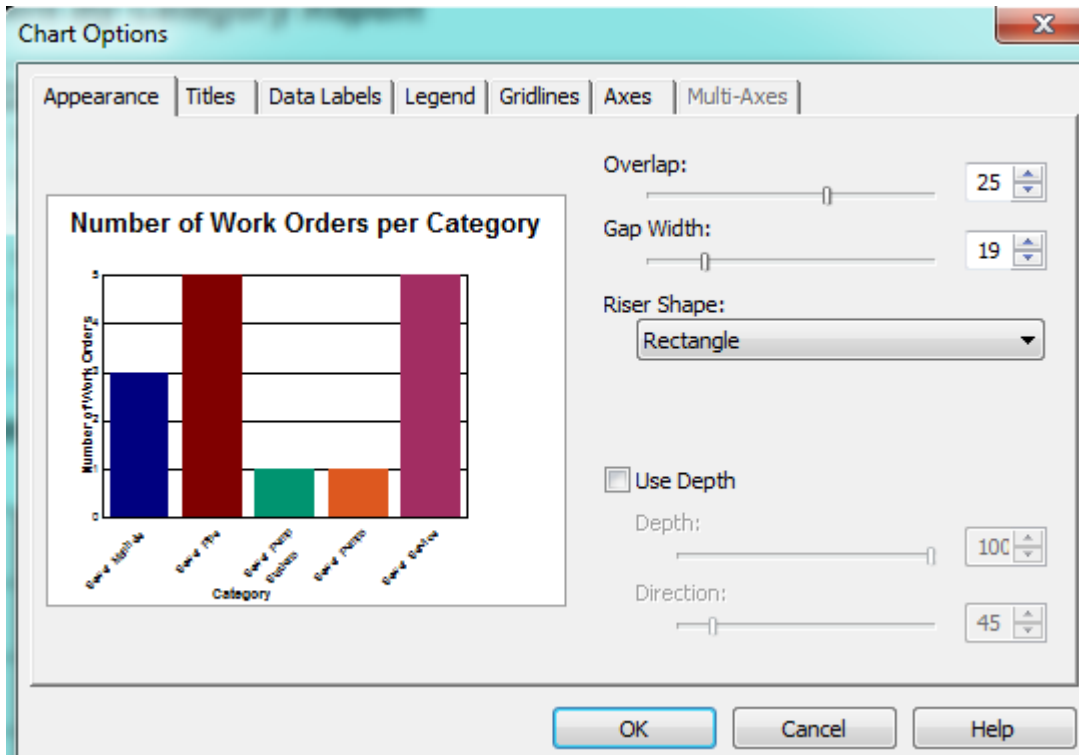
Preview

| Sewer Work Orders By Category Report |                     |               | 7/2/2014     |
|--------------------------------------|---------------------|---------------|--------------|
|                                      |                     |               | 11:29 AM     |
| Category                             |                     | Count of WO's | * Total Cost |
| 21100                                | Sewer Manhole       | 3             | \$0.00       |
| 21200                                | Sewer Pipe          | 5             | \$580.27     |
| 21300                                | Sewer Service       | 5             | \$481.54     |
| 22000                                | Sewer Pump Stations | 1             | \$0.00       |
| 22100                                | Sewer Pumps         | 1             | \$0.00       |
| Grand Totals:                        |                     | 15            | \$1,061.81   |

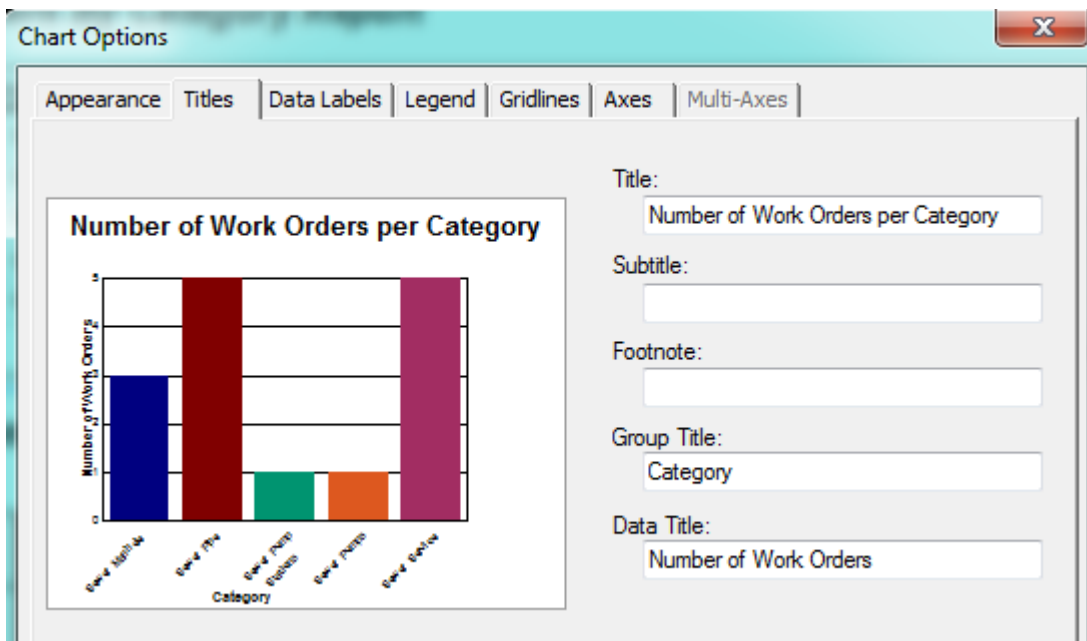


Right click on the chart for further options. Examples of these options are displayed on the following pages. Options vary depending on the type of graph you are working with:

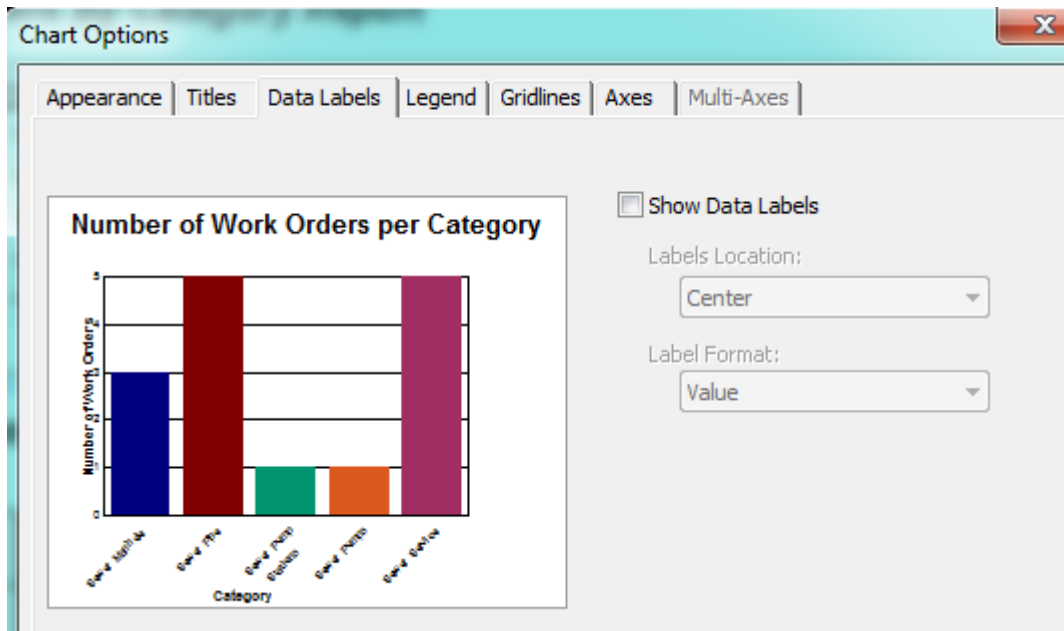
### Chart Options, Appearance tab



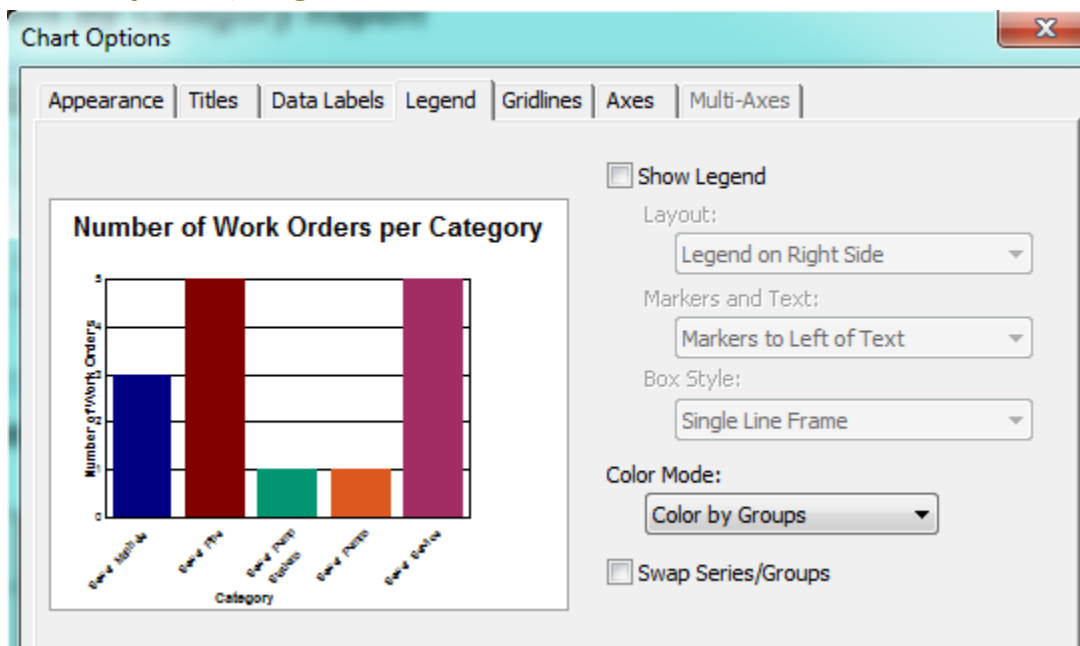
### Chart Options, Titles tab



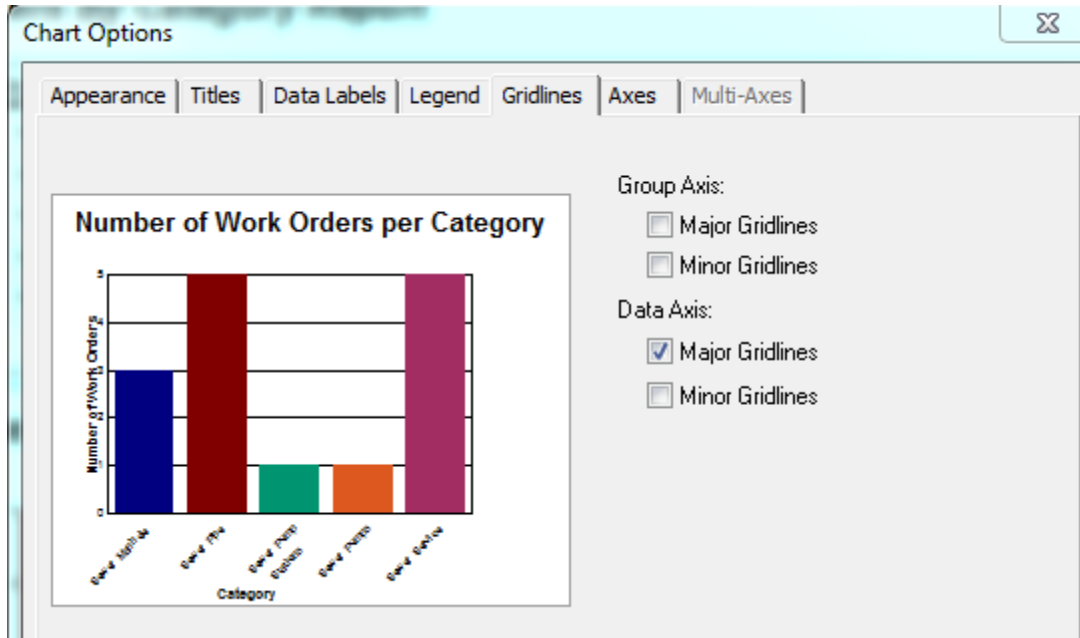
## Chart Options, Data Labels tab



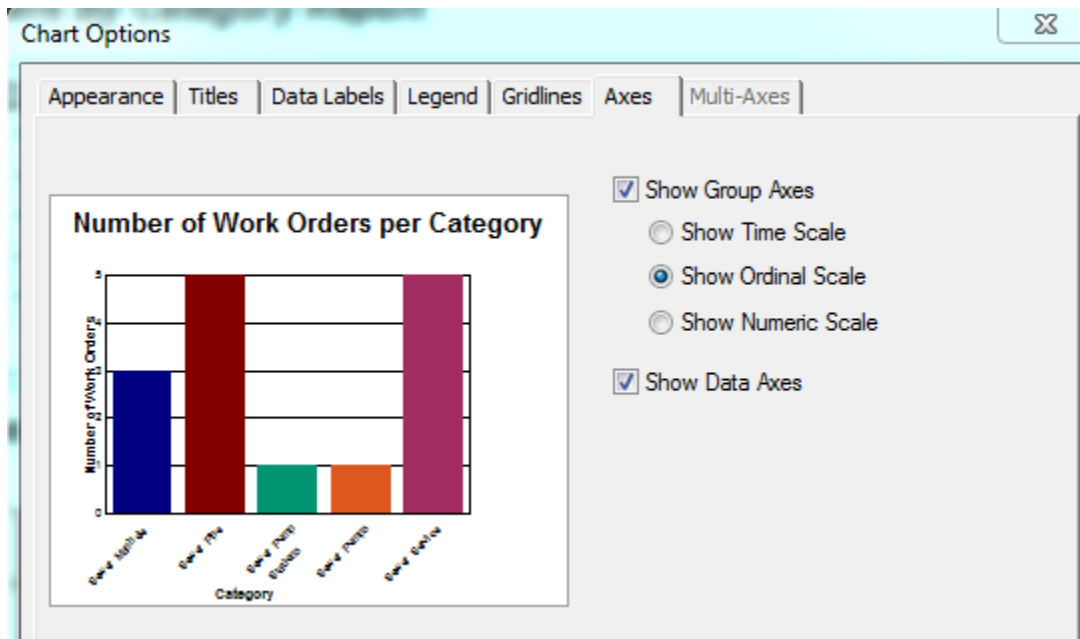
## Chart Options, Legend tab



## Chart Option, Gridlines tab



## Chart Options, Axes tab



You can play with the options until you achieve the look that best portrays your information.

Example 22A

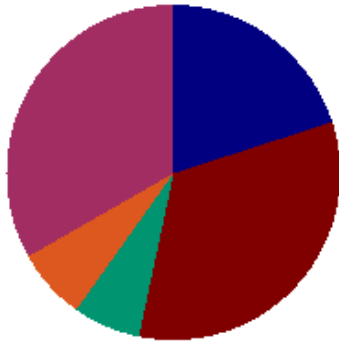
## Chart Type

In the *Chart Expert, Type* tab, you can select the Chart Type. These include **Bar**, **Pie**, **Line**, **Gauge**, etc.

### Pie Chart

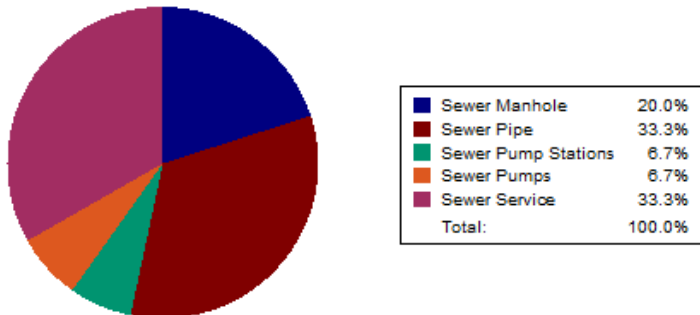
If the Pie option had been chosen instead of the Bar Graph pictured above, the graph we created would look like this:

#### Number of Work Orders per Category



The Legend needs to be added back in. (*Options* tab)

#### Number of Work Orders per Category



The Categories are shown as percentages so the title should reflect this. (*Text* tab)

#### Percentage of Work Orders per Category

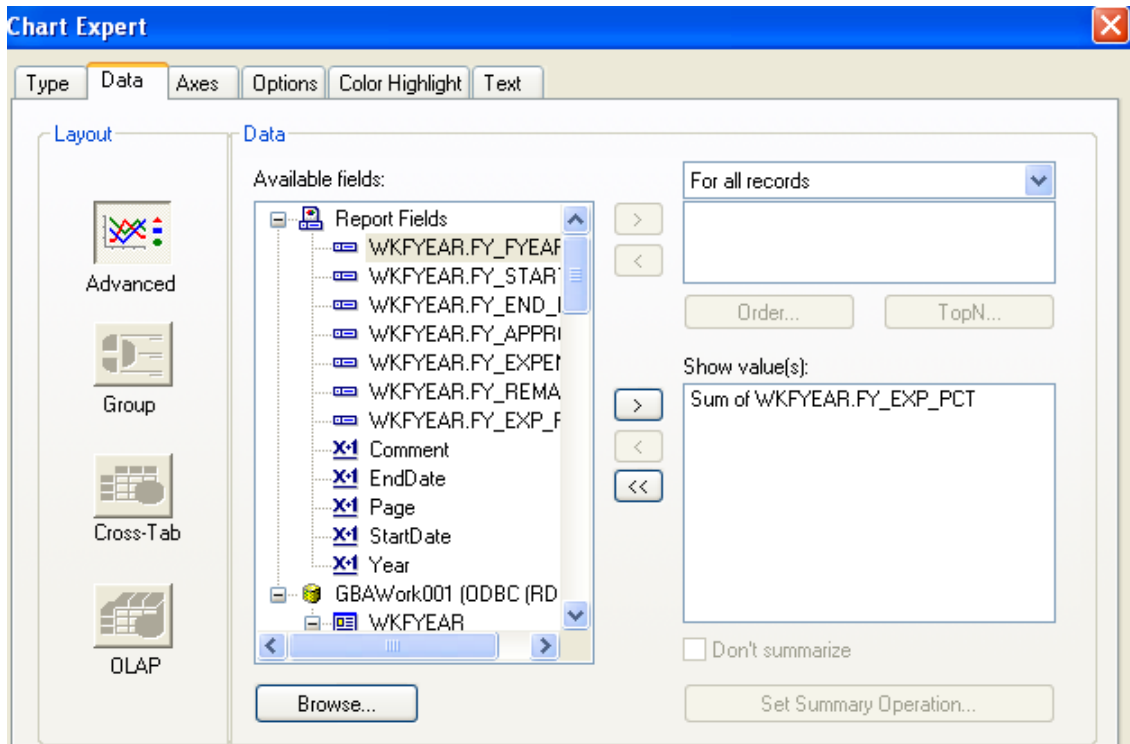
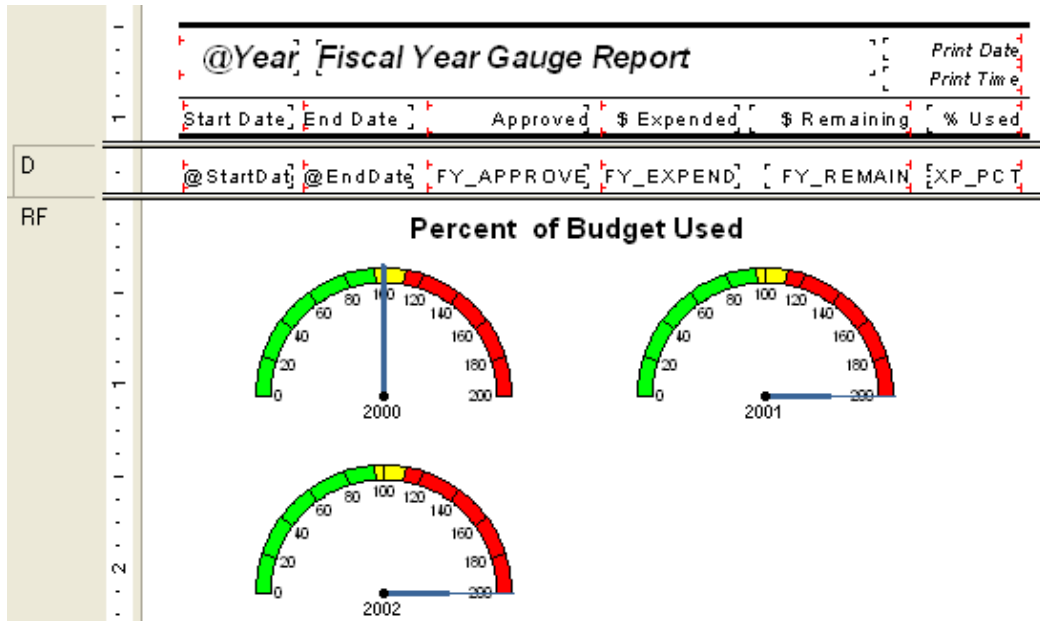


Example 23A and Example 24A

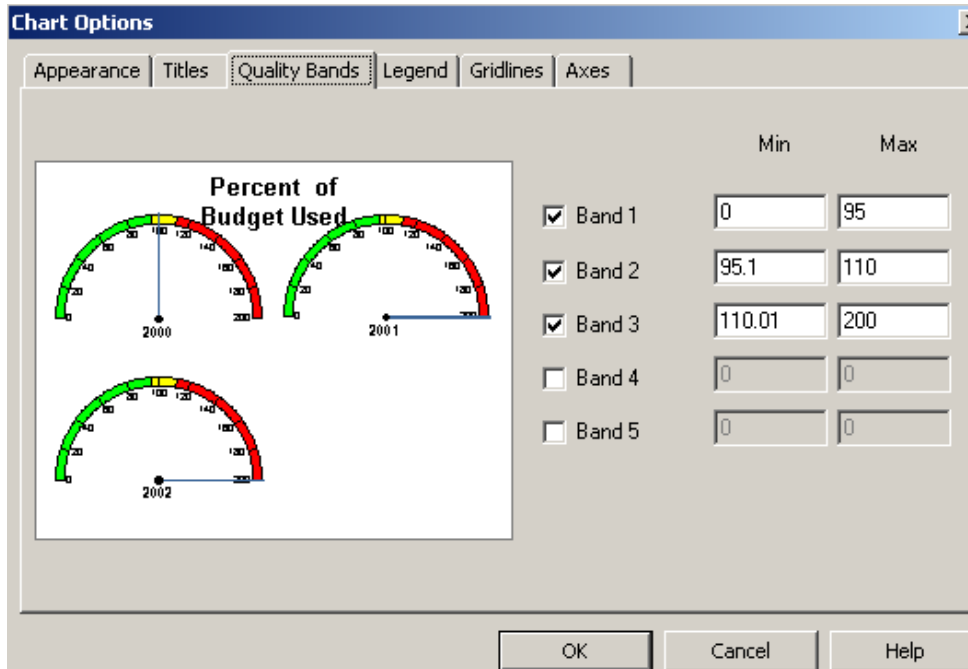
## Gauge Chart

Gauge reports give a unique perspective on data. An expenditure report can show where you are with your spending for the year. You can set the values and colors of your bands. At a glance the pointer will show you where you are now and if you need to worry about the next few months of spending or not.

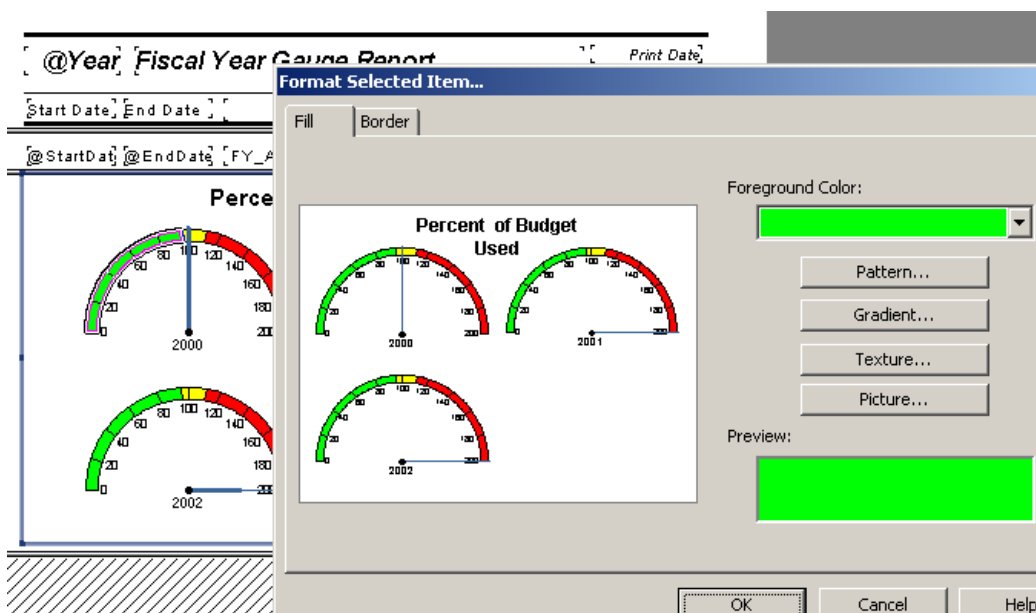
In the *Work* report folder open the **Fiscal Year Gauge Report (DashBudgetYearGauge.rpt)**. The report is set up as follows:




1. To select the colors in the gauge, right click on the gauge chart box.
2. Select *Chart Options*.
3. Click on the "Quality Bands" tab. You can set up to 5 "bands" or ranges of values.
4. Click OK to save.



5. For each band to have an individual color, you have to click each individual band to highlight.
6. Right click and select "Format Selected Item...".
7. Choose the Foreground Color.
8. Click OK.

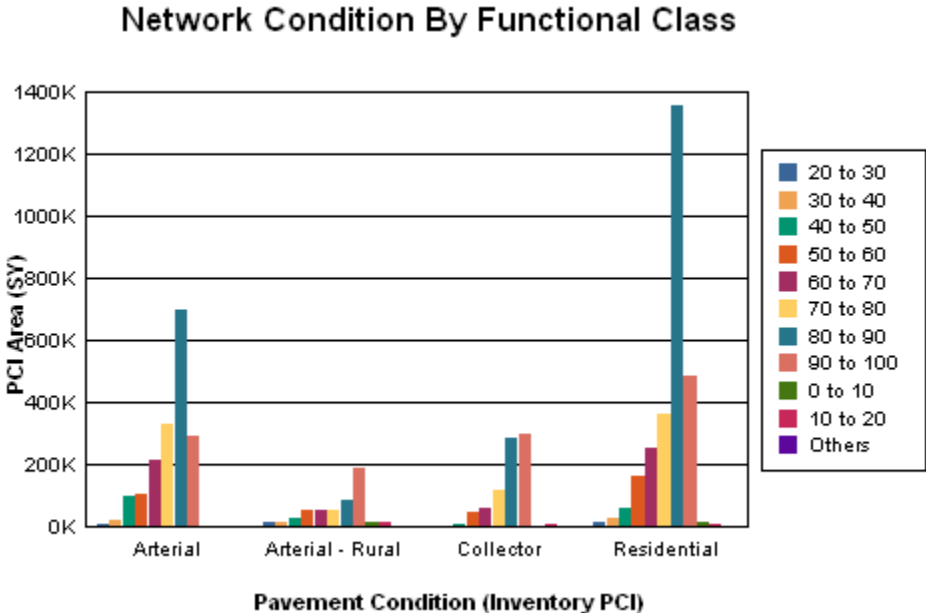


# Cross – Tabs

Cross-Tab  is a row and column object that can be helpful in creating a type of spreadsheet. It is also useful in creating and modifying graphs.

It was necessary to use a Cross-Tab object to fix some graphs that were originally created using just the Crystal Chart option.

One graph looked like this:



As you can clearly see, the chart legend poses the most obvious issue. The placement of the bars is an additional concern. The “0 to 10”, “10 to 20”, and “Others” bars are placed after the “90 to 100” bar instead of before the “20 to 30” bar.

“This behavior occurs because Crystal Reports takes the first grouping in the data set and creates a sorted view of this data before creating the graph. When this first grouping does not contain all the possible items to be shown in the legend, Crystal Reports will sort the selection and add any new items to the end of the legend list.”

<http://technicalsupport.businessobjects.com>

The Arterial grouping did not have bars for “0 to 10”, “10 to 20” or “Others”. Thus, the legend was created without these ranges. As additional groupings were added, the legend picked up the missing PCI values.

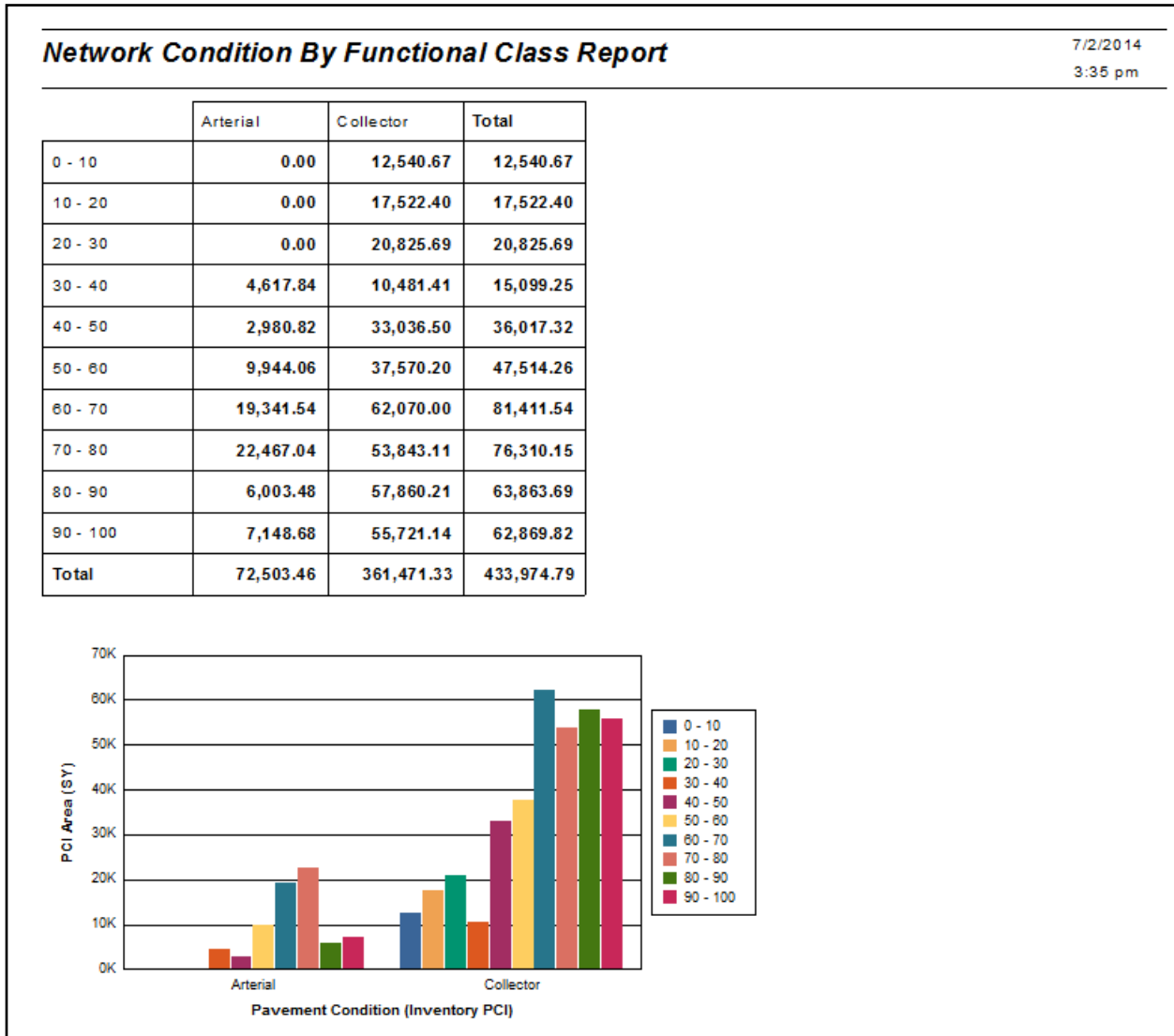
A Cross-Tab object was used to correct these issues.



## Creating a Cross-Tab Report

We will create a Cross-Tab report for Street Pavement Conditions to be run in the **Pavement Manager>>Field Inspections** module. A cross-tab object can be brought into an existing report or a new report can be created using the Cross-Tab Report Wizard.

Report to be created:

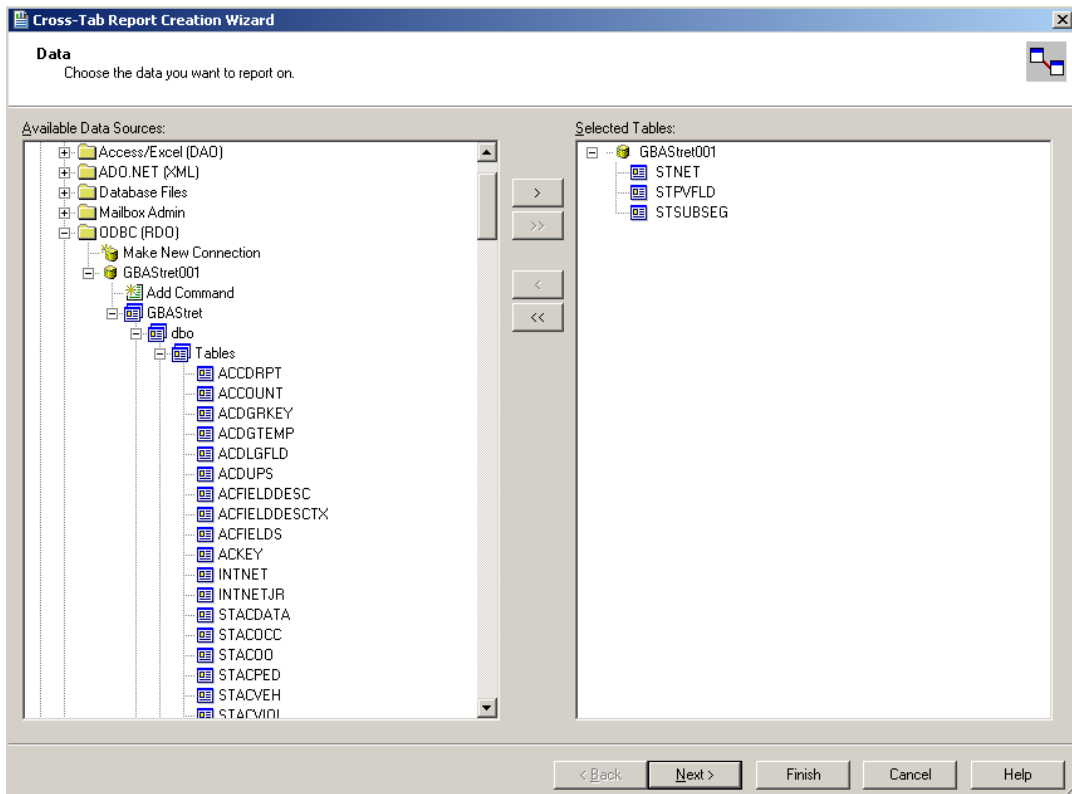


This module has fields utilizing several tables so it would be worthwhile to check **Field Definitions** to make sure we bring in all of the pertinent tables.

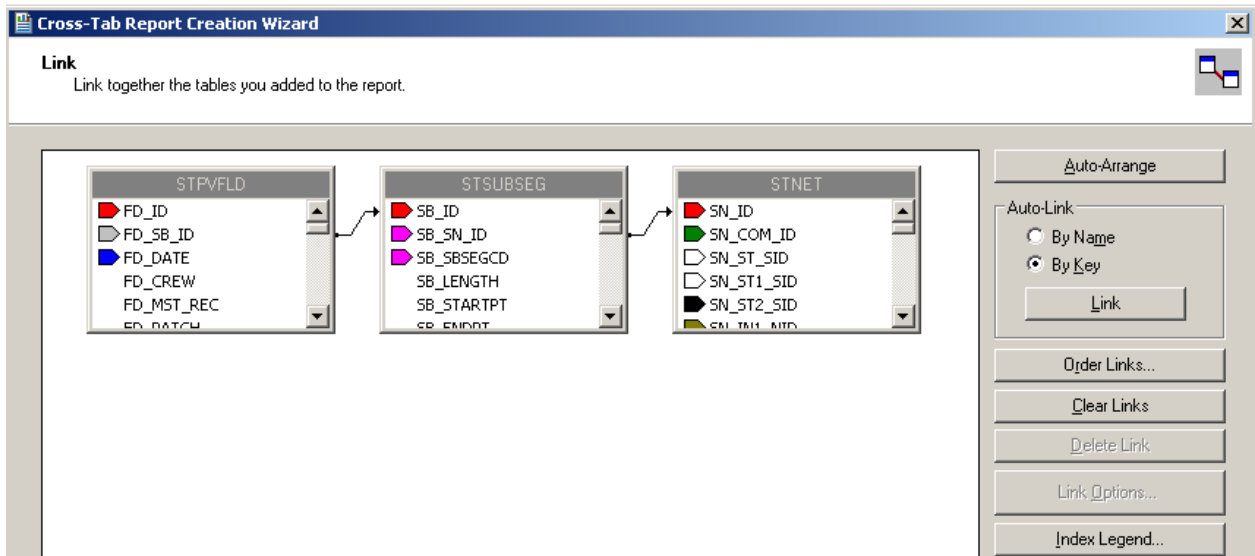
We will be using the following fields:

- Inventory PCI (STPVFLD\_FD\_PCI)
- Total Area (STSUBSEG\_SB\_TAREA)
- Street Classification (STNET\_SN\_CLAS\_TY)

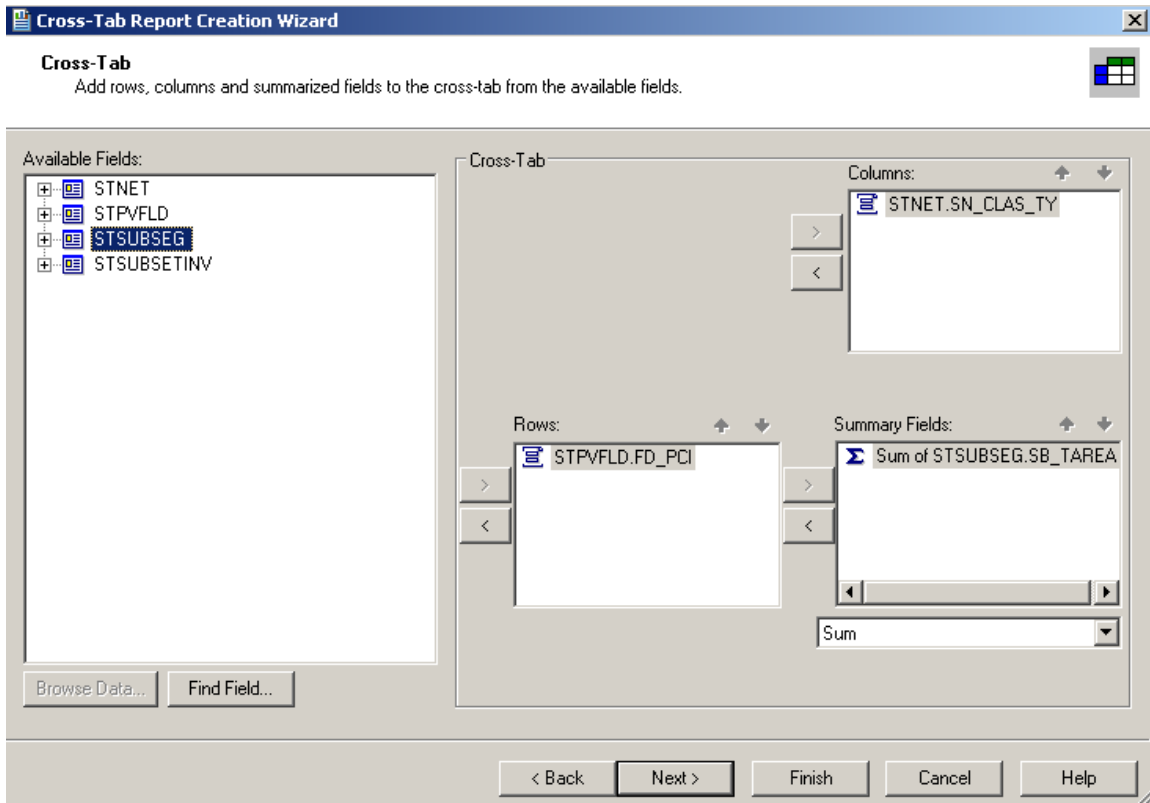
1. Open Crystal Reports and select *New Reports >> Cross-Tab Report Wizard*.
2. Expand *Create New Connection*.
3. Open *ODBC (RDO)*.
4. Within *Data Source Selection* select *GBAStret001 >> Finish* (You may need to provide User Name and Password here).
5. Move the necessary tables from *Available Data Sources* to *Selected Tables*.



6. Click **Next** and link as follows. Remember to “Left Outer Join” between tables.

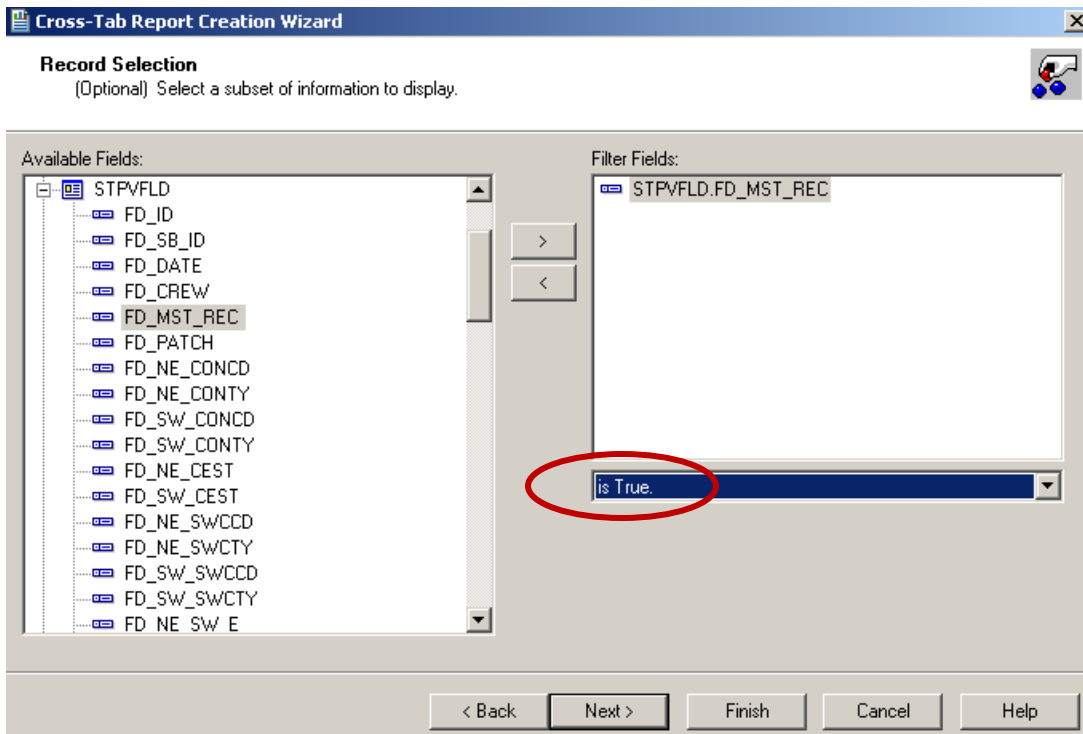


7. Click **Next**. Set up the *Columns*, *Rows*, and *Summary Fields* as follows:



8. Click **Next**. At this time, we will skip the charting option.

9. Click **Next**. We would like to filter for the Most Recent Records (**STPVFLD.FD\_MST\_REC**).



10. Click **Next**. Leave the Grid Style as *Original*.
11. Click **Finish**.
12. Save the report in the **Street** report folder as **LC\_PCIClass.rpt**.

A report has been created.

This is the Cross-Tab object that has been created.

|      | Arterial    | Collector       | Residential | Total           |
|------|-------------|-----------------|-------------|-----------------|
| 6.90 | <b>0.00</b> | <b>1,267.33</b> | <b>0.00</b> | <b>1,267.33</b> |
| 7.75 | <b>0.00</b> | <b>3,830.56</b> | <b>0.00</b> | <b>3,830.56</b> |
| 8.45 | <b>0.00</b> | <b>458.22</b>   | <b>0.00</b> | <b>458.22</b>   |
| 8.90 | <b>0.00</b> | <b>1,022.33</b> | <b>0.00</b> | <b>1,022.33</b> |

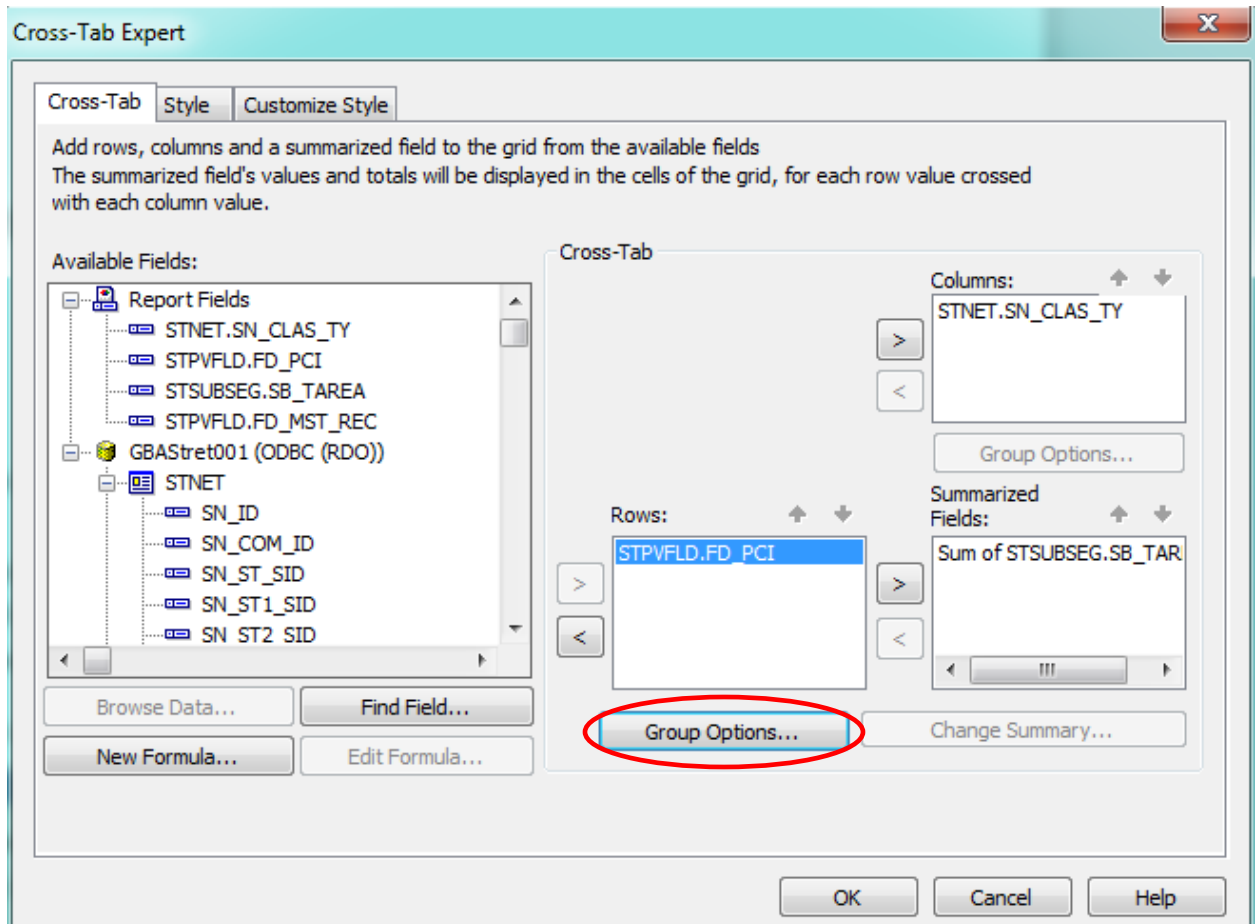
It shows every PCI value (6.9, 7.75, 8.45...). We would like to group the PCI values to make the data more manageable.

## Cross-Tab Expert, Grouping

There are various options that can be set up in the Cross-Tab Expert.

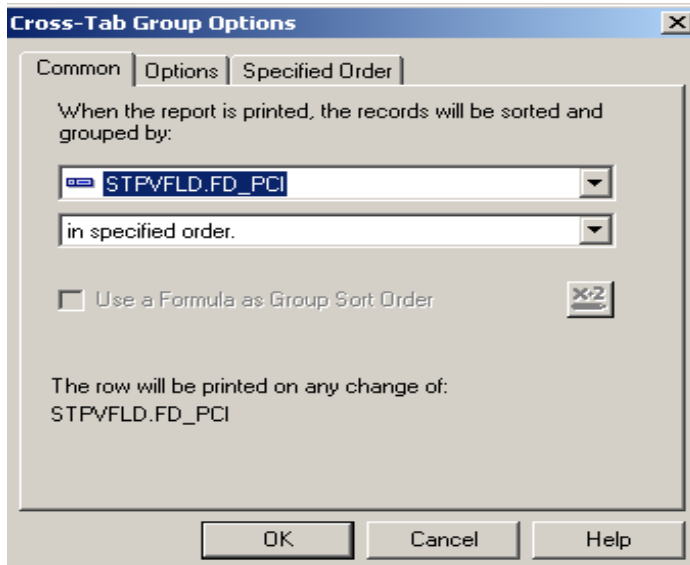
At this time the *Group Options...* will be set up.

1. Right click in the empty top-left corner of the table and select **Cross-Tab Expert...**
2. Click on the **STPVFLD.FD\_PCI** field in the **Rows** box to highlight it.

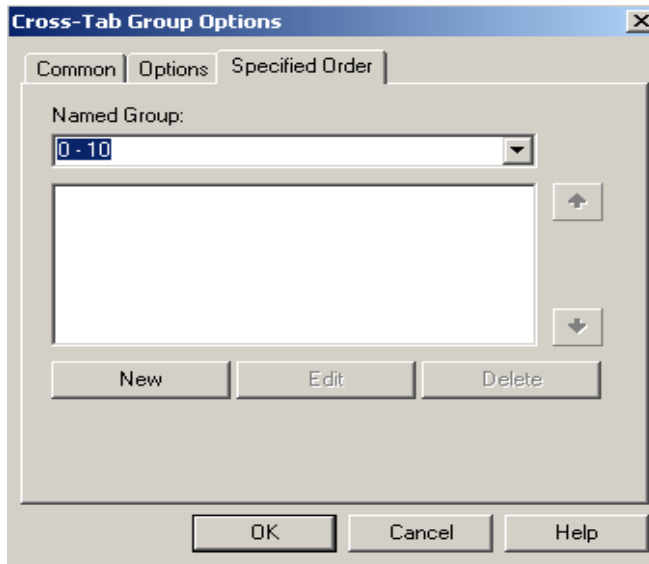


3. Click on **Group Options...** This will open the various grouping options that we have previously used.

- Using the drop down box below the field name, select “in specified order”.

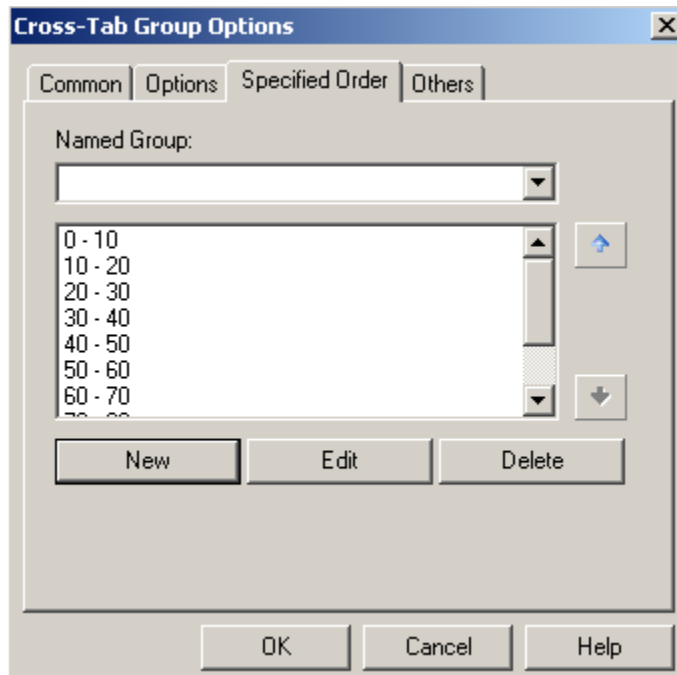
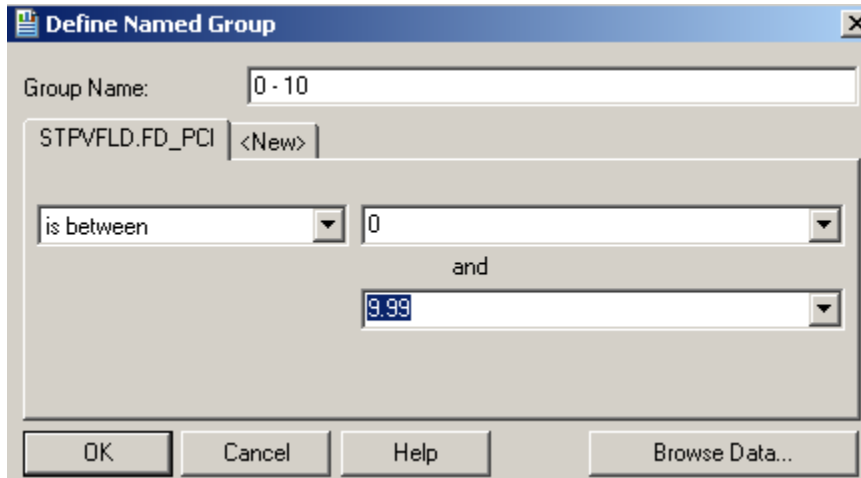


- This should take you to the **Specified Order** tab. If that tab does not open, click on the tab name.
- Enter the first group name.
  - “0 - 10”



- Click **New**. (Or, you can click **New** and enter the group name in the **Define Named Group** box.)

8. Select “is between” from the drop down box. Two boxes appear allowing you to set the upper and lower limits of the group. Enter the appropriate values.
9. Click **OK** and continue the process until all of the ranges have been entered.



10. Click **OK**
11. Click **OK** again to close the *Cross-Tab Expert*.

The report now looks like this:

|              | Arterial         | Collector        | Residential     | Total            |
|--------------|------------------|------------------|-----------------|------------------|
| 0 - 10       | <b>0.00</b>      | <b>12,541.26</b> | <b>0.00</b>     | <b>12,541.26</b> |
| 10 - 20      | <b>1,766.33</b>  | <b>15,337.62</b> | <b>0.00</b>     | <b>17,103.95</b> |
| 20 - 30      | <b>0.00</b>      | <b>18,502.09</b> | <b>0.00</b>     | <b>18,502.09</b> |
| 30 - 40      | <b>4,617.84</b>  | <b>7,977.52</b>  | <b>470.56</b>   | <b>13,065.92</b> |
| 40 - 50      | <b>2,980.82</b>  | <b>9,800.53</b>  | <b>535.83</b>   | <b>13,317.18</b> |
| 50 - 60      | <b>11,124.56</b> | <b>54,284.62</b> | <b>0.00</b>     | <b>65,409.18</b> |
| 60 - 70      | <b>46,264.87</b> | #####            | <b>1,285.56</b> | #####            |
| 70 - 80      | <b>23,614.21</b> | <b>57,101.67</b> | <b>0.00</b>     | <b>80,715.88</b> |
| 80 - 90      | <b>6,003.48</b>  | #####            | <b>0.00</b>     | #####            |
| 90 - 100     | <b>7,148.68</b>  | <b>70,989.21</b> | <b>779.72</b>   | <b>78,917.61</b> |
| Others       | <b>0.00</b>      | <b>28,380.30</b> | <b>0.00</b>     | <b>28,380.30</b> |
| <b>Total</b> | #####            | #####            | <b>3,071.67</b> | #####            |

To see all of the number fields, the cells size will need to be increased.

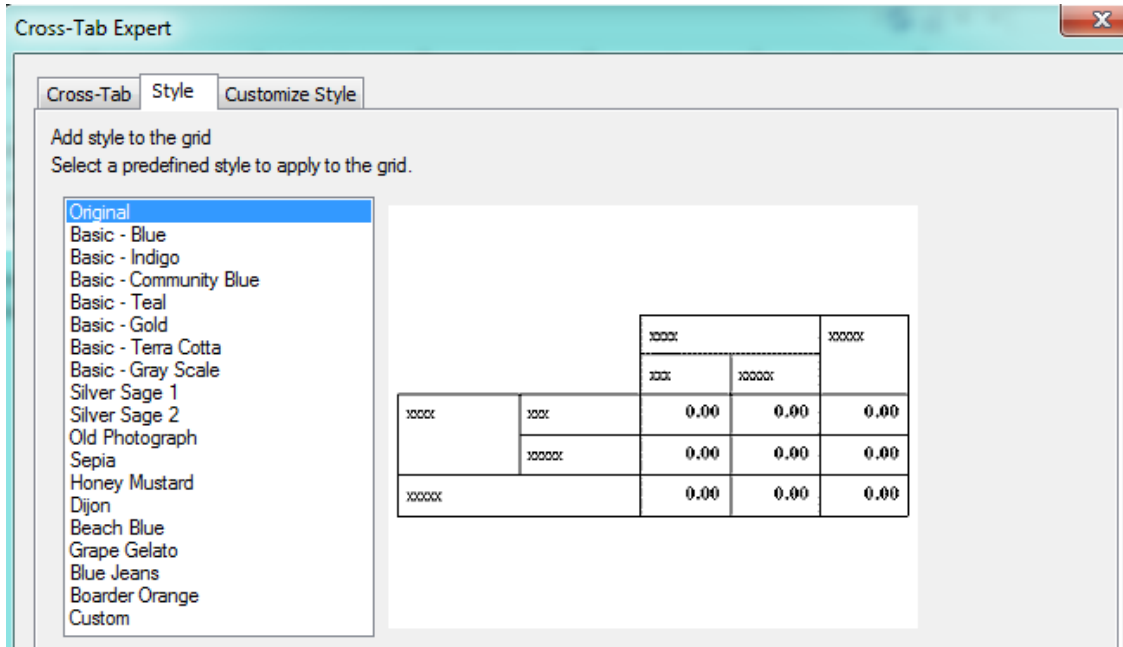
12. Click on one of the blocked out fields (#####). This will activate the sizing handles.
13. Click and drag the sizing handle to increase the width of the cell. All of the cells for this field will increase in size.
14. Change the Column titles to Bold, right aligned and the Area values beneath to not bold.
15. Save

|              | <b>Arterial</b>   | <b>Collector</b>  | <b>Residential</b> | <b>Total</b>      |
|--------------|-------------------|-------------------|--------------------|-------------------|
| 0 - 10       | 0.00              | 12,541.26         | 0.00               | <b>12,541.26</b>  |
| 10 - 20      | 1,766.33          | 15,337.62         | 0.00               | <b>17,103.95</b>  |
| 20 - 30      | 0.00              | 18,502.09         | 0.00               | <b>18,502.09</b>  |
| 30 - 40      | 4,617.84          | 7,977.52          | 470.56             | <b>13,065.92</b>  |
| 40 - 50      | 2,980.82          | 9,800.53          | 535.83             | <b>13,317.18</b>  |
| 50 - 60      | 11,124.56         | 54,284.62         | 0.00               | <b>65,409.18</b>  |
| 60 - 70      | 46,264.87         | 110,258.58        | 1,285.56           | <b>157,809.01</b> |
| 70 - 80      | 23,614.21         | 57,101.67         | 0.00               | <b>80,715.88</b>  |
| 80 - 90      | 6,003.48          | 104,884.68        | 0.00               | <b>110,888.16</b> |
| 90 - 100     | 7,148.68          | 70,989.21         | 779.72             | <b>78,917.61</b>  |
| Others       | 0.00              | 28,380.30         | 0.00               | <b>28,380.30</b>  |
| <b>Total</b> | <b>103,520.79</b> | <b>490,058.08</b> | <b>3,071.67</b>    | <b>596,650.54</b> |

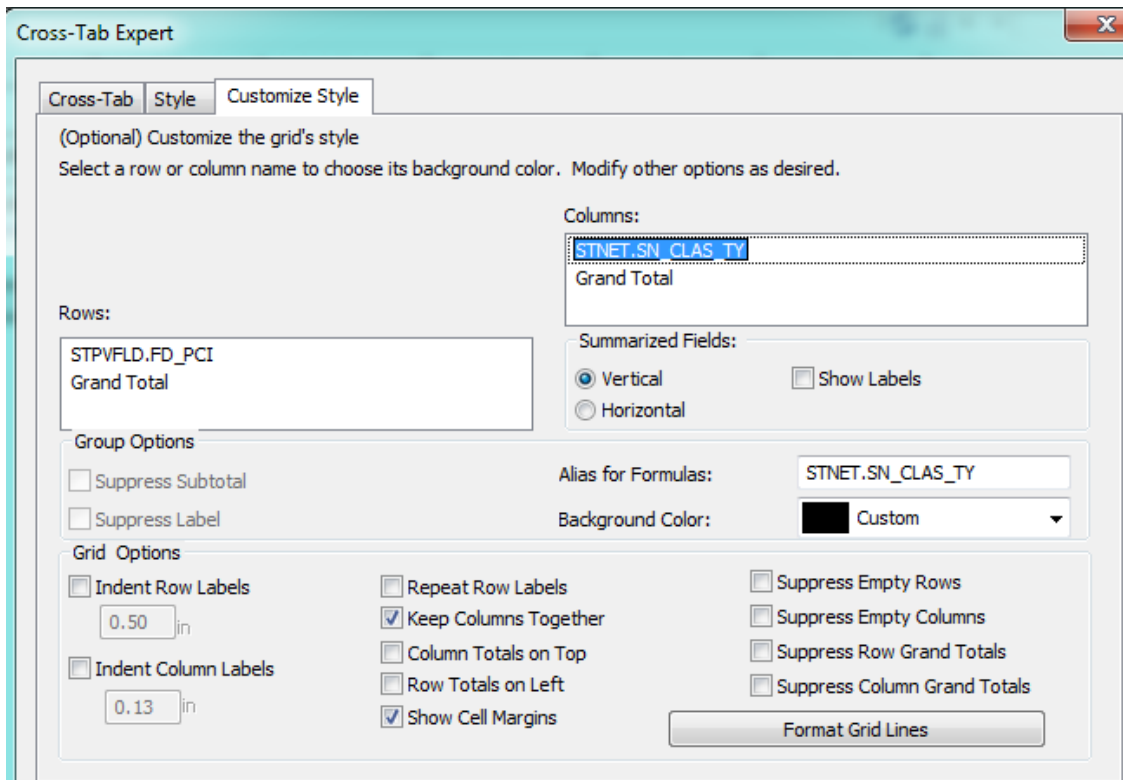


These Cross-Tab options are worth reviewing. The style might catch the eye of the reader to tempt them to read the data.

## Cross-Tab Expert, Style




## Cross-Tab Expert, Customize Style

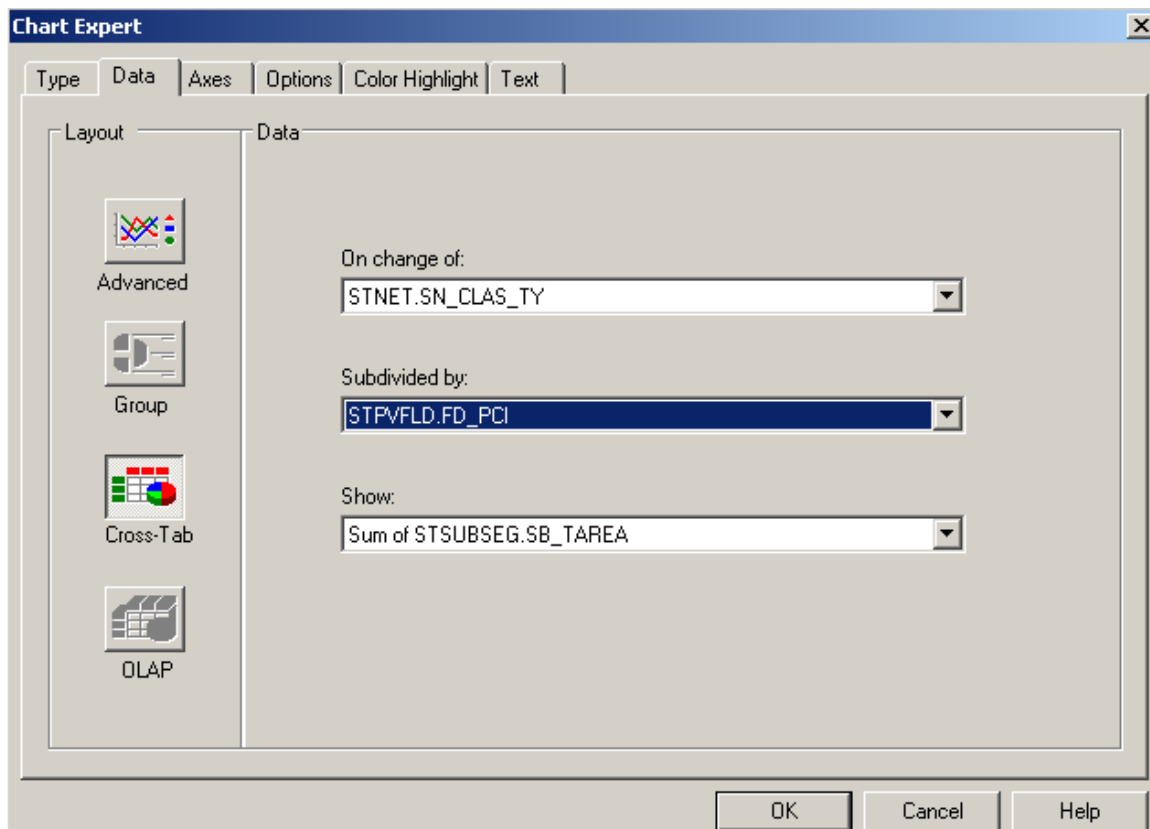


Example 25A

## Graph Using Cross-Tab Data

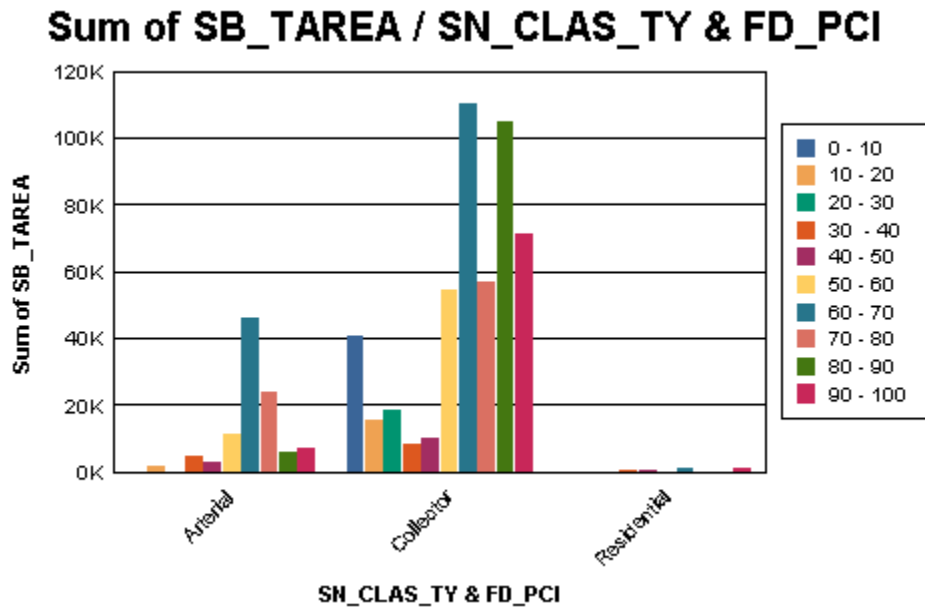
We will now create a graph using the information from the **Cross Tab** object created in the previous example.

1. Click on the report *Design* tab and increase the size of the **Report Footer** section to about 3”.
2. Click on **Insert Chart**  or click on **Insert** and then **Chart**.
3. Click the chart box frame into the **Report Footer** section.
4. The **Chart Expert** dialogue opens.
5. In the **Data** tab select **Cross-Tab**.
6. Use the drop down arrows to choose the appropriate fields and formulas.

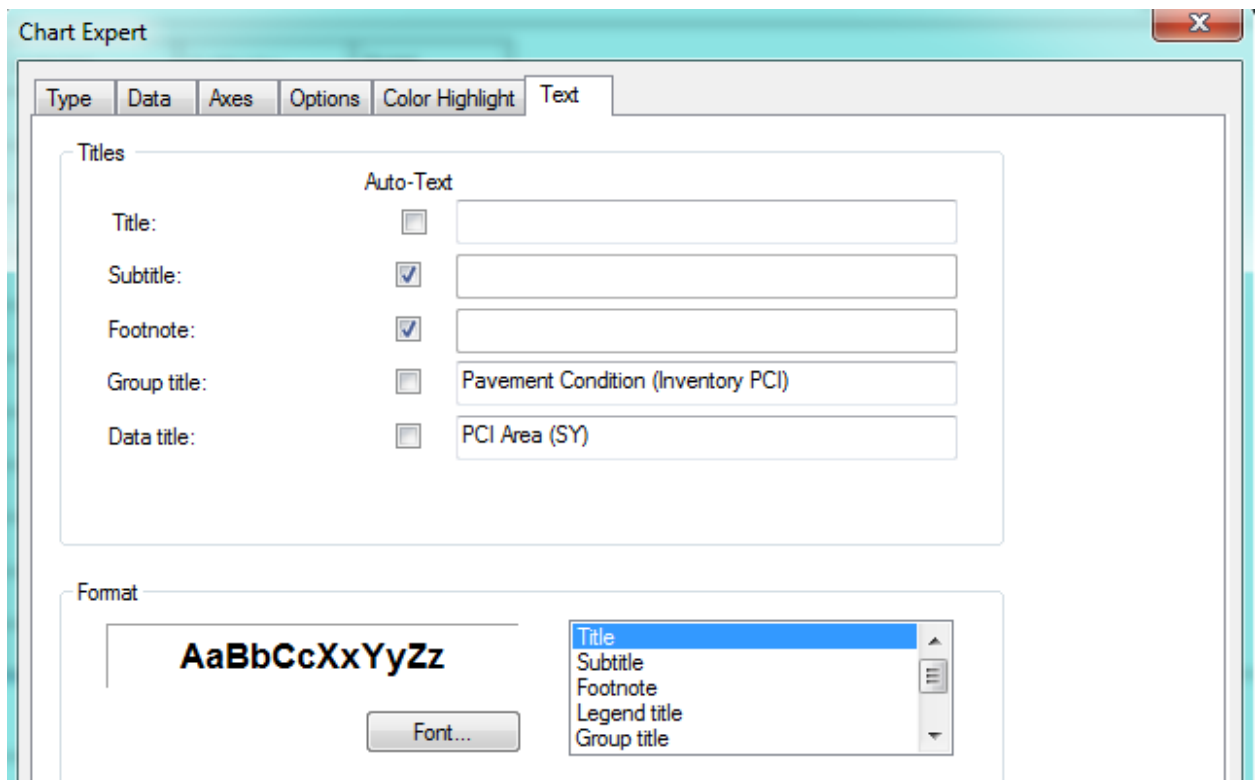


7. Click **OK**.

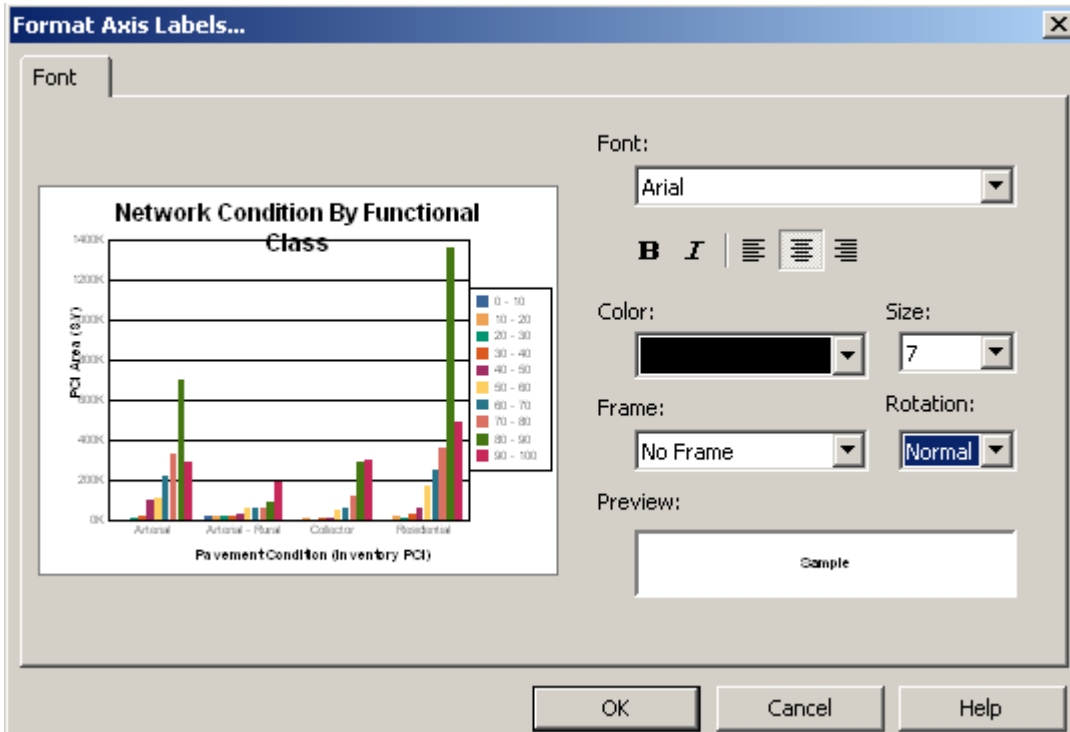
The chart now looks like this:



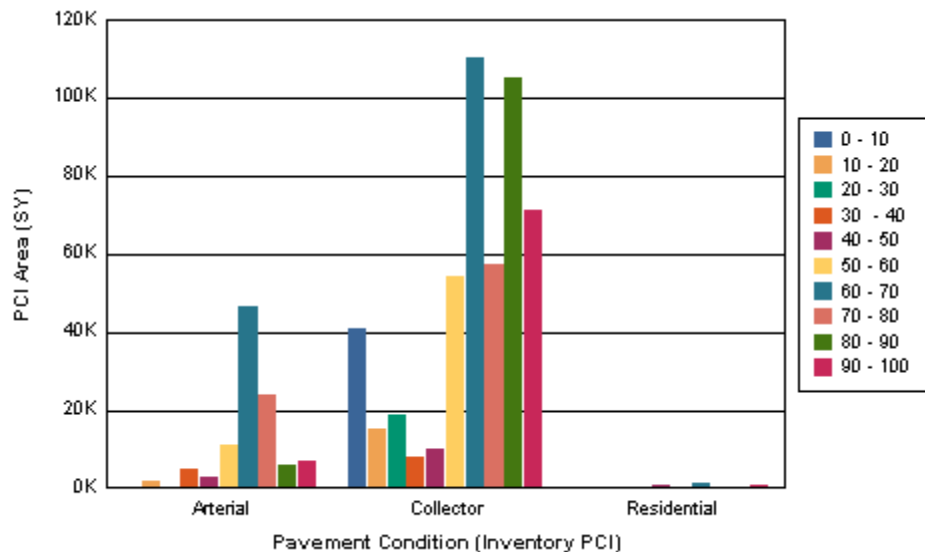
- The Chart Expert can be used to modify the titles (Text tab).



9. To read the Group axis (x-axis) horizontally, click on one of the titles.
10. Right click and select **Format Axis Label**.
11. Change the rotation to **Normal**.

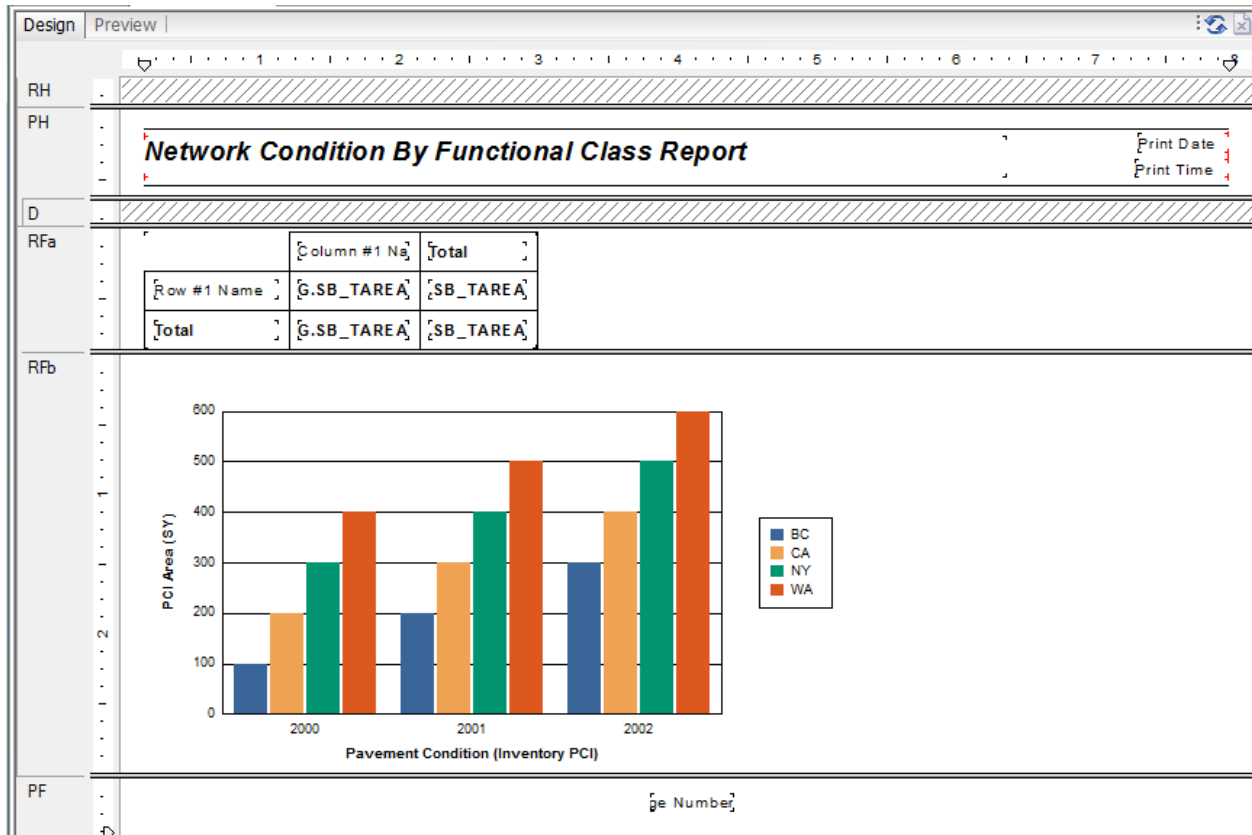


12. Click **OK**. The changes will be applied to the chart.



13. The Cross-Tab object can be left at the top of the report in the Report Header, moved to the Report Footer or it can be suppressed, leaving the graph on its own.

Clean up modifications will probably be necessary such as the Report Title, date and time.



14. Save the report in the Street folder as **LC\_PCIClass.rpt**.

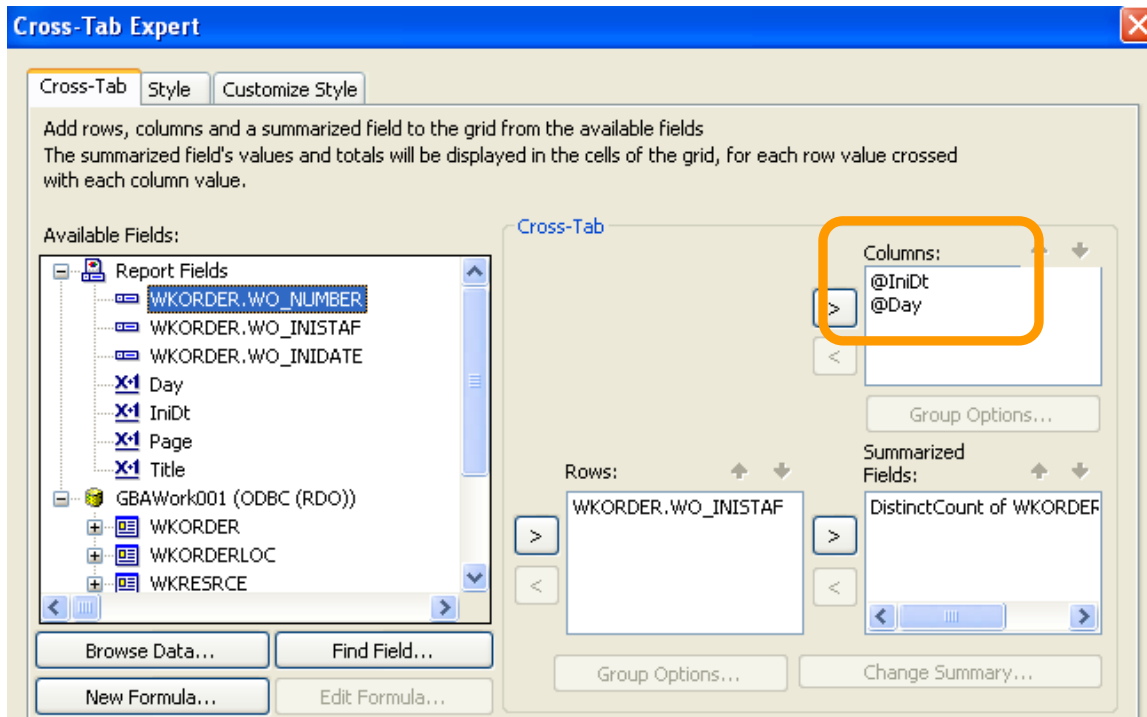
*Note: "Because cross-tabs are calculated during the first report pass (While Reading Records), you cannot use second-pass formulas in cross-tabs. You can use only formulas that calculate during the first pass. However, you can base a chart or a map on a cross-tab, because cross-tabs are processed before charts and maps." The Complete Reference Crystal Reports 10, Peck, 2004*

Example 26A

# Cross-Tab Dates

This report shows the number of Work Orders a person created in a specific date range. It shows the number for each day and day of the week.

| <b>Work Order Count Report</b> |                |        |        |
|--------------------------------|----------------|--------|--------|
| ?Report Subtitle               |                |        |        |
| @Title                         |                |        |        |
| Group #1 Name                  |                |        |        |
| WO_NUMBER                      | WO_INISTAF     | @IniDt | @Day   |
| ORDER.WO_NUMBER                |                |        |        |
| WO_INISTAF                     |                |        |        |
|                                | Column #1 Name | Total  |        |
|                                | In #2 Name     | Total  |        |
| Row #1 Name                    | NUMBER         | NUMBER | NUMBER |
| Total                          | NUMBER         | NUMBER | NUMBER |



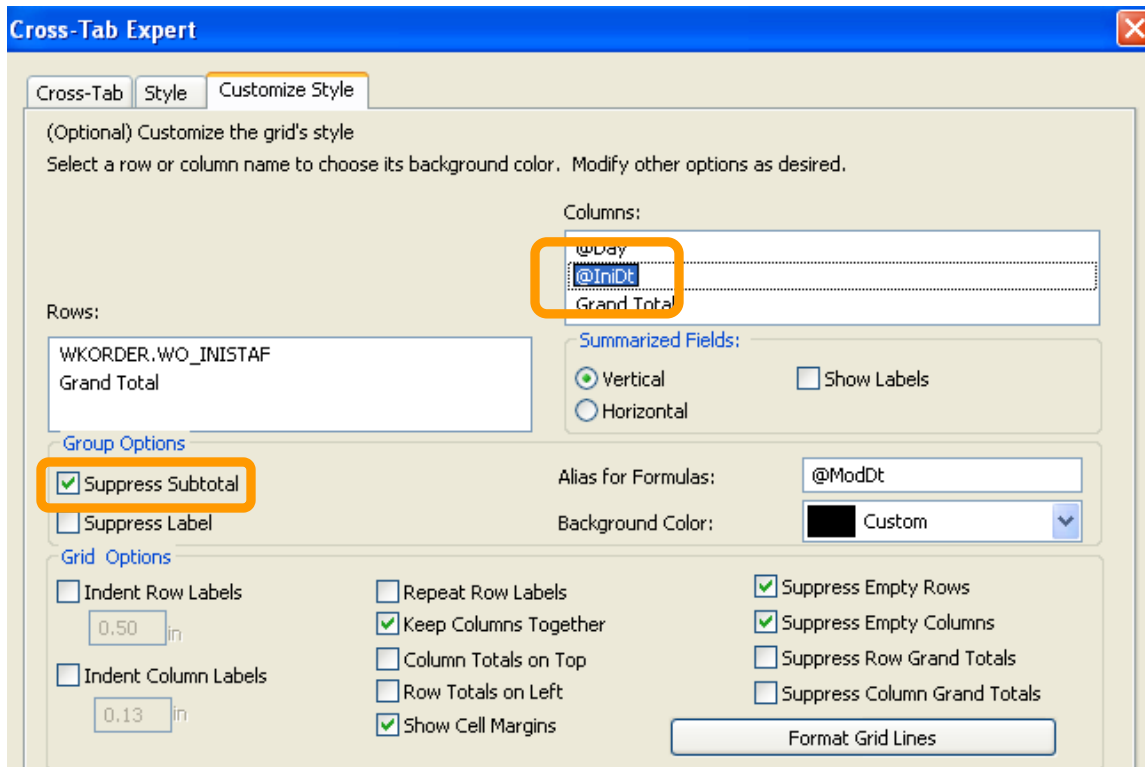
**IniDt formula:**

Date({WKORDER.WO\_INIDATE})

**Day formula:**

["Sun", "Mon", "Tues", "Wed", "Thur", "Fri", "Sat"] [DayOfWeek({@IniDt})]

In the *Customize* Tab make sure the *Suppress Subtotal* box is checked.



## Work Order Count Report

7/1/2010 To 8/30/2010

|                | 7/22/10 | 7/28/10 | Total |
|----------------|---------|---------|-------|
|                | Thur    | Wed     |       |
| <b>pthomas</b> | 0       | 1       | 1     |
| <b>ycortez</b> | 1       | 0       | 1     |
| <b>Total</b>   | 1       | 1       | 2     |

To format the date field, you can right click on the date field and choose Format Field then click on the Date tab and select the formatting.

# Cross-Tab Column and Row Titles

|          |               | Leave Type           |                     |                  |                      |                   |
|----------|---------------|----------------------|---------------------|------------------|----------------------|-------------------|
|          |               | Administrative Leave | Docked Family Leave | Docked Unexcused | Family Leave Holiday | Family Leave Sick |
| Employee | Ben Burges    | 0                    | 0                   | 0                | 0                    | 0                 |
|          | David Gossman | 0                    | 0                   | 0                | 0                    | 2.00              |

The titles “Leave Type” and “Employee” are part of the Cross-Tab. Formulas were created for the titles:

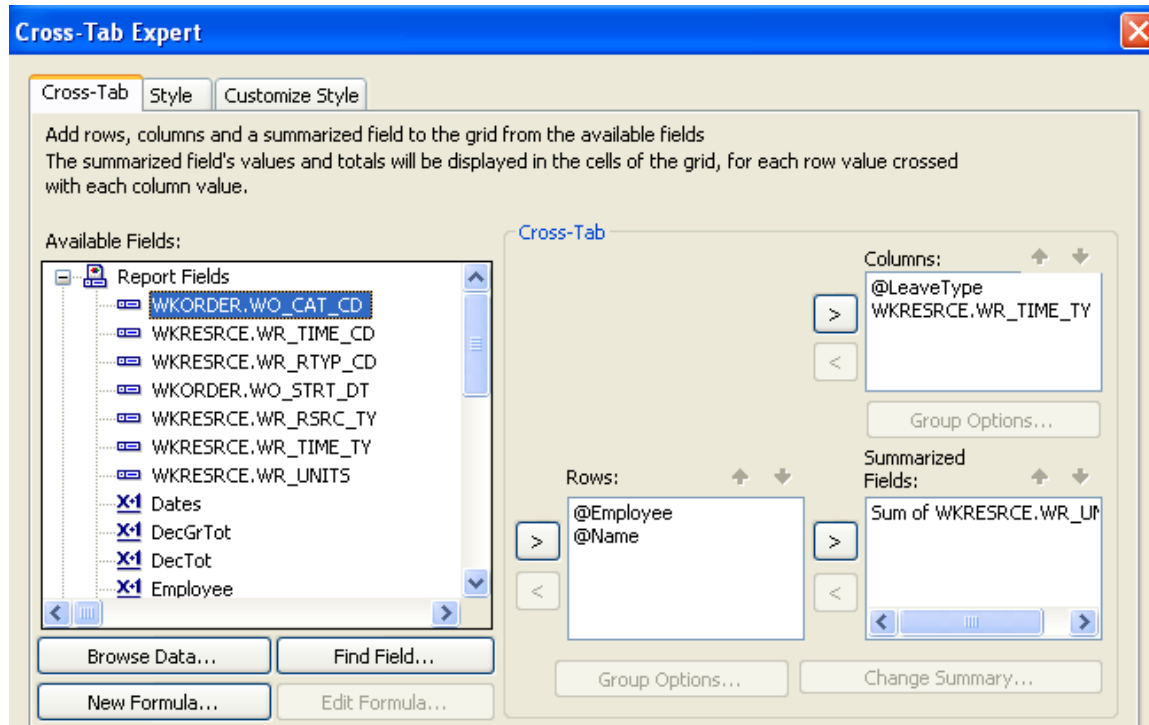
**@Leave Type**

“Leave Type”

**@Employee**

“Employee”

Then the cross-tab uses the formulas as the first field in the Columns and Rows choices.





# Using Crystal Reports with Lucity

---

## Advanced - 2

The sixth of a seven-part series, this workbook is designed for Crystal Reports® users with some experience. Here, you'll learn to set up Hide (Drill-Down), Variables, Percentages and Commands. Issues with Web and Dashboard reports will be addressed.

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# Hide (Drill-Down)

Sometimes, it's useful to view a condensed version of a report, where the details are accessible only when needed. This is often helpful when trouble shooting bad data. This option is available when grouping data. The following example will show you how to display the number of Work Orders for each category with the option to view the individual Work Orders within the categories.

The main report looks like this:

| <b>Work Orders by Category Report</b>                              |  | 8/27/2012<br>8:11 AM |
|--|--|----------------------|
| Double click the category code to view the individual work orders. |  |                      |
| Category   |  | Count                |
| 13310 Auxiliary Equipment  |  | 1                    |
| 41310 Backflow Preventors  |  | 1                    |
| 12100 Bridge Maintenance   |  | 1                    |
| 12510 Bus Stops  |  | 1                    |
| 13320 Cabinet  |  | 1                    |
| 02000 Call Center  |  | 3                    |
| 92100 Commercial Collecti  |  | 2                    |
| 13341 Conductor Cabling  |  | 1                    |
| 13342 Conduit Cabling  |  | 1                    |
| 12520 Curb   |  | 1                    |
| 11300 Detention Basins   |  | 1                    |
| 60000 Equipment  |  | 99                   |

The hidden section of the Equipment category looks like this:

| Equipment | WO #       | Status   | Status Date | Category  | Main Task                  | *Total Cost |
|-----------|------------|----------|-------------|-----------|----------------------------|-------------|
|           | 2006-01662 | Complete | 7/25/2006   | Equipment | Miscellaneous              | \$156.59    |
|           | 2006-01682 | Complete | 8/7/2006    | Equipment | Dist Maintenance/Equipment | \$155.47    |
|           | 2006-01684 | Complete | 8/7/2006    | Equipment | Miscellaneous              | \$208.35    |
|           | 2006-01685 | Complete | 8/7/2006    | Equipment | Miscellaneous              | \$199.74    |


1. We will modify the **Work Order Summary Report (WOSum.rpt)** from the Work Order module. From the Work report folder open **LC\_WOHide.rpt**.
2. Change the title to **Work Orders by Category Report**.
3. Delete the **Address** column.
4. Add the **Category** grouping and move the Category grouping to be the first grouping.
5. Add a second *Page Header* section above the Column titles by placing the cursor on the left ruler section, click and wiggle to create the break.
6. Move the **Category** title above **WO #** and remove the Category field.
7. Increase the *Group Header 1* section size.

|      |                                       |            |             |            |             |        |            |
|------|---------------------------------------|------------|-------------|------------|-------------|--------|------------|
| PHa  | <b>Work Orders by Category Report</b> |            |             |            |             |        | Print Date |
|      | Report Subtitle                       |            |             |            |             |        | Print Time |
|      | <b>Category</b>                       |            |             |            |             |        |            |
| PHb  | WO #                                  | Status     | Status Date | Main Task  | *Total Cost |        |            |
| GH1  | Group #1 Name                         |            |             |            |             |        |            |
| GH2  | Group #2 Name                         |            |             |            |             |        |            |
| D    | [Hatched Area]                        |            |             |            |             |        |            |
| GF2a | WO_NUMBER                             | WO_STAT_TY | @StatusDat  | WO_ACTN_TY | @CostTot    | @WOCos |            |
| GF1  |                                       |            |             |            |             |        |            |
| RF   | @GrTot                                |            |             |            |             |        |            |

8. Right click in the *Page Header b* section, click **Select All Section Objects**.

9. Drag the column titles into the *Group Header 1* section, beneath **Group #1 Name**.
10. Right click in the *Page Header a* section and select *Merge Section Below*.
11. Add a column title called **Count** in the *Page Header* section.

| <b>Work Orders by Category Report</b> |               |            |              |             |                | Print Date |
|---------------------------------------|---------------|------------|--------------|-------------|----------------|------------|
| Report Subtitle                       |               |            |              |             |                | Print Time |
| Category                              |               |            |              |             | Count          |            |
| GH1                                   | Group #1 Name |            | Status       | Status Date | Main Task      | Total Cost |
| GH2                                   | Group #2 Name |            |              |             |                |            |
| D                                     |               |            |              |             |                |            |
| GF2a                                  | WO_NUMBER     | WO_STAT_TY | @Status Date | WO_ACTN_TY  | @CostTo@WOCost |            |
| GF1                                   |               |            |              |             |                |            |
| RF                                    | @GrTot        |            |              |             |                |            |

12. Create a count formula using the *Summary* button  to count the number of Work Orders (*Distinct Count* to deal with any filtering issues).
  - a. Have the *Count* formula placed in the *Group Footer 1* section.
  - b. Move the formula to the **Count** column.

**Insert Summary** X

Choose the field to summarize:

Calculate this summary:

Summary location  
 Insert Group...

Options  
 Show as a percentage of  
  
 Summarize across hierarchy

13. Next, we will create a concatenated formula where fields can be “tacked together” to eliminate awkward spacing. Create a new formula called **Category**.

```
if isnull({WKORDER.WO_CAT_CD}) then "" else {WKORDER.WO_CAT_CD}&" "&
if isnull({WKORDER.WO_CAT_TY}) then "" else {WKORDER.WO_CAT_TY}
```

14. Drag this formula into the *Group Footer 1* section under the **Category** column title.

15. To the left of the report, right click in the *Group Header 1* section and select *Hide(Drill-Down)*.

16. Repeat step 14 for the *Group Footer 2a* section.

|      |                                       |            |             |             |           |             |
|------|---------------------------------------|------------|-------------|-------------|-----------|-------------|
| PH   | <b>Work Orders by Category Report</b> |            |             |             |           | Print Date  |
|      | ?Report Subtitle                      |            |             |             |           | Print Time  |
|      | Category                              |            |             |             | Count     |             |
| GH1  | Group #1 Name                         | WO #       | Status      | Status Date | Main Task | *Total Cost |
| GH2  | Group #2 Name                         |            |             |             |           |             |
| D    |                                       |            |             |             |           |             |
| GF2a | WO_NUMBER                             | WO_STAT_TY | @StatusDate | WO_ACTN_TY  | @CostTot  | @WOCost     |
| GF1  | @Category                             |            |             |             | WO_NUMBER |             |
| RF   |                                       |            |             |             |           | @GrTot      |

17. Preview the report to see how it looks.

|                                       |  |              |
|---------------------------------------|--|--------------|
| <b>Work Orders by Category Report</b> |  | 8/27/2012    |
|                                       |  | 8:50 AM      |
| <b>Category</b>                       |  | <b>Count</b> |
| 13310 Auxiliary Equipment             |  | 1            |
| 41310 Backflow Preventors             |  | 1            |
| 12100 Bridge Maintenance              |  | 1            |
| 12510 Bus Stops                       |  | 1            |
| 13320 Cabinet                         |  | 1            |
| 02000 Call Center                     |  | 3            |
| 92100 Commercial Collecti             |  | 2            |
| 13341 Conductor Cabling               |  | 1            |
| 13342 Conduit Cabling                 |  | 1            |
| 12520 Curb                            |  | 1            |
| 11300 Detention Basins                |  | 1            |
| 60000 Equipment                       |  | 99           |

- To view the Work Orders within each category, double click the category code.

|                  |               |                    |                            |                    |
|------------------|---------------|--------------------|----------------------------|--------------------|
| <b>Equipment</b> |               |                    |                            |                    |
| <b>WO #</b>      | <b>Status</b> | <b>Status Date</b> | <b>Main Task</b>           | <b>*Total Cost</b> |
| 2006-01662       | Complete      | 7/25/2006          | Miscellaneous              | \$156.59           |
| 2006-01682       | Complete      | 8/7/2006           | Dist Maintenance/Equipment | \$155.47           |
| 2006-01684       | Complete      | 8/7/2006           | Miscellaneous              | \$208.35           |
| 2006-01685       | Complete      | 8/7/2006           | Miscellaneous              | \$199.74           |
| 2006-01705       | Complete      | 11/13/2006         | Routine Service            | \$0.00             |
| 2006-01709       | Complete      | 11/13/2006         | Routine Service            | \$0.00             |

18. Next, you should add a text line in the *Page Header* that instructs the report viewer to double click on the category code to view the individual work orders.

|  |  |              |
|--|--|--------------|
| <b>Work Orders by Category Report</b>                              |  | 8/27/2012    |
|  |  | 8:56 AM      |
| Double click the category code to view the individual work orders. |  |              |
| <b>Category</b>  |  | <b>Count</b> |
| 13310 Auxiliary Equipment  |  | 1            |
| 41310 Backflow Preventors  |  | 1            |

Example 27A

# Variables

## Why Use Variables?

One of the more important uses of variables is in reports that may be run with a filter of a “child” or “grid” field that could have multiple values. Other uses are in running subtraction calculations in progressing records or passing information from a subreport to the main report. There are many uses that only become apparent when the use of the standard formulas doesn’t work.

A variable is a type of component that may be used in a formula. A variable represents a specific item of data or a value. It then acts as a placeholder for that value. When a formula encounters a variable, it searches for the variable’s value and uses it in the formula.

Unlike a constant value, which is fixed and unchanging, a variable can repeatedly be assigned different values. When you assign a value to a variable, it maintains that value until you later assign it a new value. Because of this flexibility, it is necessary for you to declare variables before you use them. It is also frequently necessary to reset the variable.

The original **Work Order Category Summary Report (WOCatSum.rpt)** looked like this:

The screenshot shows the header and footer of a report. The header includes the title 'Work Order Category Summary Report', a report subtitle, and fields for 'Print Date' and 'Print Time'. The main body of the report is a table with columns for 'Category', 'Count of W O's', and 'Total Cost'. The footer includes a 'Grand Totals' row with fields for 'RDER.WO\_ID' and 'R.WO\_TO TCOST'.

It was a very simple report which grouped on Category and used the Crystal Summary tool to calculate the Group Total and Grand Total. This worked when the report was run without filters.

|       |                  |     |             |
|-------|------------------|-----|-------------|
| 3010  | Tree             | 2   | \$714.51    |
| 40000 | Water Department | 26  | \$464.08    |
| 41000 | Potable          | 44  | \$2,596.80  |
| 41110 | Potable Mains    | 124 | \$20,068.40 |

There were certain filters that caused duplicate Work Order costs. The problem filters are the fields that come from grid data. In the Work Order module these would include Location, Assets, Tasks and Resources. This occurs because of the filter statement being passed from Lucity to Crystal. If there are two Tasks on a Work Order that are true for a Task filter being run, then the report will run the record twice.

When the report was run with a resource filter on Work Orders that have employees, these same categories looked like this:

|       |                  |     |             |
|-------|------------------|-----|-------------|
| 3010  | Tree             | 2   | \$2,143.54  |
| 40000 | Water Department | 25  | \$464.08    |
| 41000 | Potable          | 40  | \$10,403.04 |
| 41110 | Potable Mains    | 122 | \$59,106.27 |

There is an obvious difference in the cost fields. Instead of possibly going down due to records being filtered out that had no employees, the cost actually went up. Some work orders had multiple employees so the cost was summed each time the filter was true. The count was calculated using the Distinct Count option as opposed to the Count option for calculating so there was no duplication of records.

To correct this issue we used grouping and variables.

|       |                  |     |             |
|-------|------------------|-----|-------------|
| 3010  | Tree             | 2   | \$714.51    |
| 40000 | Water Department | 25  | \$464.08    |
| 41000 | Potable          | 40  | \$2,598.80  |
| 41110 | Potable Mains    | 122 | \$20,068.40 |

## Declaring a Variable

Each variable must be assigned a **data type** (string, number, currency, time, or date) and a **name** (your choice). You also need to know the **scope** or degree to which the variable will be used:

- **Local** - Variable will be used in a single formula.
- **Global** - Variable will be used throughout the main report. This is Default if the scope isn't stated.
- **Shared** - Variable will be used throughout the main report and any subreports.

1. To declare a variable, create a formula using the *Formula Workshop* or type it in.
  - Within the *Formula Workshop*, there are two options under *Operators* called *Scope* and *Variable Declarations*.
  - Open *Scope* and double click the option that you want (typically - **Shared**).
  - Open *Variable Declarations* which lists the correct format used in stating the *Data Type*. Double click the correct *Data Type*.
  - The correct format requires that the scope be placed before the Data Type.

Shared numberVar := ;

- For just declaring a variable, you should remove the colon and equal sign “:=”.
- The name for the variable goes after the Data Type.

<Scope> <Data Type><VariableName>;

Example: **Shared NumberVar Security;**

In our example, the Scope is **Shared** and the Data Type is **NumberVar**. The Variable name is **Security**.

2. After the formula is created it needs to be placed in the report.

## Assigning a Value to a Variable

After a variable has been declared, a value can be assigned to it. The assigned value can be a direct value, formula, parameter, or the value of a field.

<VariableName> := <Value>

Example: Security := {?ViewSecuredFields};

## Declare and Assign

You can also declare a variable and assign a value to it in one step. In this case you would not have removed the “:=”.

Example: Shared NumberVar Security := {?ViewSecuredFields};

## Evaluation Time

Evaluation Times are statements that tell when the formula is to be evaluated. If nothing is stated, Crystal Reports guesses what is appropriate for the data being used in the formula. Within the *Formula Workshop* these options can be found under *Functions > Evaluation Time*.

- **BeforeReadingRecords:** formulas are evaluated before the database records are read.
- **WhileReadingRecords:** formulas are evaluated while it is reading the database records.
- **WhilePrintingRecords:** formulas are evaluated while it is printing the database record data.
- **Evaluate After (x):** formula forces this formula to calculate after the “x” formula.

Typically **WhilePrintingRecords** is used.

## Using Variables in a Report

One way to correct the **WOCatSum.rpt** report would be to use variables.

|      |  |               |              |                     |
|------|--|---------------|--------------|---------------------|
| PH   | <b>Work Order Category Summary Report</b>                                      |               |              | Print Date          |
|      | Report Subtitle  |               |              | Print Time          |
|      | Category   | Count of WO's | * Total Cost |                     |
| GH1  | @ZeroCost  |               |              |                     |
| GH2  | @ZeroWO  |               |              |                     |
| D    | WO_NUMBER  | WO_ID         | TOTCOST      |                     |
| GF2a | @WOCost  |               |              |                     |
| GF2b | @CatWOSum  |               |              | @TotSum             |
| GF1  | WO_CAT_CD  | WO_CAT_TY     | {DER.WO_ID}  | @CategoryTot        |
| RF   | Grand Totals   |               |              | {RDER.WO_ID} @Total |
| PF   | A 'Hidden' field indicates permission to view the secured field is turned off. |               |              |                     |



1. Add a second grouping on the Work Order Number, **WO\_NUMBER**.
2. Create a formula for the Work Order Cost (**WOCost**) and place it in the *WO Number Group Footer 2*.

```

WhilePrintingRecords;
Shared numberVar WOCost ;
WOCost:={WKORDER.WO_TOTCOST}

```

3. Create a formula to summarize the cost for the Category (**CatWOSum**). Add a new section below the *WO Number Group Footer 2*. This is a second *Group Footer (GF2b)* for this section. Place this new formula in this section.

```

WhilePrintingRecords;
Shared numberVar CatTot ;
Shared numberVar WOCost ;
CatTot:= CatTot + WOCost

```

4. Create a formula to summarize the total cost for all Work Orders (**TotSum**). Place this in *GF2b*.

```

WhilePrintingRecords;
Shared numberVar TotWOCost ;
Shared numberVar WOCost ;
TotWOCost:= TotWOCost + WOCost

```

5. Create a formula to reset or zero the Work Order cost variable (**ZeroWO**). Place this in the *WO Number Group Header #2* section.

```

WhilePrintingRecords;
Shared numberVar WOCost:=0;

```

6. Create a formula to reset the Category Cost variables (**ZeroCat**). Place this in the *Category Group Header #1*.

```

WhilePrintingRecords;
Shared numberVar CatTot:=0;

```

7. Create a formula to show the Category total cost (**CategoryTot**). Place this in the *Category Group Footer #1*.

```

WhilePrintingRecords;
Shared numberVar CatTot ;
CatTot

```

8. Create a formula to show the Grand Total Cost (**Total**). Place this in the *Report Footer*.

```

WhilePrintingRecords;
Shared numberVar TotWOCost ;
TotWOCost

```

9. Suppress the new *Group Header* and *Footer* sections.

Example 28A

It depends on the report as to whether you use variables or running totals to solve filter issues. At the time the report was revised the use of variables was the choice method to correct the issue.

Variables are also very useful to pass information from a subreport to the main report. This was shown in **Unlinked Subreports** mentioned in **Intermediate 2**. This is shown again here now that variables have been discussed.

## Unlinked Subreports

There are times when the subreports do not need to be linked. For example, you won't need to link subreports if there are no connections to the main report. In this situation, the subreport can share data using variables but does not necessarily share a database.

Stand-alone reports can be brought in as subreports so that one report can bring in many reports or just the final values of these reports as a summary.

In *Lucity* software the button captions may be altered to suit individual needs. These field captions may be reflected in the report by one of the following methods:

- Edit the appropriate text object in the report as discussed in the related Beginning Crystal workbooks.
- Pull the value that is stored in the database and display it on the report using an unlinked subreport. This is the setup for the User fields in the Custom tab.

Lucity uses this type of unlinked subreport in many of the Detail reports. The subreport is hidden in a Report Header. It contains a formula declaring variables that are associated with the User button captions in the Custom tab.

|     |   |                |
|-----|---|----------------|
| RHa | - |                |
| RHb | - |                |
| D   | - | @StoreUserBtns |
| RFa | - |                |
| RFb | - |                |

The `@StoreUserBtns` formula appears on the following page. Note that this is only part of the formula. We've included this to make you aware of what happens behind the scenes.

- Any line starting with `//` is just a comment; it is not part of the formula.

The formula for each User button caption looks something like this:

```
WhilePrintingRecords;  
Shared StringVar strUser1;  
strUser1
```

```

//The subreport that this formula belongs to must contain the following
//Select Expert statement:
//{WTFIELDS.FieldName} like ["BD_USE*"]
//The Fields table reference should match your database. The two character
//data field prefix and suffix must be changed for each report.
//You must also enter your specific Fields Table name in the "IF" statements
//found below (e.g. - WTFIELDS):
WhilePrintingRecords;
//Enter two-character field prefix here (e.g. - 'BD'):
StringVar ModPrefix:='BD';
StringVar strUser1Field:=ModPrefix+'_USER1CD';
StringVar strUser2Field:=ModPrefix+'_USER2CD';
StringVar strUser3Field:=ModPrefix+'_USER3CD';
StringVar strUser4Field:=ModPrefix+'_USER4';
StringVar strUser5Field:=ModPrefix+'_USER5';
StringVar strUser6Field:=ModPrefix+'_USER6';
StringVar strUser7Field:=ModPrefix+'_USER7';
StringVar strUser8Field:=ModPrefix+'_USER8';
StringVar strUser9Field:=ModPrefix+'_USER9';
StringVar strUser10Field:=ModPrefix+'_USER10';
StringVar strUser11Field:=ModPrefix+'_USER11';
StringVar strUser12Field:=ModPrefix+'_USER12';
StringVar strUser13Field:=ModPrefix+'_USER13';
StringVar strUser14Field:=ModPrefix+'_USER14';
StringVar strUser15Field:=ModPrefix+'_USER15';
Shared StringVar strUser1;
Shared StringVar strUser2;
Shared StringVar strUser3;
Shared StringVar strUser4;
Shared StringVar strUser5;
Shared StringVar strUser6;
Shared StringVar strUser7;
Shared StringVar strUser8;
Shared StringVar strUser9;
Shared StringVar strUser10;
Shared StringVar strUser11;
Shared StringVar strUser12;
Shared StringVar strUser13;
Shared StringVar strUser14;
Shared StringVar strUser15;
If {WTFIELDS.FieldName} = strUser1Field then
    If not IsNull ({WTFIELDS.UserName}) and {WTFIELDS.UserName} <> '' then
        strUser1:={WTFIELDS.UserName}+':';
    Else strUser1:={WTFIELDS.DefaultName}+':';

If {WTFIELDS.FieldName} = strUser2Field then
    If not IsNull ({WTFIELDS.UserName}) and {WTFIELDS.UserName} <> '' then
        strUser2:={WTFIELDS.UserName}+':';
    Else strUser2:={WTFIELDS.DefaultName}+':';

If {WTFIELDS.FieldName} = strUser3Field then
    If not IsNull ({WTFIELDS.UserName}) and {WTFIELDS.UserName} <> '' then
        strUser3:={WTFIELDS.UserName}+':';
    Else strUser3:={WTFIELDS.DefaultName}+':';

```

## Date Variables

Date fields can be converted to a string type variable that can be easier to reset.

```
WhilePrintingRecords;
shared stringvar FirstNoticeDue;

if {WTBFNOTICE.BN_NOT_TY}="First Notification Sent" then
FirstNoticeDue:=totext({@NoticeDt}+90,"MM/dd/yyyy")
```

The reset for this variable (FirstNoticeDue) is:

```
WhilePrintingRecords;
shared stringvar FirstNoticeDue:="";
```

## Using Variables for Subtraction

Crystal Reports is quite useful when adding numbers together but it gets pretty tricky when you want to find the difference in running numbers.

In Water, the Meter Set Location module has a **Flow Meter Location Usage Report (WTMtUsage.rpt)** that is a good example of this. It is modified here to a single Reading to clarify the subtraction process.

| Flow Meter Location Usage Report |                      |               |           |          | Print Date   |
|----------------------------------|----------------------|---------------|-----------|----------|--------------|
| Report Subtitle                  |                      |               |           |          | Print Time   |
| @Dates                           |                      |               |           |          |              |
| GH1                              | Meter Loc Number:    | Group #1 Name | @ZeroLoc  | Address: | @Address/Apt |
| GH2a                             | Meter Device Number: | MD_NUMBER     | @ZeroDev  |          | Group #2     |
| GH2b                             | @ZeroPrev            | Date          | Reading 1 | Amount 1 |              |
| Da                               | @Date                | RM_READ1      | @Diff1    |          |              |
| Db                               | @PrevVal             | @CalcTot1     |           |          |              |
| GF2                              | Device Total:        | @TotMet1      |           |          |              |
| GF1                              | Location Total:      | @TotLoc1      |           |          |              |
| RF                               |                      |               |           |          |              |

The report is grouped on the **Meter Location Number (Group 1)** and then the **Device ID (Group 2)**.

- In *GH1* there is a formula to reset the Location Usage (**ZeroLoc**):  
shared Numbervar LocTot1:=0;
- In *GH2a* there is a formula to reset the Device Usage (**ZeroDev**):  
shared Numbervar MetTot1:=0;
- In *GH2b* there is a formula to reset the Device Reading 1 value (**ZeroPrev**):  
Shared Numbervar prevval1:=0;

- In *Da* there is a formula for the amount used (**Diff1**):
 

```

      Shared Numbevar prevval1;
      if PreviousIsNull ({WTMTMD.RM_READ1}) then 0
      else if Previous ({WTMTMD.RM_READ1}) = 0 then 0
      else if (previous ({WTMETDEV.MD_ID}) <> {WTMETDEV.MD_ID})then 0
      else {WTMTMD.RM_READ1}-prevval1;
      
```
- In *Db* there are two formulas:
 

```

      (PrevVal)
      Shared Numbevar prevval1;
      prevval1:={WTMTMD.RM_READ1};

      (CalcTots)
      shared Numbevar MetTot1;
      shared Numbevar LocTot1;
      MetTot1:=MetTot1 + {@Diff1};
      LocTot1:=LocTot1 + {@Diff1};
      
```
- In *GF2* there is a formula for Device total usage (**TotMet1**):
 

```

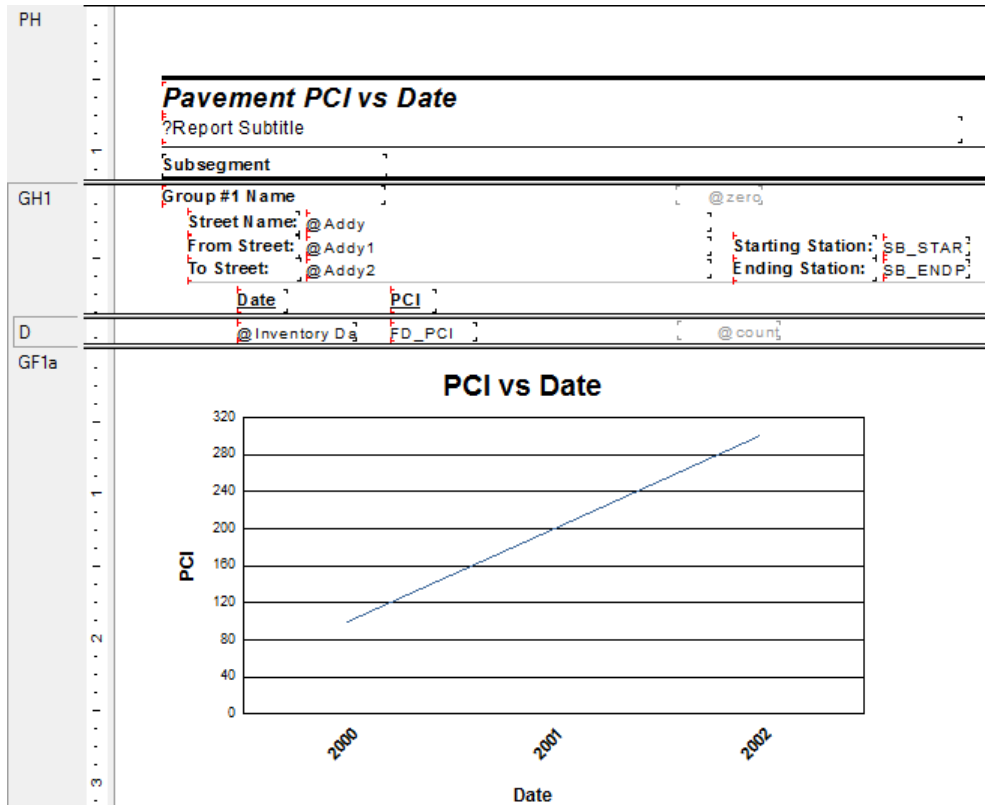
      shared Numbevar MetTot1;
      MetTot1
      
```
- In *GF1* there is a formula for the Location total usage (**TotLoc1**):
 

```

      shared Numbevar LocTot1;
      LocTot1
      
```

## Using Variables to Count for Section Suppression

A report was created to view Street Subsegment information including its PCI on a given date. A graph was created for each subsegment that had more than one date. The graph needed to suppress when there were no or one date/PCI values.



The (count) formula was created:

```
WhilePrintingRecords;
Shared numberVar cnt ;
cnt:=cnt +1
```

Then within the *Section Expert*, *GFa1* Suppress formula was added:

```
WhilePrintingRecords;
Shared numberVar cnt ;
cnt in[0,1]
```

The section suppresses when *cnt* is equal to 0 or 1.

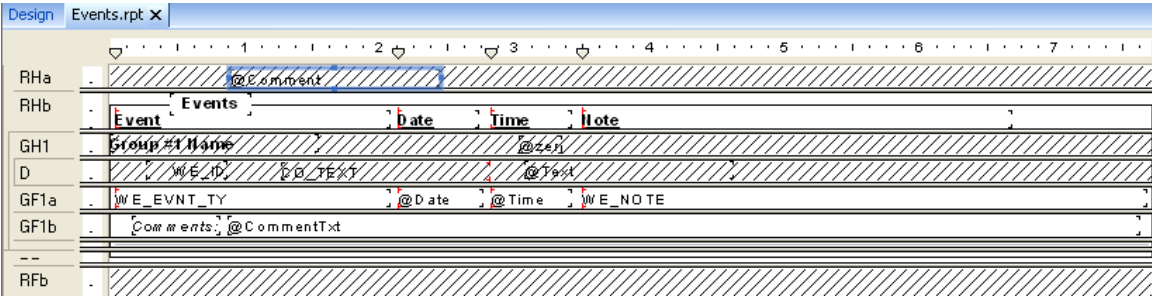
# Comments to Non Comment Subreports

Subreports may not be put in subreports. Adding a Comment section that is in a separate **XXMEMO** table that requires certain criteria to be true to pull the correct data seems impossible to add to a section in a report that is already a subreport.

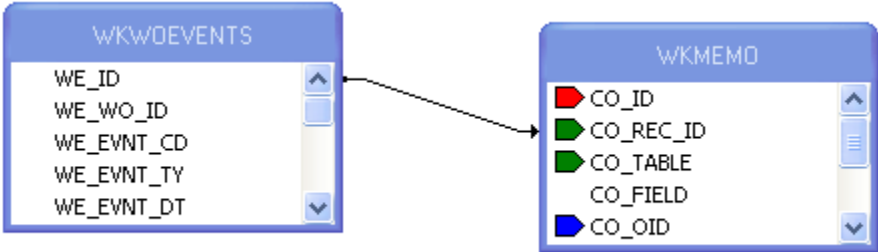
There are a variety of ways to accomplish this task. Not all work for the various scenarios.

## Option 1 - Variables

A client wanted the Comment for Events added to the **Work Order Detail Report (WODetail.rpt)**. *Events* is a subreport of this Report. It was done as follows:



1. Bring in the **WKMEMO** table and link left outer join.



2. Group on the ID of the subreport table (**WKWOEVENTS**).
3. Create a variable formula (**Text**) to grab the text of the correct Memo field.

```

WhilePrintingRecords;
Shared stringVar Text ;

If {WKMEMO.CO_FIELD}="WE_MEMO1" then
Text:={WKMEMO.CO_TEXT}
    
```

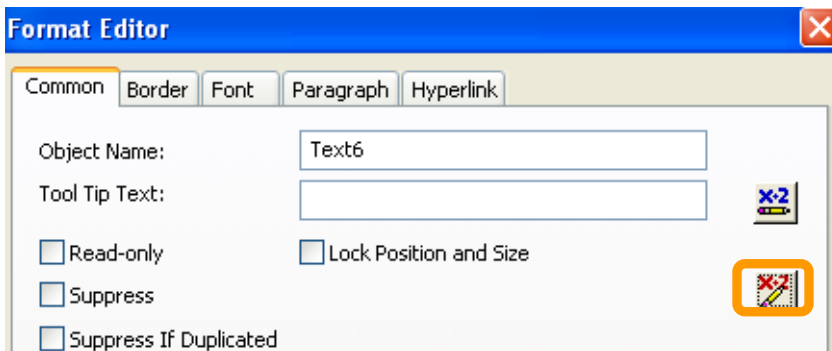
4. Create a reset formula (**Zero**) for this variable and place it in the *Group Header* section. The zero in this case is a space “ ” instead of a zero (0) because it is a string variable.

```
WhilePrintingRecords;
Shared stringVar Text:=" ";
```

5. Place the report information in the *Group Footer* section.
6. Create another *Group Footer* section for the Comment.
7. Place the Comment text formula (**CommentTxt**) in the second footer section. Make sure this field is allowed to grow.

```
WhilePrintingRecords;
Shared stringVar Text ;
Text
```

8. For the “Comments” text field use a suppress formula when the text variable is blank.



```
WhilePrintingRecords;
shared stringVar Text ;
Text=" "
```

9. In *Section Expert* select *Suppress Blank Section* for the second *Group Footer (GF1b)*.

## Option 2 - Grouping & Conditional Suppression

Here is another way in which a Comment was brought into a subreport.

The comment was added to the *Notifications* subreport within the **Request Detail Report (ReqDetail.rpt)**.



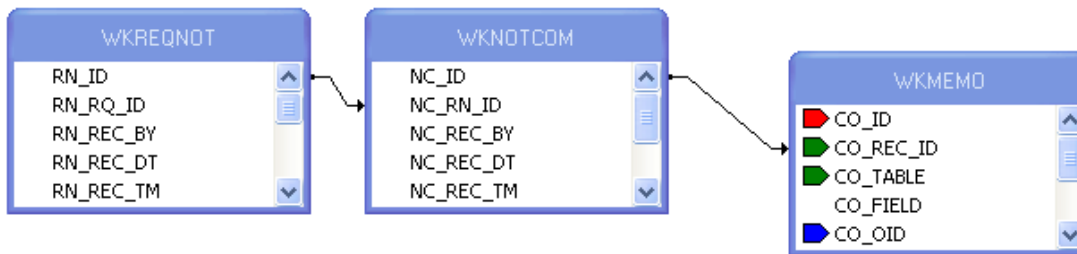
| Initiated Date | Initiated By | Agency | Contact | Purpose Text |
|----------------|--------------|--------|---------|--------------|
| 10/20/2009     | GBA          | DEF    | Ted     |              |
| 10/20/2009     | GBA          | ABC    | Babs    | Follow Up    |

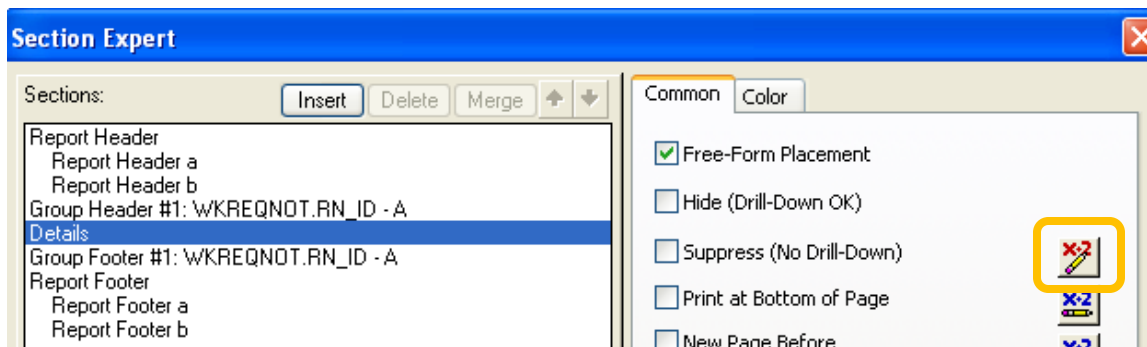
| Recorded Date | Recorded By |
|---------------|-------------|
| 10/20/2009    | GBA         |

| Initiated By   | Date      | Time  | Agency    | Contact    | Purpose    |
|----------------|-----------|-------|-----------|------------|------------|
| RN_REC_BY      | @Date     | @Time | RN_AGENCY | RN_CONTACT | RN_PURP_TY |
| @Com Date Time | NC_REC_BY |       | CO_TEXT   |            |            |

1. Bring in the **WKMEMO** table and link with left outer join.




2. Group on the **WKREQNOT.RN\_ID** field and place the information from this table in the *Group Header*.
3. In the *Detail* section place the information from the **WKNOTCOM** table and the **Text** field from the **WTMEMO** table.
4. In the *Section Expert*, create a conditional suppression formula for the *Details* section.



{WKMEMO.CO\_FIELD} <> "NC\_MEMO1"

# Grouping – More Advanced

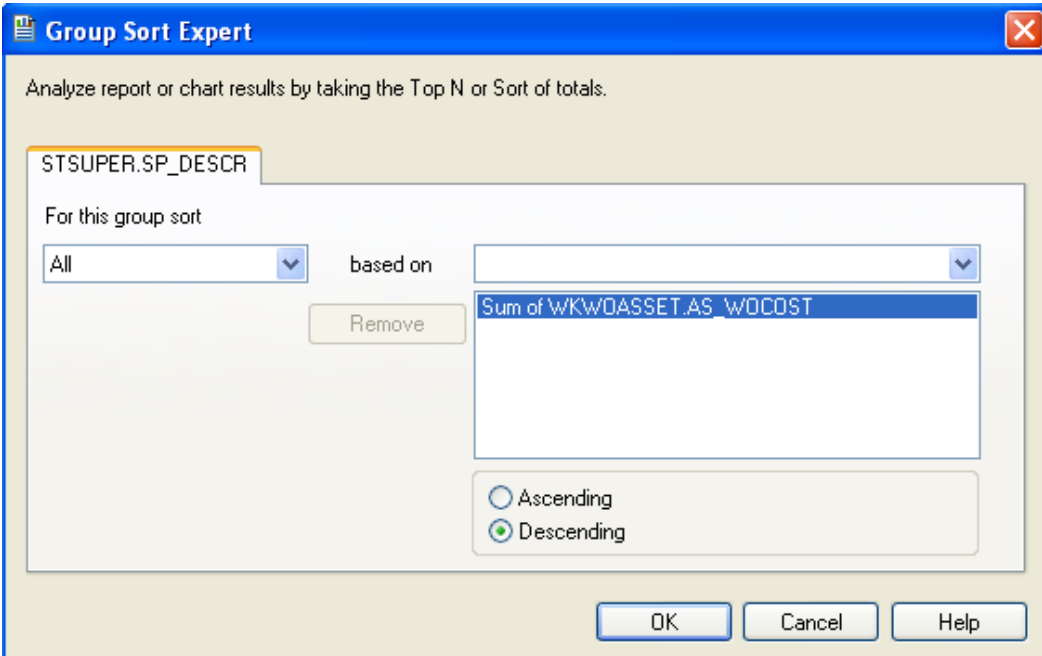
## Group Sort Expert

When a report uses grouping, the report automatically sorts on the first group and then within the group any other groups. Each group can be sorted in ascending, descending or a specific order. The *Group Sort Expert*  can be used to change the field the report will sort on.

An example of this is the **Supersegment Work Order Cost Summary Report - By Descending Cost** (SupersegDWOCost.rpt).

| <b>Supersegment Work Order Cost Summary Report - By Descending Cost</b> |                      |                  |                          |
|---|----------------------|------------------|--------------------------|
| @Dates  |                      |                  | Print Date<br>Print Time |
| Description:  |                      | Cost to Maintain |                          |
| GH1   | <b>Group #1 Name</b> |                  |                          |
| D   | SP_UNIQUE            | SP_DESCR         | AS_WOCOST                |
|   | WO_NUMBER            |                  |                          |
| GF1   | SP_DESCR             |                  | @totoast                 |
| RF  | Total                | T.AS_WOCOST      |                          |


- This report was grouped on the Supersegment description field.
- The asset work order cost (AS\_WOCOST) was being summed in the group footer.
- Within the *Group Sort Expert* the sort was changed to the cost field.



## Section Expert and Grouping

If different Heading information is needed for data in the same group, you can use the *Section Expert* to create this affect.

|      |   |
|------|---|
| GH2a | <p>The following streets are designated as <u>one-way streets</u> pursuant to authority granted in Section 35-303:</p> <p><b>Regulation Number</b>      <b>Location</b>      <b>Restriction</b></p>   |
| GH2b | <p>Trucks over 12,000 lbs. shall be prohibited on the following streets pursuant to authority granted in Section 35-782:</p> <p><b>Regulation Number</b>      <b>Location</b></p>   |
| GH2c | <p>The following streets are designated for a <u>maximum speed limit</u> as indicated, and for day and/or night as indicated, pursuant to authority granted in Section 35-267:</p> <p><b>Regulation Number</b>      <b>Location</b>      <b>Restriction</b></p> |

- The *Select Expert* of the report is selecting only records where the following is true.
  - {STSIGNREG.SR\_REGS\_CD} in [1, 2, 3 TO 12]
- Each *Group Header 2* section is grouping on REGS\_CD in the Traffic Regulations table (STSIGNREG).
- Within the *Section Expert*  each *Group Header* section has a suppress formula so it will only show the records that coincide with that group heading.
  - GH2a suppresses when the following is true:
    - {STSIGNREG.SR\_REGS\_CD} in [1,3 TO 12]
 This means that GH2a will show up when the REGS\_CD is equal to 2.
- The other two GH2 sections have different suppression formulas.

Not only can you have different information in the *Group Header* sections, you can do this in the *Group Footer* as well.

|      |  |
|------|--|
| GH1a | <p><b>Employee Usage Detail</b></p> <p><b>Employee Number</b>    <b>Employee Name</b>      <b>Labor Hrs</b>    <b>Labor Cost</b>    <b>OT Hrs</b>    <b>OT Cost</b>    <b>Total Cost</b></p> |
| GH1b | <p><b>Equipment Usage Detail</b></p> <p><b>Equipment Number</b>    <b>Equipment Name</b>      <b>Hours Used</b>      <b>Total Cost</b></p>   |
| GH1c | <p><b>Material Usage Detail</b></p> <p><b>Material Number</b>    <b>Material Name</b>      <b>Unit of Measure</b>      <b>Qty Used</b>      <b>Total Cost</b></p>                            |
| GH2  | <p><b>Group #2 Name</b></p>  |
| D    | <p>@LbHrs    @LbCost    UNITS    @R_TCST    @OTR_TCST    @OT    @R_UNITS    @R_UNIT_C    @R_TCST    @</p>  |
| GF2a | <p>WR_RSRC_CD    WR_RSRC_TY      #LbHrs    #LbCost    #OTHrs    #OTCost    #EmTotCost</p>  |
| GF2b | <p>WR_RSRC_CD    WR_RSRC_TY      #HrsUsed    #Cost</p>   |
| GF2c | <p>WR_RSRC_CD    WR_RSRC_TY      WR_UOM_TY      #Qty    #MatCost</p>   |
| GF1a | <p><b>Totals:</b>    #TotLbHrs    #TotLbCost    #TotOTHrs    #TotOTCost    #GrTotCost</p>  |
| GF1b | <p><b>Totals:</b>    #TotHrs    #EqTotCost</p>   |
| GF1c | <p><b>Totals:</b>    #TotQty    #MtTotCost</p>   |
| RF   | <p>The referenced date is the Resource End Date.</p>   |

You can use the *Section Expert* to suppress the different *Header* and *Footer* sections. For example the *GH1a*, *GF2a* and *GF1a* all use the following suppression formula:

{WKRESRCE.WR\_RTYP\_CD} in [2,3]

## Specific Order of Grouping

Another report using conditional suppression formulas to show different headers also needed the groups to show in a specific order.

|      |   |
|------|---|
| PH   | TRAFFIC REGULATIONS - SR_REG_TY<br>?Post Date<br>@Page  |
| GH1  | Group #1 Name   |
| GH2a | The following streets are designated as <u>one-way streets</u> pursuant to authority granted in Section 35-303:<br>Regulation Number      Location      Restriction   |
| GH2b | Trucks over 12,000 lbs. shall be prohibited on the following streets pursuant to authority granted in Section 35-782:<br>Regulation Number      Location  |
| GH2c | The following streets are designated for a <u>maximum speed limit</u> as indicated, and for day and/or night as indicated, pursuant to authority granted in Section 35-267:<br>Regulation Number      Location      Restriction |
| D    | SR_UNIQUE      RedLoc.rot      Restrictions.rot   |
| GF2  |   |
| GF1  |   |

This was done using the *Change Group* option. For *Group 2* the following option was used.

**Change Group Options**

Common Options Specified Order Others

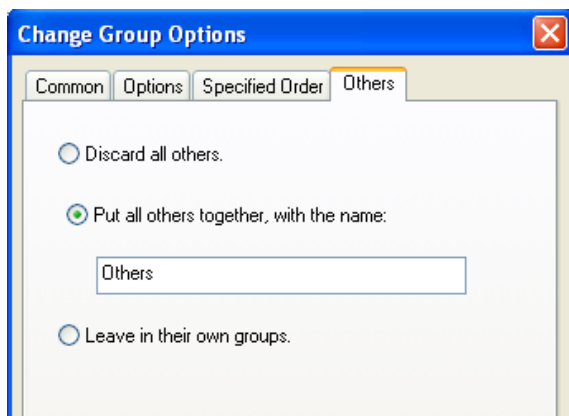
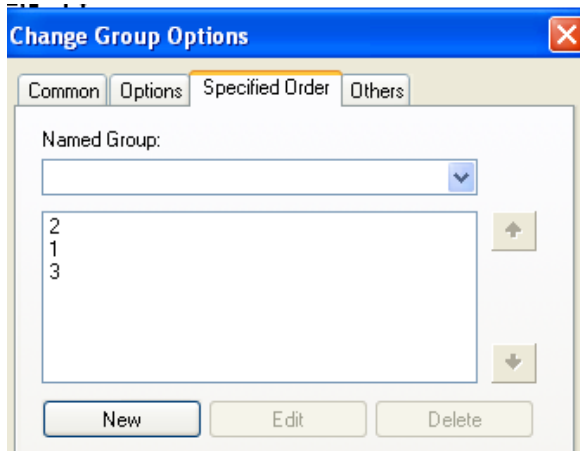
When the report is printed, the records will be sorted and grouped by:

STSIGNREG.SR\_REGS\_CD

in specified order.

Use a Formula as Group Sort Order

The section will be printed on any change of:  
STSIGNREG.SR\_REGS\_CD



## Percentages

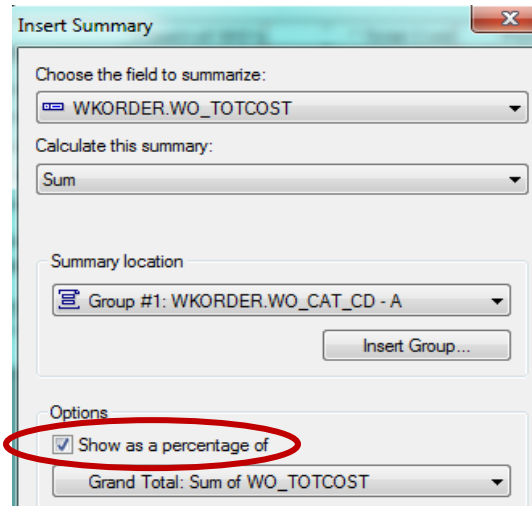
It is possible to show a value as a percent of a group or of the total using Insert Summary or a formula. These options may be used with reports that will **not** be run with filters on grid (child) fields.

### *Percentage with Insert Summary*

In the **Work** module there is a **Work Order Category Summary Report (WOCatSum.rpt)** that we will find the percent of the total cost of all work orders for that particular category.

1. From the Work report folder open **LC\_WOCatSumPerc.rpt**.
2. Modify the existing report to allow room for the new Percent column.
  - a. Reduce the **CAT\_TY** field width by moving the right edge to 4".
  - b. Move the **Grand Totals** text field so that the right edge is also at 4".
  - c. Move the **Count of WO's** column so that the right edge is at 5".
  - d. Move the **Total Cost** column so that the right edge is at 6 ¼".
3. Add a text object for the **Percent** column.
  - o Right align at 7".

4. Calculate the value for the Category Cost as a percent of the Total Cost.
  - o Click on Insert Summary. Set up as follows and click OK.



5. Move the summary that has been created so that the right edge aligns with the right edge of the Percent column.

| Work Order Category Summary Report |               |              |         |  |
|------------------------------------|---------------|--------------|---------|--|
| Category                           | Count of WO's | * Total Cost | Percent |  |
| 41000 Potable                      | 44            | \$2,596.80   | 0.58 %  |  |
| 41110 Potable Mains                | 124           | \$20,088.40  | 4.47 %  |  |
| 41120 Potable Nodes                | 1             | \$59.58      | 0.01 %  |  |
| 41130 Potable System Valves        | 73            | \$18,723.59  | 4.17 %  |  |
| 41150 Potable Vaults               | 4             | \$607.95     | 0.14 %  |  |
| 41200 Hydrants                     | 421           | \$41,369.28  | 9.21 %  |  |

## Percentage with a Formula

Continuing with the previous report, we will add the same percent using a formula.

1. Right Click on *Formula Fields* and select *New*.
2. Type in a name (*CatPercent*).
3. Expand *Functions > Summary > PercentOfSum*
4. Double click *PercentOfSum (fld, condFld)*

From the Crystal Report Help Guide:

*fld* is a Number or Currency field that can be evaluated by the function.

*condFld* is a field used to group the values in *fld* by.

- The following formula shows in the Workshop window.

PercentOfSum ( , )

5. Expand *Report Fields*.
6. The *fld* to be used is the **WO\_TOTCOST** field.
  - Click just to the right of the left parenthesis.
  - Double click the **WO\_TOTCOST** field.
7. The *condfld* group field is **WO\_CAT\_CD**.
  - Click just to the right of the coma.
  - Double click **WO\_CAT\_CD**.
8. Click *Save and close*.
9. Drag the formula (**CatPercent**) just to the right of the Percent formula created with the *Insert Sum* tool.
10. While the new formula is highlighted, click the percent sign (%) in the tool bar.

This newly created formula should have the same percent value as the one created with the Insert Summary Tool.

Example 29A

# Image Reports

Reports using images can be helpful. There are several imaging reports used throughout the Sewer modules. At this time, Lucity Web does not support this type of report.

The following items are necessary to bring an image into a report. We will look at the TV Observation Image Report (TVObsrlmg.rpt).

|                                     |   |   |
|-------------------------------------|---|---|
| RH                                  | @D@P@St@  |   |
| PH                                  |   |   |
| <b>TV Observation Image* Report</b> |   |   |
|                                     | Report Subtitle   | Print Date<br>Print Time  |
| GH1                                 | US Structure: NT_USMAN<br>DS Structure: NT_DSMAN<br>Date Inspected: @D@t@l@n@s@ | US Address: @USA@address<br>DS Address: @DSA@address<br>TV Direction: TL_TVDR_TY<br>Crew: TL_CREW |
| GH2                                 | Observation #: TO_O<br>Defect: TO_NOT2_TY<br>Rating: TO_R                       | Distance: TO_FOOT<br>Location: TO_NOT1_TY<br>Observed GPM: TO_FLO                                 |
| D                                   |   |   |
| GF2a                                | Images.rpt  |   |
| GF1a                                |   |   |
| GF1b                                |   |   |
| RF                                  |   |   |
| PF                                  | Images are limited to bmp, tiff, pex, tga, jpg, pict, png                       |   |

1. First a *Parameter field* is set up and must have the Name of GBAMSDOCPATH:

**Edit Parameter: GBAMSDOCPATH**

Name:  Type:

List of Values:  Static  Dynamic

Value Field:  Description Field:

Insert    Actions

| Value                  | Description |
|------------------------|-------------|
| Click here to add item |             |
|                        |             |
|                        |             |
|                        |             |

Options:

| Option                       | Setting        |
|------------------------------|----------------|
| Prompt Text                  | Enter GBAPath: |
| Prompt With Description Only | False          |
| Default Value                |                |
| Allow custom values          | True           |
| Allow multiple values        | False          |
| Allow discrete values        | True           |

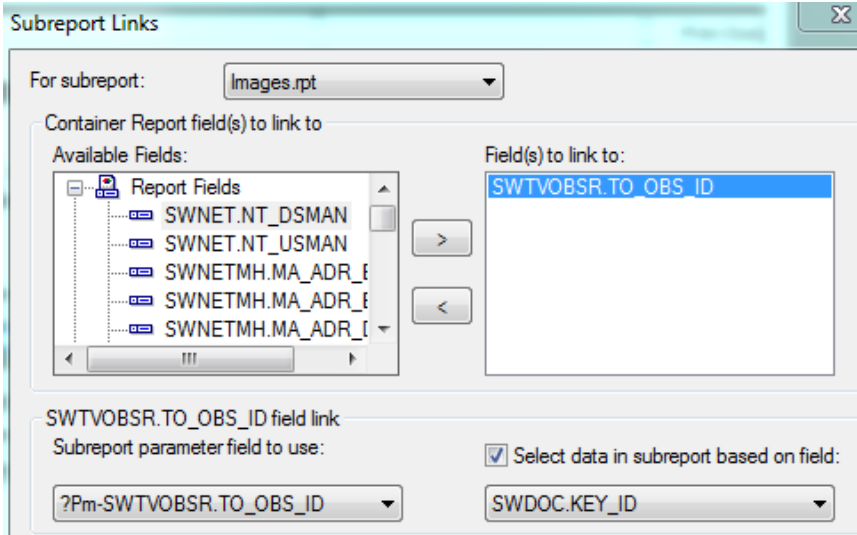
OK Cancel Help



- Then the **DocPath** formula is created and placed in the *Report Header*:

**shared stringvar GBADocPath:={?GBAMSDOCPATH};**

- The Image subreport is in a *Group Footer*.
- The subreport is linked to the main report:



- Within the subreport's *Select Expert* is the following selection criteria:

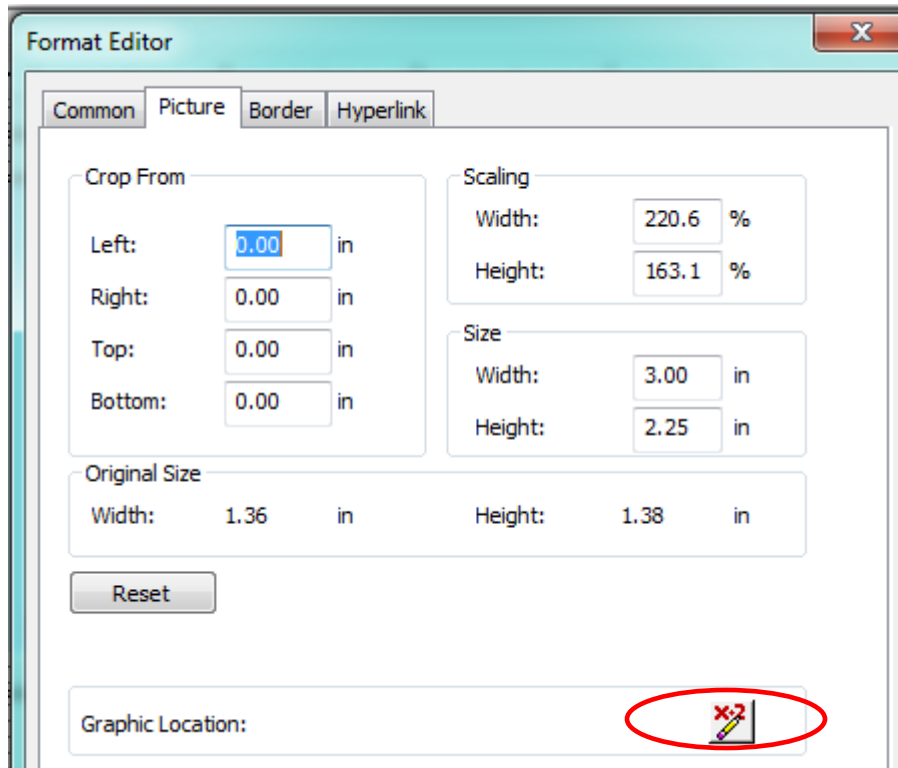
{SWDOC.DOC\_PATH} Like ['\*.jpg', '\*.bmp', '\*.jpeg', '\*.tif', '\*.tiff', '\*.TGA', '\*.PNG']  
 and  
 {SWDOC.KEY\_ID} = {?Pm-SWTVOBSR.TO\_OBS\_ID} and  
 {SWDOC.CHILD\_TABLE} = "SWTVOBSR"

*Note: Some Oracle versions are case-sensitive. The image may not show if the Path extension case does not match exactly. It may need to be changed to:*

*UpperCase({SWDOC.DOC\_PATH}) Like ['\*.JPG', '\*.BMP', '\*.JPEG', '\*.TIF', '\*.TIFF', '\*.TGA', '\*.PNG']*

|     | 1          | 2 | 3 | 4 | 5 | 6 | 7 |
|-----|------------|---|---|---|---|---|---|
| RHa | @R.DocPath |   |   |   |   |   |   |
| RHb | Doc_Desc   |   |   |   |   |   |   |
| D   |            |   |   |   |   |   |   |
| RFa | Doc_Desc   |   |   |   |   |   |   |
| RFb | Doc_Desc   |   |   |   |   |   |   |

6. The `ReIDocPath` formula in the subreport *Header* looks like this:  
**shared Stringvar GBADocPath;  
GBADocPath**
7. The image is in an OLE object in the *Detail* section. Right click the object, select *Format Graphic*, and then click on the *Picture* tab.

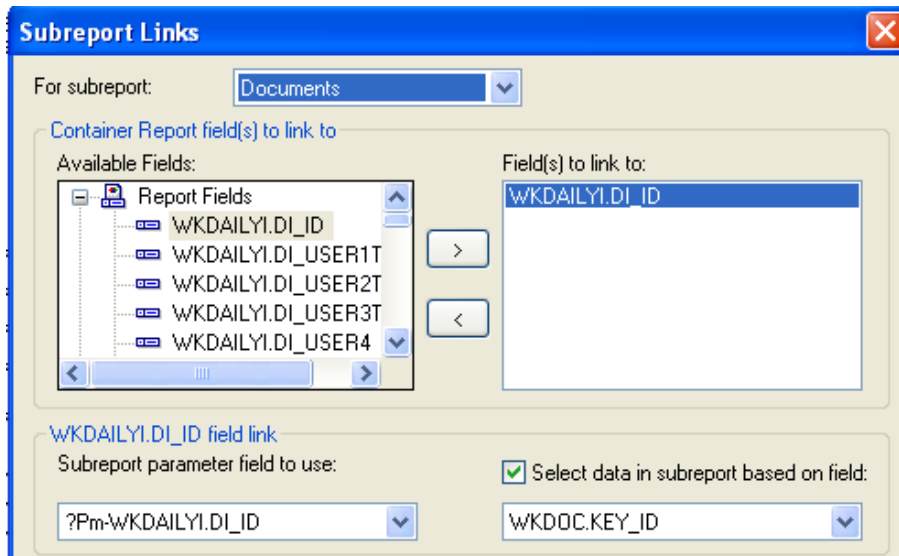


8. Click the formula button next to Graphic Location. The following formula appears:  
**shared stringvar GBA DocPath;  
if left ({SWDOC.DOC\_PATH},13) = "\$GBAMSDOCPATH"  
then {@ReIDocPath} + right ({SWDOC.DOC\_PATH}, (Len ({SWDOC.DOC\_PATH})-  
13))  
Else {SWDOC.DOC\_PATH}**
9. To suppress the *Detail* section when there is no image:
  - a. In *Section Expert* click on the *Details a* section.
  - b. In the Suppress (No Drill-Down) formula box there is a formula.  
**isnull ({SWDOC.DOC\_ID})**

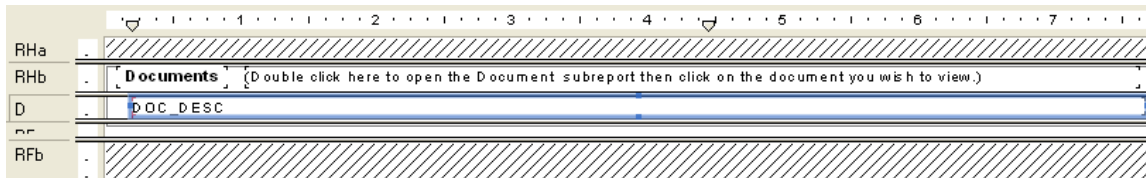
# Hyperlinking

Modules can have documents attached to them. A client wished to have a link to these documents in the **Daily Inspection Detail Report**.

A *Notification* subreport was added. The subreport used the **WKDOC** table. It was linked as follows:



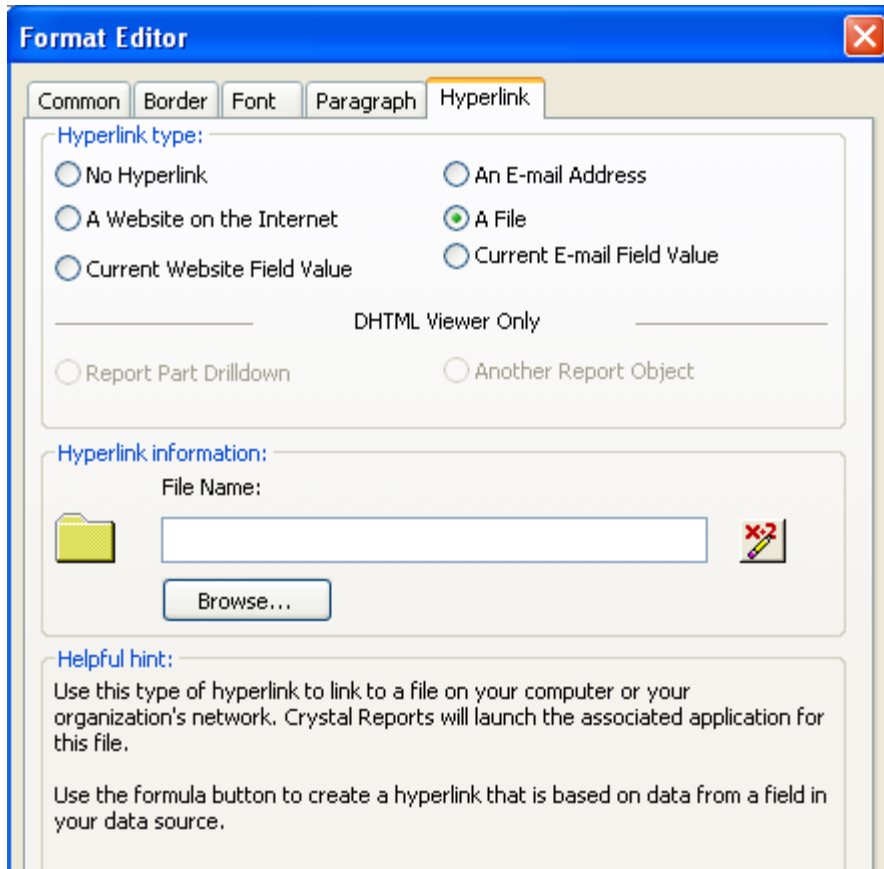
The subreport was set up like this:



- Within the *Select Expert* the formula looked like this:

{WKDOC.MODULE\_NAME}="WKDAILYI" and  
{WKDOC.KEY\_ID} = {?Pm-WKDAILYI.DI\_ID}

- For the **DOC\_DESC** field you right clicked and selected *Format Field*.
- Then the *Hyperlink* tab was selected.



- In the *File Name Formula Workshop* the Document Path field was brought in:
  - {WKDOC.DOC\_PATH}
- In the subreport *Report Header* a statement was added so the report user knew what to do to access the documents.
  - (Double click here to open the Document subreport then click on the document you wish to view.)

# Use of Commands

If the database you are using supports SQL, you can write your own command which will be represented in Crystal Reports as a Table object. This can reduce the size of the data being brought in as well as running fields through calculations and groupings before the data runs in the report. Sorting can be an issue when the value to be sorted on is a formula within a group. The *Group Sort Expert* can be helpful but not all formula fields are available for sorting.

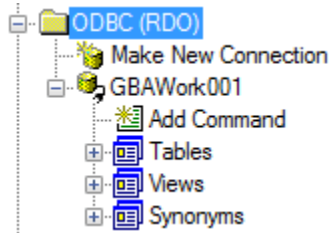
Commands do not recognize Lucivity filters when the report is run.

Here is an example of a report which only used a Command.

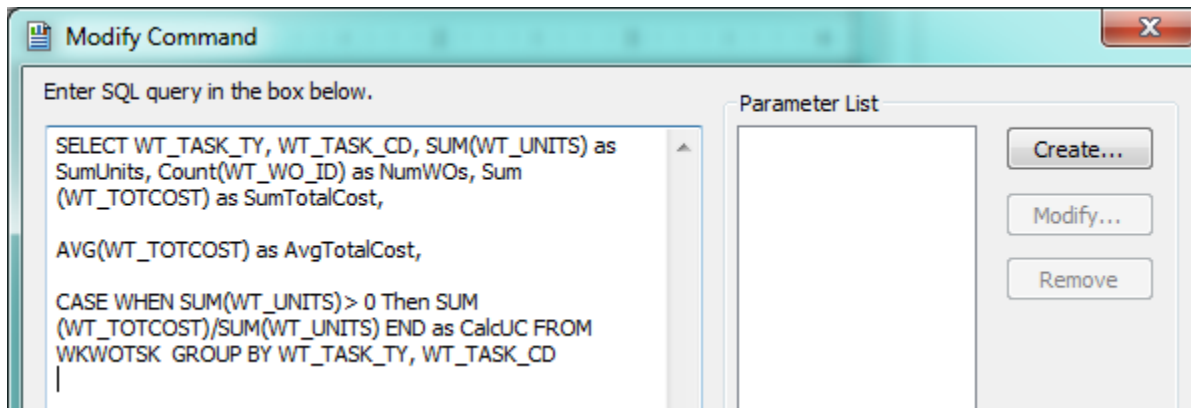
| <b>Task Summary Report - Avg Cost/Unit Sort</b> |                |              |                    | 7/17/2014             |
|---|----------------|--------------|--------------------|-----------------------|
|   |                |              |                    | 9:57:54PM             |
| <b>Task</b>                                     | <b>**# WOs</b> | <b>Units</b> | <b>*Total Cost</b> | <b>*Avg Cost/Unit</b> |
| ENW T00 Engineering Quality Control             | 103            | 3.00         | \$114,320.94       | \$38,106.98           |
| VMFUEL01 Semi-Annual Dispenser Maint            | 13             | 2.00         | \$14,743.95        | \$7,371.98            |
| VMFAB01 Fabrication                             | 62             | 54.00        | \$328,978.20       | \$6,092.19            |
| CSINFO01 Info Calls Solid Waste                 | 7,710          | 720.00       | \$1,927,740.94     | \$2,677.42            |

The report needed to group on the Task but the sort was on the **Avg Cost/Unit** formula field. This formula was not available in the *Group Sort Expert* so a Command was used.

When the report was created and the Data window appeared, instead of selecting tables, the *Add Command* was selected.



The SQL statement was added to the left box.



The values were brought into the report and then the *Record Sort Expert* was used to sort on the **CalcUC** field.

| <b>Task Summary Report - Avg Cost/Unit Sort</b> |   |        |               |               | Print Date |
|---|---|--------|---------------|---------------|------------|
| ?Report Subtitle                                |   |        |               |               | Print Time |
| Task  | **# WOs   | Units  | *Total Cost   | Avg Cost/Unit |            |
| D   | @Task   | NumWOs | SumUnits      | SumTotalCos   | CalcUC     |
| RF  | Totals  | NumWOs | d.SumTotalCos |               |            |
| PF  | <small>A 'Hidden' field indicates permission to view the secured field is turned off.</small><br><small>Due to possible multiple tasks per work order the sum of the work orders per task will not necessarily equal the Total WOs.</small> |        |               |               |            |

Another case where Add Command is used is when you need to Select records with an OR statement that uses fields from different tables.

To set this up you need to know the required tables, the fields used in the report and the selection criteria.

Here is an example of the SQL statement used to create this type of report:

```

SELECT SWBLDG.*, SWBLDGOB.*, SWBLDGSUMP.BB_STAT_TY, SWNET.NT_BASIN,
SWNET.NT_USMAN, SWNET.NT_DSMAN, SWBLDGOB.BO_STAT_TY,
SWBLDGSUMP.BB_STAT_TY

FROM ((SWBLDG LEFT JOIN SWBLDGOB ON SWBLDG.BD_BLDGID =
SWBLDGOB.BO_BLDGID) LEFT JOIN SWBLDGSUMP ON SWBLDG.BD_BLDGID =
SWBLDGSUMP.BB_BLDGID) LEFT JOIN SWNET ON SWBLDG.BD_NETID = SWNET.NT_ID

WHERE

SWBLDGOB.BO_STAT_TY='positive' or
SWBLDGOB.BO_STAT_TY='suspect' or
SWBLDGSUMP.BB_STAT_TY='positive' or
SWBLDGSUMP.BB_STAT_TY='suspect'

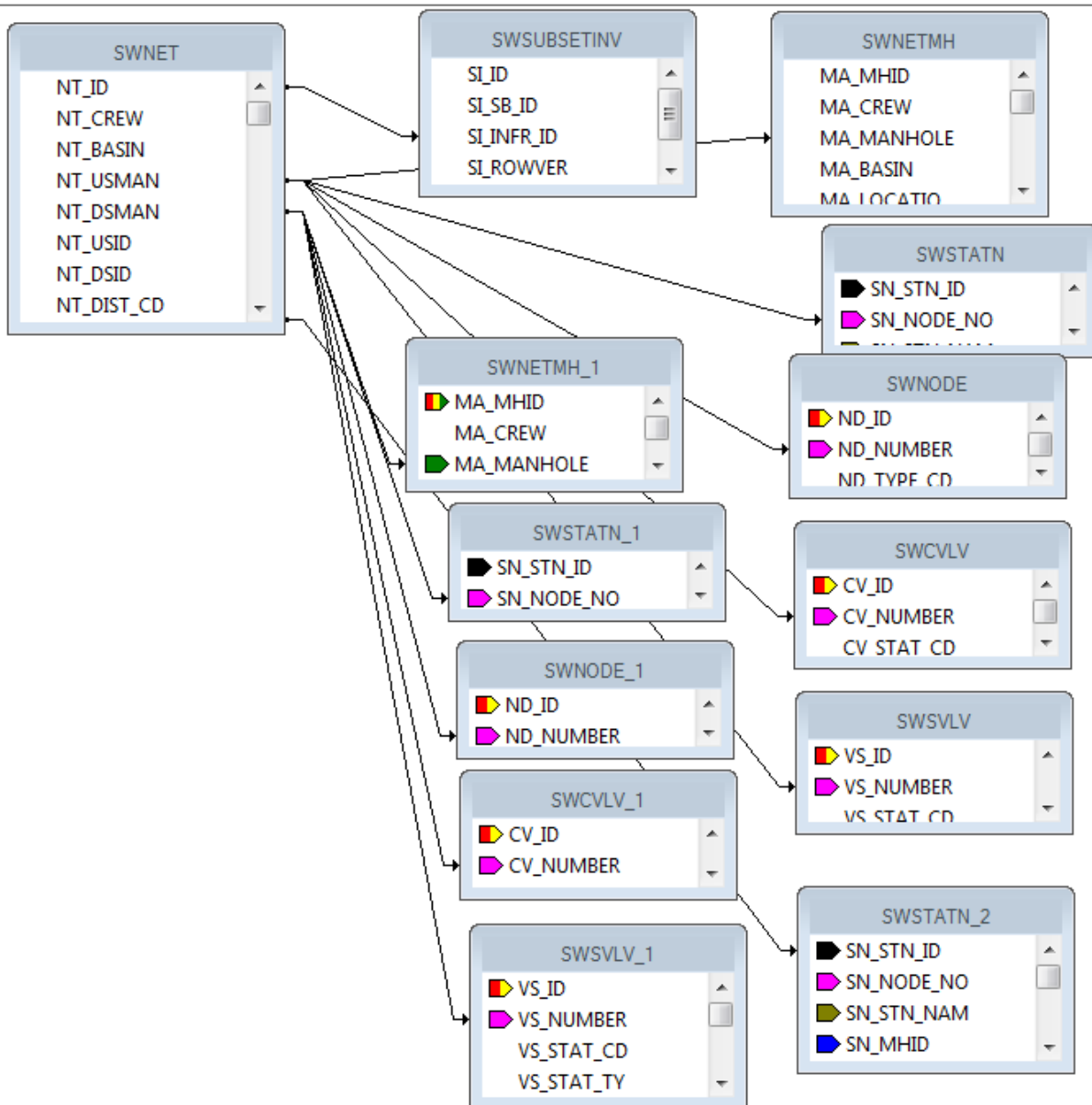
```

## Duplicate Table Use

Due to Lucy's flexibility in the use and linking of tables it is helpful that Crystal can accommodate most of the relationships.

Crystal Reports allows the same table to be brought in multiple times into a report by adding a “\_#” such as “\_1” or “\_2” to the end of the table name.

This is helpful when showing the relationship of the structures to the ends of a pipe as seen in the Sewer Pipe Detail Report (PipeDet.rpt).



## Conversions

The fields in Lucity can be a variety of types like numeric, text or datetime. If the fields are used in a formula, then all of the pieces need to be the same type of data. You can use conversion formulas:

ToText(x)

ToString(x)

ToNumber(x) - There could possibly be issues with this formula. An optional conversion for a string filed is VAL(x)

To go from all caps to “Normal Text” use the following formula:

ProperCase({WKRESRCE.WR\_RSRC\_TY})

To get years to show up without a comma:

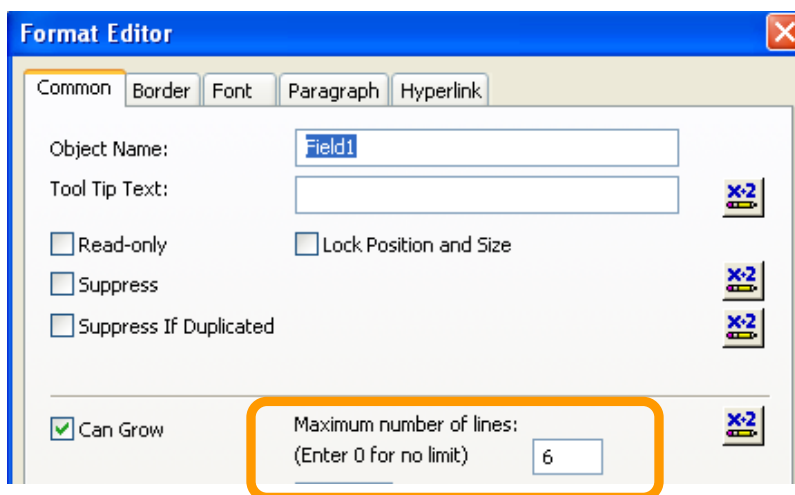
ToText(Year ({?Post Date}),0,"

## Odd Things Happen

### *Field not showing all of the text*

Check the Field Format Editor in the common tab to make sure the *Can Grow* option is checked. If it is checked and the field is still cutting off the data then make sure the maximum lines is set at “0”.

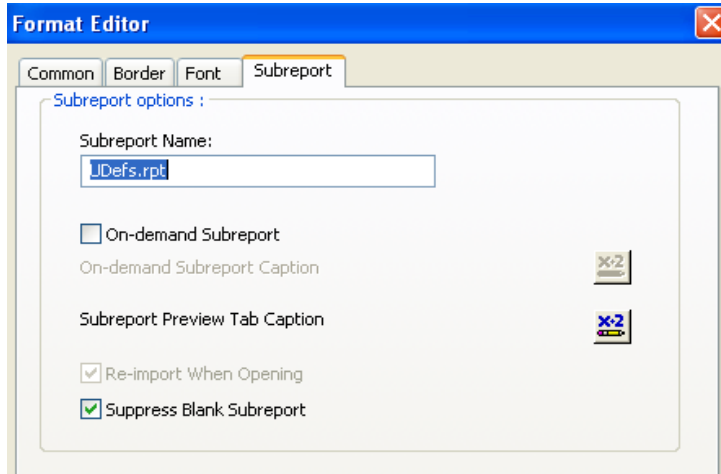
Work – old version (RTDetail.rpt) formatting for the Comments For Crew subreport, **CO\_TEXT** field.





## Report Takes a Long Time to Open

If you have a Detail report that takes a LONG time to open, check the **UDefs.rpt** subreport at the top of the report and the Comment subreport at the bottom of the report. Open the Format Editor dialog box for the Subreport and click on the Subreport tab. Make sure the “*Re-import When Opening*” check box is NOT checked. Sometimes this option is silver and can’t be changed.



# Using Crystal Reports with Lucity

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## *Advanced - 3*

The seventh of a seven-part series, this workbook is designed for Crystal Reports® users creating Work reports. This guide goes over particular steps and challenges in creating reports for work orders. Most of the following items can be issues found in creating other reports, however; they are very common in Work reports. Some of the general issues have been discussed previously so are included again for review.

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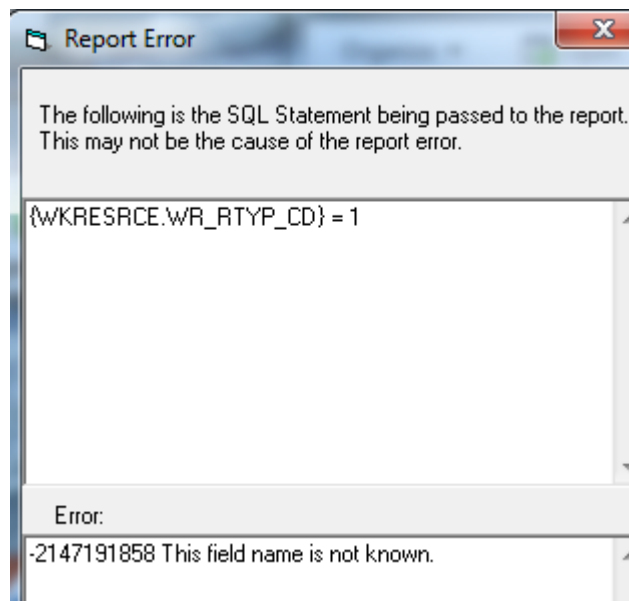
## Adding Tables

Bring in all of the tables that could possibly be filtered on in the report.

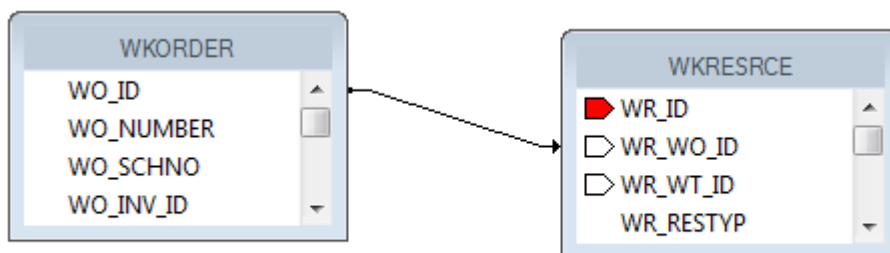
The following is a simple Work Order Report with fields from the **WKORDER** table with only the **WKORDER** table in the Database Expert.

| Work Order Summary |           |            |             |
|--------------------|-----------|------------|-------------|
| Work Order #:      | Category: | Task:      | Total Cost: |
| WO_NUMBER          | WO_CAT_TY | WO_ACTN_TY | WO_TOTCOST  |

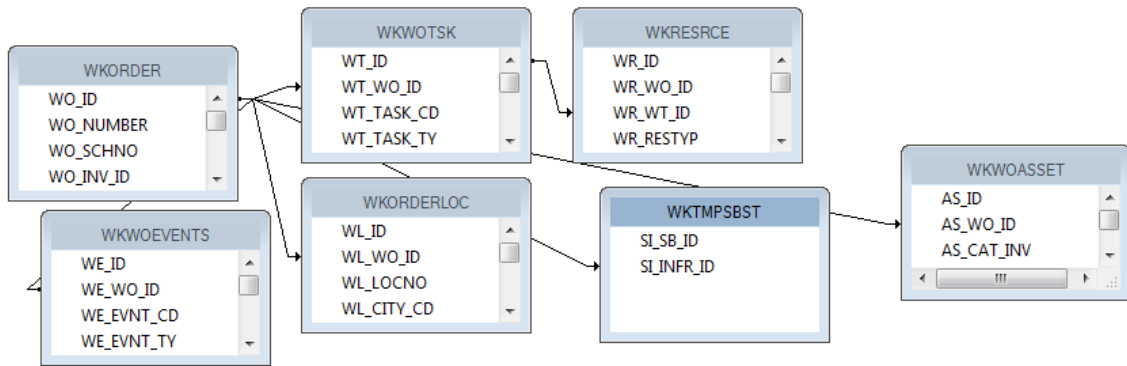
- If this report is run in Lucity with a filter on **Resource Code equal to 1** (employee) then the following error will show up and the report will not run.



- The error occurs because the **WKRESRCE** table is not a part of this report.
- Bring in any tables with possible fields to be filtered on into the *Database Expert* and *Link*.



The standard Work Order Summary report has the following tables yet only shows fields from the **WKORDER** and **WKORDERLOC** tables:



- In general, the tables are linked with “Left Outer Join” connections. If the table on the left is true then move to the right for the next information. This shows with an arrow pointing to the “Connecting” tables.
- Inner joins can be used - information in both tables has to exist - but sometimes Crystal has some issues with this linking. This shows with a line with no arrows.
- Some older reports show all of the connections without arrows even though they are “Left Outer Joins”. If looking at an old standard report and all of the connections look like inner joins, check each connection by double clicking each line and finding the Join Type description.

Many items in the Work Order module are found in grids. Each grid uses a different table.

- The normal user wants to start grabbing tables, linking and pulling in fields. As long as you can find the correct linking fields this should work, right? Wrong. There may be issues with multiple lines showing and possible problems with running the report with a filter.

A typical field an end user might like to see is the Address. It will be necessary to bring in the **WKORDERLOC** table to be among the tables in the main body of the report so the report can be run with an address filter. If the address is brought directly in from this table, the following occurs:

### **Work Order Summary**

| <b>Work Order #:</b> | <b>Category:</b>       | <b>Task:</b>                   | <b>Address:</b>  | <b>Total Cost:</b> |
|----------------------|------------------------|--------------------------------|------------------|--------------------|
| 2006-01128           | Sewer Service          | Waste Water Quality Commercial | 926 S BANNING ST | 270.45             |
| 2006-01128           | Sewer Service          | Waste Water Quality Commercial | 821 S ROANOKE ST | 270.45             |
| 2006-01129           | Residential Collection | Residential Collections        |                  | 0.00               |
| 2006-01129           | Residential Collection | Residential Collections        |                  | 0.00               |

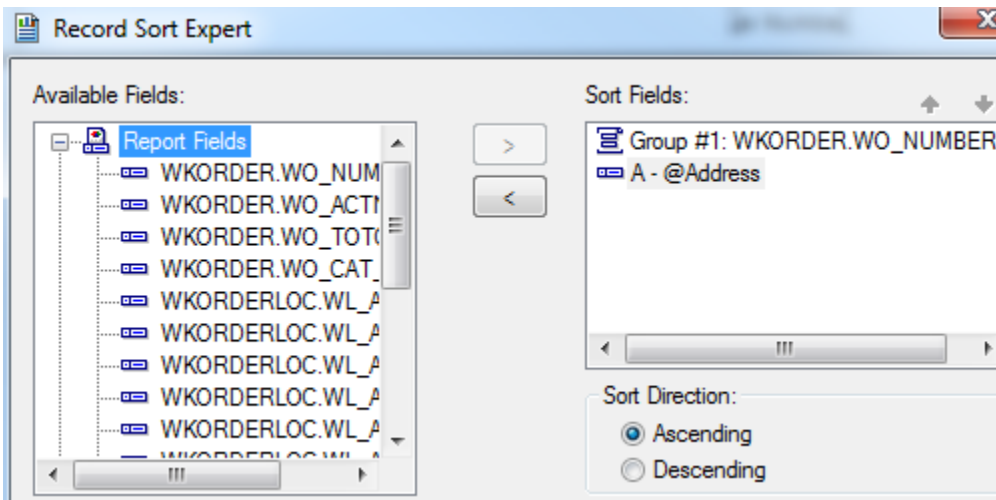
- The Work Order # 2006-01128 shows up twice because in this record there are two addresses in the Address grid. This might not be a problem to see the work order for each location but the Total Cost is going to show up each time as well, which is normally undesirable.

Possible ways to handle this:

1. If you want just one of the addresses, you could group on **WO\_NUMBER** and then place all of the fields in the *Group Header* or *Footer* section.

| PH  | <b>Work Order Summary</b> |           |            |          |             |
|-----|---------------------------|-----------|------------|----------|-------------|
|     | Work Order #:             | Category: | Task:      | Address: | Total Cost: |
| GH1 | WO_NUMBER                 | WO_CAT_TY | WO_ACTN_TY | @Address | @TOTCOST    |
| D   |                           |           |            |          |             |
| GF1 |                           |           |            |          |             |

- o Depending on whether you wish to see the top address or bottom address in the Work Order Location grid, you could go into the *Record Sort Expert* and select the address field to sort on in either ascending or descending order.



2. Another possibility is grouping on **WO\_NUMBER** and then putting the address formula in the *Detail* section. This would allow all of the addresses in the Location grid to show.

|      | <b>Work Order Summary</b> |           |            |          |             |
|------|---------------------------|-----------|------------|----------|-------------|
|      | Report Subtitle           |           |            |          |             |
|      | WO #:                     | Category: | Task:      | Address: | Total Cost: |
| GH1  | WO_NUMBER                 | WO_CAT_TY | WO_ACTN_TY |          | @WOCost     |
| D    |                           |           |            |          |             |
| GF1a |                           |           |            |          |             |

| <b>Work Order Summary</b> |               |                                |                                      |             |
|---------------------------|---------------|--------------------------------|--------------------------------------|-------------|
| Work Order #:             | Category:     | Task:                          | Address:                             | Total Cost: |
| 2006-01128                | Sewer Service | Waste Water Quality Commercial | 821 S ROANOKE ST<br>926 S BANNING ST | 270.45      |

- There can still be problems if another field from another grid is brought in. In this next example the subtask from the **WKWOTSK** table is used.

**Work Order Summary**

| Work Order #: | Category:     | Task:                    | SubTask:            | Address:         | Total Cost: |
|---------------|---------------|--------------------------|---------------------|------------------|-------------|
| 2006-01128    | Sewer Service | Waste Water Quality Comm | Work Zone           | 821 S ROANOKE ST | 270.45      |
|               |               |                          | Regulatory Research | 821 S ROANOKE ST |             |
|               |               |                          | Emergency Response  | 821 S ROANOKE ST |             |
|               |               |                          | Regulatory Research | 821 S ROANOKE ST |             |
|               |               |                          | Regulatory Research | 926 S BANNING ST |             |
|               |               |                          | Emergency Response  | 926 S BANNING ST |             |
|               |               |                          | Regulatory Research | 926 S BANNING ST |             |
|               |               |                          | Work Zone           | 926 S BANNING ST |             |

- There are three subtasks for this work order and one of the Tasks has two resources. So, for each address each task/resource combination is brought in. You definitely don't want this to happen. The problem is the way Lucity passes the information over to Crystal Reports.

The best way to handle grid information is with subreports. Both the SubTask and Address fields can be put in subreports.

| PH | <b>Work Order Summary</b> |           |            |          |           |             |
|----|---------------------------|-----------|------------|----------|-----------|-------------|
|    | Work Order #:             | Category: | Task:      | SubTask: | Address:  | Total Cost: |
| D  | WO_NUMBER                 | WO_CAT_TY | WO_ACTN_TY | Subtasks | Addresses | Q_TOTCOST   |

**Work Order Summary**

| Work Order #: | Category:     | Task:                    | SubTask:            | Address:         | Total Cost: |
|---------------|---------------|--------------------------|---------------------|------------------|-------------|
| 2006-01128    | Sewer Service | Waste Water Quality Comm | Work Zone           | 821 S ROANOKE ST | 270.45      |
|               |               |                          | Regulatory Research | 926 S BANNING ST |             |
|               |               |                          | Emergency Response  |                  |             |

Note: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Adding a Comments Section


The data from the *Comment* tab within **Work Orders** and **Requests** is brought into the report differently than the *Comment* sections in other modules. For this example, we'll add a Comment subreport to the **Work Order Summary Report**.

1. First, we'll find the field definition for the Work Order Comment section.
  - a. Open the **Work Orders Standard** module. Click on the *Comments* tab.

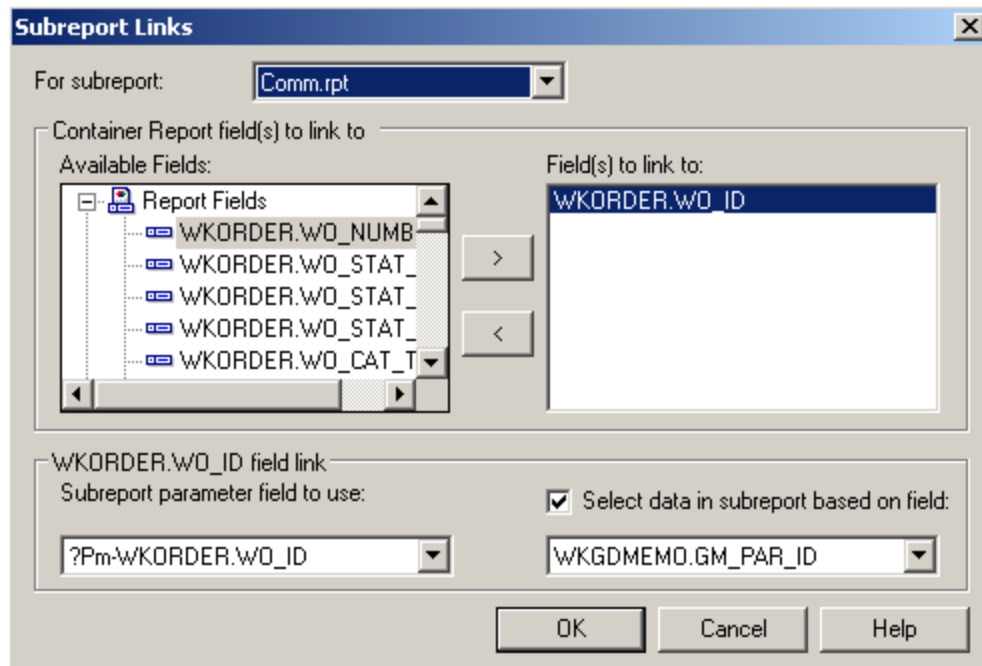
| Recorded By ▲ | Recorded Date | Recorded Time | Comment                             |
|---------------|---------------|---------------|-------------------------------------|
| GBA           | 04/09/2007    | 08:53 PM      | This is also a special type of memo |

- b. Right click in the grid.
- c. Select *Add Comment* or *View Details* for an existing comment.
- d. Ctrl + right click in the large comments box to view the field definition. Note that the table name is **WKGDMEMO** and the field name is **GM\_MEMO**.
- e. Close the comment dialog.

**Note:** This Comment section does not hit the *WKMEMO* table. Instead, it uses the *WKGDMEMO* table.

2. Open the Work Orders module's Report Dialog.
3. Export the **WOSum.rpt** report and rename it **LC\_WOSumComment.rpt**. Open the renamed report.
4. Right click in the left margin of the *Group Footer 1a* section and select *Insert Section Below*.
5. Click *Insert Subreport* .
  - a. In the *New report name* section, type a name for the subreport (**Comment**).
  - b. Click *Report Wizard*.
6. Open **Create New Connection>>ODBC>>GBAWork001 (Finish)>>Tables**.
  - a. Move the **WKGDMEMO** table to *Selected Tables*.
  - b. Then, choose *Finish* and *OK*.
7. Insert the **Comment** "box" into the *Group Footer 1b* section.
8. Choose subreport formatting options and resize the box.
9. Right click within the **Comment** box and select *Change Subreport Links*.

- a. Select fields so it looks like the following:



- b. Click *OK*.

10. Double click on the **Comment** box. You are now in the **Comment** subreport.

11. Click *Select Expert* and add the following to the formula:

**and** {WKGDMMEMO.GM\_PARENT} = "WKORDER"

- o This can be done with the *New* tab.

OR

- a. In the **Formula Editor > Formula Workshop** you can type "and"
- b. Double click the field, **WKGDMMEMO.GM\_PARENT**
- c. Type in "="
- d. Right click on **WKGDMMEMO.GM\_PARENT** within the list of fields and click *Browse Data* and select **WKORDER**, *Paste Data*.
- e. Select *Save and Close* and then click *OK*.

**Note:** The formula in Requests would look like this:

```
{WKGDMMEMO.GM_PAR_ID} = {?Pm-WKREQ.RQ_ID} and
{WKGDMMEMO.GM_PARENT} = "WKREQ"
```

12. Add column titles. You'll want to make the titles **bold** and underlined in order to make them distinct.



13. Drag in the appropriate fields.
  - o You'll need to create formulas for the **Date** and **Time** fields before adding them.
14. Increase the size of the **GM\_MEMO** field and format it so it *Can Grow*.
15. Place a box around the **Comment** subreport to separate it from the rest of the data. Make sure the bottom of the box is in the Report Footer section so the box will grow to accommodate the Memo field if necessary.
  - a. Add a title for the box (**Comments**).
  - b. Format the **Comments** text box with a white background.

|                 |                     |              |              |                 |
|-----------------|---------------------|--------------|--------------|-----------------|
| Report Header a |                     |              |              |                 |
| Report Header b | <b>Comments</b>     |              |              |                 |
|                 | <b>Recorded By:</b> | <b>Date:</b> | <b>Time:</b> | <b>Comment:</b> |
| Details         | GM_REC_BY           | @Date        | @Time        | GM_MEMO         |
| Report Footer b |                     |              |              |                 |

16. Click the *Design* tab.
17. Click the *Section Expert* button.
  - a. Select **Group Footer1b** and the *Suppress Blank Section* option.
  - b. Select **Group Footer 1** and the *Keep Together* option.
  - c. Then, click OK.

**Preview**

### **Work Order Summary Report**

| WO #            | Status              | Status Date  | Category       | Main Task                       |
|-----------------|---------------------|--------------|----------------|---------------------------------|
| 98-000027       | Complete            |              | Administrative | General Office                  |
| <b>Comments</b> |                     |              |                |                                 |
|                 | <b>Recorded By:</b> | <b>Date:</b> | <b>Time:</b>   | <b>Comment:</b>                 |
|                 | GBA                 | 4/16/2007    | 2:33:00PM      | This is a comment for 98-000027 |
| 98-000028       | Complete            |              | Administrative | General Office                  |
| <b>Comments</b> |                     |              |                |                                 |
|                 | <b>Recorded By:</b> | <b>Date:</b> | <b>Time:</b>   | <b>Comment:</b>                 |
|                 | GBA                 | 4/16/2007    | 2:34:00PM      | This is a comment for 98-000028 |
| 98-000029       | Complete            |              | Pavements      | Asphalt Preparation             |
| 98-000005S      | Completed           |              | Pavements      | Mudjacking                      |
| 98-000030       | Complete            |              | Pavements      | Repair Potholes                 |

**Notes:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Linking

When a subreport is added to a report, the linking procedure is usually straight forward; however, there are exceptions throughout the Lucity modules. We previously discussed one such exception: the **XXMEMO** table to the Main table for Comments. Here, the linking field was not obvious.

There are other situations where information in a grid requires a go-between table to work with the parent module. When creating a report, this go-between table is required to connect the subreport to the main report. For example, when Work Orders or Requests are linked to Work Orders or Requests, a go-between table called **WKWOMWO** is needed.

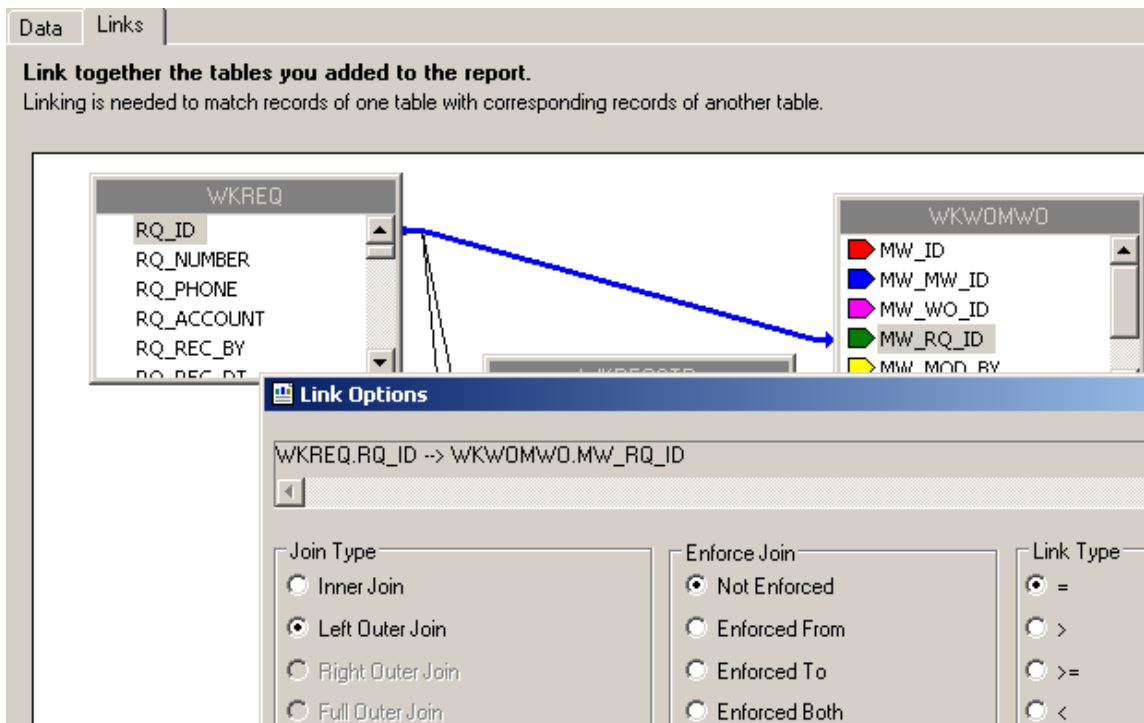
## Linking Work Orders to Requests

In our first step-by-step example, we will link a Work Order subreport to a Request report.

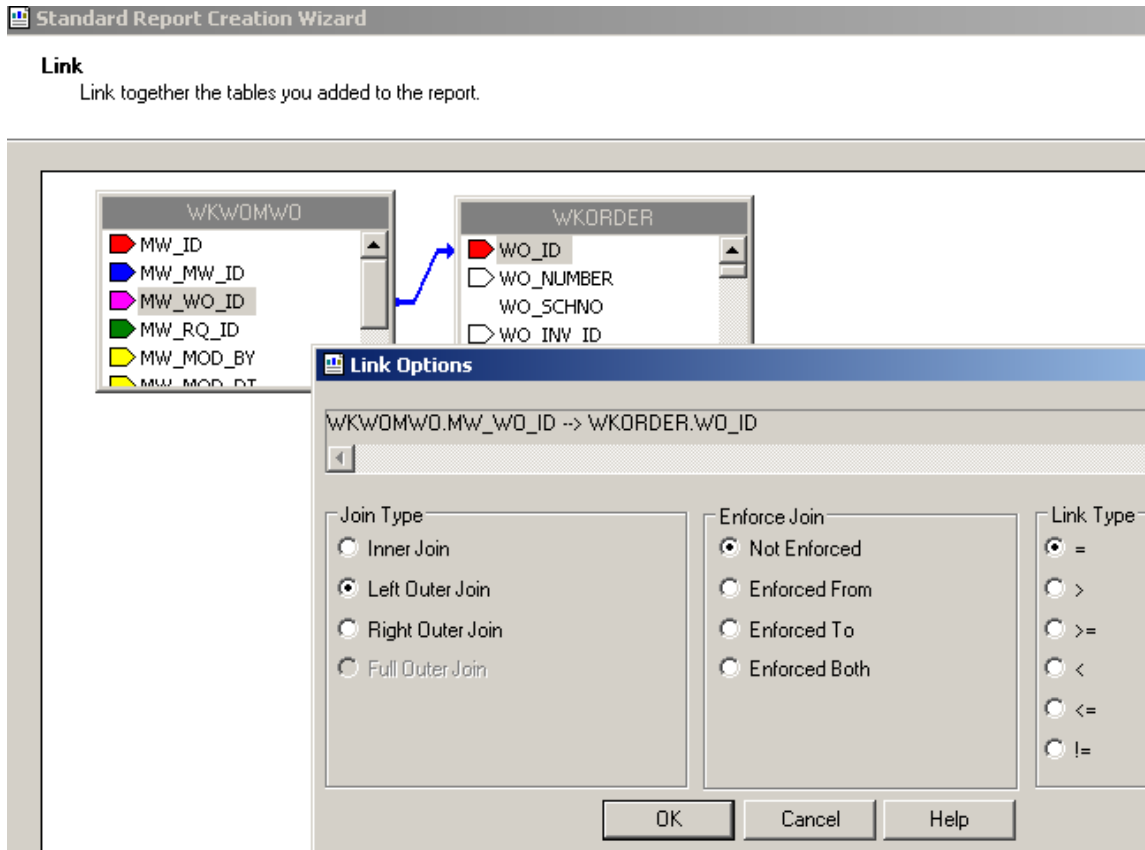
1. We will modify the Summary of Requests (**ReqSum.rpt**) report from the Request module. From the Work report folder open **LC\_ReqSumLinks.rpt**.
2. Open the *Database Expert*.
3. Add the **WKWOMWO** table and link it to **WKREQ**.

The connected fields usually have an **ID** field with a common part; in this case, it is **RQ**.

- a. To link the tables, click on the joining field in the “parent” table and drag it onto the joining field in the connecting table.
- b. Double click on the joining arrow and select the *Left Outer Join* Link Option.
- c. Click *OK* and then click *OK* again.



4. Add a **Detail** section for the Work Orders subreport.
5. Create a subreport (**Linked Work Orders**).
  - a. For the *Selected Tables*, bring in **WKORDER** and **WKWOMWO**.
  - b. Select *Next* and link the tables. *Left Outer Join*.
    - The “parent” table will be the table that is linked to the main report. (Usually placed far left, top)
  - c. Click *Finish* and then click *OK*.



6. Place the subreport in the new **Details** section.
7. Select the formatting options and resize the subreport.

8. Right click in the **Linked Work Orders** subreport box and select *Change Subreport Links*. Set up as shown below:

9. Open the **Linked Work Orders** subreport.
  - a. Set up the subreport with the desired information.

| <b>Linked Work Orders</b> |                 |                |
|---------------------------|-----------------|----------------|
| <u>WO #</u>               | <u>Category</u> | <u>Problem</u> |
| WO_NUMBER                 | WO_CAT_TY       | WO_PROB_TY     |

- b. Open the *Section Expert* in the main report and select *Suppress Blank Section* for the subreport *Detail* section.

10. Preview the report.

## Summary of Requests

| Request # | ReqDate   | Status       | StatDate   | Priority | Problem    |
|-----------|-----------|--------------|------------|----------|------------|
| 98-000052 | 10/5/1998 | Completed    | 2/15/1999  | Medium   | Potholes   |
| 98-000053 | 10/5/1998 | WO Completed | 11/12/1998 | Medium   | Sewer Odor |

| <b>Linked Work Orders</b> |                  |                |
|---------------------------|------------------|----------------|
| <u>WO #</u>               | <u>Category</u>  | <u>Problem</u> |
| 98-000019                 | Sewer Department | Sewer Odor     |

- In our example, there is an extra space above the first Work Order record. One way to remove this space is to go back into the **Linked Work Orders** subreport *Select Expert* and add a statement for Work Order IDs greater than zero.

```
{WKWOMWO.MW_MW_ID} = {?Pm-WKWOMWO.MW_MW_ID}
and {WKORDER.WO_ID} > 0
```

- As you can see in the Preview screen below, this additional statement has removed the blank space from above the first Work Order record.

### Summary of Requests

| Request # | ReqDate   | Status       | StatDate   | Priority | Problem    |
|-----------|-----------|--------------|------------|----------|------------|
| 98-000052 | 10/5/1998 | Completed    | 2/15/1999  | Medium   | Potholes   |
| 98-000053 | 10/5/1998 | WO Completed | 11/12/1998 | Medium   | Sewer Odor |

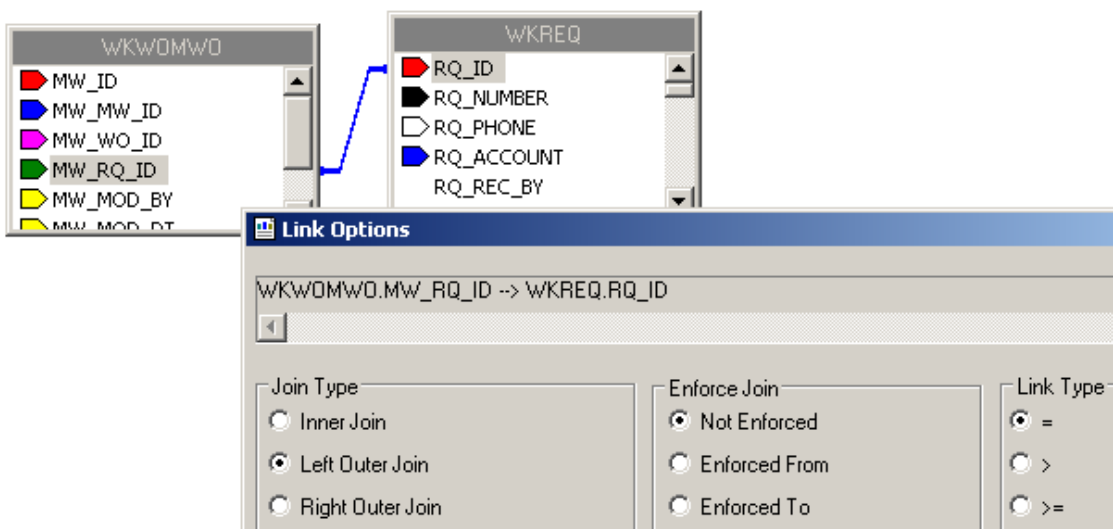
| Linked Work Orders |                  |            |
|--------------------|------------------|------------|
| WO #               | Category         | Problem    |
| 98-000019          | Sewer Department | Sewer Odor |

- Another way to handle the blank line is to use the *Section Expert* in the subreport. Select *Suppress blank section* for the *Detail* section.

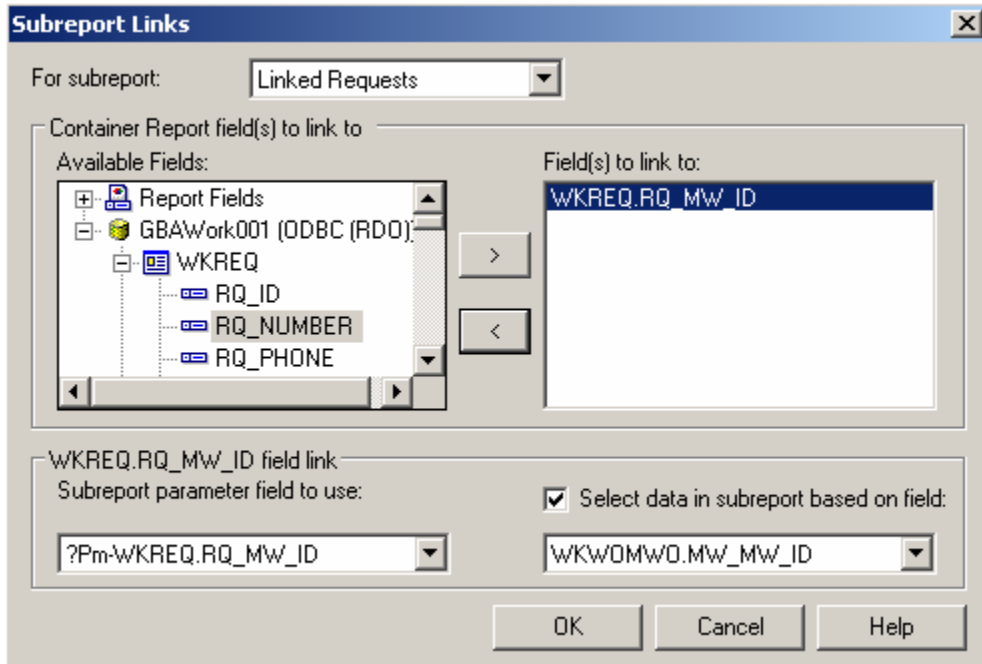
## Linking Requests to Requests

For our next example, we'll continue with `LC_ReqSumLinks.rpt` from above. Here, we'll add the linked Requests.

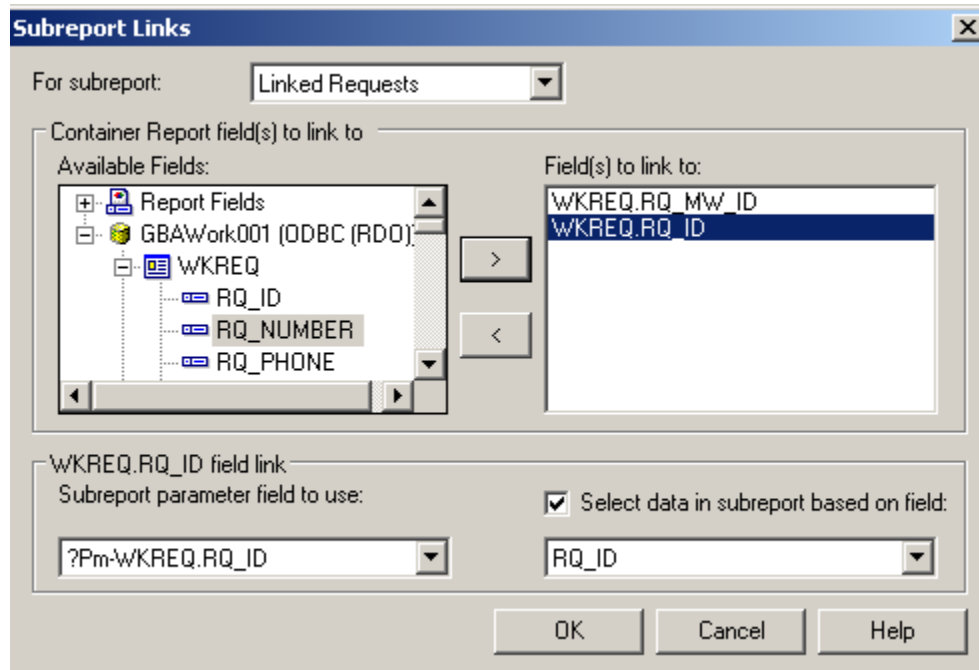
- Add a **Detail** section beneath the **Linked Work Orders** subreport.
- Insert a subreport named **Linked Requests**.
  - For the Selected Tables bring in **WKWOMWO** and **WKREQ**.
  - Link as follows:



- c. Place the subreport in the newly created **Detail** section.
  - d. Select formatting options, and resize.
3. Right click on the **Linked Requests** subreport and select *Change Subreport Links*. Set up as shown below:



- o You do not want to show the request you are in when listing linked requests, so an additional linking statement needs to be added.



4. Open the **Linked Requests** subreport and click *Select Expert*.

5. You'll need to modify one of the linking formulas created in *Subreport Links*.

{WKWOMWO.MW\_MW\_ID} = {?Pm-WKREQ.RQ\_MW\_ID} and  
 {WKREQ.RQ\_ID} = {?Pm-WKREQ.RQ\_ID}

- o Change the second formula to “not equal”.
- o You can do this in the *Formula Workshop* by highlighting the “=” and then opening *Operators>>Comparisons* and double clicking Not Equal (x<>y). OR You can just type in “<>”. The “=” will be replaced with “<>”.
- o Remember to *Save and Close* the *Formula Workshop* and select *OK* to close the *Select Expert*. The new formula will appear as follows:

{WKWOMWO.MW\_MW\_ID} = {?Pm-WKREQ.RQ\_MW\_ID} and  
 {WKREQ.RQ\_ID} <> {?Pm-WKREQ.RQ\_ID}

- 6. Set up the subreport with the desired information.
- 7. Go back to the main report and open *Section Expert*. Select *Suppress Blank Section* for this new *Detail* section.

**Preview**

**Summary of Requests**

| Request # | ReqDate   | Status    | StatDate  | Priority | Problem  |
|-----------|-----------|-----------|-----------|----------|----------|
| 98-000052 | 10/5/1998 | Completed | 2/15/1999 | Medium   | Potholes |

| Linked Work Orders |                  |            |
|--------------------|------------------|------------|
| WO #               | Category         | Problem    |
| 98-000019          | Sewer Department | Sewer Odor |

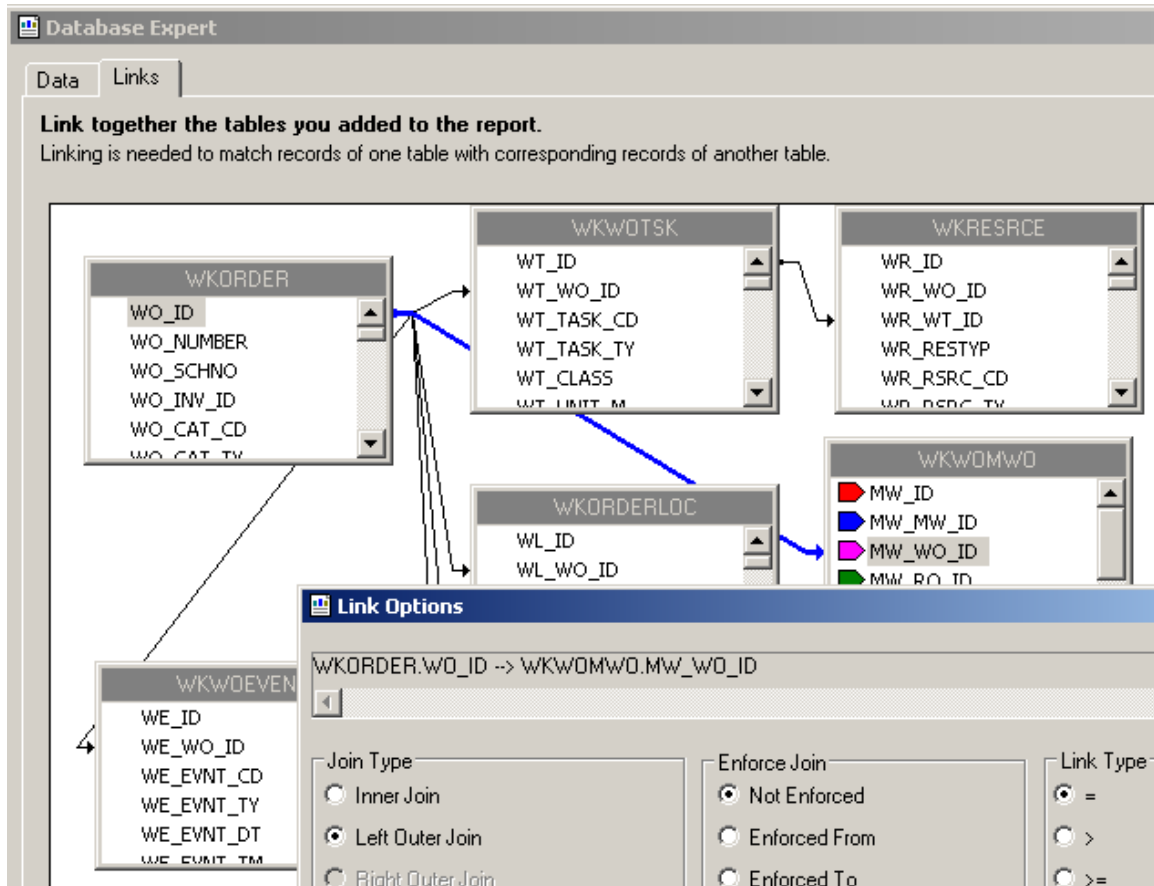
| Linked Requests |                  |            |
|-----------------|------------------|------------|
| Req #           | Category         | Problem    |
| 98-000053       | Sewer Department | Sewer Odor |

**Linking Requests to Work Orders**

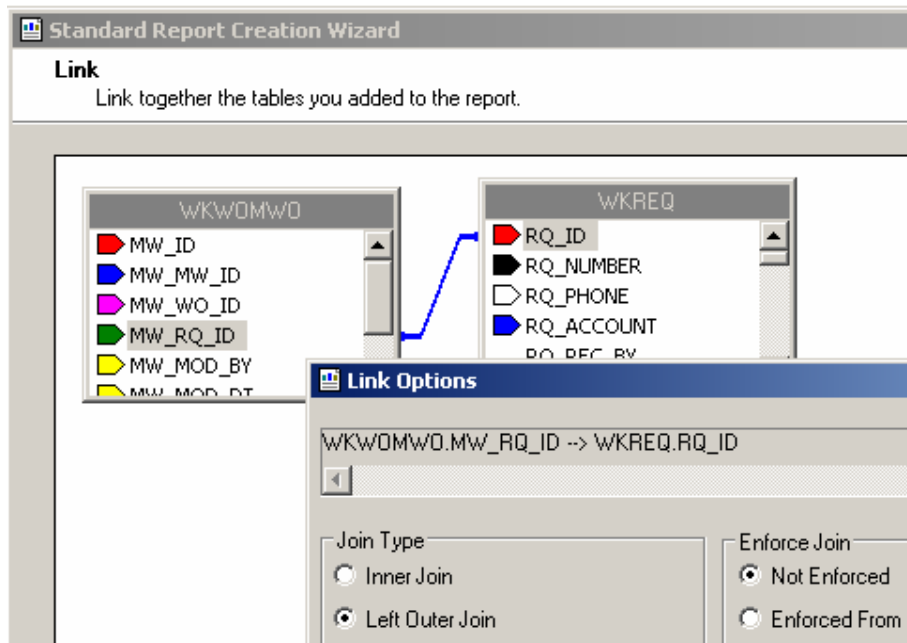
The procedure for adding the linked subreports is very similar to the above examples.

In this case, we'll add a **Linked Requests** subreport to the **Work Order Summary Report**.

- 1. We will modify the Work Order Summary (**WOSum.rpt**) report from the Work Order module. From the Work report folder open **LC\_WOSumLinks.rpt**.
- 2. Open *Database Expert* and add the **WKWOMWO** table, linking it to **WKORDER**.

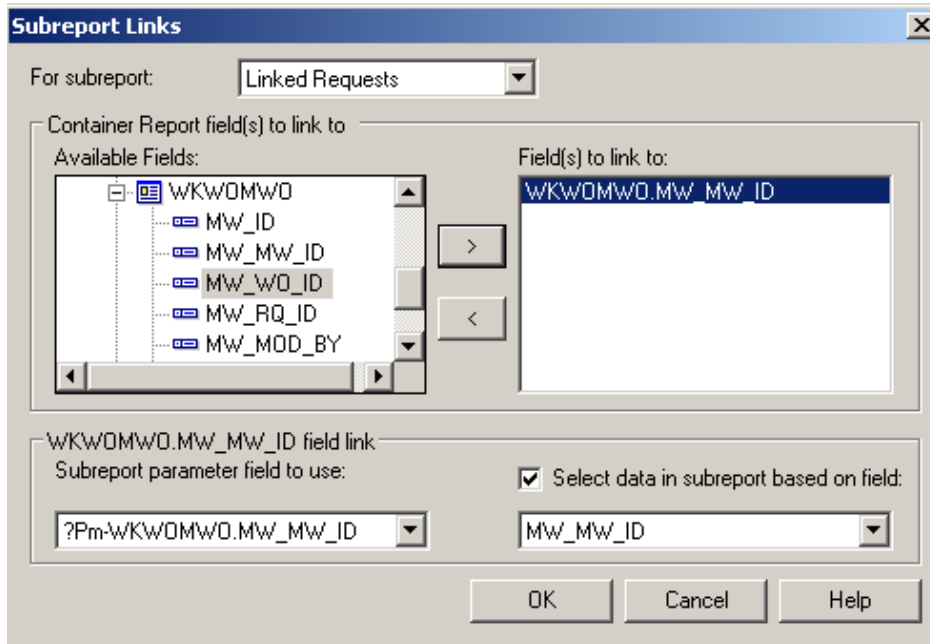


3. Add an additional **Group footer** section beneath **GF1a**. This will be the new **GF1b**.
4. Create a subreport named **Linked Requests** with the **WKWOMWO** and **WKREQ** tables.





5. Insert the **Linked Requests** subreport into the new **GF1b** section.
6. Right click on the subreport and select *Change Subreport Links*.

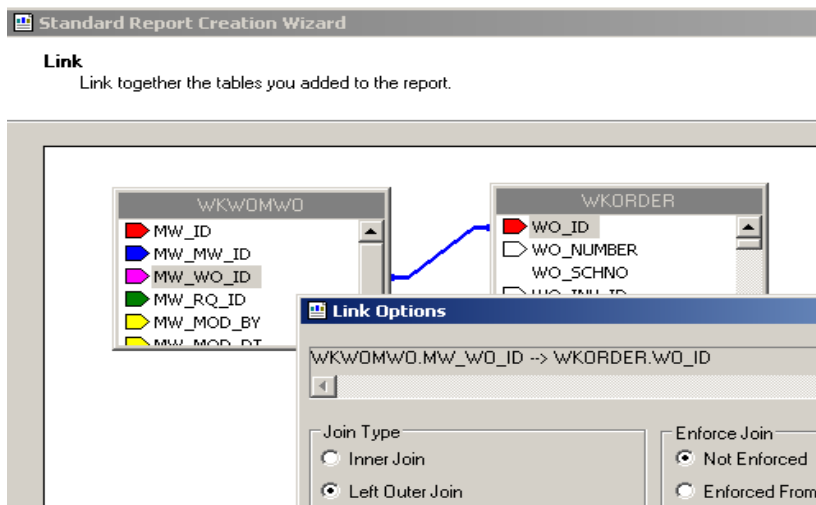


7. Proceed with the subreport details as previously demonstrated.

## Linking Work Orders to Work Orders

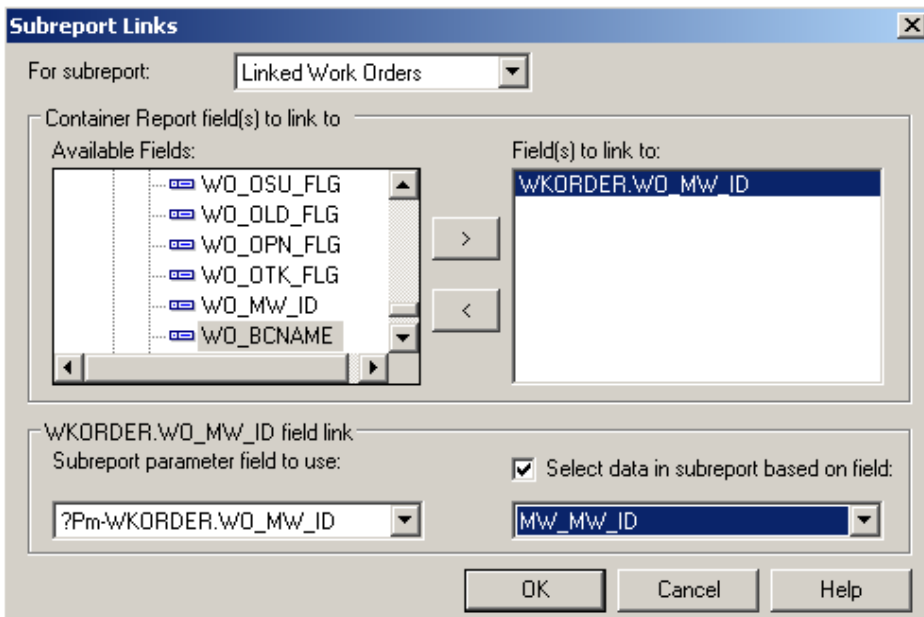
We will continue with the open **LC\_WOSumLinks.rpt** report and add a second subreport, **Linked Work Orders**.

1. Add a new **Group Footer** section.
2. Create a new subreport named **Linked Work Orders** and bring in the **WKWOMWO** and **WKORDER** tables.

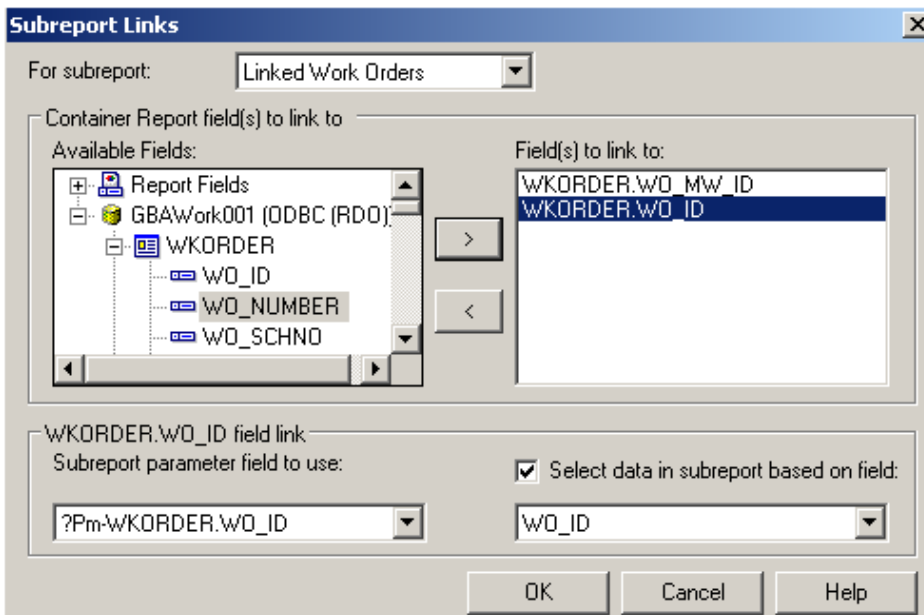


3. Place the **Linked Work Orders** subreport in the new **Group Footer** section.

- Right click on the subreport and select *Change Subreport Links*.



AND



- Open the **Linked Work Orders** subreport and click *Select Expert*.
- Change the formula as discussed previously.

{WKWOMWO.MW\_MW\_ID} = {?Pm-WKORDER.WO\_MW\_ID} and  
 {WKORDER.WO\_ID} <> {?Pm-WKORDER.WO\_ID}

- Proceed with the subreport details.

Example 30A

# Work Order Reports with Assets

## Asset Inventory Numbers

You can use the Asset number for record selection. By adding a formula in the *Select Expert* section, you can limit records to the desired assets.

The following Asset values are required to create any formulas that would select specific Assets. This is not a complete list.

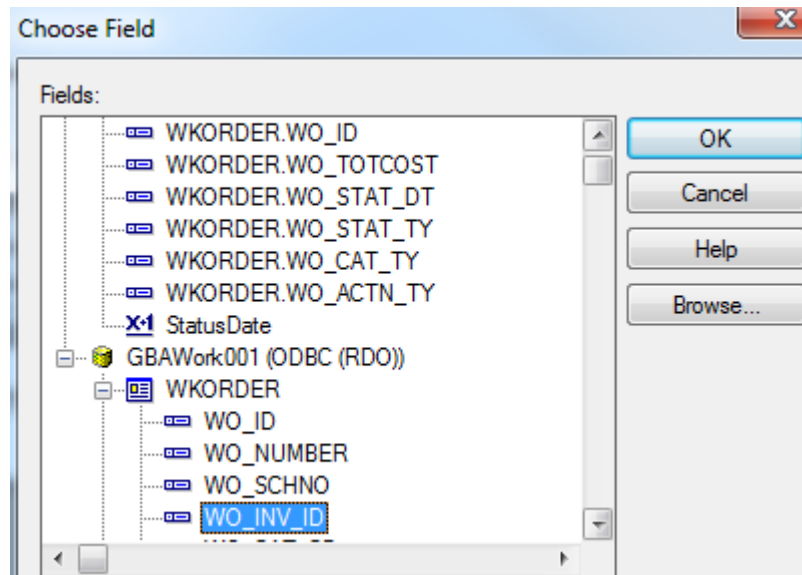
| CI_ID | CI_NAME                   | CI_ID | CI_NAME                    | CI_ID | CI_NAME                   | CI_ID | CI_NAME                  |
|-------|---------------------------|-------|----------------------------|-------|---------------------------|-------|--------------------------|
| 1     | No Inventory Item         | 57    | Street Preemptive Signal   | 109   | Recycled Control Valve    | 161   | Elec Open Point          |
| 2     | Sewer Structure           | 58    | Street Junction Box        | 110   | Street Ramp               | 162   | Elec Circuit Breaker     |
| 3     | Sewer Pump Station        | 59    | Street Meter Box           | 111   | Recycled Hydrant          | 163   | Elec Recloser Location   |
| 4     | Sewer Pump                | 60    | Street Snow Shoe           | 112   | Recycled Service Tap      | 164   | Elec Recloser Unit       |
| 5     | Sewer Service             | 61    | Street Cabinet             | 113   | Recycled AMR              | 165   | Elec Sectionalizer Loc   |
| 6     | Sewer Pipe                | 62    | Street Auxiliary Equipment | 114   | Raw Water AMR             | 166   | Elec Sectionalizer Unit  |
| 7     | Street Segment            | 63    | Street Signal Head         | 115   | Recycled Supply Source    | 167   | Elec Fault Interrupter   |
| 8     | Street Intersection       | 64    | Signal Controller          | 116   | Recycled Vault            | 168   | Elec Fuse Location       |
| 10    | Water Pipe                | 65    | Street Sidewalk            | 117   | Raw Water Vault           | 169   | Elec Fuse Unit           |
| 11    | Water Valve               | 66    | Street Curb                | 118   | Street Parking            | 170   | Elec Switch Location     |
| 12    | Water Hydrant             | 67    | Street Pavement Marking    | 119   | Water Loss                | 171   | Elec Switch Unit         |
| 13    | Water Pump Station        | 68    | Street Median              | 120   | Water Flushing            | 172   | Elec Capacitor Bank      |
| 14    | Water Storage Facility    | 69    | Street Guard Rail          | 121   | Facility Site             | 173   | Elec Series Cap Location |
| 15    | Water Meter Location      | 70    | Street Bus Stop            | 122   | Facility Site Asset       | 174   | Elec Capacitor Unit      |
| 16    | Water Node                | 71    | Street Railroad Xing       | 123   | Facility Door             | 175   | Elec Shunt Reactor       |
| 17    | Water Vault               | 72    | Street Wall                | 124   | Water Site                | 176   | Elec Fault Indicator     |
| 18    | Water Supply Source       | 73    | Street Fence               | 125   | Water Sampling Station    | 177   | Elec Fault Limiter       |
| 19    | Street Structure          | 74    | Street Steps               | 126   | Street Road Attribute     | 178   | Elec Ground              |
| 20    | Street Subsegment         | 75    | General Custom             | 127   | Street Road Segment       | 179   | Elec Surge Arrestor      |
| 22    | Water Pumps               | 76    | Facility Building          | 128   | Street Road Ramp          | 180   | Elec Street Light        |
| 23    | Water Backflow Preventers | 77    | Facility Roof              | 129   | Street Road Asset         | 181   | Elec Recloser Elect Ctrl |
| 24    | Water Service Taps        | 78    | Facility Floor             | 130   | Street Road               | 182   | Elec Recloser Hydr Ctrl  |
| 25    | Storm Structure           | 79    | Facility Room              | 132   | Solid Waste               | 183   | Elec Section Elect Ctrl  |
| 26    | Storm Conduit             | 80    | Facility Furnishing        | 133   | Solid Waste Container     | 184   | Elec Section Hydr Ctrl   |
| 27    | Storm Pump Station        | 81    | Park Meter                 | 134   | Solid Waste Route         | 185   | Elec Relay Control       |
| 28    | Storm Pump                | 82    | Park Pool                  | 135   | Elec Underground Struc    | 186   | Elec Regulator Control   |
| 29    | Storm Detention Basin     | 83    | Park Refuse                | 136   | Elec Surface Struc        | 187   | Elec Capacitor Control   |
| 30    | Street Post/Pole          | 84    | Light Controller           | 137   | Elec Elec Station         | 188   | Elec Load Tap Control    |
| 31    | Street Sign               | 85    | Street Light               | 138   | Elec Switching Station    | 189   | Elec Network Protector   |
| 32    | Fleet                     | 86    | Bridge                     | 139   | Elec Support Struc        | 190   | Elec Generator           |
| 33    | Equipment                 | 88    | Water Control Valve        | 140   | Elec Warning Sign         | 191   | Elec Meter               |
| 34    | Street Supersegment       | 89    | Water Meter Device         | 141   | Elec Aerial Marker        | 192   | Elec Induction Motor     |
| 38    | Water Main Breaks         | 90    | Water AMR                  | 142   | Elec Riser                | 193   | Elec Synchr Motor        |
| 39    | Park                      | 91    | Raw Water Meter Location   | 143   | Elec Anchor Guy           | 218   | Park Pool Site           |
| 40    | Park Parking Lot          | 92    | Raw Water Meter Device     | 144   | Elec Span Guy             | 219   | Park Pool Appurtenances  |
| 41    | Park Path                 | 93    | Raw Water Node             | 145   | Elec Pushbrace            | 220   | Park Playground          |
| 42    | Park Structure            | 94    | Raw Water Pipe             | 146   | Elec Assembly             | 221   | Park Fence               |
| 43    | Park Field                | 95    | Raw Water Pump             | 147   | Elec Joint Use Attachment | 222   | Park Modular Equipment   |
| 44    | Park Court                | 96    | Raw Water Pump Station     | 148   | Elec Conduit Inventory    | 223   | Raw Water Main Breaks    |
| 45    | Park Landscape            | 97    | Raw Water Storage Facil    | 149   | Elec Prim Under Line Seg  | 224   | Sewer FOG Facilities     |
| 46    | Park Lighting             | 98    | Raw Water Supply Source    | 150   | Elec Sec Under Line Seg   | 225   | Sewer IPT Facilities     |
| 47    | Park Playground Equipment | 99    | Raw Water System Valves    | 151   | Elec Prim Over Line Seg   | 226   | Sewer FOG Extractor      |
| 48    | Park Furniture            | 100   | Raw Water Control Valve    | 152   | Elec Sec Over Line Seg    | 227   | Customer Address         |
| 49    | Park Irrigation Control   | 101   | Recycled Meter Location    | 153   | Elec Circuit Source       | 228   | Facility Building Asset  |
| 50    | Park Irrigation Valve     | 102   | Recycled Meter Device      | 154   | Elec Bus Bar              | 229   | Facility Floor Asset     |
| 51    | Tree                      | 103   | Recycled Node              | 155   | Elec Communication Cable  | 230   | Facility Roof Asset      |
| 52    | Street Main Line          | 104   | Recycled Pipe              | 156   | Elec Transformer Bank     | 231   | Facility Room Asset      |
| 53    | Street Conduit            | 105   | Recycled Pump              | 157   | Elec Transformer Location |       |                          |
| 54    | Street Conductor          | 106   | Recycled Pump Station      | 158   | Elec Transformer Unit     |       |                          |
| 55    | Street Traffic Detector   | 107   | Recycled Storage Facility  | 159   | Elec Volt Regulator Loc   |       |                          |
| 56    | Street Fiber Optic Line   | 108   | Recycled System Valve      | 160   | Elec Volt Regulator Unit  |       |                          |

Note: These Assets come from the *WKCATINV* table.

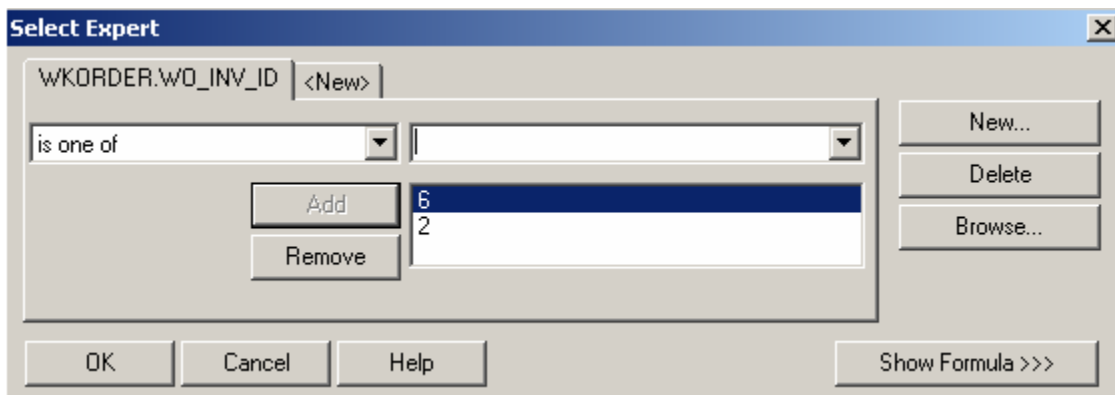
## Limiting Record Selection to Specific Assets

We will create a **Work Order Summary Report** that will show only **Sewer Pipe** and **Manhole** work orders with their assets.

1. From the Work report folder open **LC\_WOSumPipeMan.rpt**.
2. You can view just Sewer Pipe and Manhole records by adding the following formula to the Select Expert:
  - a. Open Select Expert.
  - b. Click on **WO\_INV\_ID**.



- c. Click **OK**.
- d. Set up as follows.



- e. Click **OK**.

*Note: The 6 (Sewer Pipe) and 2 (Sewer Structure) values come from the WKCATINV table on the previous page.*

OR

- a. You can click Report>>Selection formulas>>Record.
- b. Type in the following formula:  
`{WKORDER.WO_INV_ID} in [2, 6]`

## Preview

### **Work Order Summary Report**

| <b>WO #</b> | <b>Status</b> | <b>Status Date</b> | <b>Category</b>     |
|-------------|---------------|--------------------|---------------------|
| 98-000037   | Complete      |                    | Pipe Maintenance    |
| 98-000038   | Completed     |                    | Pipe Maintenance    |
| 98-000040   | Complete      |                    | Manhole Maintenance |

As you can see in the above example, the new **Work Order Summary Report** displays only the Sewer Pipe and Manhole records.

## **Asset Subreports**

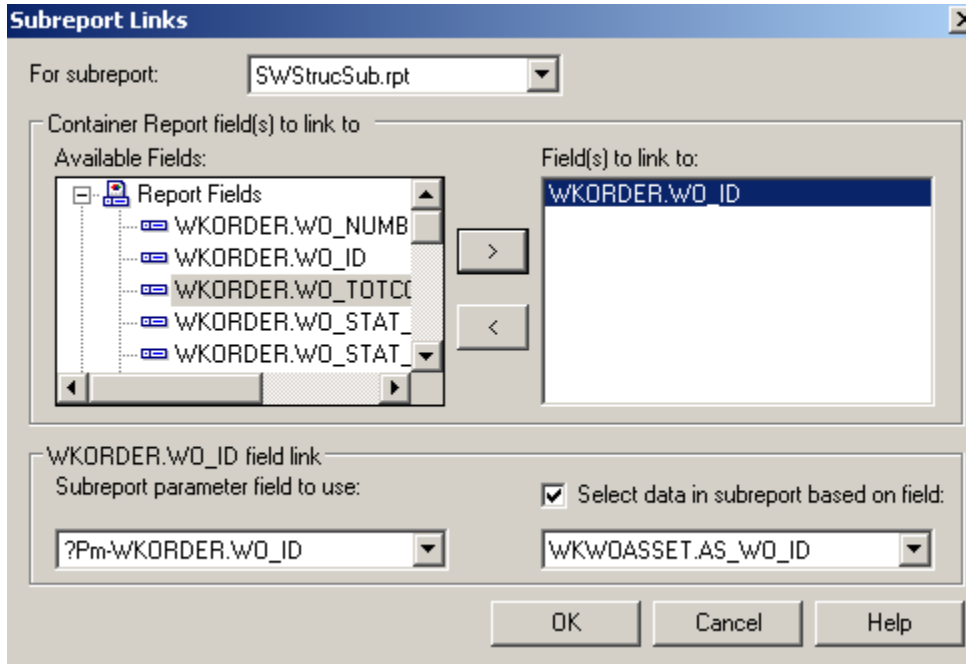
We will now add Asset subreports to the limited **Work Order Summary Report** we created above.

1. We are going to “borrow” subreports from **WOFormSewerAsset.rpt**.
  - a. Click *File* in the top tool bar, then *Open*, and then double click **WOFormSewerAsset.rpt**.
  - b. Right click on the **SWPipe.rpt** subreport.
  - c. Select *Save Subreport As*.
  - d. Enter a name for your subreport (**SWPipeSub.rpt**) and then *Save* the subreport. Make sure it is saved in the Work report folder.
  - e. Repeat these steps for the **SWStruc.rpt** subreport, giving it a new name as well.
    - For example, we’ve named this subreport, **SWStrucSub.rpt**.

*Note: When you are finished with these subreports, you may want to delete them from your “family” of Work reports. This will help avoid confusion in the future.*

2. Close **WOFormSewerAsset.rpt**.
3. You are back in **LC\_WOSumPipeMan.rpt**. Insert two new **Group Footer** sections.
4. In your new **Group Footer** sections, insert the two subreports using the *Choose an existing report* option.
5. Choose the subreport formatting options. Remember to suppress the blank subreports within formatting and in the *Section Expert*.

- Link the subreports.



- Within the subreports, remove the blank sections.
- Remove the “old” linking formula in each subreport’s *Select Expert*.

| <b>Work Order Summary Report</b> |           |             |             |           |            |                | Print Date      |
|----------------------------------|-----------|-------------|-------------|-----------|------------|----------------|-----------------|
| Report Subtitle                  |           |             |             |           |            |                | Print Time      |
| WO #                             | Status    | Status Date | Category    | Main Task | Address    | Total Cost     |                 |
| <b>Group #1 Name</b>             |           |             |             |           |            |                |                 |
| D                                |           |             |             |           |            |                |                 |
| GF1a                             | WO_NUMBER | WO_STAT_TY  | @StatusDate | WO_CAT_TY | WO_ACTN_TY | Locations.rpt  | @CostTot@WOCost |
| GF1b                             |           |             |             |           |            | SWPipeSub.rpt  |                 |
| GF1c                             |           |             |             |           |            | SWStrucSub.rpt |                 |
| RF                               |           |             |             |           |            | @GrTot         |                 |

## Preview

| <b>Work Order Summary for Sewer Pipes and Manholes Report</b> |                   |             |                       |                    |                   |                        | 7/7/2014 |
|---|-------------------|-------------|-----------------------|--------------------|-------------------|------------------------|----------|
|   |                   |             |                       |                    |                   |                        | 9:59 AM  |
| WO #  | Status            | Status Date | Category              | Main Task          | Address           | Total Cost             |          |
| 2006-01612  | Complete          | 9/16/2013   | Sewer Manhole         | Emergency Response | 165 E VALENCIA ST | \$70.94                |          |
| <b>Asset List (Sewer Structures)</b>                          |                   |             |                       |                    |                   |                        |          |
| <u>Structure</u>  | <u>Address</u>    | <u>Dia</u>  | <u>Structure Type</u> | <u>Map Page</u>    | <u>US Loc</u>     | <u>Completion Date</u> |          |
| 113487  | 165 E VALENCIA ST | 23.0        | Standard              | 1-720              | 28                | 4/11/2014              |          |
| 1 Manholes  |                   |             |                       |                    |                   |                        |          |

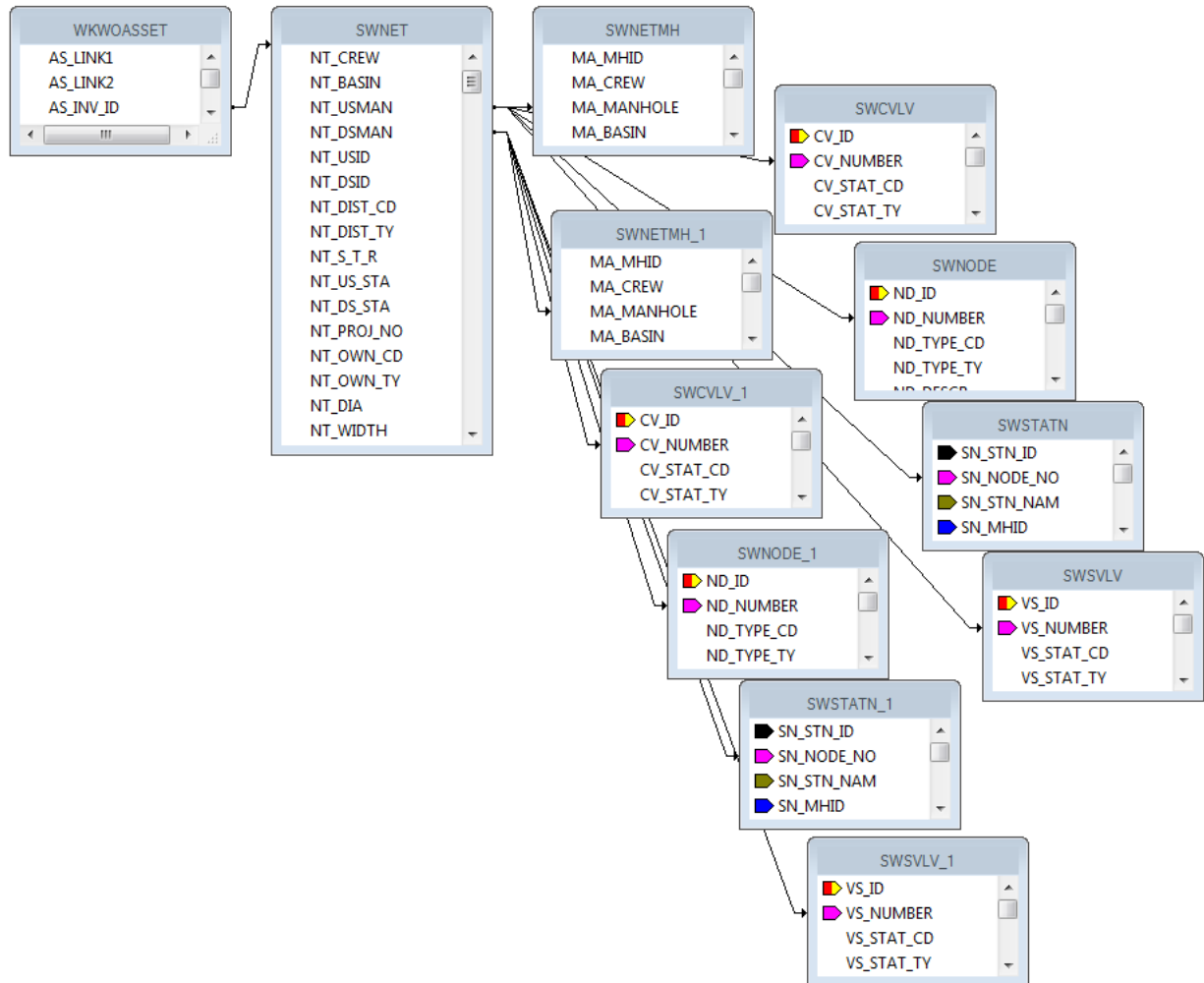
Example 31A

## Bringing in Asset Work Orders

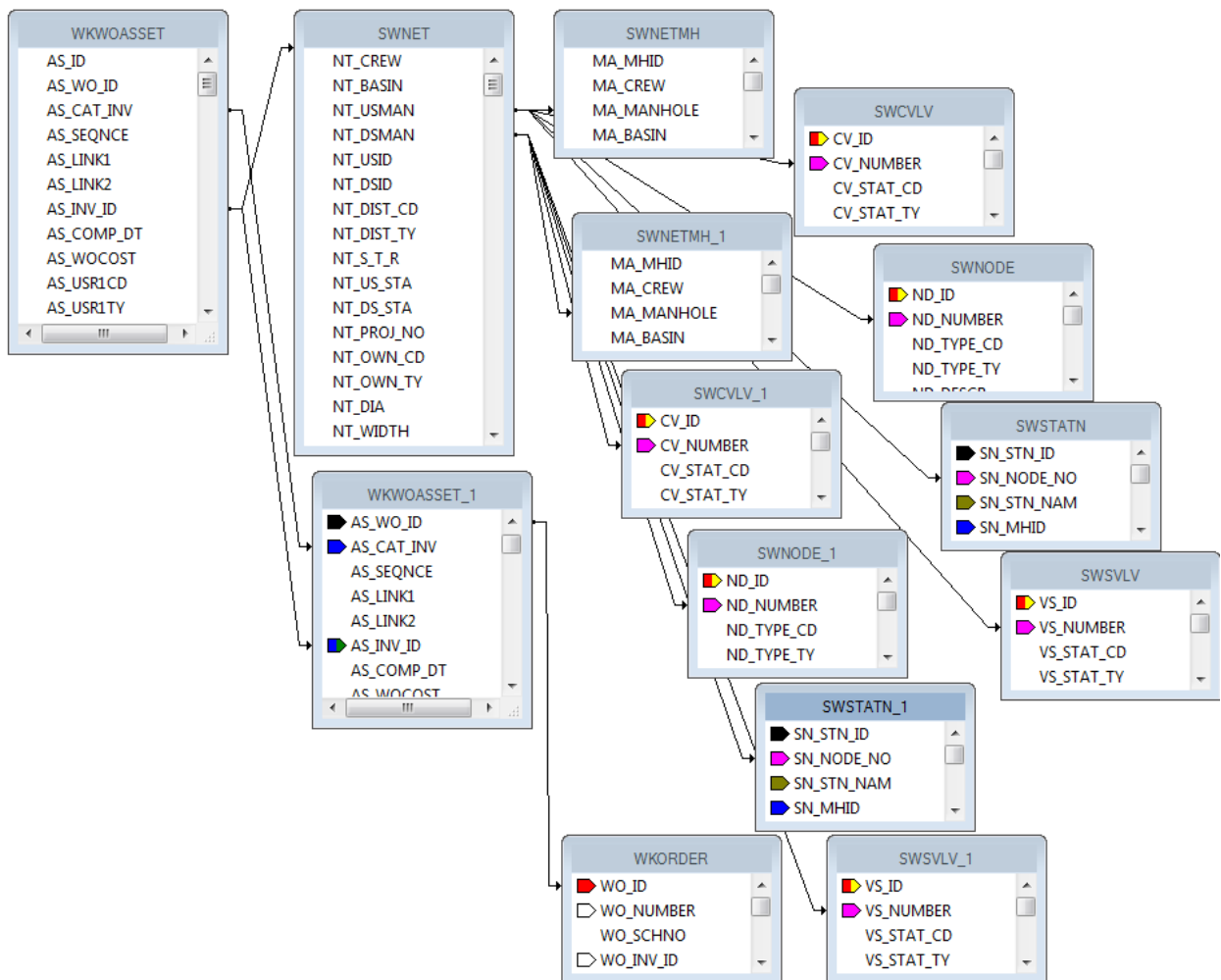
In a Work Order report with Assets, it is sometimes desirable to see all of the Work Orders associated with the Assets. This is helpful in determining if the asset is being plagued with problems.

1. From the Work report folder open `LC_WOSumPipeManWOs.rpt`. We will set up the Pipe asset subreport (`SWPipeSub.rpt`) to bring in any associated work orders.

The original tables for this subreport are linked as follows:



- Additional tables are needed. Bring in **WKORDER** and an additional **WKWOASSET** which will show as **WKWOASSET\_1**. Left outer joins.



- Grouping should be added for the **AS\_LINK1** field. The fields in the *Detail* section will be moved into the *Group Header* section.
- Bring in the **WO\_NUMBER** field and the **WO\_ACTN\_TY** field into the *Detail* section.
- Create a formula (**WOTitle**) that will show when there are any other work orders associated with this asset:
 

```
If {?Pm-WKORDER.WO_ID} <> {WKORDER.WO_ID} then "Additional Work Orders"
```
- Group on this formula so that it will show only once for a list of work orders.
- In the subreport *Section Expert* click on the *Group Header #2* section and select *Suppress Blank Section*.
- In the subreport *Section Expert* add a conditional suppression formula for the *Details* section.
 

```
{?Pm-WKORDER.WO_ID} = {WKORDER.WO_ID}
```

This will suppress the work order number the asset is associated with in the main report.



The Pipe subreport now looks like this:

| Asset List (Sewer Pipes) |            |                    |             |                 |         |  |
|--------------------------|------------|--------------------|-------------|-----------------|---------|--|
| US Structure             | US Address | Length             | US Map Page | DS Map Page     |         |  |
| DS Structure             | DS Address | Diameter           | Material    | Completion Date |         |  |
| NT_USMAN                 | @USAddy    | LENGTH             | MA_MAPPAGE  | MA_MAPPAGE      | @CompDt |  |
| NT_DSMAN                 | @DSAddy    | NT_DIA             | NT_MAT_TY   |                 |         |  |
| Group #2 Name            |            |                    |             |                 |         |  |
| WO_NUMBER                |            | WO_ACTN_TY         |             |                 |         |  |
| GF2                      |            |                    |             |                 |         |  |
| GF1                      |            |                    |             |                 |         |  |
| Count Pipes              |            | #Leng Total Length |             |                 |         |  |

### Preview

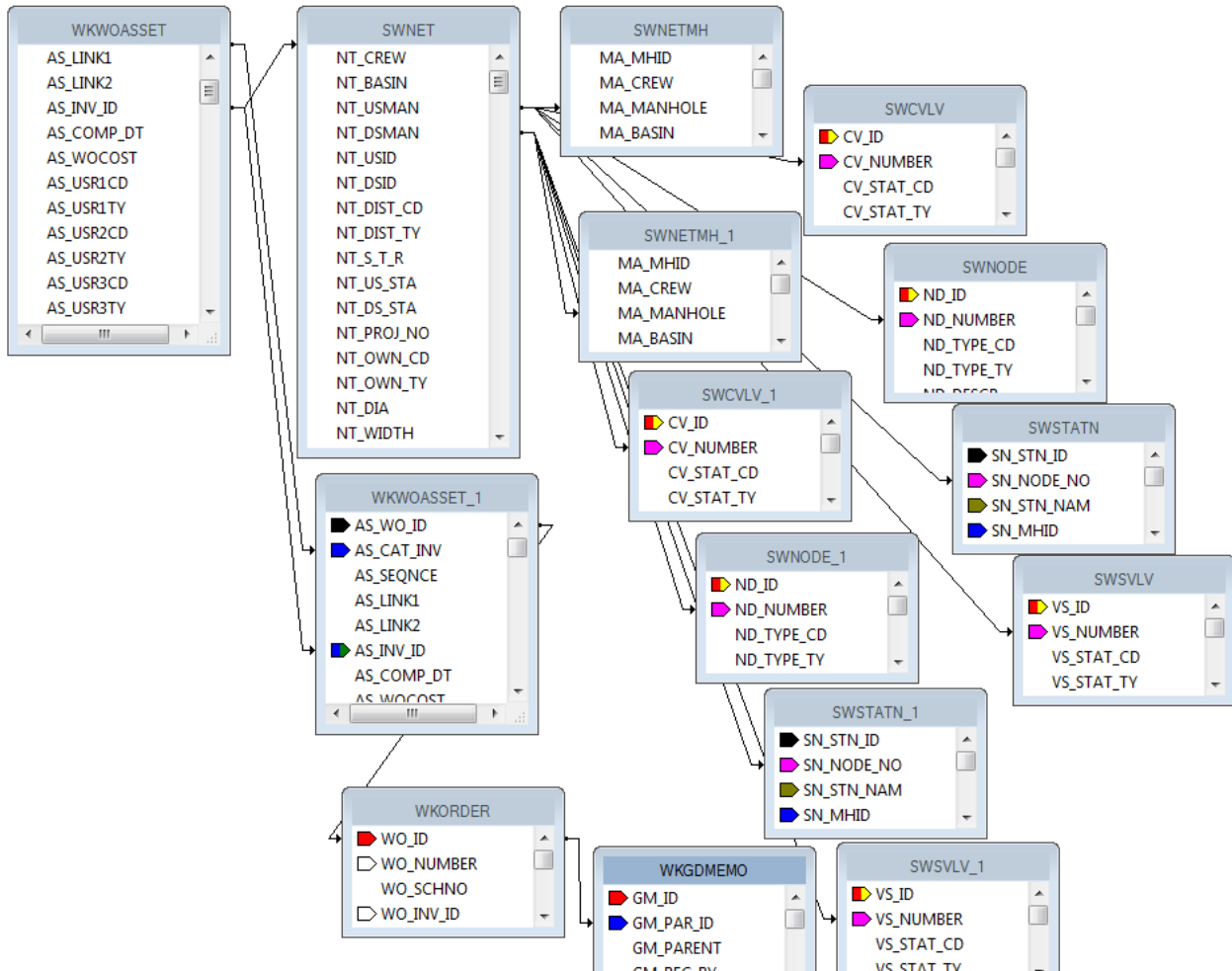
2013-00005      New Work Order      11/12/2013      Sewer Pipe      Engineering Quality Control

| Asset List (Sewer Pipes)      |                   |                    |             |                 |  |  |
|-------------------------------|-------------------|--------------------|-------------|-----------------|--|--|
| US Structure                  | US Address        | Length             | US Map Page | DS Map Page     |  |  |
| DS Structure                  | DS Address        | Diameter           | Material    | Completion Date |  |  |
| 113495                        | 1424 S PROJECT DR | 170.8              | 1-720       | 1-720           |  |  |
| 113497                        | 0 E LESLIE CT     | 8                  | VCP         |                 |  |  |
| <b>Additional Work Orders</b> |                   |                    |             |                 |  |  |
| 2014-00009                    |                   | GIS Map Update     |             |                 |  |  |
| 2014-00008                    |                   | Emergency Response |             |                 |  |  |
| 1 Pipes                       |                   | 512.4 Total Length |             |                 |  |  |

## Bringing in Comments for the Asset Work Orders

To view the comments that are associated with each Asset work order we will continue with LC\_WOSumPipeManWOs.rpt.

1. The Work Order Comment is shown by bringing in the **WKGDMEMO** table then linking to the **WKORDER** table. Left outer join.



2. Create a new group on the **WO\_NUMBER** field.
3. Move the data in the *Detail* section into the new *Group Header* section (GH3).
4. Add the **GM\_MEMO** field to the *Detail* section.
5. In the subreport *Section Expert* for *Group Header #3*, add the following formula to *Suppress*.

{?Pm-WKORDER.WO\_ID} = {WKORDER.WO\_ID}

Also select *Suppress Blank Section*.

6. In the subreport *Section Expert* for *Details*:
  - a. Add the following formula to *Suppress*.
   
 ( {?Pm-WKORDER.WO\_ID} = {WKORDER.WO\_ID} )
   
 Or ( {WKGDMEMO.GM\_PARENT} <> "WKORDER" )
  - b. Also select *Suppress Blank Section*.

|     |                                 |                   |                   |                     |                    |                        |  |
|-----|---------------------------------|-------------------|-------------------|---------------------|--------------------|------------------------|--|
| RHb | <b>Asset List (Sewer Pipes)</b> |                   |                   |                     |                    |                        |  |
|     | <u>US Structure</u>             | <u>US Address</u> | <u>Length</u>     | <u>US Map Page</u>  | <u>DS Map Page</u> | <u>Completion Date</u> |  |
|     | <u>DS Structure</u>             | <u>DS Address</u> | <u>Diameter</u>   | <u>Material</u>     |                    |                        |  |
| GH1 | <u>NT_USMAN</u>                 | <u>@USAddy</u>    | <u>LENGTH</u>     | <u>MA_MAPPAGE</u>   | <u>MA_MAPPAGE</u>  | <u>@CompDt</u>         |  |
|     | <u>NT_DSMAN</u>                 | <u>@DSAddy</u>    | <u>NT_DIA</u>     | <u>NT_MAT_TY</u>    |                    |                        |  |
| GH2 | <u>Group #2 Name</u>            |                   |                   |                     |                    |                        |  |
| GH3 | <u>WO_NUMBER</u>                |                   | <u>WO_ACTN_TY</u> |                     |                    |                        |  |
| D   | <u>GM_MEMO</u>                  |                   |                   |                     |                    |                        |  |
| GF3 |                                 |                   |                   |                     |                    |                        |  |
| GF2 |                                 |                   |                   |                     |                    |                        |  |
| GF1 |                                 |                   |                   |                     |                    |                        |  |
| RFa | <u>Count Pipes</u>              |                   | <u>#Leng</u>      | <u>Total Length</u> |                    |                        |  |
| --  |                                 |                   |                   |                     |                    |                        |  |

**Preview**

|                                 |                               |                 |                    |                             |                        |  |
|---------------------------------|-------------------------------|-----------------|--------------------|-----------------------------|------------------------|--|
| <b>2013-00005</b>               | New Work Order                | 11/12/2013      | Sewer Pipe         | Engineering Quality Control |                        |  |
| <b>Asset List (Sewer Pipes)</b> |                               |                 |                    |                             |                        |  |
| <u>US Structure</u>             | <u>US Address</u>             | <u>Length</u>   | <u>US Map Page</u> | <u>DS Map Page</u>          | <u>Completion Date</u> |  |
| <u>DS Structure</u>             | <u>DS Address</u>             | <u>Diameter</u> | <u>Material</u>    |                             |                        |  |
| 113495                          | 1424 S PROJECT DR             | 170.8           | 1-720              | 1-720                       |                        |  |
| 113497                          | 0 E LESLIE CT                 | 8               | VCP                |                             |                        |  |
| <b>Additional Work Orders</b>   |                               |                 |                    |                             |                        |  |
| 2014-00008                      | Emergency Response            |                 |                    |                             |                        |  |
|                                 | memo for 2014-00008           |                 |                    |                             |                        |  |
| 2014-00009                      | GIS Map Update                |                 |                    |                             |                        |  |
|                                 | Second comment for 2014-00009 |                 |                    |                             |                        |  |
|                                 | another WO for this pipe.     |                 |                    |                             |                        |  |
| 1 Pipes                         |                               | 683.2           | Total Length       |                             |                        |  |

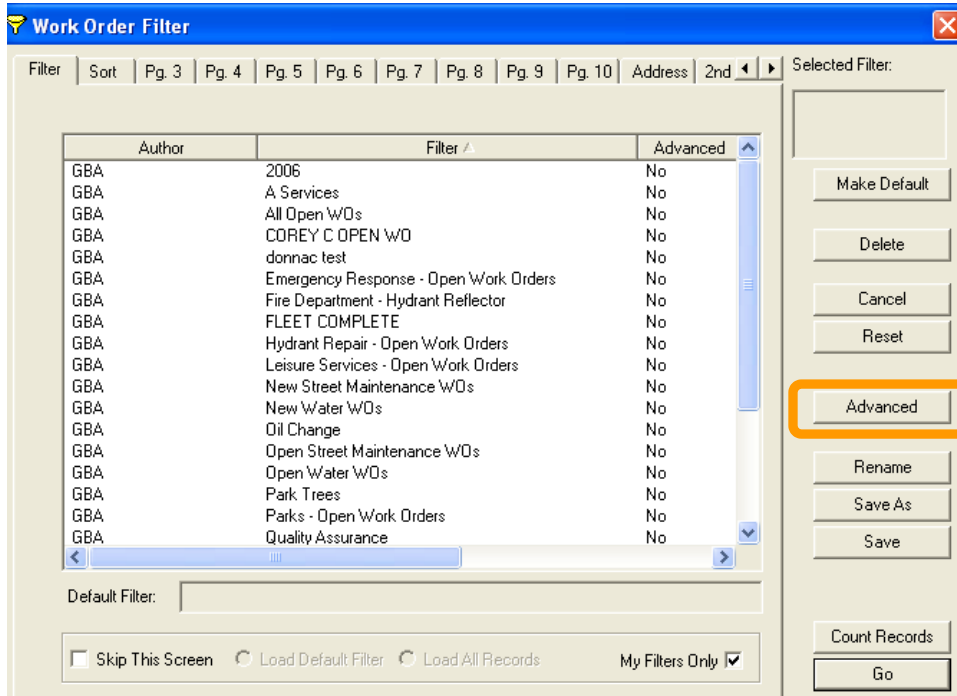
# Filter on Grid Fields and the Impact on Reports

If you have a module that allows you to filter on a field that is in a grid with multiple records and you plan on running a report (without groupings) with this field as a filter, then the report may have some issues. If you have a field you wish to summarize, you need to set it up with groupings and variables or running totals.

For example, in a Work Order report where the fields have been placed in the *Detail* section without Grouping - the following could occur:

Filter on a grid field that has multiple values and run the report against this filter and see what the numbers do. Resource = 1 (employee) is a good one.

The filter can be found when you click *Advanced*.



Then click on the “Report SQL” tab.

Lucity passes to Crystal the following statement.

**{WKRESRCE.WR\_RTYP\_CD} = 1**

When the report runs, it looks at the record every time the statement is true. If a report had three employees then it would hit the record three times.

In WO# 2006-01128 there are two employees so when the report is run with a resource filter the work order line shows up twice.

|            |               |                                   |                  |        |
|------------|---------------|-----------------------------------|------------------|--------|
| 2006-01128 | Sewer Service | Waste Water Quality<br>Commercial | 821 S ROANOKE ST | 230.40 |
| 2006-01128 | Sewer Service | Waste Water Quality<br>Commercial | 821 S ROANOKE ST | 230.40 |

If the information being summarized is in the **WKORDER** table, then grouping on the **WO\_NUMBER** and setting up variables should be sufficient. If you are summarizing a field within Task or Resources you will need to further group. In most cases using a Running Total is equally effective as the variables.

## Using Variables in a Report

The original Work Order Category Summary (WOCatSum.rpt) report looked like this:

| <b>Work Order Category Summary Report</b> |           |           |               | Print Date             |
|---|-----------|-----------|---------------|------------------------|
| Report Subtitle                           |           |           |               | Print Time             |
| Category                                  |           |           | Count of WO's | Total Cost             |
| -----                                     |           |           |               |                        |
| GH1                                       |           |           |               |                        |
| D   |           |           | WO_ID         | TOTCOST                |
| GF1                                       | WO_CAT_CD | WO_CAT_TY | DER.WO_ID     | ER.WO_TOCOST           |
| RF  |           |           | Grand Totals  | DER.WO_ID ER.WO_TOCOST |

It was a very simple report which grouped on Category and used the Crystal Summary tool to calculate the Group Total and Grand Total. This worked when the report was run without filters.

|       |                  |     |             |
|-------|------------------|-----|-------------|
| 3010  | Tree             | 2   | \$714.51    |
| 40000 | Water Department | 28  | \$464.08    |
| 41000 | Potable          | 44  | \$2,598.80  |
| 41110 | Potable Mains    | 124 | \$20,068.40 |

There were certain filters that caused duplicate Work Order costs. The problem filters are the fields that come from grid data. In the Work Order module these would include Location, Assets, Tasks and Resources. This occurs because of the filter statement being passed from Lucity to Crystal. If there are two Tasks on a Work Order that are true for a Task filter being run then the report will run the record twice.

When the report was run with a resource filter on Work Orders that have employees these same categories looked like this:

|       |                  |     |             |
|-------|------------------|-----|-------------|
| 3010  | Tree             | 2   | \$2,143.54  |
| 40000 | Water Department | 25  | \$464.08    |
| 41000 | Potable          | 40  | \$10,403.04 |
| 41110 | Potable Mains    | 122 | \$59,106.27 |

There is an obvious difference in the cost fields. Instead of possibly going down due to records being filtered out that had no employees, the cost actually went up. Some work orders had multiple employees so the cost was summed each time the filter was true. The count was calculated using the Distinct Count option as opposed to the Count option for calculating so there was no duplication of records.

To correct this issue we used grouping and variables.

|       |                  |     |             |
|-------|------------------|-----|-------------|
| 3010  | Tree             | 2   | \$714.51    |
| 40000 | Water Department | 25  | \$464.08    |
| 41000 | Potable          | 40  | \$2,596.80  |
| 41110 | Potable Mains    | 122 | \$20,068.40 |

Open WOCatSum.rpt and follow the steps used to correct the report.

|      |  |               |              |              |
|------|--|---------------|--------------|--------------|
| PH   | <b>Work Order Category Summary Report</b>                                      |               |              | Print Date   |
|      | ?Report Subtitle   |               |              | Print Time   |
|      | Category   | Count of WO's | * Total Cost |              |
| GH1  | @ZeroCost  |               |              |              |
| GH2  | Group #2 Name  | @ZeroWO       |              |              |
| D    | WO_NUMBER  | WO_ID         | TOTCOST      |              |
| GF2a | @WOCost  |               |              |              |
| GF2b | CatWOSum   |               | @TotSum      |              |
| GF1  | WO_CAT_CD  | WO_CAT_TY     | DER.WO_ID    | @CategoryTot |
| RF   | Grand Totals:  |               | ORDER.WO_ID  | @Total       |
| PF   | A 'Hidden' field indicates permission to view the secured field is turned off. |               |              |              |

1. Add a second grouping on the Work Order Number, **WO\_NUMBER**.
2. Create a formula for the Work Order Cost (**WOCost**) and place it in the *WO Number Group Footer 2*.

```
WhilePrintingRecords;
Shared numberVar WOCost ;
WOCost:={WKORDER.WO_TOTCOST}
```

3. Create a formula to summarize the cost for the Category (**CatWOSum**). Add a new section below the *WO Number Group Footer 2*. This is a second *Group Footer (GF2b)* for this section. Place this new formula in this section.

```
WhilePrintingRecords;
Shared numberVar CatTot ;
Shared numberVar WOCost ;
CatTot:= CatTot + WOCost
```

4. Create a formula to summarize the total cost for all Work Orders (**TotSum**). Place this in *GF2b*.

```
WhilePrintingRecords;
Shared numberVar TotWOCost ;
Shared numberVar WOCost ;
TotWOCost:= TotWOCost + WOCost
```

5. Create a formula to reset or zero the Work Order cost variable (**ZeroWO**). Place this in the *WO Number Group Header #2* section.

**WhilePrintingRecords;**

**Shared numberVar WOCost:=0;**

6. Create a formula to reset the Category Cost variables (**ZeroCat**). Place this in the *Category Group Header #1*.

**WhilePrintingRecords;**

**Shared numberVar CatTot:=0;**

7. Create a formula to show the Category total cost (**CategoryTot**). Place this in the *Category Group Footer #1*.

**WhilePrintingRecords;**

**Shared numberVar CatTot ;**

**CatTot**

8. Create a formula to show the Grand Total Cost (**Total**). Place this in the *Report Footer*.

**WhilePrintingRecords;**

**Shared numberVar TotWOCost ;**

**TotWOCost**

9. Suppress the new *Group Header* and *Footer* sections.

It depends on the report as to whether you use variables or running totals to solve filter issues. At the time the report was revised the use of variables was the choice method to correct the issue.

Variables are also very useful to pass information from a subreport to the main report.

Sometimes with complex reports variables are necessary to calculate the data correctly.

## Using Running Totals in a Report

The same report could have been modified using Running Totals to correct the filtering issue.

1. The additional grouping on the Work Order number is still necessary.
2. Two Running Totals are created.
  - One for the Category cost (CatCost).
    - The *Evaluate* is set up as “On change of group” and the group is “Group #2”, the Work Order Number.
    - The *Reset* is set up as “On change of group” and the group is “Group #1”, Category.

The screenshot shows the 'Running Totals' configuration dialog in Crystal Reports. On the left, the 'Available Tables and Fields' pane lists fields from 'Report Fields' and 'GBAWork001 (ODBC (RDO))'. The 'Report Fields' section includes WKORDER.WO\_CAT\_CD, WKORDER.WO\_CAT\_TY, WKORDER.WO\_ID, WKORDER.WO\_TOTCOST, and WKORDER.WO\_NUMBER. The 'GBAWork001' section includes WKORDER, WKORDERLOC, WKRESRCE, WKTMPST, WKWOASSET, WKWOEVENTS, and WKWOTSK. The right side of the dialog is configured for a running total named 'CatCost'. The 'Summary' section is set to 'Field to summarize' as 'WKORDER.WO\_TOTCOST' with a 'sum' type. The 'Evaluate' section is set to 'On change of group' for 'Group #2: WKORDER.WO\_NUME'. The 'Reset' section is set to 'On change of group' for 'Group #1: WKORDER.WO\_CAT\_'. There are 'x2' icons next to the group names, indicating they are applied to two different groups.



- The second running total is to calculate the cost grand total (**TotCost**).

- It *Evaluates* on the same group as the Category cost running total but the *Reset* is *Never*.

| <b>Work Order Category Summary Report</b> |               |               |            |
|---|---------------|---------------|------------|
| ?Report Subtitle                          |               |               | Print Date |
| Category                                  |               |               | Print Time |
|   |               | Count of WO's | Total Cost |
| GH1                                       |               |               |            |
| GH2                                       | Group #2 Name | WO_ID         | WO_TOTCOST |
| D   |               |               |            |
| GF2                                       |               |               |            |
| GF1                                       | WO_CAT_CD     | WO_CAT_TY     | #CatCos    |
| RF  | Grand Totals  | ORDER.WO_ID   | #TotCos    |

# Secured Fields

## Secured Fields in the Main Body of Report

Sometimes, fields should be hidden in reports if the person viewing the report does not have the proper level of security. This can be done by using parameters and formatting options.

*Note: This will only work for fields in the main body of the report. Fields that need to be hidden in subreports will be addressed next.*

Many cost fields in Work Order reports are set to use the “Hidden” option. Sometimes you may wish to suppress the fields completely.


The following steps are provided to set up the field security.

1. Right click *Parameter Fields* and select *New*.
2. Type in the *Name - ViewSecuredFields*.
  - This is a special parameter field that must have this name “ViewSecuredFields”. When the report is run within Lucity, the security is passed to the report and will not query the user. If the report is run outside of a Lucity module, in Crystal, then the security will be queried.
  - If the report is refreshed, it will ask for the parameters again, including the permission to view the secure fields. At this point you can change the security value the report will run with.
3. Select the *Type > Number* and under *Options > Discreet Value -True*.
4. Click *OK*.

## Field Viewing Options


### Field to Show Blank

For a blank field to show up when the user does not have rights to view the secured fields, do the following:

1. Right click the field that requires suppression and select *Format Field*.
2. Click the *Common* tab.
3. Click the formula box  next to *Suppress*.
4. Double click the **ViewSecuredFields** parameter from the **Report Fields**.
5. Type “= 0”.  
`{?ViewSecuredFields} = 0`
6. Click *Save* and close.
7. Click *OK*

## Field to show “Hidden”

For the word “Hidden” to show up when the user does not have rights to view the secured fields, do the following:

1. Right click in the field that requires suppression and select *Format Field*.
2. Click the *Common* tab
3. Click the formula box  next to *Display String*.
4. Type in:  

```
if {?ViewSecuredFields}=0 then "Hidden" else "$"& totext(the field that is to show)
```

*Note: The inclusion of the dollar sign is because once the formula brings in the word “Hidden”, the formula requires the outcome to be text. The field will not allow number formatting. That is also the reason for the conversion of the field to text.*

5. Click *Save and Close*.
6. Click *OK*

It would be helpful to make a notation at the bottom of the report to explain why some of the fields are “Hidden”, such as:

“A Hidden field indicates permission to view the secured field is turned off.”

## Secured Fields in Subreports

The `ViewSecuredFields` parameter is sent to the report from the Lucity software security setup. This parameter value only reaches the main body of the report. In order for a subreport to use this value it needs to be passed into the subreport as a variable.

We will look at the **Work Order Detail Report (WODetail.rpt)** and see how security was added to the cost fields in the **Task/Resource** subreport.

1. First, we used a shared variable called **Security**. It was declared in both the report and subreport.
  - Open **WODetail.rpt**. The `ViewSecuredFields` parameter was created.
  - A new formula was created called **Security** to declare the variable.

**Shared NumberVar Security:= {?ViewSecuredFields};**

2. The new **Security** formula was placed into the *Report Header* section. The field size was reduced and the field text formatted to have white font. This ensured that the formula was not visible in the report.
3. In the **TaskRes.rpt** subreport a new formula called **SecuritySub** was created.

Once again, the **Security** variable was declared.

**Shared NumberVar Security;**

- The formula was dragged into the suppressed *Report Header*.

- There are four fields set up to show “Hidden” if the user does not have proper security. These are designated with asterisks (Cal’c UC, Task Costs, Unit Cost and Total Cost).

## Variables – Passing information from a subreport to the main report

Let’s create a report that shows the number of Requests and Work Orders for each Request Problem type. The number of Requests is straightforward enough with the use of a Running Total field. The number of Work Orders gets a little trickier because Work Orders are attached to Requests through a grid and thus need to be brought into the report as a subreport. Information from a subreport to a parent report can be done by using variables.

- Create a new Work Report from the Crystal Report Blank Report option and name it **LC\_ReqSumRQWO**.
- Bring in the **WKREQ** table. Bring in the **Problem** field (**RQ\_PROB\_TY**) and the **Request Number** (**RQ\_NUMBER**):
- Group by **Problem Type**.
- Move the **Problem** field to the *Group Footer*.
- Add a **Number of Requests** column title.
- Add a **Problem** column title.
- Create a *Distinct Count* of the Request Numbers for each Problem Type and place it under the column header in the *Group Footer* section.
- Add a “**Total**” text in the *Report Footer* section. Then put in a *Distinct Count* of the Request Numbers into the *Report Footer*.
- Add a Report Title “**Summary of Requests and Work Orders**”.

|     |   |  |                           |
|-----|---|--|---------------------------|
| RH  | - |  |                           |
| PH  | - | <b>Summary of Requests and Work Orders</b> |                           |
|     | - | <b>Problem</b>                             | <b>Number of Requests</b> |
| GH1 | - | <b>Group #1 Name</b>                       |                           |
| D   | - |  | RQ_NUMBER                 |
| GF1 | - | RQ_PROB_TY                                 | DistinctCount of WKREQ    |
| RF  | - | <b>Total:</b>                              | DistinctCount of WKREQ    |
| PF  | - |  |                           |

- Add the **WKWOMWO** table in the *Database Expert* and link as shown earlier in this document.
- Add a Group on **Request Number**. (**GH2**)
- Add another *Group Header 2* section (**GH2b**).
- Create a **Work Order** subreport with the **WKORDER** and the **WKWOMWO** tables and place it in the *Group Header 2b* section (**GH2b**). Link tables and subreport as shown earlier in this document (Work Order to Request).

14. In the subreport, drag the **WO\_Number** field into the *Detail* section. Create one formula **WOCCount**

```
WhilePrintingRecords;
Shared numberVar WOCCount;
WOCCount :=DistinctCount({WKORDER.WO_NUMBER})
```

15. Place the formula and the **WO\_NUMBER** field as follows and suppress the subreport sections. This subreport is counting the Work Orders for each Request. **WOCCount** is a shared variable that is available to the main report.

|     |   |           |
|-----|---|-----------|
| RHa | - |           |
| RHb | - |           |
| D   | - | WO_NUMBER |
| RFa | - | @WOCCount |
| RFb | - |           |

16. In the main report create a column header, **Number of Work Orders**.  
 17. Create the next five variable formulas and place in the report as shown in the example.

|      |   |  |
|------|---|--|
| RH   | - |  |
| PH   | - | <b>Summary of Requests and Work Orders</b>   |
|      | - | Problem                      Number of Requests                      Number of Work Orders |
| GH1  | - | Group #1 Name                      @ZeroProb   |
| GH2a | - | Group #2 Name                      @ZeroWO   |
| GH2b | - | Work Orders  |
| D    | - | RQ_NUMBER  |
| GF2  | - | @WOSum   |
| GF1  | - | RQ_PROB_TY                      DistinctCount of WKREQ                      @ProbTot       |
| RF   | - | Total;                      DistinctCount of WKREQ                      @TotalWO           |
| PF   | - |  |

**WOSum** (WOCCount is being summed to calculate the Problem Total for Work Orders and the Grand Total for Work Orders.)

```
WhilePrintingRecords;
Shared numberVar WOCCount ;
Shared numberVar ProbWOCCount ;
Shared NumberVar GrTotWOCCount;

ProbWOCCount:=ProbWOCCount + WOCCount;
GrTotWOCCount:=GrTotWOCCount + WOCCount;
```

**ProbTot**

WhilePrintingRecords;  
Shared numberVar ProbWOCOUNT;  
ProbWOCOUNT

**TotalWO**

WhilePrintingRecords;  
Shared numberVar GrTotWOCOUNT;  
GrTotWOCOUNT

**ZeroWO**

WhilePrintingRecords;  
Shared numberVar WOCOUNT :=0;

**ZeroProb**

WhilePrintingRecords;  
Shared numberVar ProbWOCOUNT :=0;

18. In *Section Expert*, make sure you select *Suppress Blank Section* for the **GH2b** section with the **Work Order** subreport.

- o Suppress sections as follows:

|      |   |  |
|------|---|--|
| RH   | . |  |
| PH   | . | <b>Summary of Requests and Work Orders</b>   |
|      | . | Problem                      Number of Requests                      Number of Work Orders |
| GH1  | . | Group #1 Name                      @ZeroProb   |
| GH2a | . | Group #2 Name                      @ZeroWO   |
| GH2b | . | Work Orders  |
| D    | . | RQ_NUMBER  |
| GF2  | . | @WOSum   |
| GF1  | . | RQ_PROB_TY                      DistinctCount of WKREQ                      @ProbTot       |
| RF   | . | Total:                      DistinctCount of WKREQ                      @TotalWO           |
| PF   | . |  |

*Note: The GH2b section must not be suppressed in order to pass the subreport information to the main body of the report. Within the subreport all sections may be suppressed.*

Preview

### Summary of Requests and Work Orders

| <b>Problem</b>           | <b>Number of Requests</b> | <b>Number of Work Orders</b> |
|--------------------------|---------------------------|------------------------------|
| Concrete Sidewalk Repair | 2                         | 0                            |
| TS - Flashing            | 3                         | 2                            |
| TS - Misalignment        | 3                         | 0                            |
| TS - Red Out             | 3                         | 2                            |
| TS - Timing              | 4                         | 3                            |
| <b>Total:</b>            | <b>15</b>                 | <b>7</b>                     |

Example 32A

Notes: \_\_\_\_\_

\_\_\_\_\_

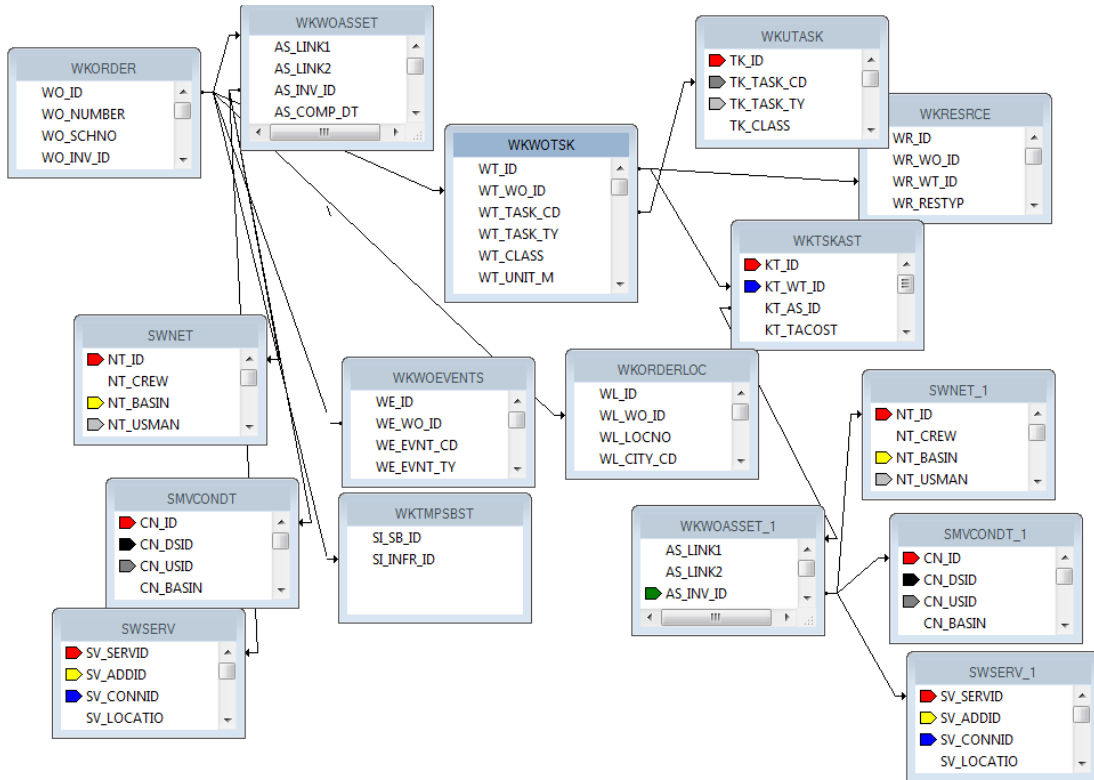
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Work Order Subtask Information to Assets

The Work module now allows Subtasks to be assigned to specific Assets. In order to show these relationships in a report, some fairly odd table links are required.



This seemingly simple one line report took nine groupings and two subreports to get to the information.

| <b>Work Order Asset Completion Report Summary by Sub Task</b> |                      |                               |      |                                     |
|---|----------------------|-------------------------------|------|-------------------------------------|
| Completion Dates From 1/1/2012 To 8/1/2012                    |                      |                               |      | 8/6/2012<br>12:22 PM                |
| <b>Completed:</b>   | 0.00                 | <b>Total to be Completed:</b> | 0.00 | <b>Percentage Completed:</b> 0.00 % |
| <b>01-001</b>   | <b>HEATER SYSTEM</b> |                               |      |                                     |
| <b>Completed:</b>   | 0.00                 | <b>Total to be Completed:</b> | 3.00 | <b>Percentage Completed:</b> 0.00 % |

**Notes:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



# Inventory Reports with Work Order Subtask Information

In Lucity version 7.4 or newer, the availability of the **WKTSKAST** and **WKWOTSK** tables in the list of synonym tables allow the addition of subtasks when creating reports for the various inventory items.

## Sub Tasks by Street Subsegment Report

8/6/2012

Resource End Dates: Between 1/1/2007 to 8/1/2012

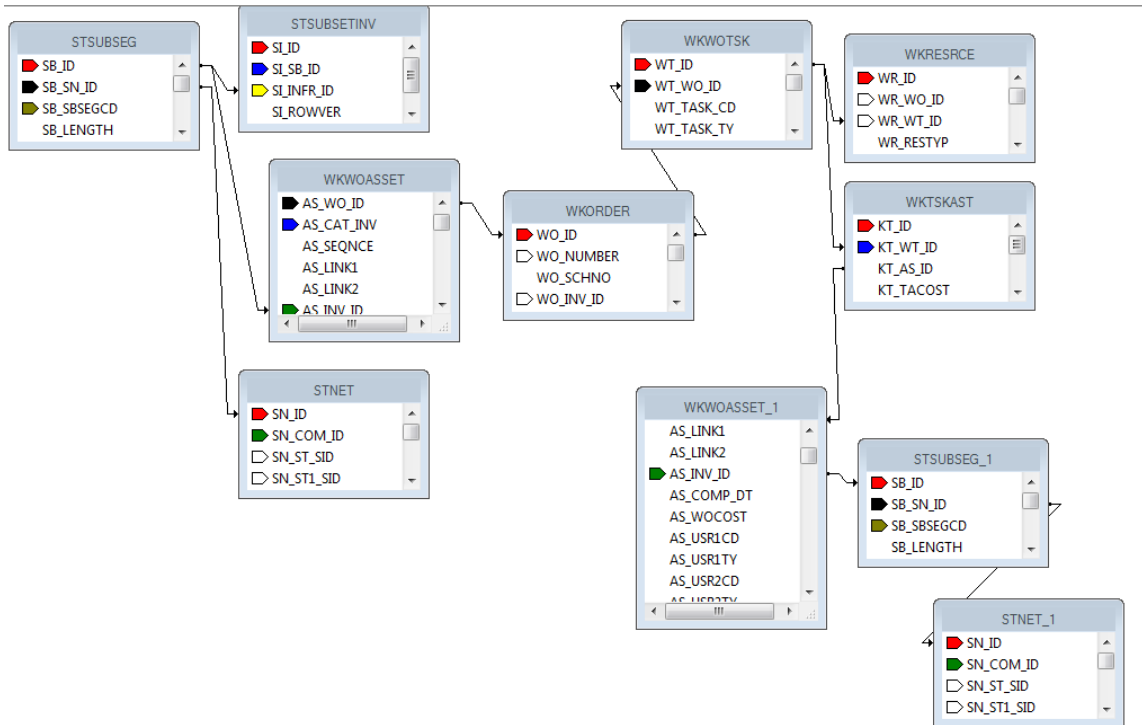
12:38:03PM

Street Subsegment:

From/To:

| Task:                   | From/To:            |            |                       | Cost:          |
|-------------------------|---------------------|------------|-----------------------|----------------|
| 100169-1                | E RAY RD            | S 156TH PL | S SANTAN VILLAGE PKW' |                |
| ENTTR00                 | Traffic Engineering |            |                       | \$39.32        |
| <b>Subsegment Cost:</b> |                     |            |                       | <b>\$39.32</b> |

This too had some interesting table links:



This report had five groupings and three subreports to assist the information out of the tables and into the report.

If you are interested in creating a report with this subtask information, contact Lucity Support and we can help step you through the process.

## Crystal Report Examples – Advanced Training

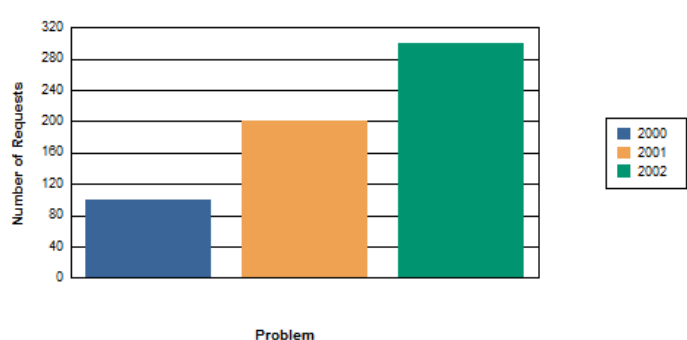
### XXII. Example 22A

Modify the **Request List Report (ReqList.rpt)** to limit the Category to **Sewer Department**, Group on **Problem** and add a graph.

Original (**ReqList.rpt**)

| <b>Request List Report</b> |             |              |           |            | Print Date |
|----------------------------|-------------|--------------|-----------|------------|------------|
| ?Report Subtitle           |             |              |           |            | Print Time |
| Request #                  | Category    | Address      | Status    |            |            |
| Created                    | Problem     | Cross Street |           |            |            |
| Comments for Work Order    |             |              |           |            |            |
| Da                         | RQ_NUMBER   | RQ_CAT_TY    | @Location | RQ_STAT_TY |            |
|                            | @Receivd Da | RQ_PROB_TY   | @XStreet  |            |            |
| RF                         |             |              |           |            |            |
| PF                         |             |              |           |            |            |
|                            |             | @Page        |           |            |            |

Change to (**CT\_ReqListProbGraph.rpt**)

| <b>Request List Report By Problem - Sewer Department</b>                             |  |             |              |          | Print Date |
|--|--|-------------|--------------|----------|------------|
| ?Report Subtitle   |  |             |              |          | Print Time |
| Request #  | Created  | Address     | Cross Street | Status   |            |
| Comments for Work Order  |  |             |              |          |            |
| GH1  | Group #1 Name                                    |             |              |          |            |
| Da   | RQ_NUMBER  | @Receivd Da | @Location    | @XStreet | RQ_STAT_TY |
| GF1  | Number of {RQ_PROB_TY} Requests; {Count of WKRE} |             |              |          |            |
| RF   |  |             |              |          |            |
| <b>Number of Requests per Problem</b>  |  |             |              |          |            |
|  |  |             |              |          |            |
| PF   |  |             |              |          |            |
|  |  | @Page       |              |          |            |

### Solution

1. From the Request module export **ReqList.rpt** and name the new report **CT\_ReqListProbGraph.rpt**.

2. Open **CT\_ReqListProbGraph.rpt** and remove the *Save Data with Report* option.
3. Click on *Select Expert* and limit the Category Code (**RQ\_CAT\_CD**) to **20000**. This will bring in just the Sewer Department category.
  - Remove the **Category** header title and field.
4. Group on the **Problem** text field.
  - a. Click on the Problem field (**RQ\_PROB\_TY**)
  - b. Click *Insert Group*
  - c. *OK*
  - d. Left align the **Group Name** field with the **Title**.
  - e. Remove **Problem** header title and field.
5. Rearrange the Column headers and fields to match the “Change to” example.
  - a. Header information **bold**.
  - b. “Comments for work Order” in *italic*.
6. Change **Comment** subreport text to *italic*.
7. Change title to “**Request List Report by Problem – Sewer Department**”
8. Add count of Request Number (**RQ\_NUMBER**) and place in the **Problem Group Footer**.
9. Add text field to **Problem Group Footer** “Number of Requests”.
  - a. Drag the Problem text field (**RQ\_PROB\_TY**) between “of” and “Requests”.
  - b. Right align field.
  - c. Increase text box width.
10. Unsuppress the *Report Footer* and increase the size to 3”.
11. Add a Bar graph.
  - a. Click **Insert Chart**.
  - b. Click in the *Report Footer* to place the chart.
  - c. In *Chart Expert* remove the Auto-Text checks and change the text for the **Title**, **Group Title** (x) and **Data Title** (y). See “Change to” example.
  - d. *OK*

12. Remove the Group (**Problem**) axes names.
  - a. Click on a Group axis name to highlight.
  - b. Right click in the highlighted box and select *Format Axis Label...*
  - c. Under *Color* select Transparent.
  - d. *OK*
13. Move the Group axis title (**Problem**) up closer to the graph by click and drag.
14. Change the line in the *Detail c* section to black.
15. Increase the space of the *Group footer 1* section to about 3/8".

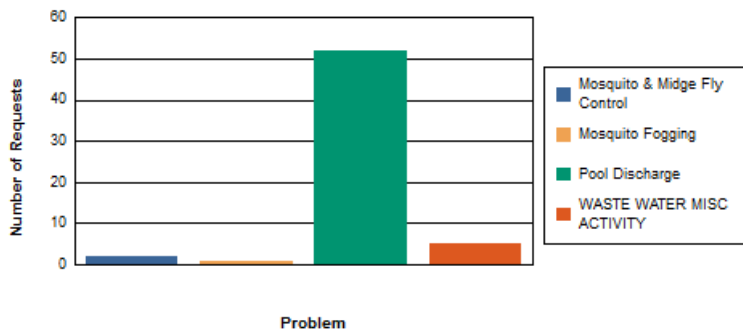
### Request List Report By Problem - Sewer Department

7/3/2014  
8:44 AM

| Request #  | Created    | Address              | Cross Street | Status    |
|--|------------|----------------------|--------------|-----------|
| <i>Comments for Work Order</i>   |            |                      |              |           |
| 2006-07202   | 11/22/2006 | 832 E SAN REMO AVE   |              | Completed |
| SAID HIS WIFE FLUSHED HER DIAMOND RING DOWN THE TOILET WEDNESDAY EVENING (11/20/06) AND WANTED TO KNOW IF THERE WAS ANYTHING THE TOG COULD DO. I CALLED HONDO AND HE STATED THAT HE WOULD SEND A CREW MEMBER TO A CERTAIN LATERAL WITH A CAMERA AND THAT WE WOULD CONTACT RESIDENT.  |            |                      |              |           |
| 2006-07842   | 11/28/2006 | 1664 E ORANGEWOOD ST |              | Completed |
| SHE SAID SHE HAD PLUMBER LOOK AT LEAK IN BACK YARD AND HE COULD NOT FIND ANYTHING, BUT SMELLED MAYBE "SEWER" AND HE TOLD HER THAT SHE NEEDED TO CHECK WITH TOG AND THAT SHE NEEDED SOMEONE TO LOCATE WHERE PIPE IS. I INFORMED HER TOG NOT RESPONSIBLE FOR "LEAKS" IN BACK YARD BUT WOULD HAVE YOU CALL HER WITH ADVICE. THX |            |                      |              |           |
| 2006-08245   | 11/30/2006 | 2138 E CHESAPEAKE DR |              | Completed |
| LIVES IN LAKE COMMUNITY - WILL DRAIN IN SEWER - A LARGE POOL, SHE SAID ABOUT 30 X 15 - SAID NO CHEMICALS FOR A WHILE.  |            |                      |              |           |
| 2006-11584   | 12/20/2006 |                      |              | Completed |
| THEY SAW A MAN WITH A T.O.G. TRUCK EMPTYING RAW SEWAGE INTO A RESERVOIR AT WARNER AND VV/WANTS THE TOWN TO TEST THE WATER BECAUSE IT "JUST DIDN'T LOOK RIGHT"  |            |                      |              |           |
| 2007-03002   | 1/18/2007  |                      |              |           |
| POOL -10,000 GALLONS -WILL DRAIN THIS WEEKEND -  |            |                      |              |           |

Number of WASTE WATER MISC ACTIVITY Requests: 5

Number of Requests per Problem



## XXIII. Example 23A


Modify the **Sewer Pipe Summary Report (PipeSum.rpt)** to group by Material and Pipe Diameter.

Use a doughnut graph to show percentage of the number of pipes of each diameter for each material type.

Original (**PipeSum.rpt**)

| <b>Sewer Pipe Summary Report</b> |              |               |               |             |         |              |             |              |                  |           |            | Print Date |
|----------------------------------|--------------|---------------|---------------|-------------|---------|--------------|-------------|--------------|------------------|-----------|------------|------------|
| ?Report Subtitle                 |              |               |               |             |         |              |             |              |                  |           |            | Print Time |
| Rec #:                           | Alt Pipe ID: | US Structure: | DS Structure: | Flow Basin: | Shape:  | Dia/Ht (in): | Width (in): | Length (ft): | Sec Length (ft): | Material: | Liner:     |            |
| NT_ID                            | NT_NUMBER    | NT_USMAN      | NT_DSMAN      | NT_BASIN    | NT_SHAP | NT_DIA       | NT_WIDTH    | NT_LENGTH    | NT_PSECLTH       | NT_MAT_TY | NT_LINR_TY |            |
| @ Page                           |              |               |               |             |         |              |             |              |                  |           |            |            |

Change to (**CT\_PipeMatDia1.rpt**)

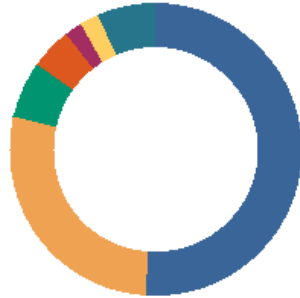
| <b>Sewer Pipe Sizes for Material Types</b>   |   |           |          |          |          |         |        |           |  |  |  | Print Date |       |      |       |      |       |        |        |
|--|---|-----------|----------|----------|----------|---------|--------|-----------|--|--|--|------------|-------|------|-------|------|-------|--------|--------|
| ?Report Subtitle   |   |           |          |          |          |         |        |           |  |  |  | Print Time |       |      |       |      |       |        |        |
| GH1  | Group #1 Name                                     |           |          |          |          |         |        |           |  |  |  |            |       |      |       |      |       |        |        |
| GH2  | Group #2 Name                                     |           |          |          |          |         |        |           |  |  |  |            |       |      |       |      |       |        |        |
| D  | NT_ID   | NT_NUMBER | NT_USMAN | NT_DSMAN | NT_BASIN | NT_SHAP | NT_DIA | NT_MAT_TY |  |  |  |            |       |      |       |      |       |        |        |
| GF2  | T.NT_ID   |           |          |          |          |         |        |           |  |  |  |            |       |      |       |      |       |        |        |
| GF1  | <b>Percent of Pipe Diameter</b><br>For @NT_MAT_TY |           |          |          |          |         |        |           |  |  |  |            |       |      |       |      |       |        |        |
|  <table border="1"><tr><td>2000</td><td>16.7%</td></tr><tr><td>2001</td><td>33.3%</td></tr><tr><td>2002</td><td>50.0%</td></tr><tr><td>Total:</td><td>100.0%</td></tr></table> |   |           |          |          |          |         |        |           |  |  |  | 2000       | 16.7% | 2001 | 33.3% | 2002 | 50.0% | Total: | 100.0% |
| 2000   | 16.7%   |           |          |          |          |         |        |           |  |  |  |            |       |      |       |      |       |        |        |
| 2001   | 33.3%   |           |          |          |          |         |        |           |  |  |  |            |       |      |       |      |       |        |        |
| 2002   | 50.0%   |           |          |          |          |         |        |           |  |  |  |            |       |      |       |      |       |        |        |
| Total:   | 100.0%  |           |          |          |          |         |        |           |  |  |  |            |       |      |       |      |       |        |        |
| @ Page   |   |           |          |          |          |         |        |           |  |  |  |            |       |      |       |      |       |        |        |

### Solution

1. From the **Sewer Report** folder, open **CT\_PipeMatDia1.rpt**.
2. Remove **Width**, **Length**, **Sec Length** and **Liner** column header and fields.
3. Move **Material** column next to the **Dia/Ht** column.
4. Drag the right report edge marker to 8 1/8" (to reduce line size and Header information.)
5. Reduce the **Report Subtitle** box to 7".

6. Increase the **Title** box to 7”.
7. Change the title to “**Sewer Pipe Sizes for Material Types**”.
8. Change the *Page Setup* to **Portrait**.
9. Center the page number.
10. Group on Material (**NT\_MAT\_TY**).
11. Group on Diameter (**NT\_DIA**).
12. Count the number of pipes for the **Diameter** group.
  - a. Click on the Pipe ID field (**NT\_ID**).
  - b. Click on *Insert Summary*.
  - c. Set the summary to **Count**.
  - d. Set the Location to **Group 2** (Diameter).
  - e. *OK*
13. Increase the *Group Footer 1* section to 3”.
14. Insert Chart into the *Group Footer 1* section.
15. In *Chart Expert* under *Type*, select **Doughnut**.
16. In *Chart Expert*, Data tab, Select **Group Layout**.
17. Confirm the Data as *On change of Diameter (NT\_DIA) Show the count of the pipe ID (NT\_ID)*.
18. In *Chart Expert* under *Text*, change the *Title* to read **Percent of Pipe Diameter**.
19. Suppress *Group Headers 1* and *2*, *Detail* and *Group Footer 2* sections.
20. Remove the column headers and line beneath them.
  - Close up the *Page Header* to about 1”.
21. Change the Graph Subtitle font.
  - a. Click on the graph Subtitle (**For @NT\_MAT\_TY**).
  - b. Right click and select *Format Subtitle...*
  - c. Change to **Bold** and *Color Black*.
  - d. *OK*
22. Remove the value in the Center of the doughnut.
  - a. Right click on the chart and select *Chart Options...*
  - b. Under Data labels, uncheck the *Show Pie Total* option.
  - c. *OK*

**Percent of Pipe Diameter**  
For Concrete

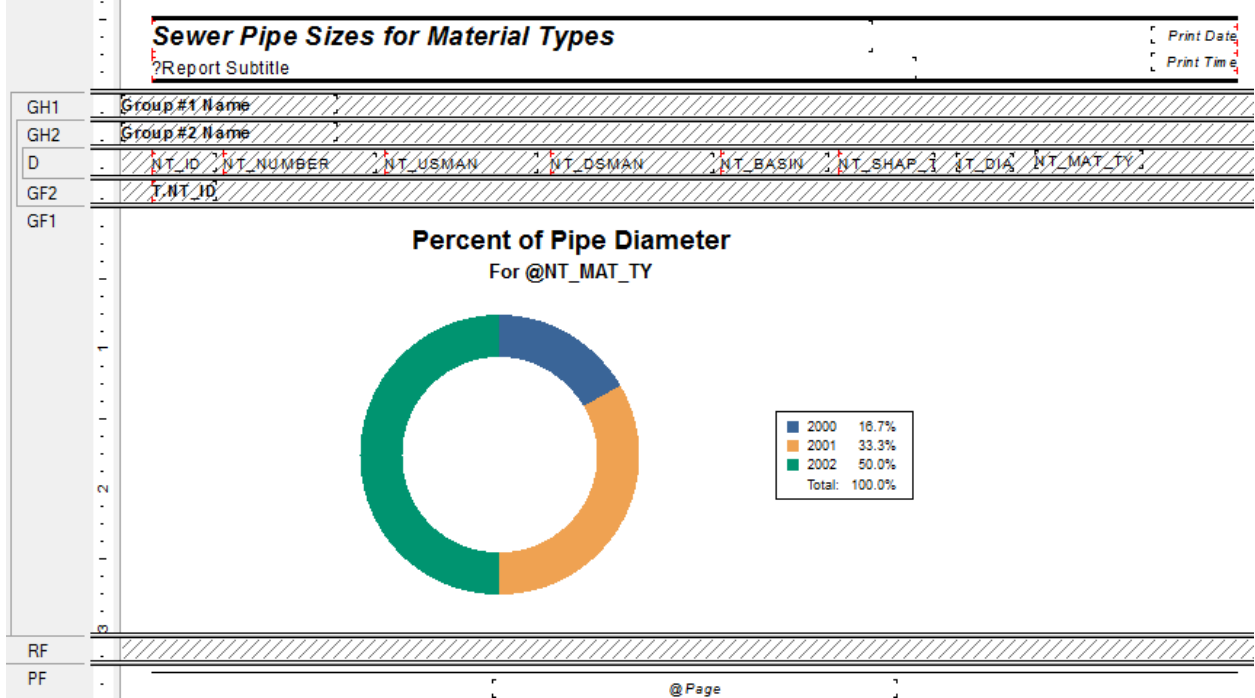


|               |       |
|---------------|-------|
| 8             | 51.1% |
| 10            | 27.7% |
| 12            | 6.4%  |
| 21            | 4.3%  |
| 24            | 2.1%  |
| 27            | 2.1%  |
| 36            | 6.4%  |
| Total: 100.0% |       |


## XXIV. Example 24A

The report created in Example 23A showed the Legend in ascending order by pipe diameter. In this example we would like the Legend to show in order of percent.

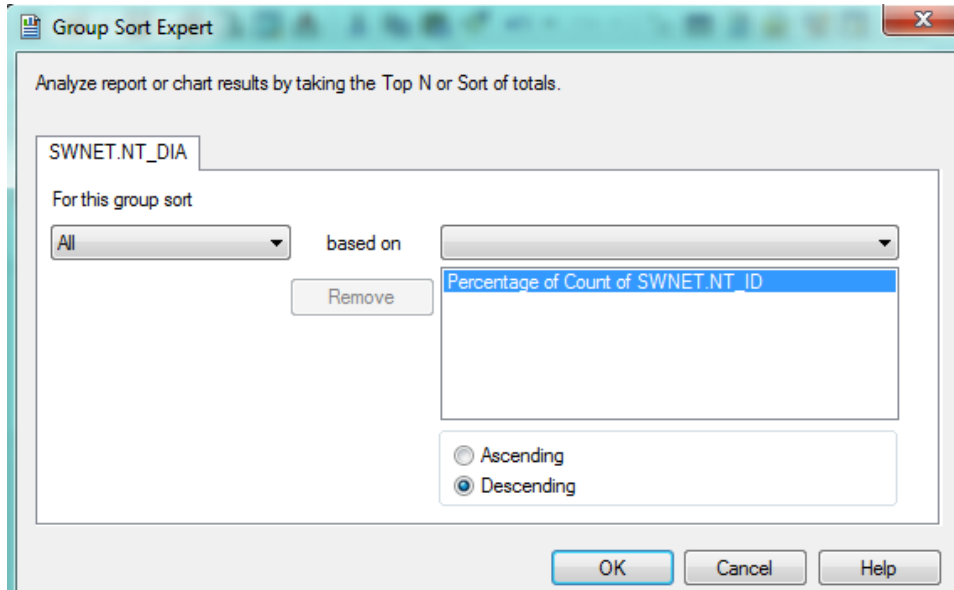
Original (CT\_PipeMatDia1.rpt)



### Solution

1. Use a Copy of **CT\_PipeMatDia1.rpt** and name it **CT\_PipeMatDia2.rpt**.
2. Change the Summary field to show as a **percent**.
  - a. Right click on the summary field and select *Edit Summary...*
  - b. Under Options check *Show as a percentage of*.
  - c. The drop down box should show **Group #1**.
  - d. *OK*
3. Change the sort for the report.
  - a. Click on the summary field.
  - b. Click on *Group Sort Expert* .





c. *OK*

---

**Sewer Pipe Sizes for Material Types**

7/3/2014

11:29 AM

---

**Percent of Pipe Diameter**

For Concrete



|               |       |
|---------------|-------|
| 8             | 51.1% |
| 10            | 27.7% |
| 12            | 6.4%  |
| 36            | 6.4%  |
| 21            | 4.3%  |
| 24            | 2.1%  |
| 27            | 2.1%  |
| Total: 100.0% |       |

## XXV. Example 25A

We will add a crosstab to the **Request Summary Report (ReqSum.rpt)**.

The report will query a date range and list the employees in the **Recorded By** field (**RQ\_REC\_BY**) and show for each day the number of requests created.

The report will show only the crosstab.

Original (**ReqSum.rpt**)


| <b>Summary of Requests</b> |                         |          |             |           |            |            |           | Print Date |
|----------------------------|-------------------------|----------|-------------|-----------|------------|------------|-----------|------------|
| ?Report Subtitle           |                         |          |             |           |            |            |           | Print Time |
| Request #                  | Record Date             | Status   | Status Date | Priority  | Problem    | Address    |           |            |
| D                          | RQ_NUMBER               | @ReqDate | RQ_STAT_TY  | @StatDate | RQ_PRTY_TY | RQ_PROB_TY | @Location |            |
| RF                         | Total Requests: #TotReq |          |             |           |            |            |           |            |
| PF                         |                         |          |             |           |            |            |           | @Page      |

Change to (**CT\_ReqByDt.rpt**)

| <b>Daily Number of Requests Summary</b> |             |          |        | Print Date |
|---|-------------|----------|--------|------------|
| ?Report Subtitle                        |             |          |        | Print Time |
| From {?Start Date} To {?End Date}       |             |          |        |            |
| D                                       | RQ_NUMBER   | @ReqDate |        |            |
| RF                                      | Recorded By | Column # | Total  |            |
|   | Row #1 Name | NUMBER   | NUMBER |            |
|   | Total       | NUMBER   | NUMBER |            |
| PF                                      |             |          |        | @Page      |

### Solution

1. In the **Work Report** folder, open **CT\_ReqByDt.rpt**.
2. Keep the **RQ\_NUMBER** and **@ReqDate** fields; remove all other fields and all Column Titles.
3. In the *Report Footer* section remove the **Total Requests** text box and summary field.
4. Reduce the width of the *Page Header* and *Footer* sections to 8”.
5. In *Page Setup* change the orientation to **Portrait**.
6. Change the title to “**Daily Number of Requests Summary**”.
7. Add **Start Date** and **End Date** parameters.
  - a. In *Field Explorer* right click on *Parameter Fields*.
  - b. Type in a *Name (Start Date)* and select the *Type (Date)*.
  - c. *OK*
  - d. Repeat for **End Date**.

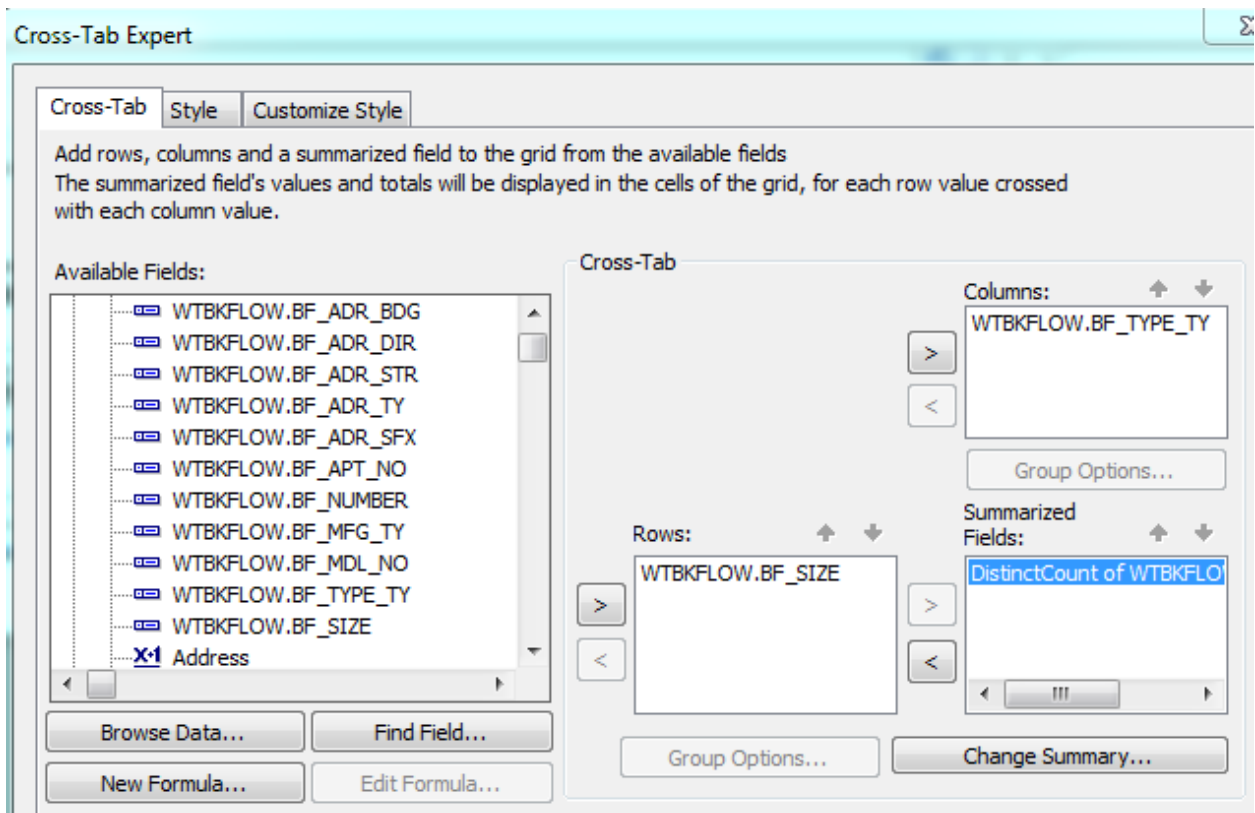
8. Use the **Date** parameters to select records.
  - a. In *Select Expert* click on  ReqDate .
  - b. *OK*
  - c. From the drop down box select *is between*.
  - d. Then select the two parameter fields (**Start Date** and **End Date**).
  - e. *OK*
9. Increase the *Report Footer* section to 1”.
10. Add a Cross-Tab.
  - a. Click on the **Insert Cross-Tab** button or in the menu bar click on *Insert > Cross-Tab...*
  - b. Click in the *Report Footer* section to place the crosstab.
11. Set up the Cross-Tab.
  - a. Right click in the top left corner of the Cross-Tab and select *Cross-Tab Expert...*
  - b. Set up *Columns (@ReqDate)*, *Rows (WKREQ.RQ\_REC\_BY)* and *Summarized fields (Count of WKREQ.RQ\_NUMBER)*
  - c. In the *Customize Style* tab review the options and make sure the *Column Totals on Top* and *Row Totals on Left* are unchecked.
  - d. *OK*
12. Add a text field to the top left box that says “**Recorded By**”.
13. Suppress the *Detail* section.
14. Preview and adjust cell sizes.
15. Change the font of the Total cells to **bold**.

| <b>Daily Number of Requests Summary</b> |            |            |            |            |            |            |            | 7/3/2014<br>2:01 PM |
|---|------------|------------|------------|------------|------------|------------|------------|---------------------|
| From 11/7/2006 To 11/15/2006            |            |            |            |            |            |            |            |                     |
| Recorded By                             | 11/7/2006  | 11/8/2006  | 11/9/2006  | 11/10/2006 | 11/13/2006 | 11/14/2006 | 11/15/2006 | Total               |
| adrianaj                                | 6          | 14         | 15         | 1          | 20         | 9          | 14         | <b>79</b>           |
| anastasia                               | 67         | 61         | 48         | 54         | 71         | 69         | 60         | <b>430</b>          |
| christinab                              | 19         | 31         | 32         | 62         | 34         | 31         | 17         | <b>226</b>          |
| galee                                   | 0          | 1          | 0          | 0          | 0          | 0          | 1          | <b>2</b>            |
| howardd                                 | 2          | 0          | 0          | 0          | 0          | 0          | 0          | <b>2</b>            |
| lindas                                  | 1          | 10         | 1          | 0          | 0          | 0          | 0          | <b>12</b>           |
| pamf                                    | 5          | 5          | 2          | 2          | 5          | 1          | 2          | <b>22</b>           |
| PaulineH                                | 72         | 62         | 59         | 40         | 77         | 54         | 63         | <b>427</b>          |
| TONYAH                                  | 61         | 54         | 57         | 54         | 84         | 46         | 63         | <b>419</b>          |
| <b>Total</b>                            | <b>233</b> | <b>238</b> | <b>214</b> | <b>213</b> | <b>291</b> | <b>210</b> | <b>220</b> | <b>1,619</b>        |

## XXVI. Example 26A

A cross-tab and bar graph will be added to the **Backflow Preventer Summary Report (wtbfsum.rpt)**.

1. In the **Water** Report folder, open **CT\_wtbfsumCTGr.rpt**.
2. Create a Cross-Tab and place it in the *Report Footer*. The Cross-Tab should show the **Type (BF\_TYPE\_TY)** field in the *Columns*, the **Size (BF\_SIZE)** field in the *Rows* and a Distinct Count of the **Device (BF\_NUMBER)** field in the *Summarized Fields*.
  - a. Unsuppress the *Report Footer* section.
  - b. Insert a Cross-Tab into the *Report Footer* section.
  - c. Within the Cross-Tab right click and select *Cross-Tab Expert...*



- d. Within the *Customize Style* tab, set the totals to be on the right and the bottom.

Cross-Tab Style Customize Style

(Optional) Customize the grid's style  
Select a row or column name to choose its background color. Modify other options as desired.

Columns:  
WTBKFLOW.BF\_TYPE\_TY  
Grand Total

Rows:  
WTBKFLOW.BF\_SIZE  
Grand Total

Summarized Fields:  
 Vertical  Show Labels  
 Horizontal

Group Options  
 Suppress Subtotal  
 Suppress Label

Alias for Formulas: Grand Total

Background Color: Custom

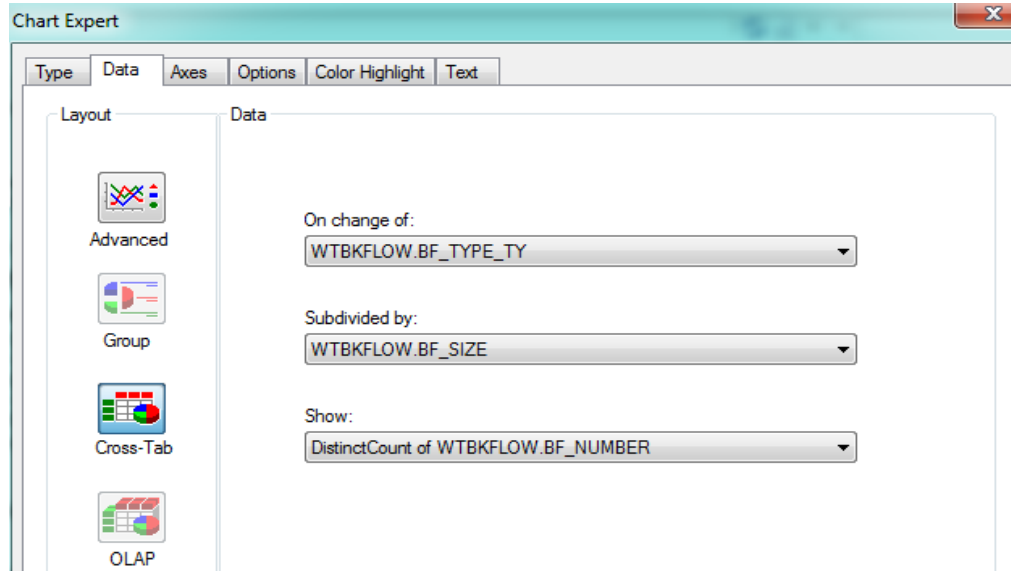
Grid Options  
 Indent Row Labels 0.50 in  
 Indent Column Labels 0.13 in  
 Repeat Row Labels  
 Keep Columns Together  
 Column Totals on Top  
 Row Totals on Left  
 Show Cell Margins  
 Suppress Empty Rows  
 Suppress Empty Columns  
 Suppress Row Grand Totals  
 Suppress Column Grand Totals

Format Grid Lines

e. *OK*

3. Add another *Report Footer* section. (*RFb*)
4. Add a bar graph to this section. The Data should use the Cross-Tab with the “*On Change of*” being the **Type** field, *Subdivided by* **Size** and *Showing* the distinct count of **Device** number.

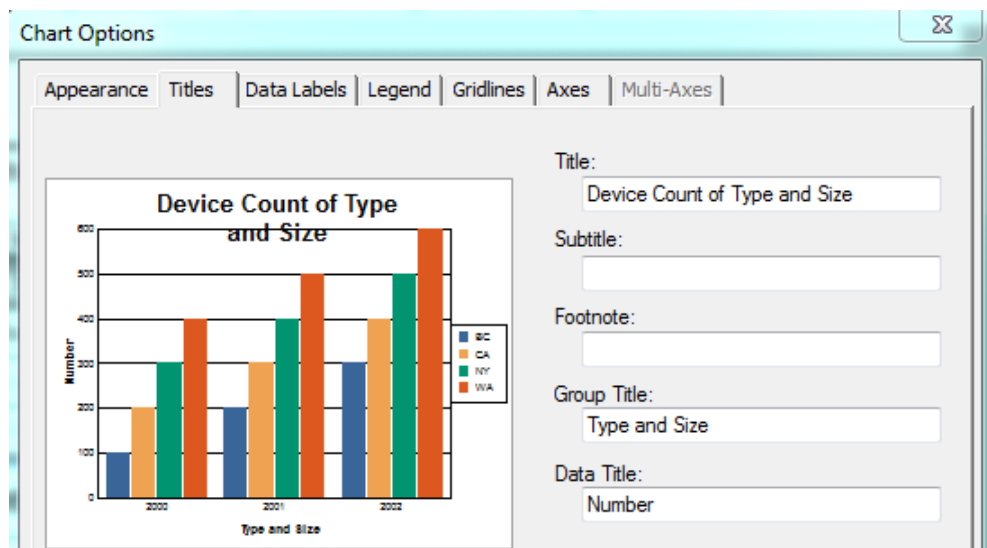
- a. Insert a graph into the *Report Footer b* section.
- b. In the *Chart Expert* set the *Data* tab up as follows:



c. *OK*

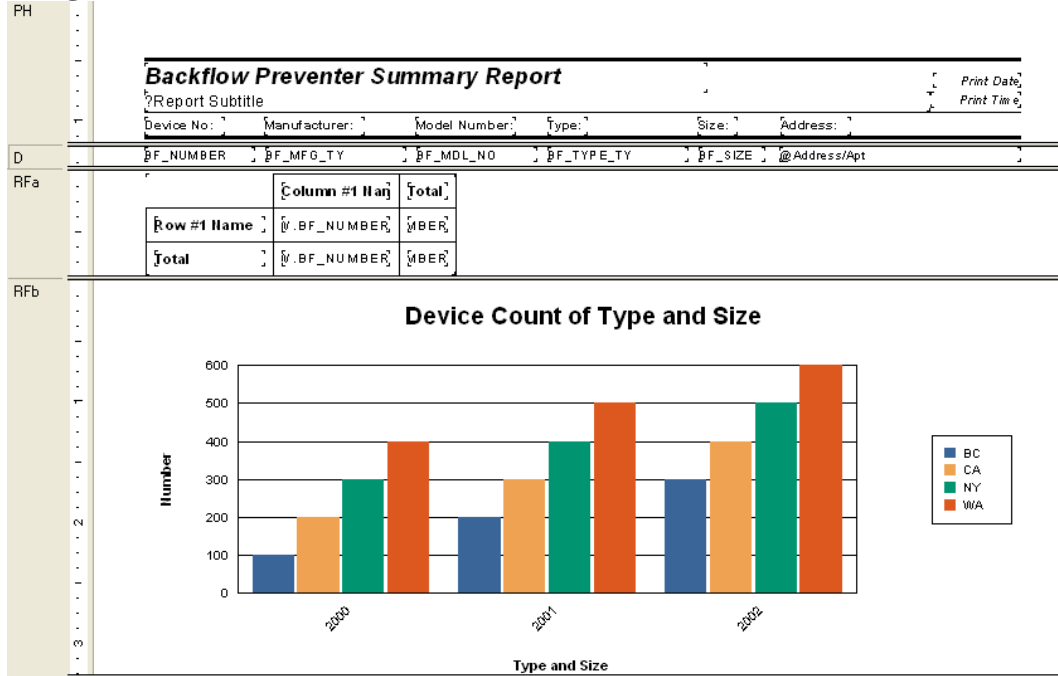
5. Right click in the chart and select *Chart Options...*

- a. In the *Legend* tab the *Color Mode* should be on *Color by Series*.
- b. In the *Titles* tab change the *Title* to read **Device Count of Type and Size**.
- c. Change the *Group Title* to read **Type and Size**.
- d. Change the *Data Title* to read **Number**.
- e. *OK*



6. Right click on a **Group** (X) axis label and select *Format Axis Label*.
  - a. Change the *Rotation* to **45**.
  - b. *OK*
7. Click and drag the *Group Title* to avoid the labels if necessary.

**Design**



# Preview

## Backflow Preventer Summary Report

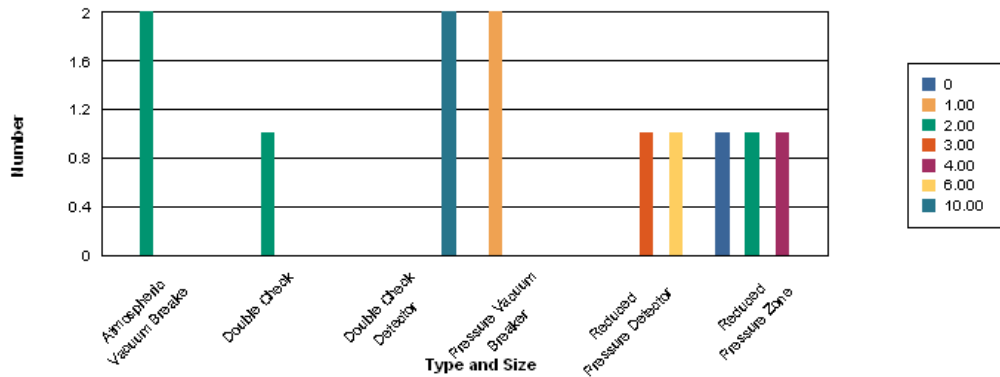
9/2/2010  
11:52 AM

| Device No: | Manufacturer:  | Model Number: | Type:                      | Size: | Address:             |
|------------|----------------|---------------|----------------------------|-------|----------------------|
| 1277       | CONBRACO       | 40-505-02     | Pressure Vacuum Breaker    | 1.00  |                      |
| 147        | WATTS          | 288A-M3       | Atmospheric Vacuum Breaker | 2.00  |                      |
| 214        | FEBCO          | 870V          | Double Check               | 2.00  | 1887 E SHANNON ST    |
| 2254       | AMES           | 3000          | Double Check Detector      | 10.00 |                      |
| 32         | RAIN BIRD      | RP-QT-100     | Reduced Pressure Zone      | 2.00  | 1754 E WOODSIDE CT   |
| 324        | WATTS          | 772DCDA0SYRW  | Double Check Detector      | 10.00 | 4785 S LAGOON DR     |
| 33         | HERSEY         | 6CMDA         | Reduced Pressure Detector  | 6.00  | 1572 E BLUEBIRD DR   |
| 4874       | CONBRACO       | 40-700-C3     | Reduced Pressure Detector  | 3.00  |                      |
| 668        | CONBRACO       | 40-20A-03     | Reduced Pressure Zone      | 4.00  | 1876 N CLAIBORNE AVE |
| 77841      | CONBRACO       | 40-202-02     | Reduced Pressure Zone      | 0.00  |                      |
| AF6119     | FEBCO          | 765           | Pressure Vacuum Breaker    | 1.00  | 2239 E PLUM CT       |
| Noels      | CHAMPION BRASS | 262           | Atmospheric Vacuum Breaker | 2.00  |                      |

### Breaks

|              | Atmospheric V. | Double Check | Double Check I | Pressure Vacu | Reduced Press | Reduced Press | Total     |
|--------------|----------------|--------------|----------------|---------------|---------------|---------------|-----------|
| 0            | 0              | 0            | 0              | 0             | 0             | 1             | 1         |
| 1.00         | 0              | 0            | 0              | 2             | 0             | 0             | 2         |
| 2.00         | 2              | 1            | 0              | 0             | 0             | 1             | 4         |
| 3.00         | 0              | 0            | 0              | 0             | 1             | 0             | 1         |
| 4.00         | 0              | 0            | 0              | 0             | 0             | 1             | 1         |
| 6.00         | 0              | 0            | 0              | 0             | 1             | 0             | 1         |
| 10.00        | 0              | 0            | 2              | 0             | 0             | 0             | 2         |
| <b>Total</b> | <b>2</b>       | <b>1</b>     | <b>2</b>       | <b>2</b>      | <b>2</b>      | <b>3</b>      | <b>12</b> |

### Device Count of Type and Size

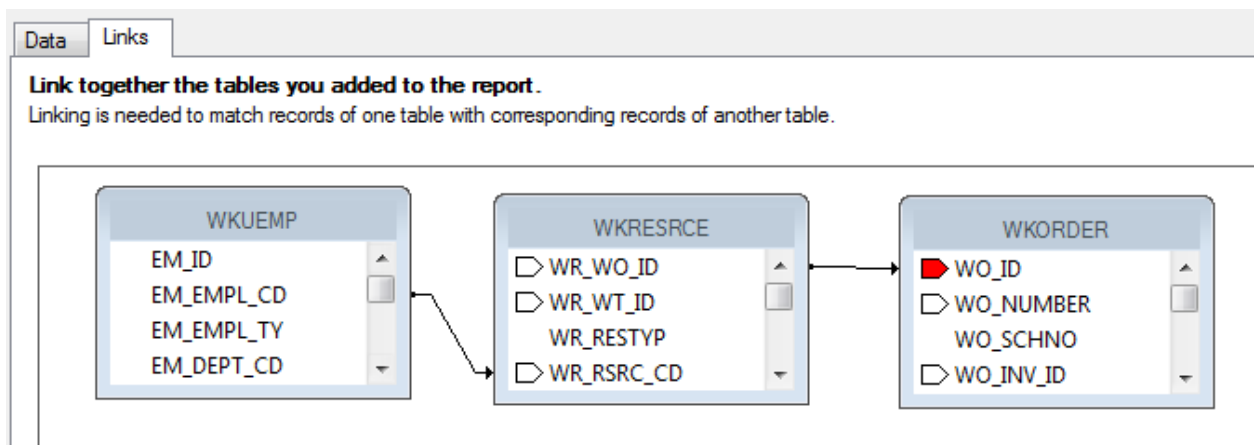




## XXVII. Example 27A

We will add to the **Employee Cost List Report (EmpCostList.rpt)** the Work Orders each Employee has worked on. Then set it up to hide the Work Orders unless called on.

1. In the **Work** Report folder, open **CT\_EmpCostListWO.rpt**.
2. Change the title to **Employee Cost List Summary with Work Orders**.
3. In the Database Expert bring in the **WKORDER** and **WKRESRCE** tables.
4. Link



5. Group on the Employee Code (**EM\_EMPL\_CD**).
6. Move the Employee data to the *Group Header 1* section.
7. Bring the Work Order Number (**WO\_NUMBER**) field into the *Detail* section.
8. In *Section Expert* click on the *Details* section and then select *Hide (Drill-Down OK)*.
9. Suppress the *Group Footer 1* Section.

| <b>Employee Cost List Summary with Work Orders</b> |  |            |             |                 | Print Date |
|--|--|------------|-------------|-----------------|------------|
| Report Subtitle                                    |  |            |             |                 | Print Time |
| Employee:  | Employee Code:   | Position:  | *Unit Cost: | *Overtime Rate: |            |
| GH1  | EM_EMPL_TY   | EM_EMPL_CD | EM_POS_TY   | U_UNIT_C        | M_OVERI_C  |
| D  | WO_NUMBER  |            |             |                 |            |
| GF1  |  |            |             |                 |            |
| RF   |  |            |             |                 |            |
| PF   | A 'Hidden' field indicates permission to view the secured field is turned off. |            |             |                 |            |
|  |  |            |             |                 | @ Page     |

When the report is run it will look like the original Employee Cost List Report.

| <b>Employee Cost List Summary with Work Orders</b> |                       |                  |                    | 7/26/2014              |
|--|-----------------------|------------------|--------------------|------------------------|
|  |                       |                  |                    | 9:42 AM                |
| <b>Employee:</b>                                   | <b>Employee Code:</b> | <b>Position:</b> | <b>*Unit Cost:</b> | <b>*Overtime Rate:</b> |
| NICK PETERS  | 118                   |                  | \$32.58            | \$48.85                |
| AGGIE WITOWSKI                                     | 119                   |                  | \$22.71            | \$34.07                |
| YOLANDA FIRESTONE                                  | 12                    |                  | \$23.99            | \$35.98                |

If you double click on an employee name it will show the Work Orders the employee has worked on.

|                |     |  |         |         |
|----------------|-----|--|---------|---------|
| AGGIE WITOWSKI | 119 |  | \$22.71 | \$34.07 |
| 2006-02282     |     |  |         |         |
| 2006-02249     |     |  |         |         |
| 2006-02283     |     |  |         |         |
| 2007-00203     |     |  |         |         |

It would be helpful to state to the user how the hidden information is shown.

## XXVIII. Example 28A

We will create a **Work Order Task Labor Cost Summary** report which shows Category subtotals as well as the total. This could easily be done with Running Totals but this should be done with variables. The intent is to guide you through the basic use of variables.

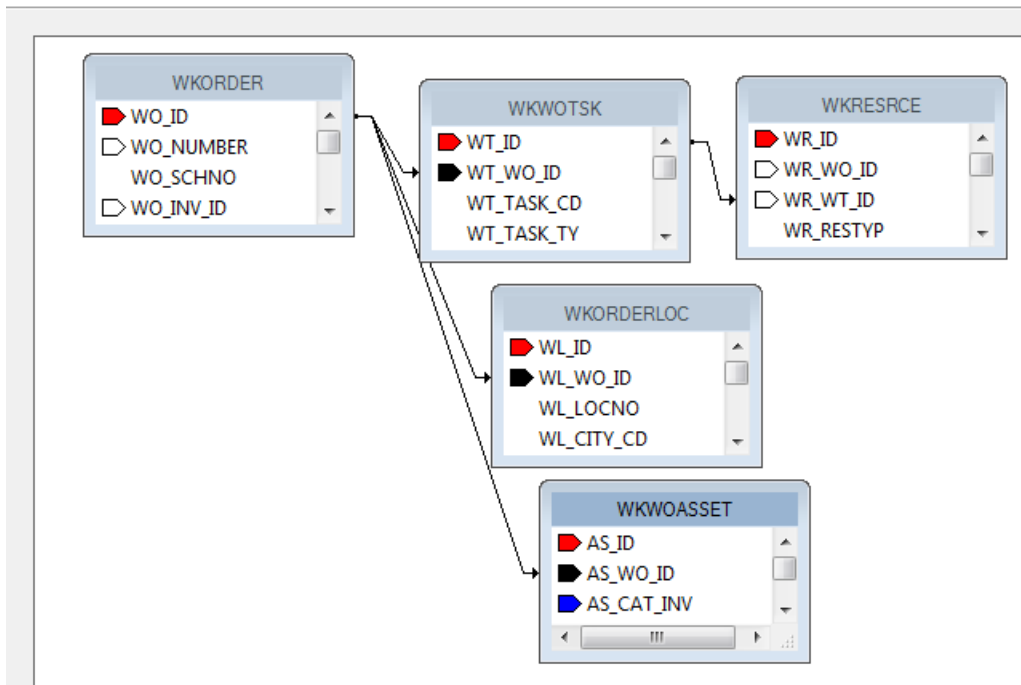
1. Create a new Work report called **Work Order Task Labor Cost Summary (CT\_WOTskLabCostSum.rpt)**. You may use the Report Wizard (then modify) or Blank Report. Use the following tables:

- WKORDER
- WKWOTSK
- WKRESRCE
- WKORDERLOC
- WKWOASSET

2. Link

### Link

Link together the tables you added to the report.



3. Bring in the following fields.

- WO Number
- Problem
- Main Task
- Labor Cost (WKORDER.WO\_LC\_ACT using variables to declare and sum)

4. Group on **Main Task**.
5. Group on **WO Number**.
6. Put in a subtotal for **Main Task** (variable).
7. Select on Closed Work Orders, **STAT\_CD>950**.
8. Put in a **Grand Total** (variable).
9. Add Dollar symbol (\$) to the cost fields.

Set up the fields as follows:

|      |   |   |            |            |             |
|------|---|---|------------|------------|-------------|
| PH   | - | <b>Work Order Task Labor Cost Summary</b> |            |            | Print Data  |
|      | - | Main Task                                 |            |            |             |
|      | - | Work Order Number:                        | Problem:   | Labor Cost |             |
| GH1  | - | Group #1 Name                             |            |            | @ZeroTask   |
| GH2  | - | Group #2 Name                             |            |            |             |
| D    | - |   |            |            |             |
| GF2a | - | WO_NUMBER                                 | WO_PROB_TY | @LaborCost |             |
| GF2b | - |   |            |            | @LaborSum   |
| GF1  | - | {WO_ACTN_TY} Total:                       |            |            | @TaskTot    |
| RF   | - | Grand Total:                              |            |            | @GrandTot   |
| PF   | - |   |            |            | Page Number |

Suggested Formulas:

### LaborCost

```
WhilePrintingRecords;
shared numbervar LabCost;
```

```
LabCost:={WKORDER.WO_LC_ACT}
```

### LaborSum

```
WhilePrintingRecords;
shared numbervar LabCost;
shared numbervar TskTot;
shared numbervar GrTot;
```

```
TskTot:=TskTot + LabCost;
```

```
GrTot:=GrTot + LabCost;
```

### TaskTot

```
WhilePrintingRecords;
shared numbervar TskTot;
```

```
TskTot
```

**GrandTot**

WhilePrintingRecords;  
shared numbervar GrTot;

GrTot

---

**ZeroTask**

WhilePrintingRecords;  
shared numbervar TskTot:=0;

**Work Order Task Labor Cost Summary**

7/25/201

**Main Task**

| <u>Work Order Number:</u> | <u>Problem:</u>             | <u>Labor Cost</u> |
|---------------------------|-----------------------------|-------------------|
| 2007-00369                |                             | \$89.91           |
| 2007-00371                |                             | \$67.43           |
| 2007-00468                |                             | \$67.43           |
| 2007-00697                | Main Leak                   | \$49.65           |
| 2007-00966                |                             | \$224.77          |
| 2007-01417                |                             | \$67.43           |
| 2007-01505                |                             | \$202.29          |
|                           | <b>Main Shutdown Total:</b> | <b>\$6,356.12</b> |

**Meter Changeout**

|            |                               |                |
|------------|-------------------------------|----------------|
| 2006-02440 | W TM - Miscellaneous          | \$12.19        |
| 2006-03235 | New Meter                     | \$12.19        |
| 2006-03543 | Leaking Meter                 | \$37.25        |
| 2007-00743 | W TM - Miscellaneous          | \$24.38        |
|            | <b>Meter Changeout Total:</b> | <b>\$86.00</b> |

## XXIX. Example 29A

We will modify the Sewer Pipe Summary report (**PipeSum.rpt**) to group by pipe material and then show the sum of the pipe length and the percentage for that material type. The Summary Tool should be used to calculate the percentage.

| Sewer Pipe Summary Report |               |               |               |             |         |              |             |              |                  |           | Print Date |
|---------------------------|---------------|---------------|---------------|-------------|---------|--------------|-------------|--------------|------------------|-----------|------------|
| Report Subtitle           |               |               |               |             |         |              |             |              |                  |           | Print Time |
| Rec #:                    | Alt. Pipe ID: | US Structure: | DS Structure: | Flow Basin: | Shape:  | Dia/Ht (in): | Width (in): | Length (ft): | Sec Length (ft): | Material: | Liner:     |
| NT_ID                     | NT_NUMBER     | NT_USMAN      | NT_DSMAN      | NT_BASIN    | NT_SHAP | T_DIA        | WIDTH       | T_LENGTH     | T_PSECLTH        | NT_MAT_TY | NT_LINR_T  |
| RF                        |               |               |               |             |         |              |             |              |                  |           |            |

1. From the **Sewer Report** folder, open **CT\_SWPipeMat.rpt**.
2. Change the title to **Sewer Pipe By Material Summary Report**.
3. Add a Group on the **Material** field.
4. Add the group option to *Repeat Group Header On Each Page*.
5. Add a summary for **Pipe Length** for each **Material Type**.
6. Using the Summary tool add a **Percent** for Pipe Length for each Material Type.

*If the previous summary formula is still where Crystal placed it then the Percent formula will be placed on top of it. Click and drag on the formula field to separate them.*

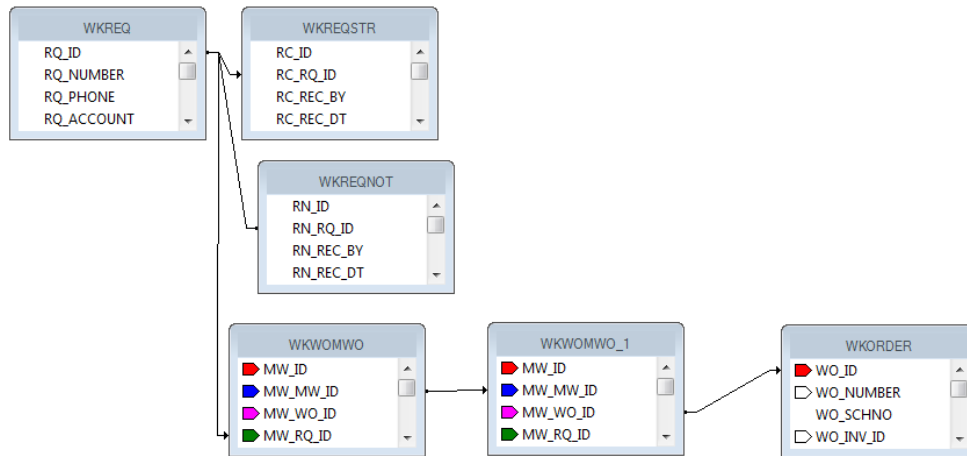
7. Add a text object with “**Total**” and the **Material** field embedded to restate the material type in the *Group Footer*.
8. Add a top Border to the length summary.
9. Add a line to separate material type sections.

| Sewer Pipe By Material Summary Report |                      |               |               |             |         |              |             |              |                  |           | Print Date |
|---------------------------------------|----------------------|---------------|---------------|-------------|---------|--------------|-------------|--------------|------------------|-----------|------------|
| Report Subtitle                       |                      |               |               |             |         |              |             |              |                  |           | Print Time |
| Rec #:                                | Alt. Pipe ID:        | US Structure: | DS Structure: | Flow Basin: | Shape:  | Dia/Ht (in): | Width (in): | Length (ft): | Sec Length (ft): | Material: | Liner:     |
| NT_ID                                 | NT_NUMBER            | NT_USMAN      | NT_DSMAN      | NT_BASIN    | NT_SHAP | T_DIA        | WIDTH       | T_LENGTH     | T_PSECLTH        | NT_MAT_TY | NT_LINR_T  |
| GH1                                   | <b>Group #1 Name</b> |               |               |             |         |              |             |              |                  |           |            |
| D                                     |                      |               |               |             |         |              |             |              |                  |           |            |
| GF1                                   |                      |               |               |             |         |              |             |              |                  |           |            |
| RF                                    |                      |               |               |             |         |              |             |              |                  |           |            |

### XXX. Example 30A

We will modify the Summary of Requests report (**ReqSum.rpt**) to show the number of days between when the Request is created and the Work Order is created. This will be done without the use of subreports but using the table linkings just learned.

1. From the **Work Report** folder, open **CT\_ReqWODays.rpt**.
2. Change the title to **Days For Request to Work Order**.
3. Bring in the following tables: **WKORDER**, **WKWOMWO** and **WKWOMWO\_1** again.
4. Link



5. Change the Priority column to **WO Number**.
6. Change the Problem column to **WO Creation Date**.
7. Create a date formula (**WODate**) to bring in the **WO\_INIDATE** field.
8. Create a column to the right of WO Creation Date for “**Req to WO**”.
9. Create a formula (**DateDiff**) to find the difference between the WO creation date (**@WODate**) and the Request creation date (**@ReqDate**).

{ @WODate } - { @ReqDate }

| <b>Days For Request to WorkOrder</b> |                 |          |             |           |                  |           |           | Print Date |
|--------------------------------------|-----------------|----------|-------------|-----------|------------------|-----------|-----------|------------|
| ?Report Subtitle                     |                 |          |             |           |                  |           |           | Print Time |
| Request #                            | Record Date     | Status   | Status Date | WO Number | WO Creation Date | Req to WO | Address   |            |
| D                                    | RQ_NUMBER       | @ReqDate | RQ_STAT_TY  | @StatDate | WO_NUMBER        | @WODate   | @DateDiff | @Location  |
| RF                                   | Total Requests: |          | #TotReq     |           |                  |           |           |            |

## XXXI. Example 31A

We will modify the Work Order Summary Report (**WOSum.rpt**) by adding assets and limiting it to show only Sewer Assets. The Assets will be brought in with grouping instead of a subreport. This will allow the Asset filters in Lucity to be applied to the report.

| <b>Work Order Summary Report</b> |           |             |             |           |            |               |          | Print Date |
|----------------------------------|-----------|-------------|-------------|-----------|------------|---------------|----------|------------|
| Report Subtitle                  |           |             |             |           |            |               |          | Print Time |
| WO #                             | Status    | Status Date | Category    | Main Task | Address    | Total Cost    |          |            |
| <b>Group #1 Name</b>             |           |             |             |           |            |               |          |            |
| D                                |           |             |             |           |            |               |          |            |
| GF1a                             | WO_NUMBER | WO_STAT_TY  | @StatusDate | WO_CAT_TY | WO_ACTN_TY | Locations.rpt | @CostTot | WOCost     |
| RF                               |           |             |             |           |            |               |          | @GrTot     |

1. From the **Work Report** folder, open **CT\_WOSWAssetSum.rpt**.
2. Change the title to **Work Order with Sewer Assets Report**.
3. In *Select Expert* add a formula to limit the work orders to those with Sewer Assets. (The asset numbers can be found in the **WKCATINV** table.)

**{WKORDER.WO\_INV\_ID} in [2, 232, 233, 234, 235, 3, 4, 5, 6]**

4. Add a group on the **Asset ID (WKWOASSET.AS\_ID)**.
5. Unsuppress the *Group Header 1* section.
6. Move the Work Order data from the **GF1a** section to the **GHI** section.
7. Delete the **GF1a** section.
8. Add a *Group Header 1* section (**GH1b**).
9. Add to the **GH1b** section Asset column headers; **Asset Type**, **System ID 1**, **Desc 1** and **Desc 2**. Underline, Italic and not bold.
10. Add the appropriate Asset fields to the *Group Header 2* section.
11. Suppress the *Group Footer 2* section.

| <b>Work Order with Sewer Assets Report</b> |                   |                    |                 |                 |            |               |          | Print Date |
|--|-------------------|--------------------|-----------------|-----------------|------------|---------------|----------|------------|
| Report Subtitle                            |                   |                    |                 |                 |            |               |          | Print Time |
| WO #                                       | Status            | Status Date        | Category        | Main Task       | Address    | Total Cost    |          |            |
| GH1a                                       | WO_NUMBER         | WO_STAT_TY         | @StatusDate     | WO_CAT_TY       | WO_ACTN_TY | Locations.rpt | @CostTot | WOCost     |
| GH1b                                       | <u>Asset Type</u> | <u>System ID 1</u> | <u>Desc 1</u>   |                 |            |               |          |            |
| GH2  | <u>AS_TYPE</u>    | <u>AS_LINK1</u>    | <u>AS_TEXT1</u> | <u>AS_TEXT2</u> |            |               |          |            |
| D  |                   |                    |                 |                 |            |               |          |            |
| GF2  |                   |                    |                 |                 |            |               |          |            |
| RF   |                   |                    |                 |                 |            |               |          | @GrTot     |
| PF   |                   |                    |                 |                 |            |               |          |            |

A Hidden field indicates permission to view the secured field is turned off.



## XXXII. Example 32A

We will modify the Work Order Summary With Asset Report (**WOSumAsset.rpt**) to bring in Sewer and Storm Pipes and show their lengths with a total combined length.

| <b>Work Order Summary With Asset Report</b> |  |             |              |           |            |               |             | Print Date |
|---|--|-------------|--------------|-----------|------------|---------------|-------------|------------|
| ?Report Subtitle                            |  |             |              |           |            |               |             | Print Time |
| WO #  | Status   | Status Date | Category     | Main Task | Address    |               | *Total Cost |            |
| <b>Group #1 Name</b>                        |  |             |              |           |            |               |             |            |
| D   |  |             |              |           |            |               | TOTCOST     |            |
| GF1a  | WO_NUMBER  | WO_STAT_TY  | @Status Date | WO_CAT_TY | WO_ACTN_TY | Locations rot | @Cost       |            |
| GF1b  |  |             |              |           |            |               | @CostSum    |            |
| GF1c  | WOAsset  |             |              |           |            |               |             |            |
| RF  |  |             |              |           |            |               | @CostTotal  |            |
| PF  | A 'Hidden' field indicates permission to view the secured field is turned off. |             |              |           |            |               | @Page       |            |

1. From the **Work Report** folder, open **CT\_WOSwSmPipeSum.rpt**.
2. Change the title to **Work Orders with Sewer and Storm Pipes Report**.
3. In *Select Expert* add a formula to limit the work orders to those with Sewer and Storm Pipe Assets. (The asset numbers can be found in the **WKCATINV** table.)

**{WKORDER.WO\_INV\_ID} in [26, 6]**

4. Using the *Save Subreport As...* option, save a copy of the **WOAsset** subreport in the **Work Report** folder (**WOSmAssetSub**).
5. Add a *Group Footer 1* section below **GF1c**.
6. Add a subreport to the new section (**GF1d**). Choose an Existing Report (**WOSmAssetSub**). Format
7. Link the new subreport to the **WKORDER** table.
8. In the new subreport (**WOSmAssetSub**) delete the two added blank sections.
9. In the **WOSmAssetSub** subreport's *Select Expert*, remove the additional linking formula.
10. In this same *Select Expert*, limit the records to the Storm Pipes.

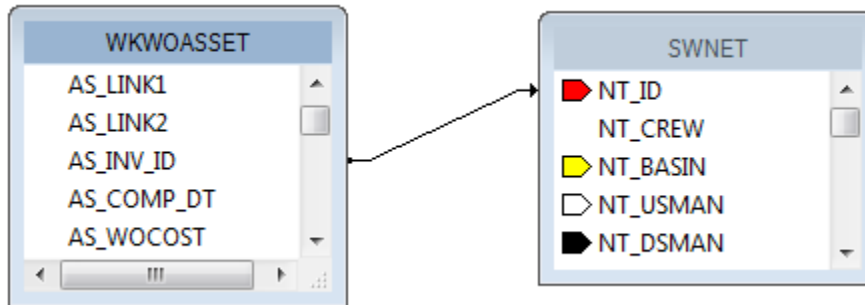
**{WKWOASSET.AS\_CAT\_INV} = 26**

11. Rename the other Asset subreport to **WOSwAsset**.
  - This is done in the Subreport's Format Editor > Subreport tab > Subreport options > **Subreport Name** box.

12. In the *Select Expert* for the **WOSwAsset** subreport, limit the records to the Sewer Pipes.

**{WKWOASSET.AS\_CAT\_INV} = 6**

13. In **WOSwAsset** add the Sewer Pipe table and link. (Remember to use the Views for the **Work** Database)



14. Change the Cost column to “**Length**”.
15. Bring in the Length field (**NT\_LENGTH**).
16. Create a Running total for the Length field (**SwLength**).
17. Create a formula (**SwTot**) to have a variable use the running total field. Place in the *Report Footer a* section.

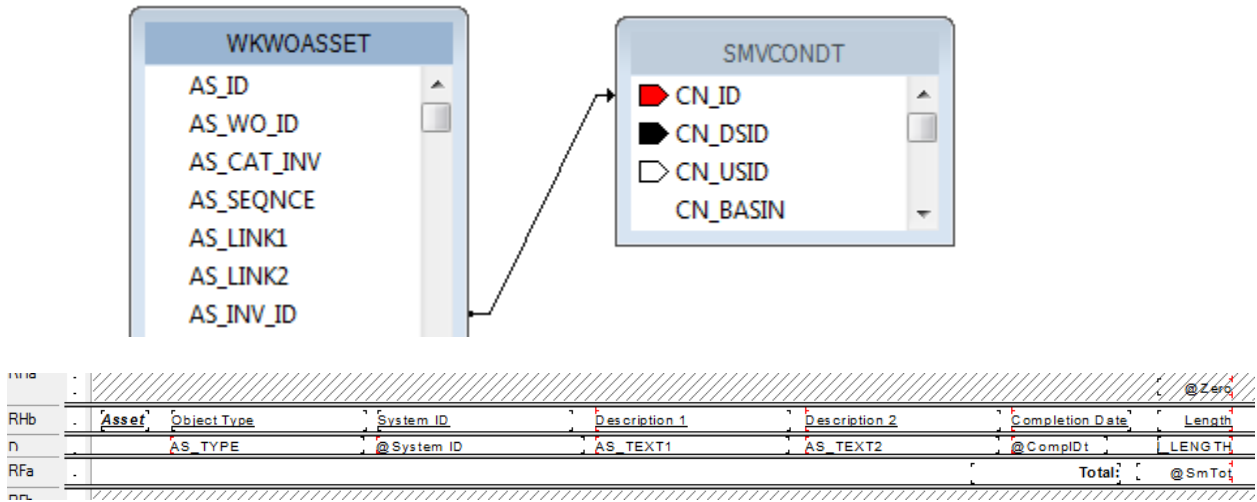
```
WhilePrintingRecords;
shared numbervar SwTotL;
SwTotL:={#SwLength}
```

18. Create a formula to reset the variable – just to be safe (**Zero**). Place in the *Report Header a* section.

```
WhilePrintingRecords;
shared numbervar SwTotL:=0;
```

|     |   |              |             |           |               |               |                 |        |        |
|-----|---|--------------|-------------|-----------|---------------|---------------|-----------------|--------|--------|
| RHa | . |              |             |           |               |               |                 | @zero  |        |
| RHb | . | <b>Asset</b> | Object Type | System ID | Description 1 | Description 2 | Completion Date | Length |        |
| N   | . | AS_TYPE      | @System ID  | AS_TEXT1  | AS_TEXT2      | @ComplDt      | NT_LENGTH       |        |        |
| RFa | . |              |             |           |               |               |                 | Total  | @SwTot |
| RFb | . |              |             |           |               |               |                 |        |        |

19. Set up the Storm subreport similarly.



20. In the main report add a new *Group Footer* section below *GF1d*. Suppress

21. Create two formulas to bring in and sum the sewer and storm pipe lengths. Place in the *GF1d* section.

### SwLengthSum

```
WhilePrintingRecords;
shared numbervar SwTotL;
Shared numbervar WOSwTot;
WOSwTot:=WOSwTot + SwTotL;
```

### SmLengthSum

```
WhilePrintingRecords;
shared numbervar SmTotL;
Shared numbervar WOSmTot;
WOSmTot:=WOSmTot + SmTotL;
```

22. Create two formulas to state the sewer and storm pipe total lengths. Place in the *Report Footer*.

### SWPipeL

```
WhilePrintingRecords;
Shared numbervar WOSwTot;
WOSwTot
```

## SMPipeL

WhilePrintingRecords;  
 Shared numbervar WOSmTot;  
 WOSmTot

23. Create one more formula to state the total length of all pipes. Place in the *Report Footer*.

## TotalPipe

WhilePrintingRecords;  
 Shared numbervar WOSwTot;  
 Shared numbervar WOSmTot;  
 WOSwTot + WOSmTot

| <b>Work Orders with Sewer and Storm Pipes Report</b>                           |            |              |           |            |               |             |  | Print Date   |
|--|------------|--------------|-----------|------------|---------------|-------------|--|--------------|
| Report Subtitle  |            |              |           |            |               |             |  | Print Time   |
| WO #   | Status     | Status Date  | Category  | Main Task  | Address       | *Total Cost |  |              |
| Group #1 Name  |            |              |           |            |               |             |  | TOTAL COST   |
| WO_NUMBER  | WO_STAT_TY | @Status Date | WO_CAT_TY | WO_ACTN_TY | Locations.rpt | @Cost       |  |              |
| WOSwAsset  |            |              |           |            |               |             |  | @CostSum     |
| WOSmAssetSub.rpt   |            |              |           |            |               |             |  |              |
| @SwLengthSum   |            |              |           |            |               |             |  | @SmLengthSum |
| Total Sewer Length:  |            | @SwPipeL     |           |            |               | @CostTotal  |  |              |
| Total Storm Length:  |            | @SmPipeL     |           |            |               |             |  |              |
| Total Length of Pipe:  |            | @TotalPipe   |           |            |               |             |  |              |
| A 'Hidden' field indicates permission to view the secured field is turned off. |            |              |           |            |               |             |  |              |