



TRAINING GUIDE

# Advanced Crystal 2



# Using Crystal Reports with Lucy

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## *Advanced Examples - 2*

The sixth of a seven-part series, this workbook is designed for Crystal Reports® users creating Work reports. Here, you'll learn some of the special linkings required in Work Orders and Requests plus address some challenges when bringing in Asset information.

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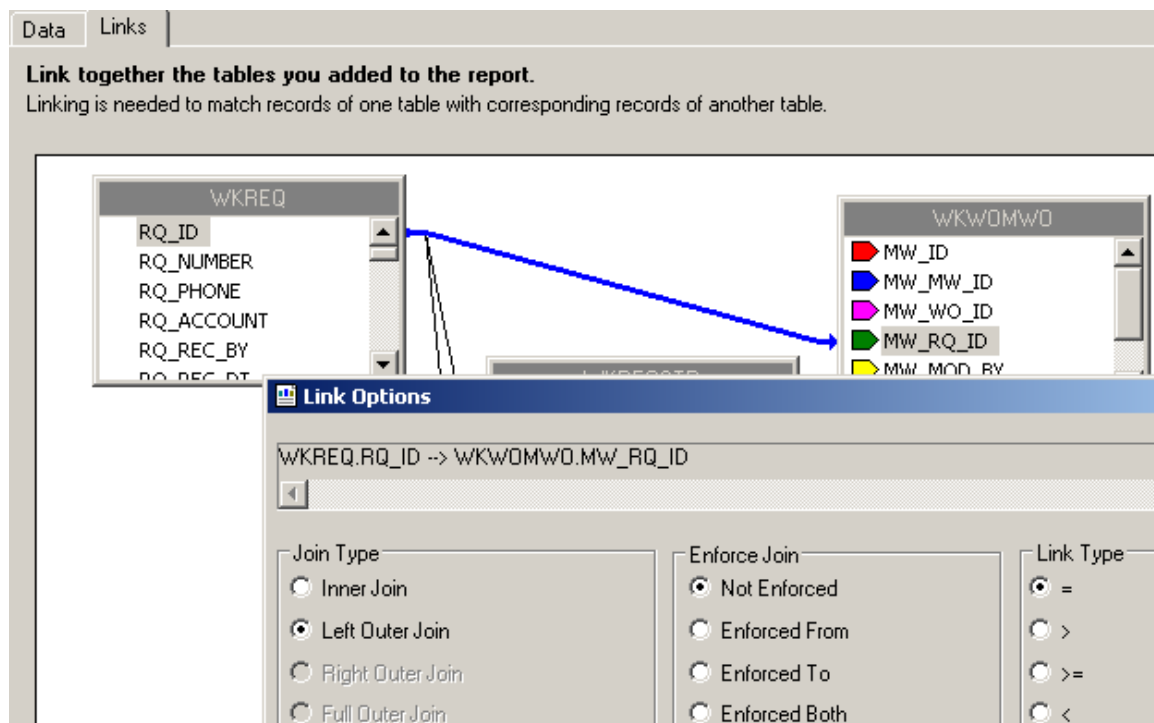
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When a subreport is added to a report, the linking procedure is usually straight forward; however, there are exceptions throughout the Lucity modules. In the related workbook, Intermediate Examples - 1, we discussed one such exception: the Comments section. 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.

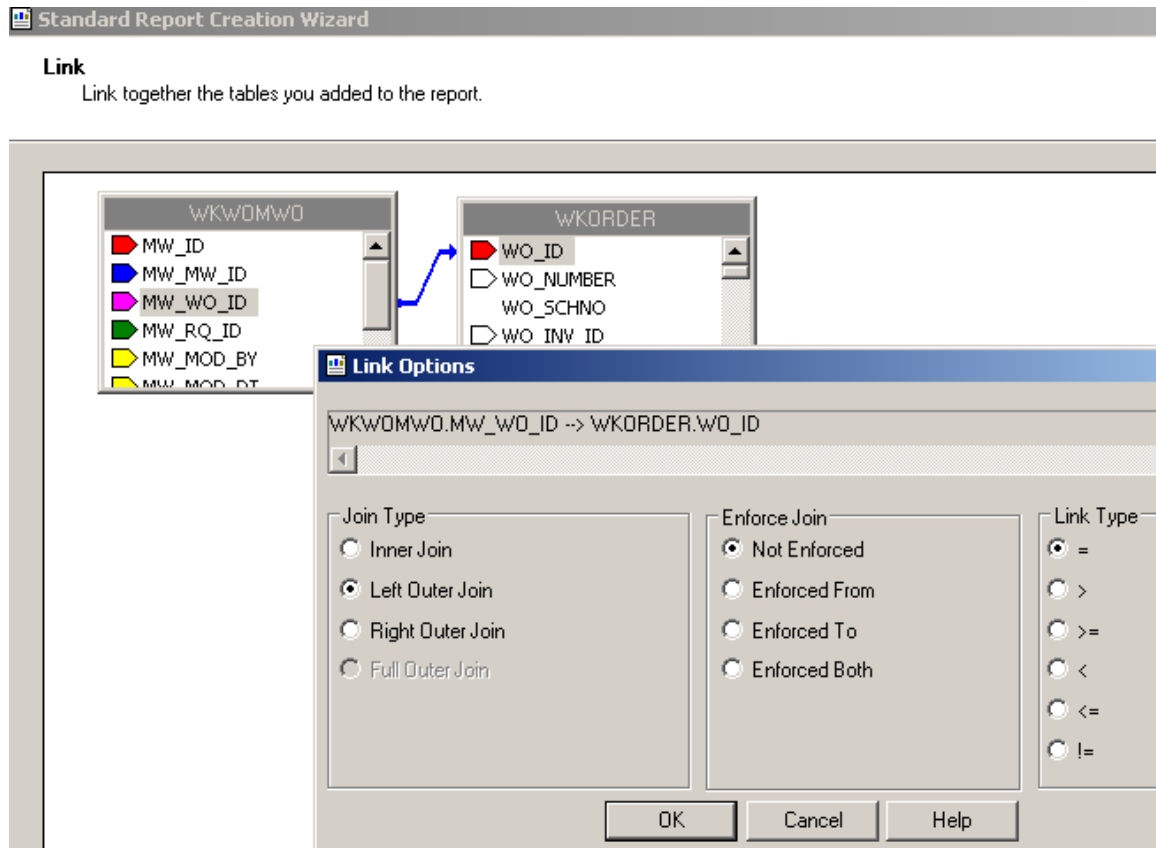
## Linking Work Orders to Requests

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

1. Export ReqSum.rpt and rename it MS\_ReqSumLinks.rpt.
2. Open MS\_ReqSumLinks.rpt.
3. Open the *Database Expert*.
4. 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.
  - To link the tables, click on the joining field in the “parent” table and drag it onto the joining field in the connecting table.
  - Double click on the joining arrow and select the *Left Outer Join* Link Option.
  - Click *OK* and then click *OK* again.



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



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

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

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

10. Open the **Linked Work Orders** subreport.
  - 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     |

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

11. 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 |

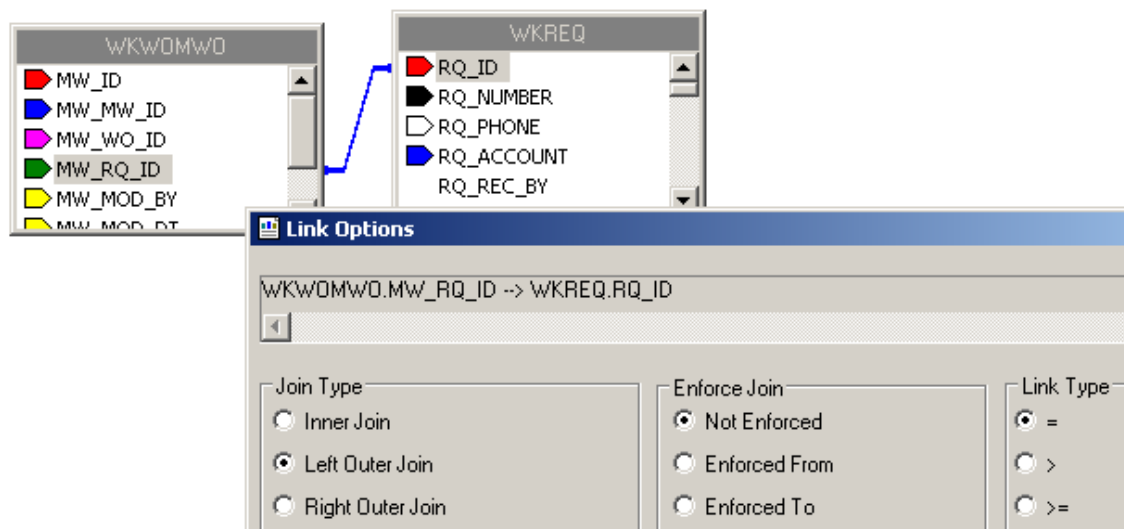
  

| Linked Work Orders |                  |            |
|--------------------|------------------|------------|
| WO #               | Category         | Problem    |
| 98-000019          | Sewer Department | Sewer Odor |

## Linking Requests to Requests

For our next example, we'll continue with **MS\_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:



- Place the subreport in the newly created **Detail** section, select formatting options, and resize.

3. Right click on the **Linked Requests** subreport and select *Change Subreport Links*. Set up as shown below:

**Subreport Links**

For subreport: **Linked Requests**

Container Report field(s) to link to

Available Fields:

- Report Fields
- GBAWork001 (ODBC (RDO))
  - WKREQ
    - RQ\_ID
    - RQ\_NUMBER
    - RQ\_PHONE

Field(s) to link to:

- WKREQ.RQ\_MW\_ID

WKREQ.RQ\_MW\_ID field link

Subreport parameter field to use: **?Pm-WKREQ.RQ\_MW\_ID**

☒ Select data in subreport based on field: **WKWDMWD.MW\_MW\_ID**

OK Cancel Help

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

**Subreport Links**

For subreport: **Linked Requests**

Container Report field(s) to link to

Available Fields:

- Report Fields
- GBAWork001 (ODBC (RDO))
  - WKREQ
    - RQ\_ID
    - RQ\_NUMBER
    - RQ\_PHONE

Field(s) to link to:

- WKREQ.RQ\_MW\_ID
- WKREQ.RQ\_ID

WKREQ.RQ\_ID field link

Subreport parameter field to use: **?Pm-WKREQ.RQ\_ID**

☒ Select data in subreport based on field: **RQ\_ID**

OK Cancel Help

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}
  - Change the second formula to "not equal".
  - 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 "<>". 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 |                  |                |           |          |          |
| <u>WO #</u>        | <u>Category</u>  | <u>Problem</u> |           |          |          |
| 98-000019          | Sewer Department | Sewer Odor     |           |          |          |
| Linked Requests    |                  |                |           |          |          |
| <u>Req #</u>       | <u>Category</u>  | <u>Problem</u> |           |          |          |
| 98-000053          | Sewer Department | Sewer Odor     |           |          |          |

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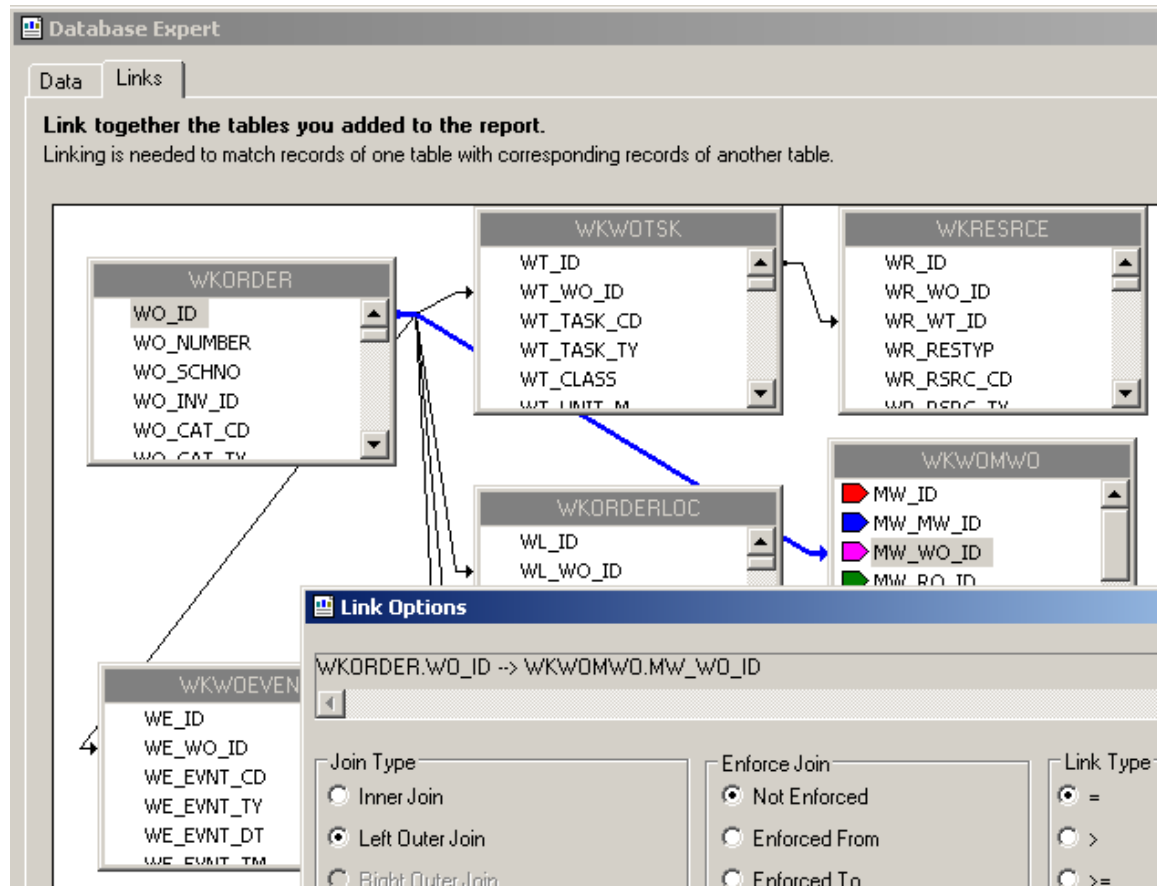


## Linking Requests to Work Orders

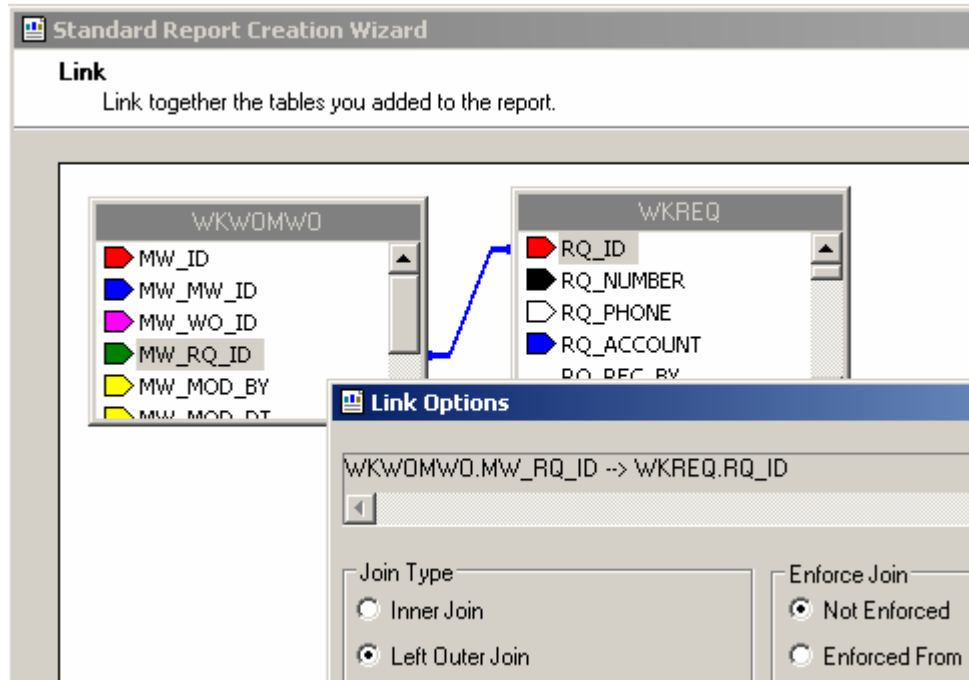
The procedure for adding the linked subreports is very similar to the above examples.

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

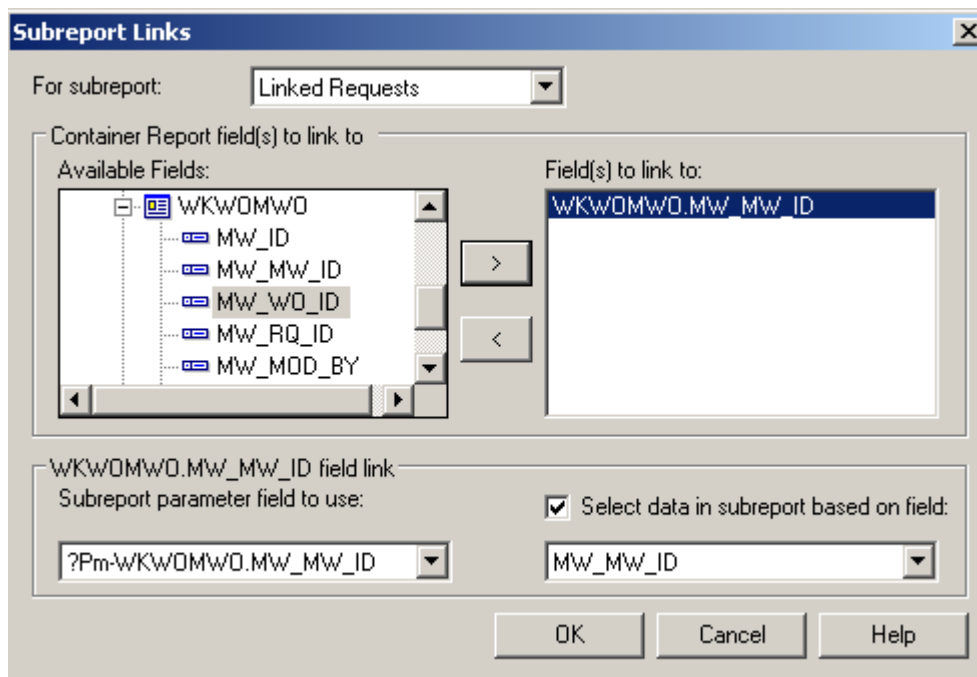
1. Export WOSum.rpt and rename it MS\_WOSumLinks.rpt.
2. Open MS\_WOSumLinks.rpt.
3. Open *Database Expert* and add the WKWOMWO table, linking it to WKORDER.



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



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

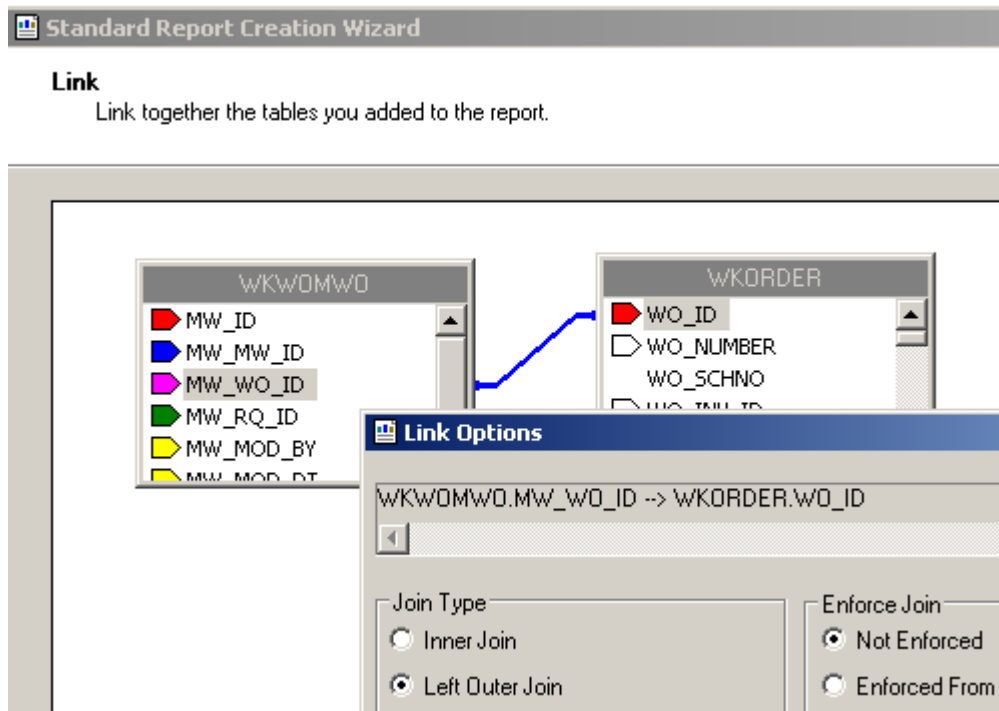


8. Proceed with the subreport details as previously demonstrated.

## Linking Work Orders to Work Orders

We will continue with the open `MS_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.

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

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- 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.

## Using Work Order 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. Additionally, you can use the Asset number for select suppression

The following Asset values are required to create any formulas that would select specific Assets.

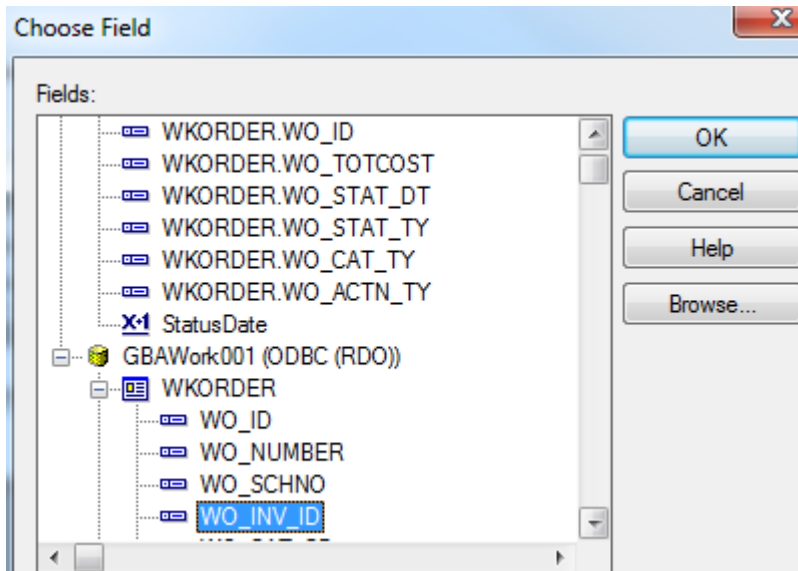
| CI_ID | CI_NAME                   | CI_ID | CI_NAME                    | CI_ID | CI_NAME                   | CI_ID | CI_NAME                  |
|-------|---------------------------|-------|----------------------------|-------|---------------------------|-------|--------------------------|
| 1     | Map 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.

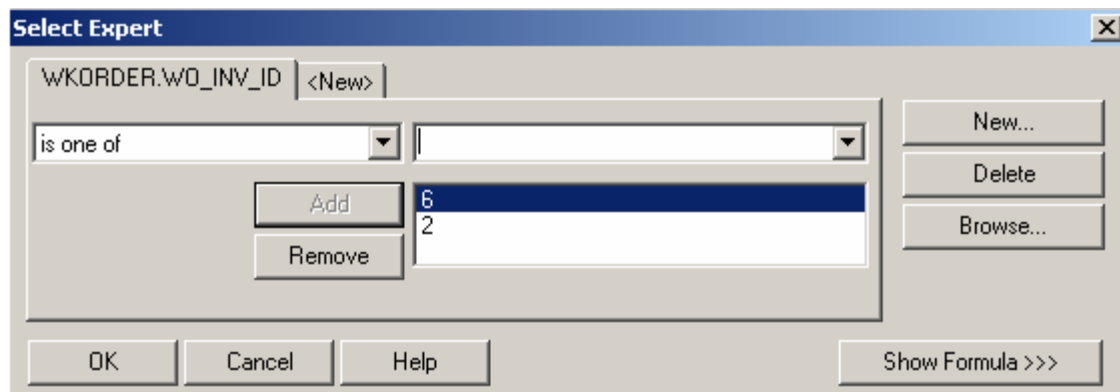
## Limiting Record Selection to Specific Assets

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

1. Export the **WOSum.rpt** report and rename it **MS\_WOSumPipeMan.rpt**.
2. You can view just Sewer Pipe and Manhole records by adding the following formula:
  - Open Select Expert.



- Click **OK**.



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

**OR**

- You can click **Report>>Selection formulas>>Record**.
- Type in the following formula:
  - {WKORDER.WO\_INV\_ID} in [2, 6]

## Preview

### Work Order Summary Report

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

As you can see in the above example, the **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**.
  - Click *File* in the top tool bar, then *Open*, and then double click **WOFormSewerAsset.rpt**.
  - Right click on the **SWPipe.rpt** subreport.
  - Select *Save Subreport As*.
  - Enter a name for your subreport (**SWPipeSub.rpt**) and then *Save* the subreport.
  - 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** by clicking on the X in the tab.
3. You are back in **MS\_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*.

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

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- 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 |            |
| GH1                              | Group #1 Name  |            |             |           |            |               |            |            |
| D                                |                |            |             |           |            |               |            |            |
| GF1a                             | WO_NUMBER      | WO_STAT_TY | @StatusDate | WO_CAT_TY | WO_ACTN_TY | Locations.rpt | OCostTo    | WOCos      |
| GF1b                             | SWPipeSub.rpt  |            |             |           |            |               |            |            |
| GF1c                             | SWStrucSub.rpt |            |             |           |            |               |            |            |
| RF                               |                |            |             |           |            |               |            | @GrTot     |

**Notes:**

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## Preview

### Work Order Summary for Sewer Pipe and Manholes

| WO #                                 | Status           | Status Date | Category         | Main Task   | Address         |
|--------------------------------------|------------------|-------------|------------------|-------------|-----------------|
| 98-000037                            | Complete         |             | Pipe Maintenance | Flush Sewer | 717 W AVE       |
| <b>Asset List (Sewer Pipes)</b>      |                  |             |                  |             |                 |
| US Structure                         | US Address       | Length      | US Map Page      | DS Map Page | Completion Date |
| DS Structure                         | DS Address       | Diameter    | Material         |             |                 |
| 5847-205                             | 403 WAVERLY ST   | 140.0       |                  |             |                 |
| 5847-204                             | 411 WAVERLY ST   | 8           | VCP              |             | 1/22/2007       |
| 5847-204                             | 411 WAVERLY ST   | 141.0       |                  |             |                 |
| 5847-203                             | 423 WAVERLY ST   | 8           | VCP              |             |                 |
| 5847-203                             | 423 WAVERLY ST   | 175.0       |                  |             |                 |
| 5847-202                             | 437 WAVERLY ST   | 8           | VCP              |             |                 |
| 5847-202                             | 437 WAVERLY ST   | 299.0       |                  |             |                 |
| 5847-146                             | 458 LEXINGTON RD | 8           | VCP              |             |                 |
| 4 Pipes                              |                  | 755.0       | Total Length     |             |                 |
| <b>Asset List (Sewer Structures)</b> |                  |             |                  |             |                 |
| Structure                            | Address          | Dia         | Structure Type   | Map Page    | US Loc          |
| Material                             |                  |             |                  |             | Completion Date |
|                                      |                  |             |                  |             | 1/22/2007       |
|                                      |                  |             |                  |             |                 |
|                                      |                  |             |                  |             |                 |
|                                      |                  |             |                  |             |                 |
| 4 Manholes                           |                  |             |                  |             |                 |

9. As you can see in the report Preview, the normal subreport suppression options are not working here. For this **Work Order Summary Report**, the **Sewer Structure** subreport needs to be suppressed. Subreports can be suppressed using the *Section Expert - Suppress (No Drill-Down)* option.

- Select Section Expert.
- For **Group Footer #1**, click Keep Together.
- For the **Sewer Pipe** subreport, **Group Footer 1b**, click the formula button next to Suppress (No Drill-Down). Enter the following formula:

{WKORDER.WO\_INV\_ID} <> 6

- For the **Sewer Structure** subreport, **Group Footer 1c**, click the formula button next to Suppress (No Drill-Down). Enter the following formula.

{WKORDER.WO\_INV\_ID} <> 2

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

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### Work Order Summary for Sewer Pipe and Manholes

[illegible]