



Name:

Summary Excel Files

Tested Excel Version:

Microsoft Excel 2013, 32bit version

## Description

---

Some standard sub-summary sheets have been created to work with the Item\_Master\_addin and the ProjectInfo Tab found in the GENSUM\_VBA\_AASHTOWare.xlsm excel file. These summary sheets can be modified for specific office needs.

The main purpose of this documentation is to explain how to use the summary sheets and how to customize and create your own summary sheets.

## Linking

---

All the summary files link to the Item\_master\_addin. If the addin is not installed the link will have to be updated in the summary file to insure the formulas are displaying up to date data. The linking happens through two named ranges, listed below,

*ITEM, which refers to =[Item\_Master\_addin.xlam]QryItemAddIn!\$A:\$A*

*QryItemNamed, which refers to =[Item\_Master\_addin.xlam]QryItemAddin!\$A:\$G*

These Named ranges are used in formulas to display various item data for a given item. The formulas are explained in the following sections. Linking to the Item\_Master\_Addin was the chosen workflow so that every summary file did not need a copy of the item master in the file. This would have made it easy for a user to have multiple files all with different versions of the item master, which could cause inaccurate data and more confusion.

## Files

---

There are currently 9 standard excel summary files. From these 9 files there are 5 different types. The ProjectInfo tab on the GenSum file can only handle these 5 types of files. Each type is explained below.

### Type 1

These summary sheet are the most common format. There are 4 Standard Excel Summary files that are type 1, SubSummary\_Full.xlsx, SubSummary\_Full\_Pavement.xlsm, SubSummary\_Half.xlsx, and SubSummary\_Half\_Pavement.xlsx. The two files with Full in the name are sized to fit on a the whole ODOT sheet border, while the two files with Half in the name are sized to fit in the bottom half of a ODOT sheet border. The two files with pavement in the name have some calculations columns set up already. All 4 files are set up the same way. For the coding to work with the ProjectInfo sheet cell A1 must have the summary type listed. For type one you can see in the image below a 1 is entered. For data to be extracted and used to fill out the general summary tab then the required info would include, Item Number, Additional Description, quantity, Page #, and Split #. The coding needs a way to find this data. The red circles in the image below show the required text so that the data from this sheet can be extracted and used to fill out the general summary tab.



1	1	SPREADSHEET INSTRUCTIONS: 1) SAVE THIS FILE TO THE PROPER FOLDER FOR YOUR PROJECT 2) DO NOT ENTER ANY DATA INTO THE ITEM NUMBER, ITEM CODE, SPLIT #, OR PAGE # 3) ENTER ITEM CODE (FOR EXAMPLE: 201E11000) AND ADDITIONAL DESCRIPTION 4) ENTER ALL DATA REQUIRED 5) DO NOT REMOVE THE PROTECTION FROM THIS SPREADSHEET												
2		NOTE: PLEASE BE CAREFULL WITH THE UNITS USED --- WATCH												
3														
4														
5														
6														
7														
8														
9	Page #													
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21	Split #	STATION RANGE	TYPICAL SECTION	SIDE	DISTANCE (D)	AVERAGE WIDTH (W)	SURFACE AREA (A) A=DxW/9	CADD GENERATED AREA						
22														
23														
24														
25														
26														
27														
28														
29		TO												
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														
49														
50														
51														
52														
53														
54														
55														
56														
57														
58														
59														
60														
61														
62														
63														
64														
65														
66														
67														
68														
69														
70														
71														
72														
73														
74														
75														
76														
77														
78														
79														
80														
81														
82														
83														
84														
85														
86														
87														
88														
89														
90														
91														
92														
93														
94														
95														
96														
97														
98														
99														
100														

The Page # is extracted by the code searching column B for a cell that contains the text Page #. The code will then grab what is entered in the cell directly below this found cell as the page number. This cell cannot be merged with any other cells. The split # is extracted in a similar manner. Again the code will search column B but this time for a cell that contains the text Split #. As shown in the image above Split # can be merged with more than one row but must only be in column B. The code then needs to find the Item number and Additional Description. The code will now search for a cell with the text ITEM\_CODE. The item numbers should be listed in the same row as this cell in the columns to the right. Then it will search for a cell that contains the text ADDITIONAL\_DESCRIPTION. An items additional description should be listed in the same row as this cell in the column the desired item number was listed. Lastly the code needs to find the Total row, this is done by searching column B for the cell that contains the text Total. This Total cell should be the in the same row that the totals carried to general summary are listed. If the code does not find all of these cells then the data cannot be extracted. The item data is extracted into two lists. One list for page total quantities and another for split quantities. This is so that the general summary can have the page total and Split total columns filled out. The item data is extracted in the following way.

The code will use the row the Item\_Code cell that was found on and find the last column to the right that contains data in that Item\_Code row. Then the code will loop through every column from the Item\_Code cell to the found last used column. The Item number, additional description, page number, and Page total quantity for each column is stored in one list, while the other list is stored with the item number, additional description, split number and quantity for each row between the Split # cell and the Total cell. For type 1 sheets this process will be repeated for any sheets found under the first one. One blank row is needed between summaries.

For this summary type rows and columns can be added or deleted.



ITEM_CODE ADDITIONAL_DESCRIPTION TYPICAL SECTION LEGEND NUMBER RATE / THICKNESS / ETC			
			441E50100 , T=1.5"
DISTANCE (D)	AVERAGE WIDTH (W)	SURFACE AREA (A) A=DxW/9	CADD GENERATED AREA
FT	FT	SQ YD	SQ YD
			ASPHALT CONCRETE SURFACE COURSE, TYPE 1 (448), PG70-22M, T=1.5"
			CY

There are formulas to fill out the three cells the red arrows are pointing to in the image to the left. The top most cell will place the 3-digit item code for item number listed in the ITEM\_CODE row. The image to the left shows the item number as 441E50100. The formula is listed below, where the cell N10 is the location of the cell that contains 441E50100.

```
=IF(OR(TRIM(N10)=0,TRIM(N10)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N10),ITEM,0),2)),"")="Y","SPECIAL",LEFT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(N10),ITEM,0))),""),3)))
```

If the item is a special item then SPECIAL will be displayed instead of the 3-digit item code.

The formula to display the items description is as follows, where N10 is the location of the cell that contains the Item Number (441E50100) and N11 is the location of the cell that contains the additional description (, T=1.5"). The additional description is displayed at the end of the item description.

```
=IF(OR(TRIM(N10)=0,TRIM(N10)=""),IF(N11="","",N11),IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N10),ITEM,0),2)),"")="Y",RIGHT(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N10),ITEM,0),4)),"123456789012"),LEN(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N10),ITEM,0),4)),"123456789012"))-10)&N11,IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N10),ITEM,0),4))&N11,"ITEM CODE DOES NOT EXIST IN ITEM MASTER")))
```

The formula to display the items unit is as follows, where N10 is the location of the cell that contains the Item Number (441E50100).

```
=IF(OR(TRIM(N10)=0,TRIM(N10)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N10),ITEM,0),3)),"")="LS","",IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N10),ITEM,0),3)),"")))
```

Lump Sum items will not display the unit. These three formulas can be dragged across the other like cells.

## Type 2

This type is used by District 4. It is used as a Pavement Marking sub-summary. Using this sheet is not required, it is offered as a template that will work with the ProjectInfo worksheet on the GenSum excel file. This is the only summary type that does not have formulas to display the items description. So caution should be taken when using this file that the correct item numbers are listed. The pavement marking sub-summary consists of 4 main sections, Edge line, Lane line, Center line, and Auxiliary. The image below shows the left side of the first three sections. The image below also shows red circles for the required cells that the code needs in order to extract item data. Notice similarly as in Type 1, cell A1 has the number 2 listed to indicate this is a type 2 summary. This 2 is needed so that code knows what type of summary the file is. Column B must also contain a cell with the text Page #. The code will find this cell and take the value in the cell directly below it and use it as the page number. The edge line, lane line, and center line sections are all set up the same way. The three sections start with a cell in column B with the text Item\_Code. The code will search column B for this text and take the value in the cell directly below it as the item number. The code will then search for a cell in column B for the text Split #. The next thing the code looks for is a cell in column B with the text Total. This cell is used to find the row where page total quantities will be extracted from and the end of a given section. So the rows between the Split # cell and the Total cell will contain quantities associated with a given split # and roadway section.







Data extraction for structure sheets and wall sheets is different from all other summaries. Since structures and walls need their own heading for each structure or wall the data is stored separately. For Type 3S the code finds the last row with data entered in the Column N. The code then stores the Page #, Bridge Name, SFN, Split Name, Item number, additional description and Total (from column D) for each row between the ITEM\_CODE row to the last row with data in it. The code formats this data to be added into the Data sheet later on.

Notice in the image above in row 17 Columns A-F contain the text Do not enter data in these columns. These column have formulas to display the data enter in columns G-P. The formulas are listed below for each column in row 25.

ITEM column:

```
=IF(OR(TRIM(N25)=0,TRIM(N25)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N25),ITEM,0),2)), "")="Y", "SPECIAL", LEFT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(N25),ITEM,0))), ""),3)))
```

EXTENSION column:

```
=IF(OR(TRIM(N25)=0,TRIM(N25)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N25),ITEM,0),2)), "")="Y", LEFT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(N25),ITEM,0))), ""),3)&RIGHT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(N25),ITEM,0))), ""),5), RIGHT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(N25),ITEM,0))), ""),5)))
```

TOTAL column:

```
=IF(OR(TRIM(N25)=0,TRIM(N25)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N25),ITEM,0),3)), "")="LS", "LS", IF((SUM(G25:J25)+O25)=0, "", SUM(G25:J25)+O25)))
```

UNIT column:

```
=IF(OR(TRIM(N25)=0,TRIM(N25)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N25),ITEM,0),3)), "")="LS", "", IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N25),ITEM,0),3)), "")))
```

DESCRIPTION column:

```
=IF(OR(TRIM(N25)=0,TRIM(N25)=""),IF(P25="", "", P25),IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N25),ITEM,0),2)), "")="Y", RIGHT(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N25),ITEM,0),4)), "123456789012"), LEN(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N25),ITEM,0),4)), "123456789012"))-10)&P25,IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N25),ITEM,0),4))&P25, "ITEM CODE DOES NOT EXIST IN ITEM MASTER")))
```

SUPPLEMENTAL INFO column:

```
=IF(OR(TRIM(N25)=0,TRIM(N25)=""),"",IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(N25),ITEM,0),6)), ""))
```

And lastly when the split name is entered in cell O21 that text is placed in the ESTIMATED QUANTITIES header line.

Rows can be inserted or deleted but column cannot.

### Type 3M

This type is for a structure summary for multiple structures. The image below shows red circles indicating the required cells. Cell A1 must contain the summary type. The Image below shows cell A1 contains a 3. For type 3 summaries cell A2 must contain either an S for single structure type or M for multi-structures type. Column B must contain a cell with the text Page and ITEM\_CODE. Column C must contain a cell with the text ADDITIONAL\_DESCRIPTION. The Bridge Name, SFN, and Split Name cells are used in data extraction and to fill out the sheet.

Data extraction for structure sheets and wall sheets is different from all other summaries. Since structures and walls need their own heading for each structure or wall the data is stored separately. For Type 3M the code finds the last row with data entered in the Column B. The code then stores the Page

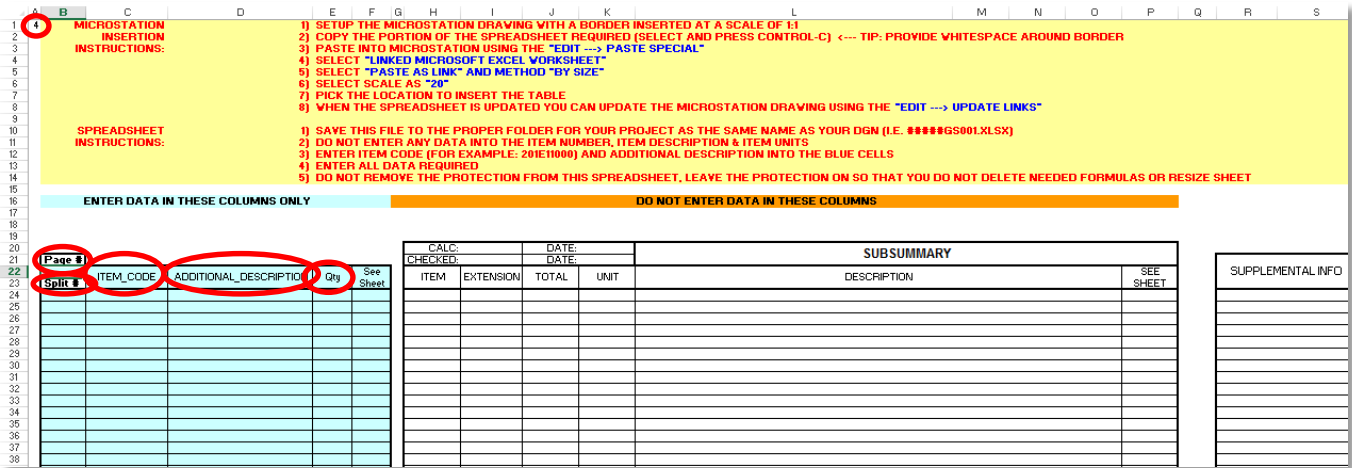






### Type 4

This summary sheet is set up having the item numbers going down rather than the normal across. The image below shows red circles indicating the required cells.



Cell A1 must have a summary type listed. The image below shows a 4 for type 4 summary sheet. The code needs the Page #, Split #, ITEM\_CODE, ADDITIONAL\_DESCRIPTION, and Qty cells with that specific text in order to extract data. Data is extracted to two lists. One list for page quantities and one for split quantities. For this type these two lists are identical. The lists will contain the page number or split number with the item number, additional description and total for each row starting from under the ITEM\_CODE row to the last row with data in it in column C.

Notice in row 16, columns G –P contain the text Do not enter data in these columns. This is because these columns have formulas that are filled out as coluns A-F are filled out. The formulas are listed before for each column for row 24.

ITEM column:

=IF(OR(TRIM(C24)=0,TRIM(C24)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(C24),ITEM,0),2)), "")="Y","SPECIAL",LEFT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(C24),ITEM,0))), "",3)))

EXTENSION column:

=IF(OR(TRIM(C24)=0,TRIM(C24)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(C24),ITEM,0),2)), "")="Y",LEFT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(C24),ITEM,0))), "",3)&RIGHT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(C24),ITEM,0))), "",5),RIGHT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(C24),ITEM,0))), "",5)))

TOTAL column:

=IF(OR(TRIM(C24)=0,TRIM(C24)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(C24),ITEM,0),3)), "")="LS","LS",IF((E24)=0,"",E24)))

UNIT column:

=IF(OR(TRIM(C24)=0,TRIM(C24)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(C24),ITEM,0),3)), "")="LS","",IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(C24),ITEM,0),3)), "")))

Description column:

=IF(OR(TRIM(C24)=0,TRIM(C24)=""),IF(D24="", "",D24),IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(C24),ITEM,0),2)), "")="Y",RIGHT(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(C24),ITEM,0),4)), "123456789012"),LEN(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(C24),ITEM,0),4)), "123456789012"))-10)&D24,IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(C24),ITEM,0),4))&D24,"ITEM CODE DOES NOT EXIST IN ITEM MASTER"))

SEE SHEET column: =IF(F24="", "",F24)





SUPPLEMENTAL INFO column:

`=IF(OR(TRIM(C24)=0,TRIM(C24)=""),"",IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(C24),ITEM,0),6)),"")))`

Rows can be inserted or deleted for columns cannot.

### Type 5

The summary type is for Retaining walls. Like structures, each retaining wall is required to have its own heading on the general summary sheet. For this reason this data is stored separately and requires its own summary type. Each wall requires a separate summary file. The image below shows red circles

The screenshot shows an Excel spreadsheet with the following content:

- Row 1: Cell A1 contains the number '5' (circled in red).
- Row 2: Column B contains 'MICROSTATION INSERTION INSTRUCTIONS:'.
- Row 3: Column B contains 'SPREADSHEET INSTRUCTIONS:'.
- Row 17: A yellow bar contains the text 'ENTER DATA IN THESE COLUMNS'.
- Row 18: A yellow bar contains the text 'DO NOT ENTER DATA IN THESE COLUMNS'.
- Row 21: A table with columns: Page #, Wall Name, ITEM\_CODE, ADDITIONAL\_DESCRIPTION, See Sheet.
- Row 22: A table with columns: CALC:, DATE:, CHECKED:, DATE:.
- Row 23: A table with columns: Participation, ITEM, EXTENSION, TOTAL, UNIT.

indicating the required cells.

Cell A1 must contain a summary type. Cells containing the text Page #, Wall Name, and ITEM\_CODE must be found in column B. A cell with the Text ADDITIONAL\_DESCRIPTION must be found in the column next to the ITEM\_CODE column. The cell containing the Item ITEM is used to find the last participation column. By default there are two columns for participation (or split names) if more are needed they can be inserted. The code will find the last participation column as the column that's to the left of the ITEM cell. The TOTAL cell is needed to get total quantities for each item.

As mentioned with the Structure sheets the data in wall sheets is extracted separately from the other summary types. The data is extracted by making a list of all item numbers starting from the row directly under the ITEM\_CODE cell down to the last row with data in it in column B. this list contains the page #, wall name, item number, additional description, total quantity and each participation quantity. The data is then formatted to be inserted into the data sheet at a later time.

In row 17, columns H – P says Do not enter data in these columns. This is because formulas are set up in these columns to be filled out as columns A-D are filled out. The formulas are listed below for each column for row 25.

ITEM column:

`=IF(OR(TRIM(B25)=0,TRIM(B25)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(B25),ITEM,0),2)),"")="Y","SPECIAL",LEFT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(B25),ITEM,0))),""),3)))`

EXTENSION column:

`=IF(OR(TRIM(B25)=0,TRIM(B25)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(B25),ITEM,0),2)),"")="Y",LEFT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(B25),ITEM,0))),""),3)&RIGHT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(B25),ITEM,0))),""),5),RIGHT(IFERROR(TRIM(INDEX(ITEM,MATCH(TRIM(B25),ITEM,0))),""),5)))`



TOTAL column: =IF(SUM(F25:G25)=0,"",SUM(F25:G25))

UNIT column:

=IF(OR(TRIM(B25)=0,TRIM(B25)=""),"",IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(B25),ITEM,0),3)), "")="LS", "",IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(B25),ITEM,0),3)), ""))))

DESCRIPTION column:

=IF(OR(TRIM(B25)=0,TRIM(B25)=""),IF(C25="", "",C25),IF(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(B25),ITEM,0),2)), "")="Y",RIGHT(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(B25),ITEM,0),4)), "123456789012"),LEN(IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(B25),ITEM,0),4)), "123456789012"))-10)&C25,IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(B25),ITEM,0),4))&C25,"ITEM CODE DOES NOT EXIST IN ITEM MASTER")))

SEE SHEET column: =IF(D25="", "",D25)

SUPPLEMENTAL INFO column:

=IF(OR(TRIM(B25)=0,TRIM(B25)=""), "",IFERROR(TRIM(INDEX(QryItemNamed,MATCH(TRIM(B25),ITEM,0),6)), ""))))

Rows can be inserted or deleted but only Participation columns can be inserted or deleted.

## Contacts

---

If you have any questions, suggestions, or problem with this application please contact the ODOT Office of CADD and Mapping Services by use of the following form on the ODOT website:

<http://www.dot.state.oh.us/Divisions/Engineering/CaddMapping/CADD/Pages/Suggestions.aspx>