Using Excel Functions in SmartBuild Package Calculations.

You can use many of the functions available in Excel within the calculation used to call out materials in SmartBuild (see end of this document for a full list of available Excel functions). If you have an Excel expert then they would be a good resource to help create these types of packages for your business.

IF Function

The most valuable function is the IF function. You can use IF functions within package calculations to evaluate certain conditions, and then perform different calculations depending on whether the test was TRUE or FALSE. These are very similar to the IF functions used in Excel. The only difference, unlike Excel, SmartBuild can not reference other cells in a spreadsheet. Instead, SmartBuild can reference 'Calc Bases' which represent information from the job like total square footage, total weight and many more (see Packages documentation for how to access a full list of Calc Bases).

Note: the purpose of an individual calculation is to add a calculated quantity (and therefore a total cost/price) of a single material to a job. So, it is important to understand that the way the material is added in the Pricing database will affect how the calculations is set up.

Example 1:

You can use a single IF functions, but the most value comes from 'nested' IF functions. A "nested IF" refers to a formula where more than one IF function is nested inside another to check more than one conditions. The first function found to be true will be used for the calculation.

General Syntax:
IF(logical_test, value_if_true,IF(logical_test, value_if_true))

Example IF statement:
if({TotalWeight} <=3000,1,if({TotalWeight} <=6000,2,if({TotalWeight} <=9000,3)))

In this example, say I have a delivery fee in my material database of $100. The way this is set up, if the total weight of the job is equal to or less than (<=) 3000 pounds, then I will get a quantity of 1 delivery fee, so $100. If the statement is not true (i.e. the total weight is more than 3000) then it will move on to the next If statement. If the total weight is less than or equal to 6000 pounds then I will get a quantity of 2, so $200 will be placed on the job's material list. (Note: since the function already determined that <= 3000 was false, so even though this 2nd function includes anything below 6000, we know it is not below 3000 already). If the total weight is less than or equal to 9000 then I will get a quantity of 3 delivery fees (or $300). We could continue to nest more total weights to make sure we cover all the possibilities.

Each IF statement needs to be carefully "nested" inside another so the calculation will execute correctly. It is required to include the correct amount of paranthesis in the function. For each nested IF statement, an opening and a closing parenthesis is required. Notice in the above 'Example 2', each IF statement has an open parenthesis before the test and then all three are closed off at the end with 3 closing parenthesis. Also, be careful to check the commas. Commas are used to separate the test from the value:
e.g. {TotalWeight} <=3000,1.

And a comma is used to separate each nested If statement:
e.g. {TotalWeight} <=3000,1,if({TotalWeight} <=6000,2….

If any statement has incorrect parentheses and/or commas then all packages in the system will not function and they will all report a quantity of 1. The program will give you an error message in a job and point you to the error.

Example 2:

This example uses the same principles as above, but it is set up different. In this example, I have a General Labor material in my pricing database with a price of $1.00. I use the If statement below to charge a specific amount per square foot depending on the size of the building. *NOTE: There is a video that goes into more detail and demonstrates how to set up and use this IF function within a labor package.*

{SFMain}*
if({SFMain} <= 1000,2.50,
if({SFMain} <= 1500,2.25,
if({SFMain} <= 2500,2.15,
if({SFMain} <= 3000,2.05,
if({SFMain} <= 3500,1.95,
if({SFMain} <= 4000,1.75,
if({SFMain} <= 4001,1.70,
if({SFMain} > 4002,1.75,
))))))))

In this example, the top {SFMain} represents the total square footage of a building and it will be multiplied (*) by whichever following IF statement is true first. So, if the building is equal to or less than 1000 square foot then the square footage will be multiplied by 2.50. Because I am using a general labor material of $1.00 in my database, this equation will multiply $1.00 * 2.50 per square foot. So, practically, I am charging $2.50 per square foot if the building is less than or equal to 1000 square feet. If the building square footage is less than or equal to 1500 (and not less than or equal to 1000) then I will charge $2.25 per square foot and so on.

Comparison operator	Meaning	Example
=	equal to	A1=D1
>	greater than	A1>D1
>=	greater than or equal to	A1>=D1
<	less than	A1
<=	less than or equal to	A1<=D1
<>	not equal to	A1<>D1

Comparison operators that can be used in If statements

In addition to the IF statement, other Excel functions can be used. The IF statement has proven the most useful so far, but we will update documentation as we find valuable functions. And feel free to experiment and let us know if you find any useful functions.

Here is a full list of the functions available to be used in package calculations (See MicroSoft's Excel help documentation for more details on these functions).

ABS
SIGN

ACOS
ACOSH
ASIN
ASINH
ATAN
ATAN2
ATANH
COS
COSH

SIN
SINH
TAN
TANH
DEGREES
PI
SQRTPI

IF
IFERROR
IFNA

AND
NOT
OR
TRUE
FALSE

SQRT
FACT
LN
LOG
LOG10
EXP
POWER
MOD

AVERAGE
MEDIAN
SUM
MAX
MIN
PRODUCT
QUOTIENT

CEILING
FIXED
FLOOR
INT
ROUND
ROUNDDOWN
ROUNDUP
TRUNC