

TotalDPS Algorithm – Programmer Specs

Valid Records for Calculation

Only Record types of 'R' and 'S' are eligible for the TotalDPS calculation. All other record types should retain their calculated delivery point using existing rules.

Setup

There will be up to 6 fields used to hold information from the primary number, unit designator, or secondary number fields. They will be referred to as A1, A2, A3, N1, N2, and N3. The A1 through A3 fields are the 3 right-most alphabetic characters and N1 through N3 are the 3 right-most numeric characters. There will also be a field to hold the temporary string to perform the calculations on, referred to as WS.

Initial Checks

NOTE: The primary number should have at least confirmed in order to enter this algorithm. If a primary number confirms by dropping a trailing alpha, the trailing alpha should NOT be used in the calculation. Military and addresses with Unique ZIP Codes are excluded because they are not actually DPV confirmed.

If there is a secondary number, follow the secondary number calculation.

If there is not a secondary number, but a unit designator is present, follow the unit designator calculation.

NOTE: For the unit designator/secondary number sections, the address MUST DPV confirm with the secondary information for it to be used in the calculation. If the secondary information does not DPV confirm, it should not be used in the calculation.

In all other cases, follow the primary number calculation.

Primary Number Calculation

If the primary number is all numeric, there is nothing to do. The delivery point will remain as is.

Example of all numeric: **123**
 489

Starting at the right-most character of the primary number, find the first non-space character and continue until you find an alpha or numeric (or you get to the beginning of the primary number, which should technically never happen). If it's a numeric, skip to the Right-Most Numeric Section. If it's an alpha, skip to the Right-Most Alpha Section.

Right-Most Numeric Section

Starting at the left-most character of the primary number, find the first space and then copy the rest of the primary number to WS.

Example: **123 1/2**

The part that would be copied to WS would be 1/2.

Right-Most Alpha Section

Copy the right-most alpha to WS.

Example: **123A**

The part that would be copied to WS would be A.

Example: **123AB**

The part that would be copied to WS would be B (only the right-most first alpha).

Example: **A**

The part that would be copied to WS would be A.

Example: **AB**

The part that would be copied to WS would be B (only the right-most first alpha).

Follow the Final Calculation.

Unit Designator Calculation

Copy the unit designator to WS.

Follow the Final Calculation.

Secondary Number Calculation

Copy the secondary number to WS.

Follow the Final Calculation.

Final Calculation

If WS is blank, you are done. The delivery point will remain as is.

If WS is a single character numeric, convert by using the following:

1 = Z, 2 = Y, 3 = X, 4 = W, 5 = V
6 = U, 7 = T, 8 = S, 9 = R, 0 = Q

Using A1 through A3 and N1 through N3 as holders for values, start at the right-most value of WS and fill in A3, A2, and A1 for each individual alpha found (each one will hold a different alpha character) and fill in N3, N2, and N1 for each individual numeric found (each one will hold a different numeric character).

A1, A2, and A3 should be converted to a numeric value by using the following:

[Blank] = 0, A = 1, B = 2, C = 3, ..., Z = 26

Perform the following calculation:

$$\begin{aligned} &((27^2) * (10^3) * (A1)) + \\ &((27^1) * (10^3) * (A2)) + \\ &((27^0) * (10^3) * (A3)) + \\ &((27^0) * (10^2) * (N1)) + \\ &((27^0) * (10^1) * (N2)) + \\ &((27^0) * (10^0) * (N3)) \end{aligned}$$

Divide the sum above by 47 and keep the remainder (REM).

Finish the calculation by,

$$(REM * 2) + \text{Original DP} + 1$$

If the value is greater than 100, keep only the right-most two digits (or divide by 100 and keep the remainder). There should always be two digits (even if the first is a zero).

NOTE: Adding 1 will guarantee a different parity for the delivery point than previous (i.e., even number original delivery points will now be odd and vice-versa).

Calculation Examples

1. Street Address with All Numeric Primary Number, no Secondary

123 MAIN ST

No change to DP (23).

2. Street Address with All Numeric Primary Number, Secondary Number (Does not DPV confirm)

123 MAIN ST APT 1

No change to DP (23).

3. Street Address with All Numeric Primary Number, Single Numeric Secondary Number (DPV confirms)

123 MAIN ST APT 1

Entry	A1	A2	A3	N1	N2	N3
Initial						1
Converted			Z			
Calc			26			
Factor	729000	27000	1000	100	10	1
Final	0	0	26000	0	0	0

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	26000	9	42	42

4. Street Address with All Numeric Primary Number, Single Alpha Secondary Number (DPV confirms)

123 MAIN ST APT A

Entry	A1	A2	A3	N1	N2	N3
Initial			A			
Converted			A			
Calc			1			
Factor	729000	27000	1000	100	10	1
Final	0	0	1000	0	0	0

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	1000	13	50	50

5. Street Address with All Numeric Primary Number, Numeric/Alpha Secondary Number (DPV confirms)

123 MAIN ST APT 1A

Entry	A1	A2	A3	N1	N2	N3
Initial			A			1
Converted			A			1
Calc			1			1
Factor	729000	27000	1000	100	10	1
Final	0	0	1000	0	0	1

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	1001	14	52	52

6. Street Address with All Numeric Primary Number, Exceptional Unit Designator (DPV confirms)

123 MAIN ST BSMT

Entry	A1	A2	A3	N1	N2	N3
Initial	S	M	T			
Converted	S	M	T			
Calc	19	30	20			
Factor	729000	27000	1000	100	10	1
Final	13851000	351000	20000	0	0	0

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	14222000	35	94	94

7. Street Address with Trailing Alpha Primary Number, no Secondary

123A MAIN ST

Entry	A1	A2	A3	N1	N2	N3
Initial			A			
Converted			A			
Calc			1			
Factor	729000	27000	1000	100	10	1
Final	0	0	1000	0	0	0

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	1000	13	50	50

8. Street Address with Trailing Alpha Primary Number (trailing alpha dropped to confirm), no Secondary

123A MAIN ST

No change to DP (23).

9. Street Address with Trailing Alpha Primary Number, Secondary Present (DPV confirms)

123A MAIN ST APT 1

Entry	A1	A2	A3	N1	N2	N3
Initial						1
Converted			Z			
Calc			26			
Factor	729000	27000	1000	100	10	1
Final	0	0	26000	0	0	0

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	26000	9	42	42

10. Street Address with Trailing Alpha Primary Number, Secondary Present (does not DPV confirm)

123A MAIN ST APT 1

Entry	A1	A2	A3	N1	N2	N3
Initial			A			
Converted			A			
Calc			1			
Factor	729000	27000	1000	100	10	1
Final	0	0	1000	0	0	0

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	1000	13	50	50

11. Street Address with Double Trailing Alpha Primary Number, no Secondary

123AA MAIN ST

Entry	A1	A2	A3	N1	N2	N3
Initial			A			
Converted			A			
Calc			1			
Factor	729000	27000	1000	100	10	1
Final	0	0	1000	0	0	0

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	1000	13	50	50

12. Street Address with All Numeric Primary Number, Zero in Secondary Number

123 MAIN ST APT 0

Entry	A1	A2	A3	N1	N2	N3
Initial			Q			0
Converted			Q			
Calc			17			
Factor	729000	27000	1000	100	10	1
Final	0	0	17000	0	0	0

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	17000	33	90	90

NOTE: According to CASS rules, addresses with just a 0 in the secondary for a street record CANNOT be matched (even if they're valid). This is probably due to the way we're creating the EMDP. Until that changes, this rule is NOT applicable.

13. Street Address with Trailing Fraction

123 1/2 MAIN ST

Entry	A1	A2	A3	N1	N2	N3
Initial					1	2
Converted					1	2
Calc					1	2
Factor	729000	27000	1000	100	10	1
Final	0	0	0	0	10	2

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	12	12	48	48

NOTE: Rural/Route Highway Contract records will follow the same rules as Street records for the primary number. Please note alpha exceptions are not applicable to RR/HC records.

14. Street Address with All Numeric Primary Number, Leading Zero in Secondary Number with following non-zero number

123 MAIN ST APT 01

Entry	A1	A2	A3	N1	N2	N3
Initial					0	1
Converted						
Calc						
Factor	729000	27000	1000	100	10	1
Final	0	0	0	0	0	1

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	1	1	26	26

15. Street Address with All Numeric Primary Number, Multiple Leading Zero in Secondary Number with following non-zero number

123 MAIN ST APT 001

Entry	A1	A2	A3	N1	N2	N3
Initial				0	0	1
Converted						
Calc						
Factor	729000	27000	1000	100	10	1
Final	0	0	0	0	0	1

Original DP	Sum Final A1 – N3	Mod 47	$((\text{Mod } 47) * 2) + \text{Original DP} + 1$	Rightmost 2 Digits
23	1	1	26	26