I have done some analytical work for both the delays, one caused by the potential difference and one cause by the angle deflection. This is what I came up with

$$\Delta x = 2d_{tot}\,a + acd_w + \frac{acd_w(1-c)}{1+a(1-c)}$$

Where $c = \frac{4E_d}{Bv_0}$ and $a = \frac{\Delta v}{v_0}$.

To find the angle of the electron I found y'/x'.

$$\dot{y} = \ddot{y}\,t = \frac{q(\Delta v - \Delta v_g)E_d}{mv_0} * \frac{d_w}{(v_0 + \Delta v - \Delta v_g)}$$

$$\begin{aligned}
&\dot{x} = v_0 + \Delta v \\
&a = \frac{\Delta v}{v_0} \quad c = \frac{4Ed}{Bv_0} \quad \Delta v_g = \frac{4E_d}{Bv_0} \quad \Delta v = acv_0 \\
&\theta \approx \tan(\theta) = \frac{\dot{y}}{\dot{x}} = \frac{qE_d(av_0 - acv_0)}{v_0 m} * \frac{d_w}{(v_0 + av_0 - acv_0)} * \frac{1}{v_0 + av_0} \\
&\qquad = \frac{qE_d d_w}{mv_0^2} * \frac{a(1-c)}{\big(1+a(1-c)\big)(1+a)}
\end{aligned}$$

The delay from the angle deflection is

$$d_\theta = 4\theta r = 4 * \frac{qE_d d_w}{mv_0^2} * \frac{a(1-c)}{\big(1+a(1-c)\big)(1+a)} * \frac{mv_0(1+a)}{qB} = \frac{d_w ac(1-c)}{(1+a(1-c)}$$

The delay from the potential is given here

$$d_p = T_w v_0 = \frac{4E_d d_w \Delta v}{Bv_0^3} * v_0 = acd_w$$

The amount that the electron would be ahead is

$$d_x = \frac{2d_{tot}\Delta v}{v_0} = 2d_{tot}\,a$$

This gives the final equation given above.

$$\Delta x = 2d_{tot}\,a + acd_w + \frac{acd_w(1-c)}{1+a(1-c)}$$

Analysis of this equation showed that the pulse width depends on the ratio of d_{tot} to d_w, the closer to 2 the better.

Ive done quite a bit of analysis on this equation but will report more later to find out if it correlates with my programs results.