$$
\begin{array}{ccc}
V_y \times \{0\} & \xrightarrow{\;\tilde{f}|_{V_y \times \{0\}}\;} & T \\[2mm]
\Big\uparrow & \overset{\widetilde{F}_{y,1}}{\nearrow} & \Big\downarrow p \\[2mm]
V_y \times [t_0, t_1] & \xrightarrow[\;F|_{V_y \times [t_0,t_1]}\;]{} & X
\end{array}
$$