$$\Rightarrow \iota(x') = \left\langle \begin{array}{c} \\ \\ \\ \\ k-1 \\ k \\ k+1 \\ \vdots \\ n \end{array} \begin{array}{ccccccccc} & & & & k-1 & k & & & \\ (1, & 0, & \cdots & 0, & 0, & 0, & * & \cdots & *) \\ (0, & 1, & \cdots & 0, & 0, & 0, & * & \cdots & *) \\ \vdots & & & \vdots & \vdots & \vdots & & & \\ (0, & 0, & \cdots & 0, & 1, & 0, & * & \cdots & *) \\ (0, & 0, & \cdots & 0, & 0, & 1, & * & \cdots & *) \\ (0, & 0, & \cdots & 0, & 0, & 0, & 0 & \cdots & 0) \\ & & & & & & & & \\ (0, & 0, & \cdots & & & & & & 0) \end{array} \right\rangle$$

(ii) $x_0 \in D_{k-1} - D_{k-2}$.

$\Rightarrow$ $\mathrm{codim}_{\mathbb{R}}(D_{k-1} - D_{k-2}) = 4$.

$\Rightarrow$ By the previous result, $\iota^{-1}(\sigma_{1,1}(V)) \cap M = D_{k-2+1} = D_{k-1}$ and $\sigma_1, \sigma_2, \cdots \sigma_{k-2}$, are linearly independent.

σ_{k-1} is a linear combination of $\sigma_1, \sigma_2, \cdots \sigma_{k-2}$.

$$\Rightarrow \iota(x_0) = \left\langle \begin{array}{c} \\ \\ \\ \\ k-2 \\ k-1 \\ k \\ k+1 \\ \vdots \\ n \end{array} \begin{array}{cccccccc} & & & k-2 & k-1 & k & & \\ (1, & 0, & \cdots & 0, & *, & * & \cdots & *) \\ (0, & 1, & \cdots & 0, & * & * & \cdots & *) \\ \vdots & & & & & \vdots & & \\ (0, & 0, & \cdots & 1, & * & * & \cdots & *) \\ (0, & 0, & \cdots & 0, & 0 & * & \cdots & *) \\ (0, & 0 & \cdots & 0 & 0 & * & \cdots & *) \\ (0, & 0 & \cdots & 0 & 0 & 0 & & 0) \\ & \vdots & & & & & & \\ (0 & 0, & \cdots & 0, & 0 & 0 & \cdots & 0) \end{array} \right\rangle \in G(k, n)$$

$$\begin{array}{lcl} & & \qquad\qquad\qquad k-2 \qquad k-1, \quad k \qquad k+1 \\ \sigma_1 &=& \sigma_1 + 0 + 0 + \cdots \qquad\qquad\qquad \cdots \quad 0 \quad + 0 \\ \sigma_2 &=& 0 + \sigma_2 + 0 + \cdots \qquad\qquad\qquad \cdots \quad 0 \quad + 0 \\ \vdots & & \vdots \qquad \vdots \qquad\qquad\qquad\qquad\qquad\qquad \vdots \\ \sigma_{k-2} &=& 0 + 0 + 0 + \cdots + \sigma_{k-2} + 0 + 0 + 0 + 0 \\ \sigma_{k-1} &=& *\sigma_1 + *\sigma_2 + *\sigma_3 + \cdots + *\sigma_{k-2} + 0 + 0 + 0 + 0 \\ \sigma_k &=& *\sigma_1 + \cdots + *\sigma_{k-2} + *\omega_{k-1} + *\omega_k + 0 + \cdots + 0. \\ \sigma_{k+1} &=& *\sigma_1 + \cdots + *\sigma_{k-2} + *\omega_{k-1} + *\omega_k + 0 + \cdots + 0 \\ \vdots & & \\ \sigma_n &=& *\sigma_1 + \cdots + *\sigma_{k-2} + *\omega_{k-1} + *\omega_k + 0 + \cdots + 0. \end{array}$$

$$\langle \sigma_1, \cdots \sigma_{k-2}, \omega_{k-1}, \omega_k \rangle = E_{x_0}$$