$$\begin{aligned}
\mathbf{A} &= \mathbf{U}\,\mathbf{\Sigma}\,\mathbf{V}^\top \\
\mathbf{A}^\top &= \mathbf{V}\,\mathbf{\Sigma}\,\mathbf{U}^\top \\[1em]
\mathbf{A}^{-1} &= \mathbf{V}\,\mathbf{\Sigma}^{-1}\,\mathbf{U}^\top \\
(\mathbf{A}^\top)^{-1} = (\mathbf{A}^{-1})^\top &= \mathbf{U}\,\mathbf{\Sigma}^{-1}\,\mathbf{V}^\top \\[1em]
\mathbf{A}^\top\mathbf{A} &= \mathbf{V}\,\mathbf{\Sigma}^2\,\mathbf{V}^\top \\
\mathbf{A}\mathbf{A}^\top &= \mathbf{U}\,\mathbf{\Sigma}^2\,\mathbf{U}^\top \\[1em]
(\mathbf{A}^\top\mathbf{A})^{-1} = \mathbf{A}^{-1}(\mathbf{A}^{-1})^\top &= \mathbf{V}\,\mathbf{\Sigma}^{-2}\,\mathbf{V}^\top \\
(\mathbf{A}\mathbf{A}^\top)^{-1} = (\mathbf{A}^{-1})^\top\mathbf{A}^{-1} &= \mathbf{U}\,\mathbf{\Sigma}^{-2}\,\mathbf{U}^\top \\[1em]
\mathbf{A}^+ = (\mathbf{A}^\top\mathbf{A})^{-1}\mathbf{A}^\top &= \mathbf{V}\,\mathbf{\Sigma}^{-1}\,\mathbf{U}^\top \\
&= \mathbf{V}\,\mathbf{\Sigma}^{+}\,\mathbf{U}^\top \\
&\quad \text{(strictly speaking)}
\end{aligned}$$

The last expression here is the Moore-Penrose pseudo-inverse. $\mathbf{\Sigma}^{-1}$ is only defined if all the singular values, σ_i, are positive (when $\mathbf{A}$ is invertible). $\mathbf{\Sigma}^{+}$, on the other hand, reciprocates only the positive singular values.