Let $[f] \in \mathrm{Ext}_{\circ}^{1}(M, N)$.

$$\begin{tikzcd} E_1 \arrow[r, "f"] \arrow[d, "\phi_1"'] & N \\ E_1' \arrow[ur, "f'"'] & \end{tikzcd}$$

$$\begin{tikzcd} E_1/\partial E_2 \arrow[r, "\mu"] \arrow[d] & N \oplus E_0 \arrow[d] \\ E_1'/\partial E_2' \arrow[r] & N \oplus E_0' \end{tikzcd}$$

$$e_1 + \partial E_2 \longmapsto (f(e_1), \partial(e_1))$$

$$\phi_1(e_1) + \partial E_2' \longmapsto (f' \circ \phi_1(e_1), \partial \phi_1(e_1))$$

Thus define a map from $N \oplus E_0$ to $N \oplus E_0'$ by

$$n \oplus e_0 \longmapsto n \oplus \phi_0(e_0).$$

$\Rightarrow$ The diagram is commutative.

② independent of the choice of a representative in a class.

$$\mathrm{Hom}(E_0, N) \xrightarrow{\delta} \mathrm{Hom}(E_1, N) \xrightarrow{\delta} \mathrm{Hom}(E_2, N)$$

$$f, g \in \mathrm{Hom}(E_1, N)$$

Suppose $\delta f = \delta g = 0$ and $f - g = \delta h$.