

Excavation Process

Elastic  
zone  
 $\varepsilon = \varepsilon^e$

Viscoplastic

zone  
 $\varepsilon = \varepsilon^e + \varepsilon^{vp}$

Viscoplastic

zone  
 $\varepsilon = \varepsilon^e + \varepsilon^{vp}$

Elastoplastic-viscoplastic

zone  
 $\varepsilon = \varepsilon^e + \varepsilon^p + \varepsilon^{vp}$

Elastic  
zone  
 $\varepsilon = \varepsilon^e$

Elastic  
zone  
 $\varepsilon = \varepsilon^e$

