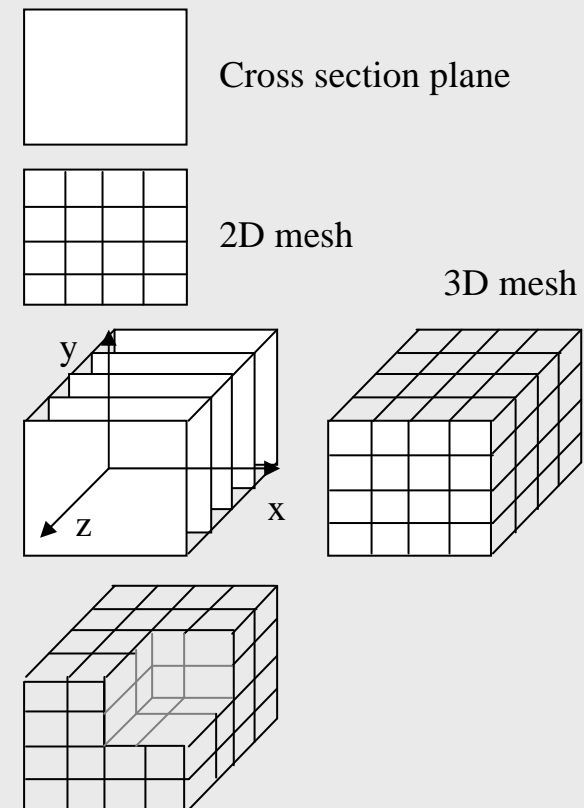# Plaxis 3D Tunnel

Dennis Waterman
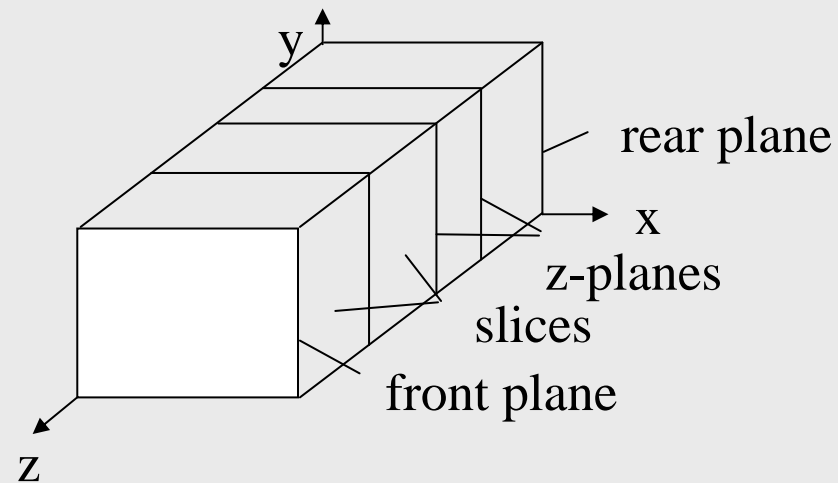
Plaxis BV

Concepts of 3D Tunnel

- Procedure
  - 2D modelling of cross section plane
  - 2D mesh generation of cross section model
  - 3D extension in third direction ('z-planes' and 'slices')
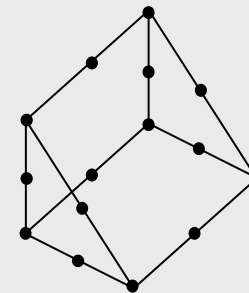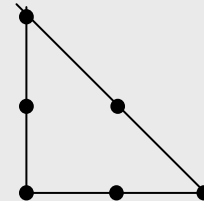 - Staged construction and excavation of geometry parts per plane or slice

Cross section plane

2D mesh

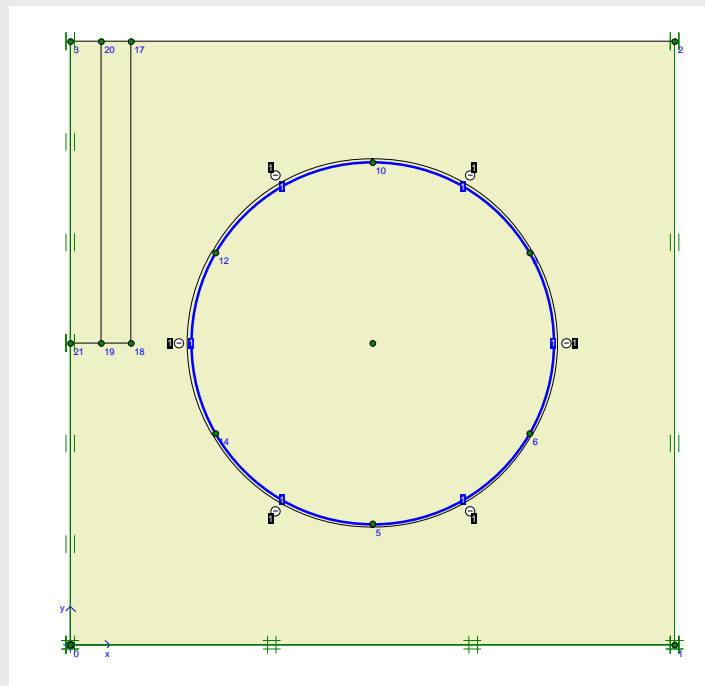3D mesh

Concepts of 3D Tunnel

- 'Planes' and 'Slices'

15-noded wedge elements
(comparable with 6-noded
elements in 2D)

Creation of a 3DT model

- Input like Plaxis V8
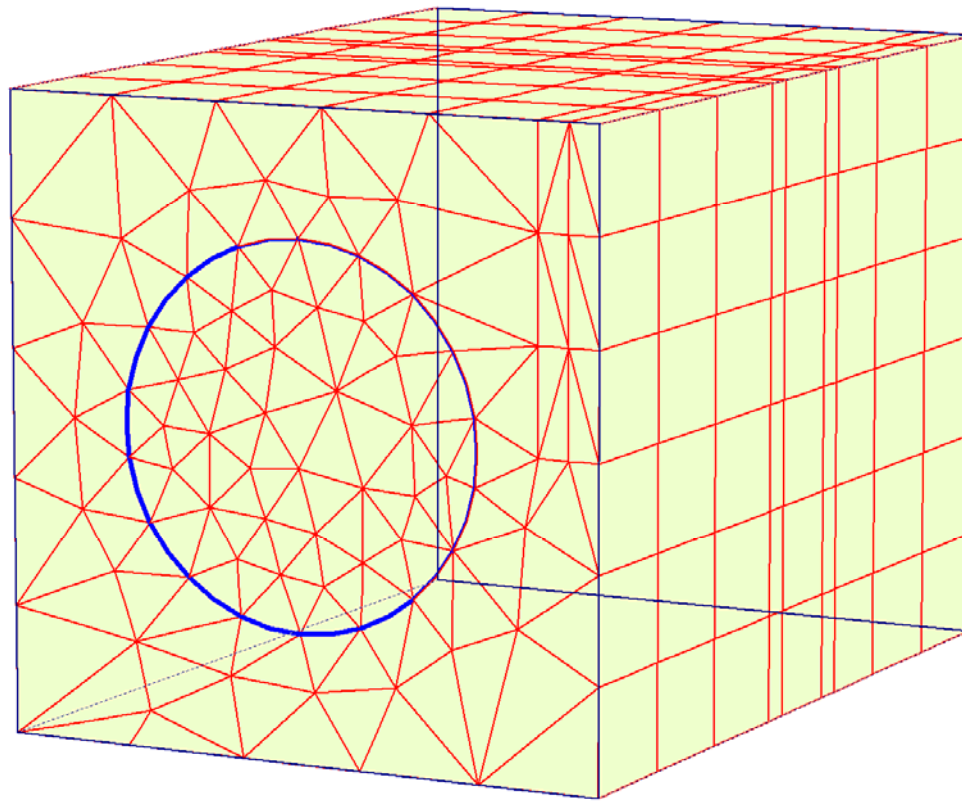- Extension using z-planes
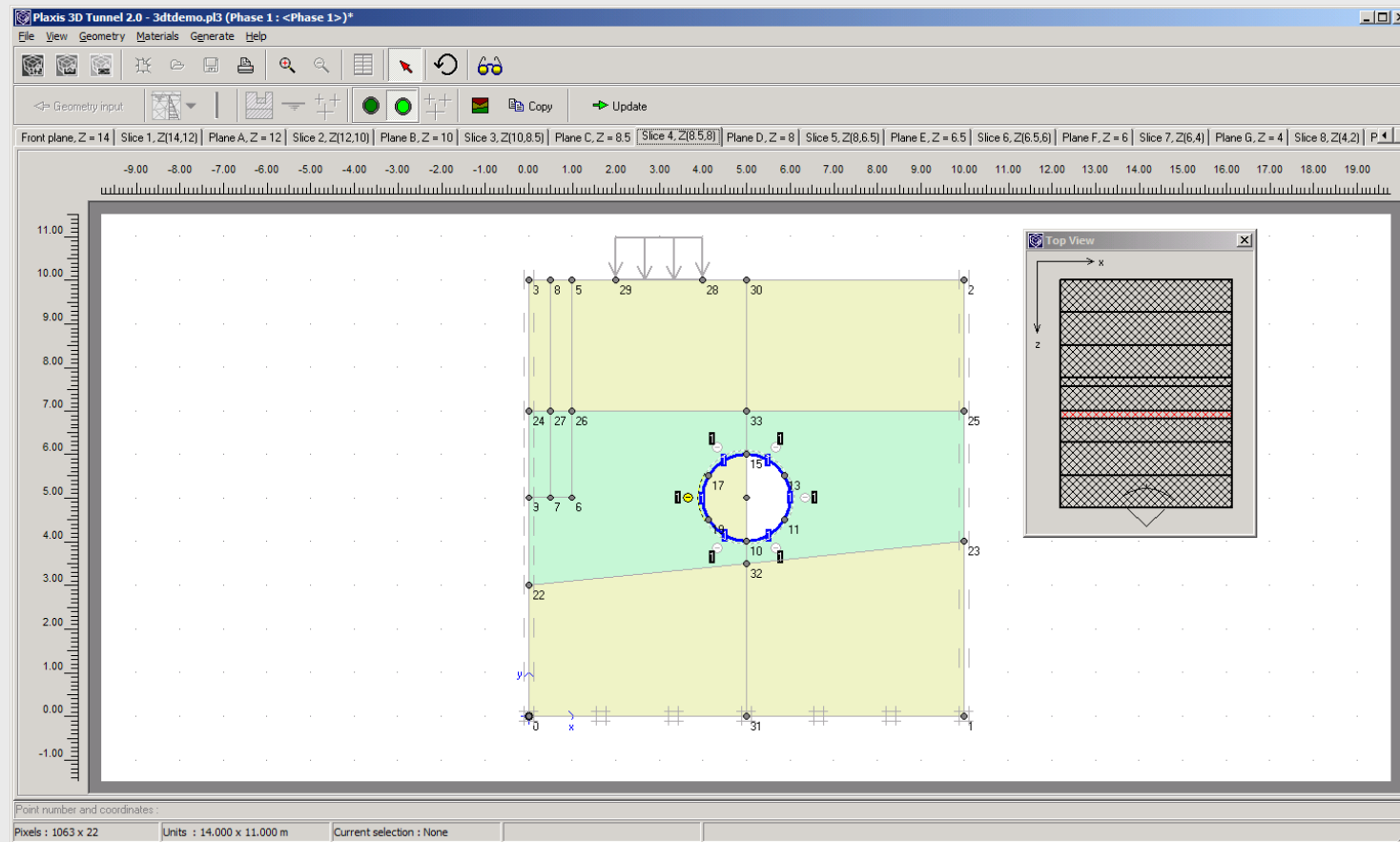
Creation of a 3DT model

Creation of a 3DT model

- Calculations
  - All phases defined by means of Staged Construction
  - Indicate per 'slice' or 'plane':
    - (De)activation of soil and structures
    - Changing material data sets
    - (De)activation of loads
    - Contraction
    - Volume strain
    - (Water) pressure
  - Top view option
  - Full 3D preview
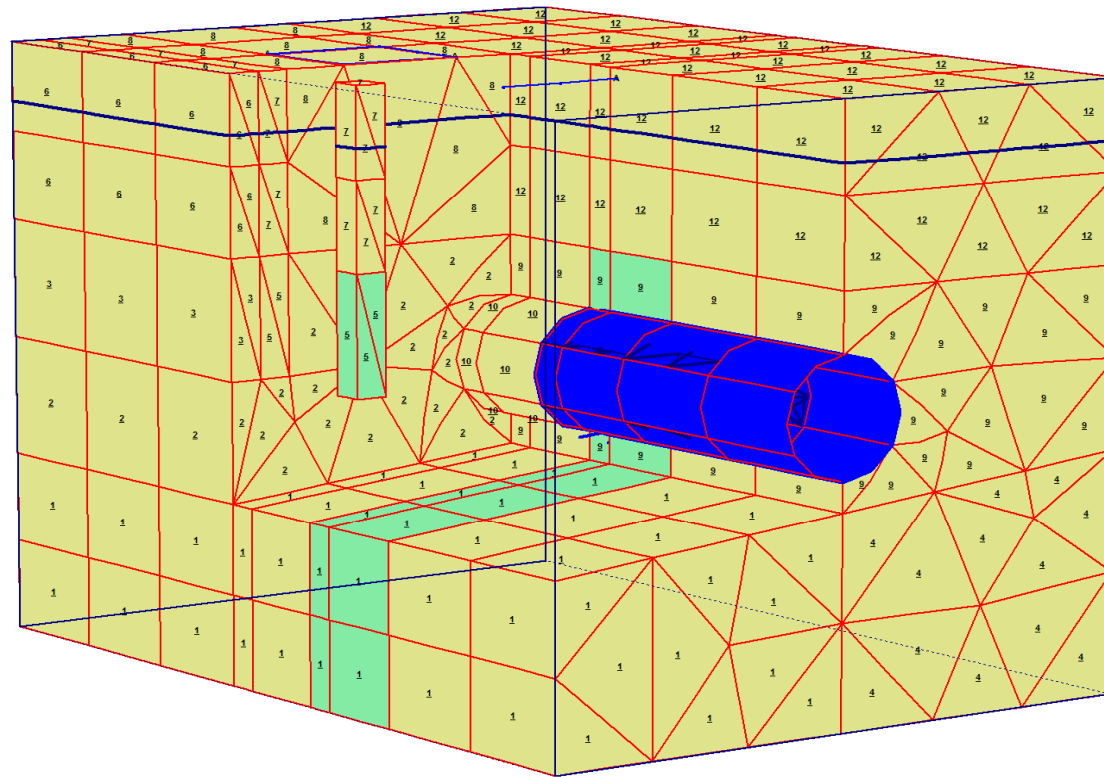 - Partial geometry option to look inside model

Creation of a 3DT model

Staged construction definition – top view window

Creation of a 3DT model

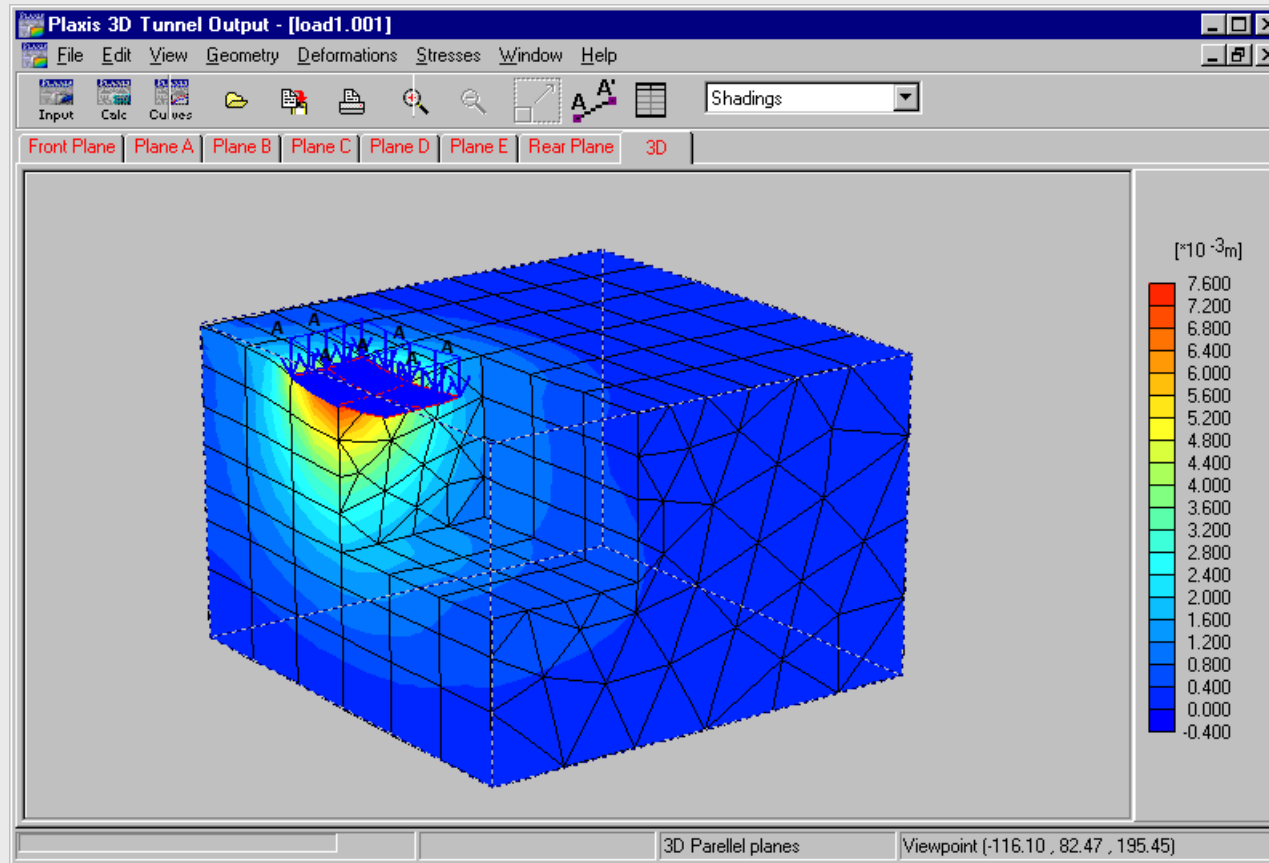Preview staged construction phase – partial geometry
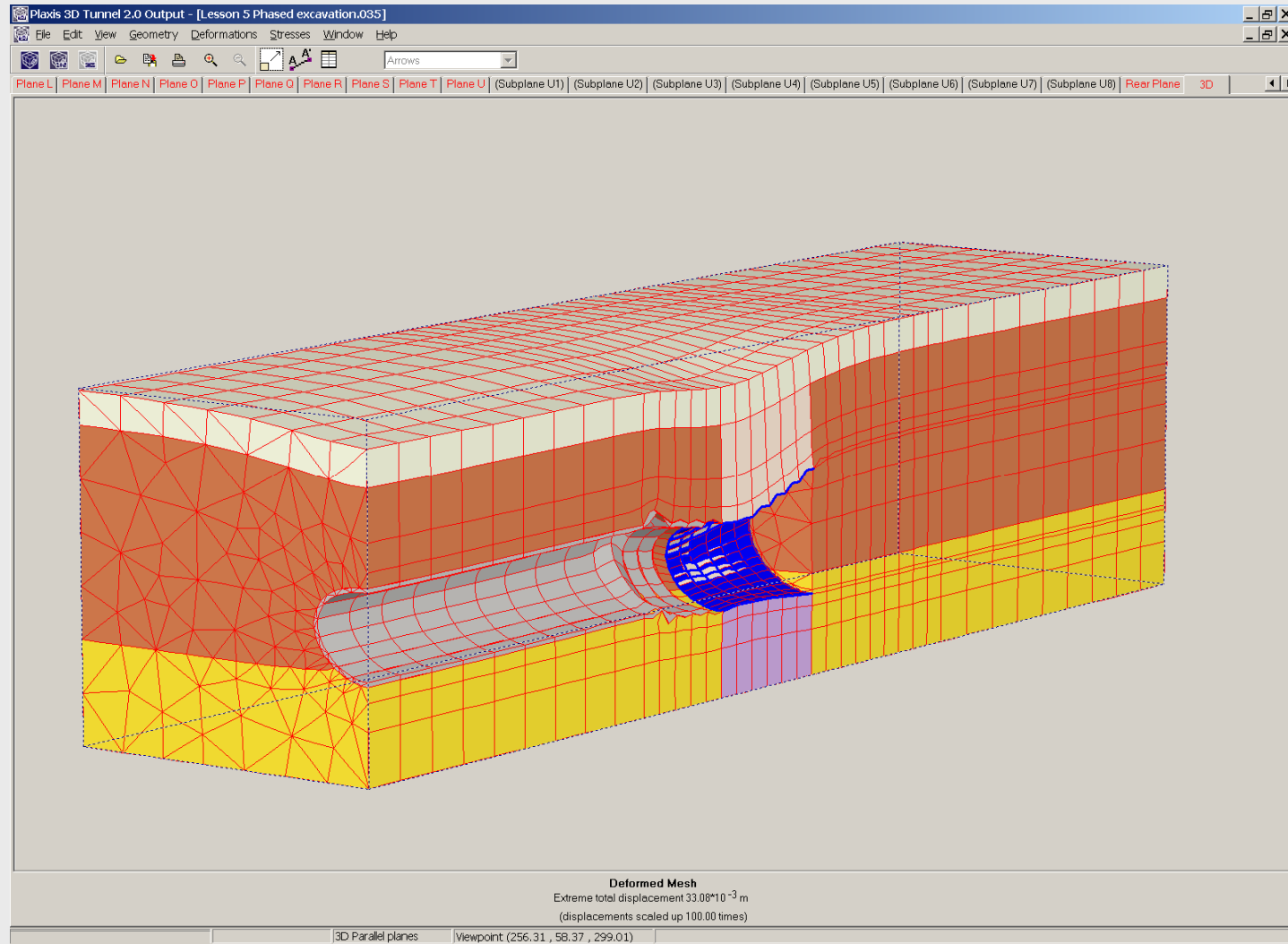
Creation of a 3DT model

- Output and visualisation
  - Visualisation in full 3D and in 2D cross sections
  - Separate output for structural elements
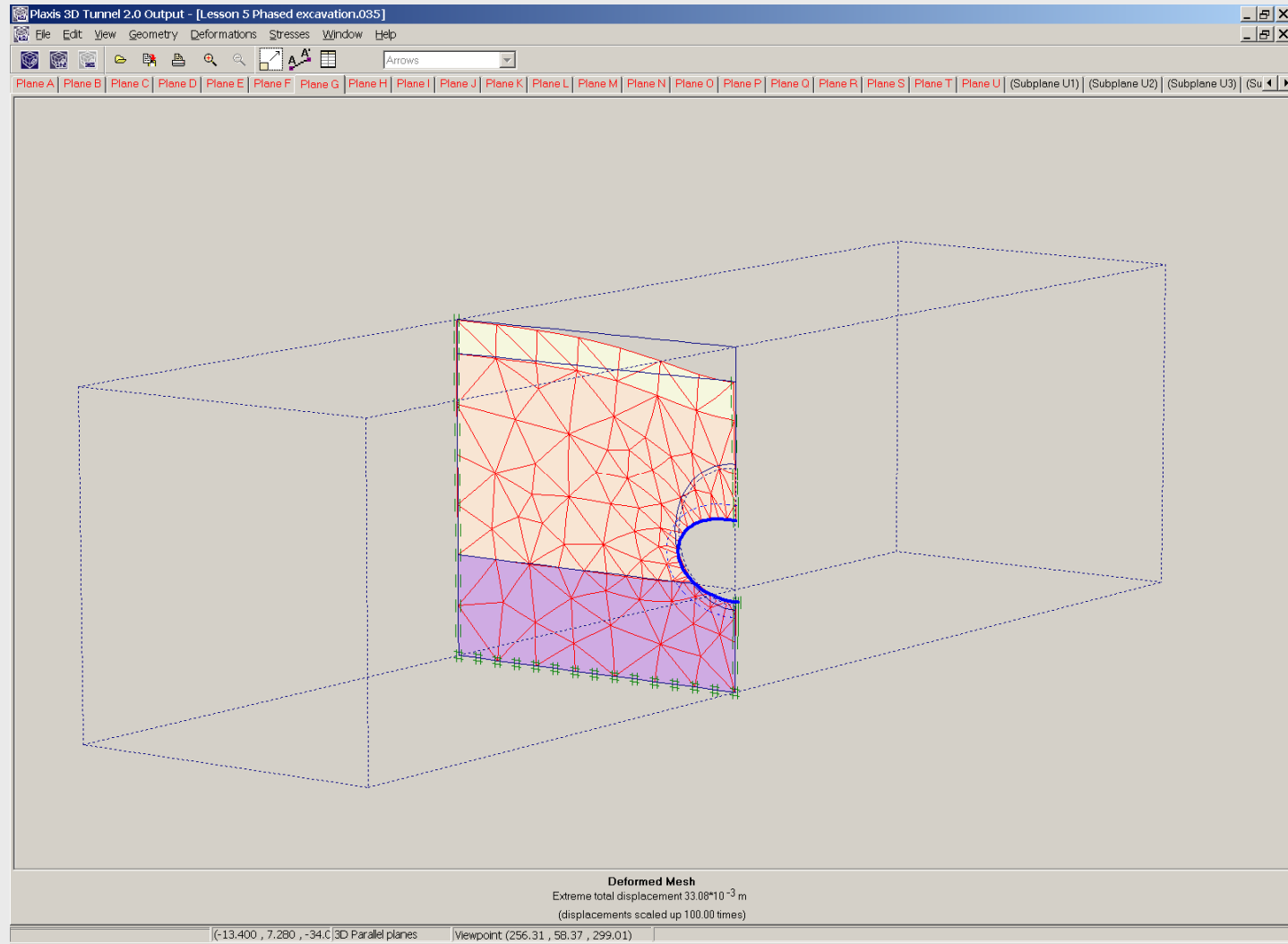 - Partial geometry option
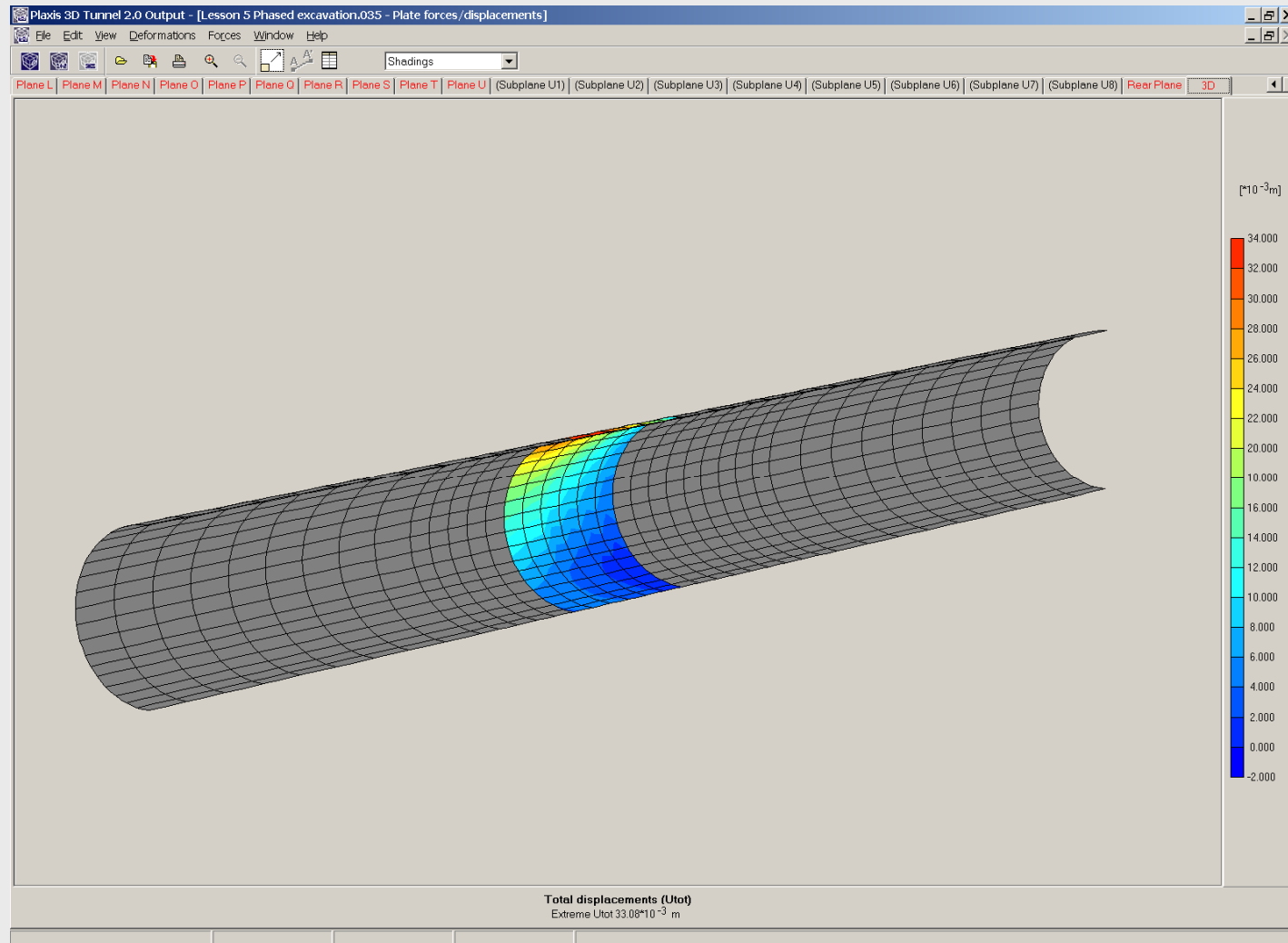
Creation of a 3D model

Creation of a 3D model

Creation of a 3D model

Creation of a 3D model

Creation of a 3D model