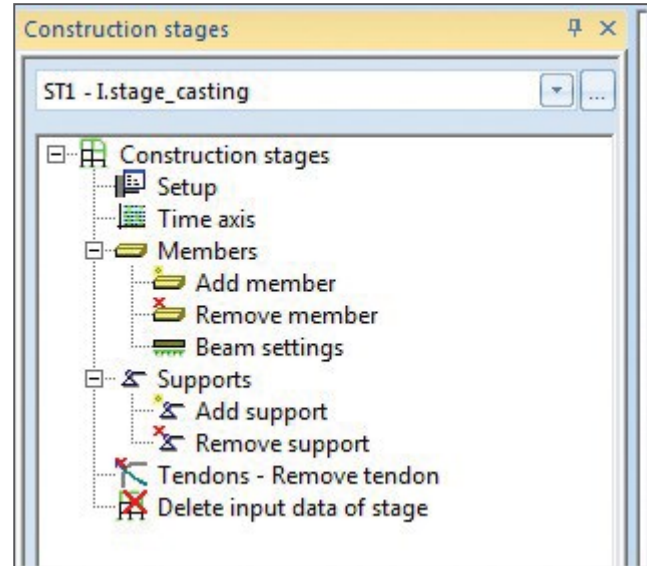


## Construction stages - Frame - nonlinear

 **esas.28**

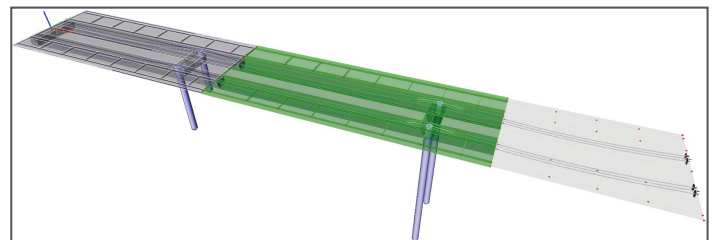
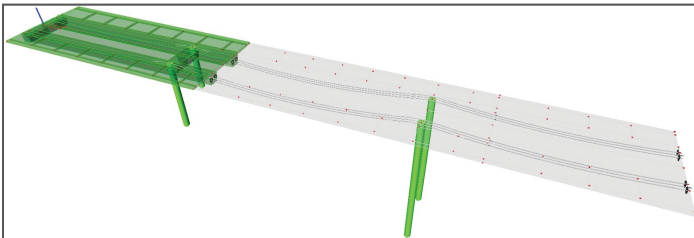
As an extension to the linear calculation of construction stages (esas.27), this module considers in a specific stage the geometry of the deformed construction from the previous stage. In SCIA Engineer, this analysis type can be applied to 3D frame structures.



### Highlights

- Successive assembling or casting of structural elements.
- Progressive construction of cross-sections.
- Gradual application of loads and prestressing.
- Changes of boundary conditions.
- Removal of temporary structural elements.

- Non linear analysis of each stage. Non linearities which can be included:
  - Non linear supports.
  - Beam non linearity (e.g. tension or compression only).
  - Non linear hinges.
  - Geometrical non linearity (P-Delta effect).
- The initial Stress/Strain values for a stage are taken from the calculated result of the previous stage.
- Evolution of the static system of the structure in each stage is taken into account through:
  - addition or removal of structural members,
  - addition or removal of supports,
  - progressive construction of cross-sections (phased cross-sections),
  - gradual application of loads and prestressing (when combined with Pre-tensioning module, esas.40).



**Required modules**  
 esas.10 and esas.27