

CTU in Prague Faculty of Civil Engineering Department of Building Structures

# Restoration of truss

Nostitz Palace in Prague

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## Description of the object, defects



View on the facade of the palace

Truss



- rotten beams gridiron
- wall plate infected by wood decaying fungi (Coriolus)

# Mycological survey

- Determination of the extent and seriousness of infestation
  - destructive methods





### Mycological survey

- The degree of damage to elements
  - A completely without damaging the wood
  - ▶ B surface or shallow damaged timber
  - C deeply damaged wood
  - C! focus on in-depth damage element
  - ▶ D more than 1 / 3 of cross-sectional area of wood damaged
- B-C, C-D reflect condition between the degree (state variations in the length of the element under consideration)



#### Analisis of defects

- Causes of defects of timber structures
  - Wood-decaying fungi
    - most important wood-destroying element
    - presence of moisture at a minimum 30 40% (dry rot only 19%)
  - Wood-destroying insects
    - larvae are most dangerous
    - long development stage
- Infestation of the truss by wood-destroying fungi and insects due to insufficient maintenance and leaking into the attic

- Requirements of preservation of monuments
  - maintaining the authenticity of repaired structure





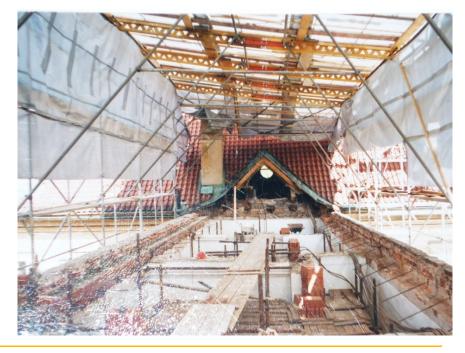
- Requirements of preservation of monuments
  - maintaining the authenticity of repaired structure





- Protection from severe weather during restoration Nostitz Palace (Prague)
  - roofing for objects up to 10 m span





- Protection from severe weather during restoration Nostitz Palace (Prague)
  - system roof panels mounted on scaffolding support (up to 24m)





Elevation of the truss for repairs



repair of corner of the truss

Cross joists for five-sided purlins





Edge-halved scarf

- use of quality wood
- prevent moisture



- wood treatment by biocidal chemical means
- separation of wooden elements from the wall

