

## CTU Online Anytime Module 1.10 – Planning for Movement

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### Key Takeaways

The number one cause for tile assembly failure is lack of and improperly installed movement joints.

**Per TCNA EJ171, “Perimeter and field movement joints within a tile installation are essential and required.”**

- Movement joints are needed because:
  - Buildings move
  - Concrete creeps and sags over time
  - Wood floor assemblies deflect
  - All materials experience thermal cycling as temperatures change
- Concrete slabs also have movement joints
  - Isolation joints around columns to accommodate vertical movement
  - Control joints/saw cuts for shrinkage
  - Expansion joints for slab and structural movement
  - Cold joints created in between concrete pours
- Thermal cycling of tile systems
  - Tile in sunlight gets hot and expands, putting grout joints under compression
  - Silicone-filled soft movement joints can help accommodate movement
  - 24” Porcelain tile can expand up to 0.3mm in length
- TCNA EJ171 details on movement joints include:
  - Exterior joints must be placed every 8-12 ft
  - Interior joints can be spaced a maximum of every 25 ft
  - Joints are required at all changes of plane
  - Never cover or abridge true expansion joints
  - Perimeter joints are a must to reduce failures
- It is the architect and engineer’s responsibility to design the movement joint patterns
  - Exterior joint widths – based on frequency of joint placement and temperature change
  - TCNA handbook gives complete view of all data sets necessary for architect and engineer to design movement joints (tile coefficient of linear expansion vs. temp changes)

- Joints should be filled with silicone sealant that conforms to C920. Sealant requirements:
  - Non-sag sealant for vertical applications
  - Exterior rated Class 25 for 25% expansion and contraction
  - Rated for use under pedestrian and vehicular traffic roads (Class T)
  - Custom Building Products' Commercial 100% Silicone Sealant is a suitable product and comes in 40 colors to match all CUSTOM grouts

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