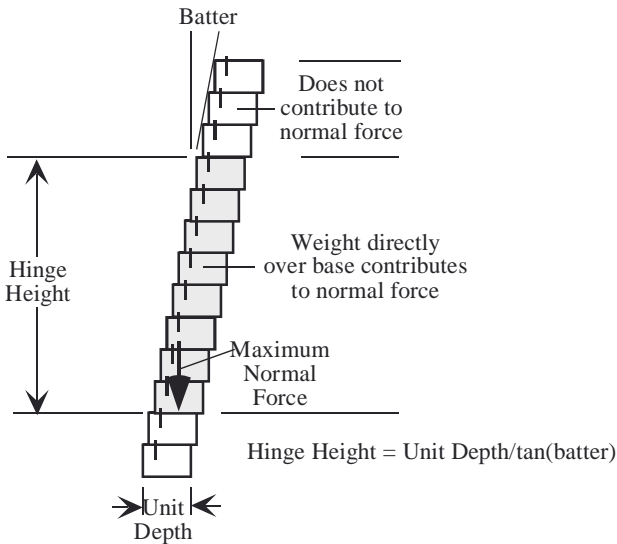




Hinge Height

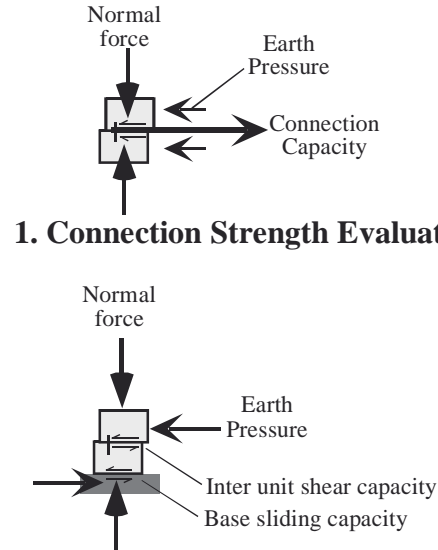
Hinge Height is a concept identified in the NCMA Design Manual for Segmental Retaining Walls which describes the limits of a downward or normal force application in a battered wall structure. The Hinge Height limitation applies primarily to the connection strength evaluation at a specific reinforcement level and the inter-unit shear and sliding calculations. The concept can also be extended to external stability calculations such as sliding and global stability analysis where normal gravity forces must be calculated.

A graphical representation of the Hinge Height concept and its application is shown below.



Hinge Height Wall Section

Hinge Height limitation is used for:



1. Connection Strength Evaluation

2. Sliding or Shear Evaluation

The Hinge Height calculation is not a significant design consideration in vertical or near vertical wall structures. It does become a serious design limitation in heavily battered structures with small facing elements where sliding resistance and geosynthetic reinforcement connection capacity are reduced to levels well below peak laboratory tested values. The Hinge Height limiting values for Keystone units are shown below.

Hinge Height Limiting Values

| Keystone Unit | Unit Depth | Batter | | |
|---------------|------------|--------|-------|-------|
| | | 0° | 3.6° | 7.1° |
| Standard Unit | 1.79' | None | 28.5' | 14.3' |
| Compac Unit | 1.0' | None | 16.1' | 8.0' |