OC PublicWorks

Retaining Wall Design with Keyway

Effective Date: May 11, 2016

Background:

1. Section 1807.2.1 of 2016 California Building Code (CBC) for retaining wall design stating in part, “Where a keyway is extended below the wall base with the intent to engage passive pressure and enhance sliding stability, lateral soils pressures on both sides of the keyway shall be considered in the sliding analysis.”
2. Without geotechnical report, for retaining walls up to 6’ in height (measured from the top of wall to the bottom of footing), a conservative value of 72 psf/ft shall be used for active pressure in the County of Orange. This is based on 60 psf from Table 1610.1 of 2016 CBC with 20% increase to account for the expansive soils present in the County as required in Section 1808.6.
3. Without geotechnical report, a conservative value of 100 psf/ft shall be used for lateral bearing pressure from Table 1806.2.
4. When active pressure is extended to the bottom of the keyway, the depth of keyway may become impractical due to the use of conservative design values.
5. Based on recent studies, when the keyway is located under the front edge of the retaining wall “toe”, the active pressure does not appear to have any effect on the keyway itself.

Policy:

Any retaining wall 6’ in height or less (height is measured from the top of wall to the bottom of footing), active pressure does not need to be extended to the bottom of the keyway if all of the following conditions are met:

1. Keyway is located under the front edge of the retaining wall “toe”.
2. 72 psf/ft is used for active pressure.
3. 100 psf/ft is used for the lateral bearing pressure.
4. 130 psf is used for cohesion for lateral sliding resistance but not more than one-half of the dead load. Section 1806.3.2 and Table 1806.2.
5. Safety factor of 1.5 is maintained for sliding resistance.

This policy does not apply to project that is more than 6’ in height nor project submitted with Geotechnical Report.

Approved by:

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