



FHWA apparent earth pressures and methods in DeepXcav

DeepXcav software program (Version 2012)

(ParatiePlus within Italy)

Document Version 1.0

Issued: 19-Apr-2013

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FHWA has specified apparent earth pressures to be used for estimating maximum support loads in braced excavations. DeepXcav provides the ability to use such design methods. To apply FHWA earth pressures we have to first change the analysis type to Limit-Equilibrium (From the analysis tab).

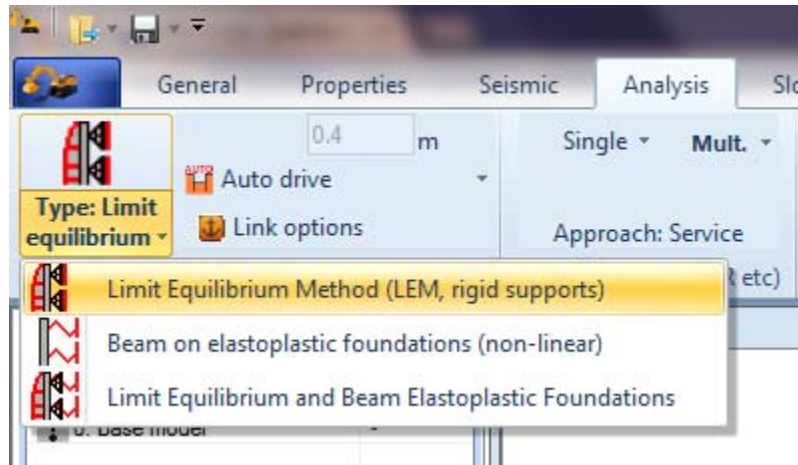


Figure 1: Switching the analysis to limit-equilibrium

At each stage then from the analysis tab the driving earth pressures can be changed.

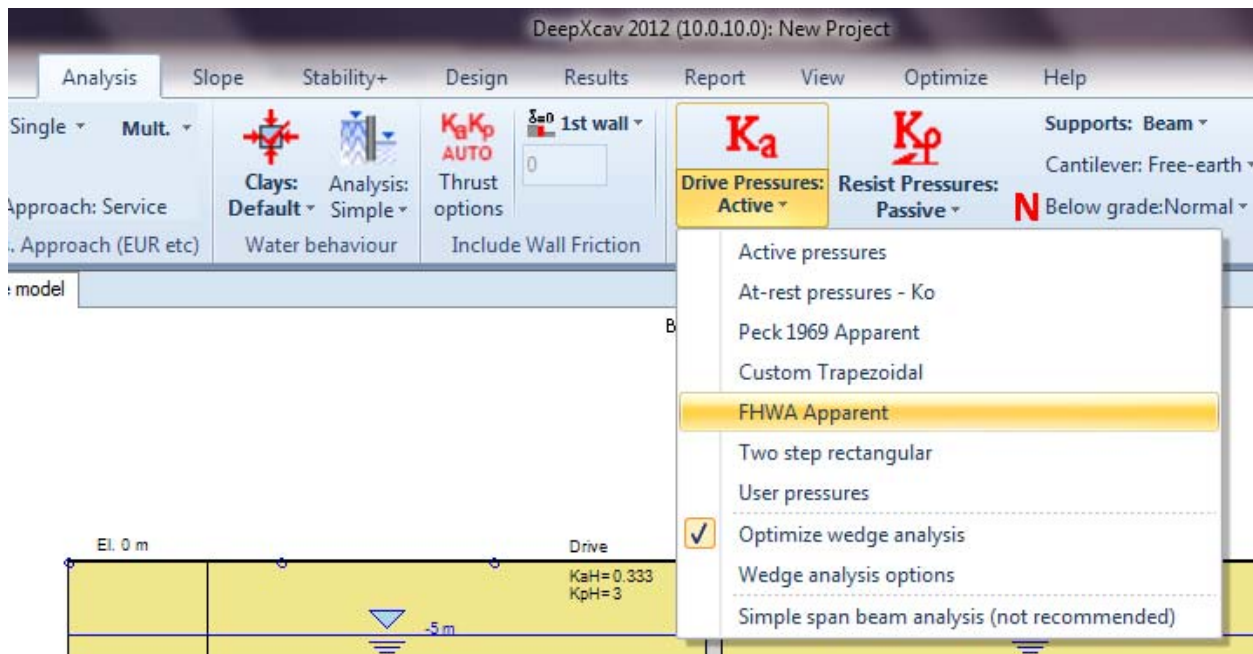


Figure 2: Selecting FHWA earth pressures

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Options are available for the FHWA approach by selecting the button:

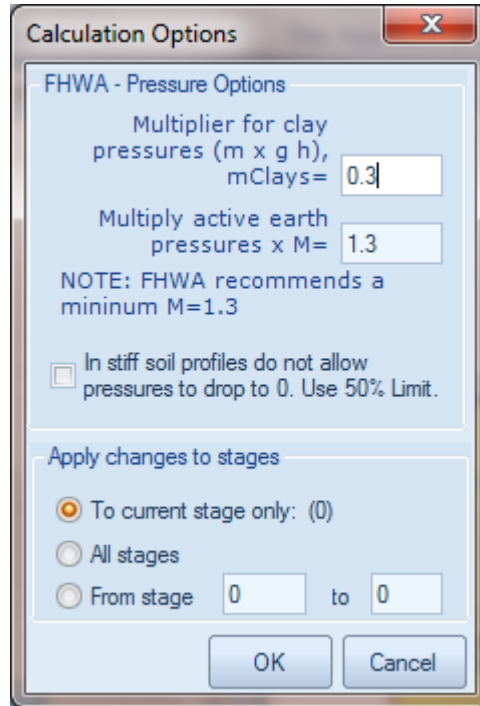


Figure 3: Further FHWA options

Typically FHWA earth pressures are associated with the tributary area method for determining support reactions. In this case, we would have to switch the support reaction calculations to the Tributary area method as shown in Figure 4:



Figure 4: Applying the tributary area method for support reactions

Last, one can control how wall bending moments are calculated. FHWA recommends a simple span approach for calculating wall bending moments. This change can be applied by selecting the simple span

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option in Figure 5. Please keep in mind that on our experience this approach can be significantly unconservative for deeper excavations.

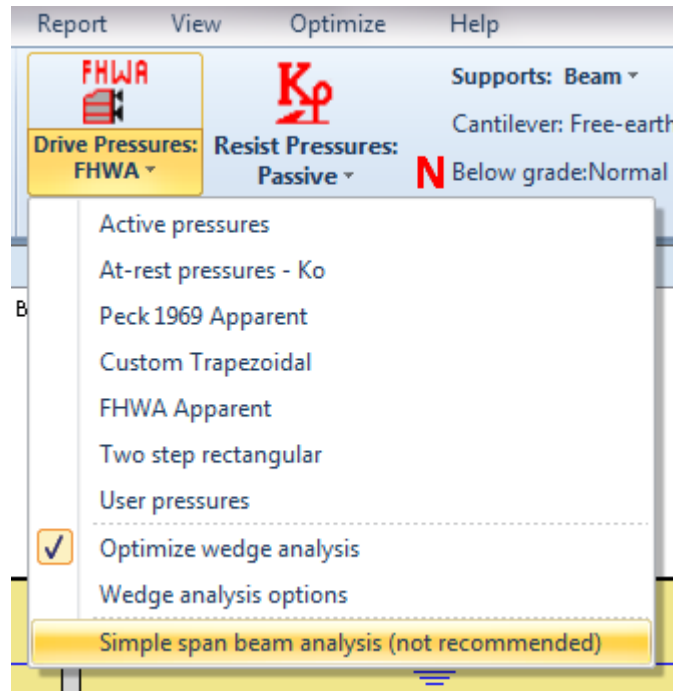


Figure 5: Simple span beam analysis option (not recommended)

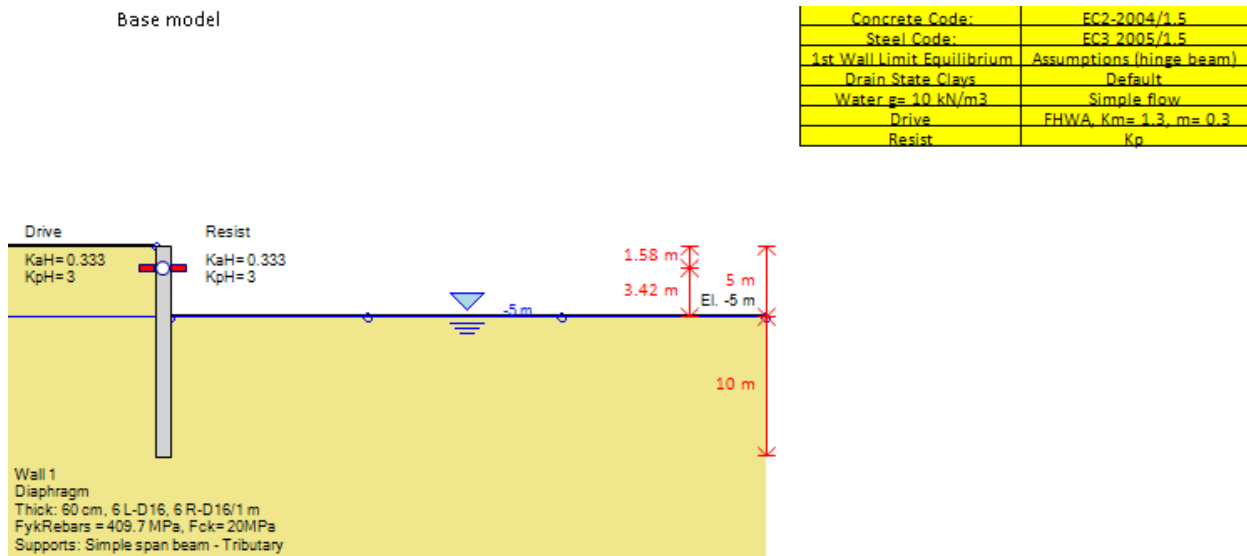


Figure 6: Assumptions table showing FHWA method for driving earth pressures and simple span beam/Tributary method for supports (under wall)