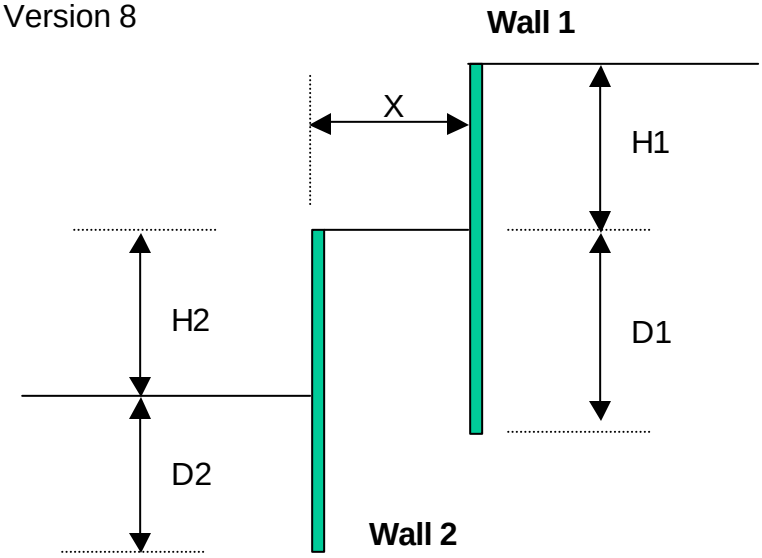
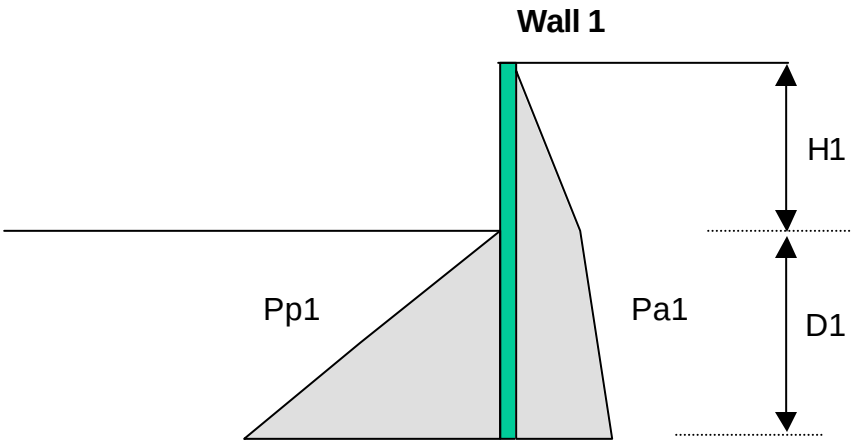
Method for Step Walls

Supported by Version 8



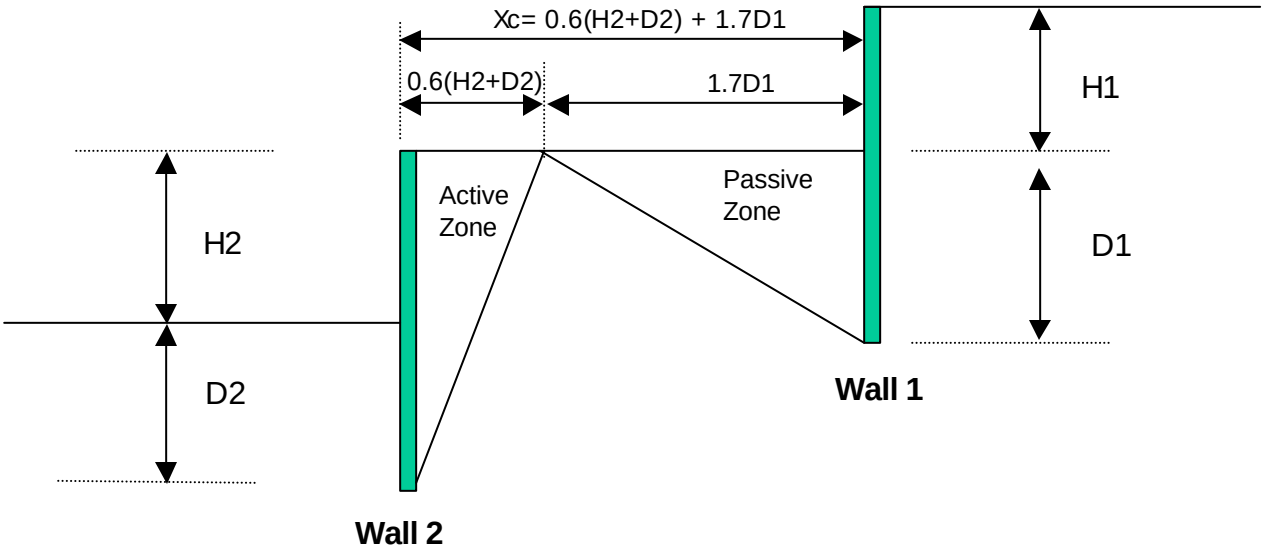
Step 1. Design Wall 1

1. Assume there is no wall in front of Wall1 and Wall2
2. Use EarthPres Module based on existing soil parameters to find active pressure and passive pressure
3. Use Shoring Module to find pile size and embedment D1 and D2
4. Use tiebacks can reduce the impact to Wall 2



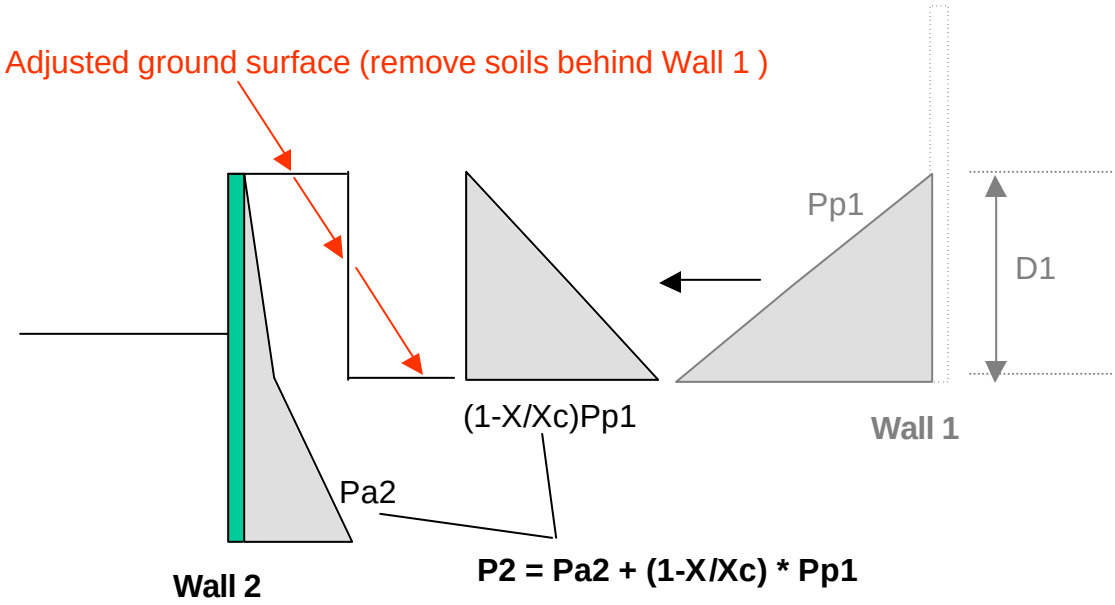
Step 2. Find the Critical Distance: Xc=0.6(H2+D2)+1.7D1

- If X > Xc, Wall 1 does not have impact on Wall 2, proceed to design Wall 2 without consideration of Wall 1.
- If X < Xc, Wall 1 may have an impact on Wall 2, go to Step 3



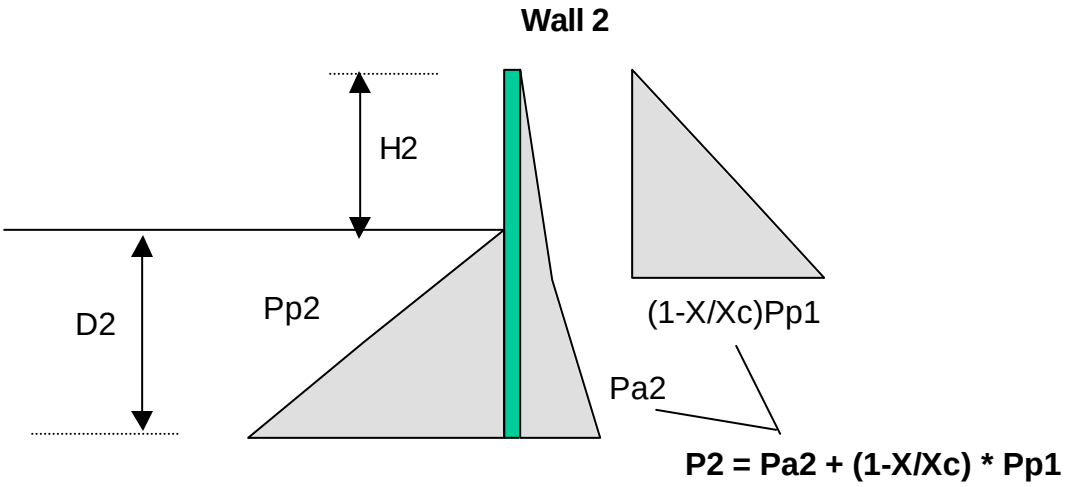
Step 3. Find total Pressure for Wall 2

1. Use EarthPres to get active pressure Pa2 (Based on adjusted ground surface)
2. Total Pressure P2 is a combination of Pa2 and part of passive pressure Pp1 from wall1: P2 = Pa2 + (1-X/Xc) * Pp1



Step 4. Design Wall2

Use Shoring program to find pile size and embedment D2



Notes:

1. If there are more walls below Wall 2, repeat the same steps for next lower wall
2. Overall stability of the complete wall system should be checked.
3. Tiebacks are recommend to reduce the embedment of upper walls, therefore reducing the impact on the lower walls.
4. The bound length of tiebacks should be placed outside of the active and passive zone of the each wall.
5. The bound length of tiebacks should be placed outside of the failure plan defined in the stability analysis.
6. Surcharge pressure should be applied for each wall using Surcharge Module.
7. Earthquake load should be applied based on local conditions.

- *This method will be supported in Shoring Version 8 (coming soon)*
- *In Version 7, users should manually calculate the Xc and P2, then input in Shoring program.*
- *This method is recommended by Dr. James Su of CivilTech Software. Many step walls have been designed using this method and are functioning well.*