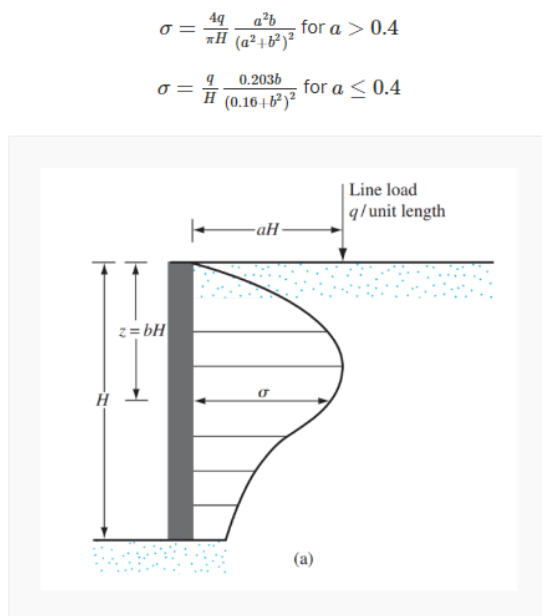


## 7.5. Earth pressure

Retaining structures and basement slabs must be designed to resist the pressure of the retained soil. The assumed soil density is 20 kN/m<sup>3</sup> and an angle of repose of the sand 34°. The surcharge at ground level is taken as 15 kN/m<sup>2</sup> to account for the potential loads in the neighbouring properties (minimum 10 kN/m<sup>2</sup> is required in BS 8002:2015 4.6.3.2).

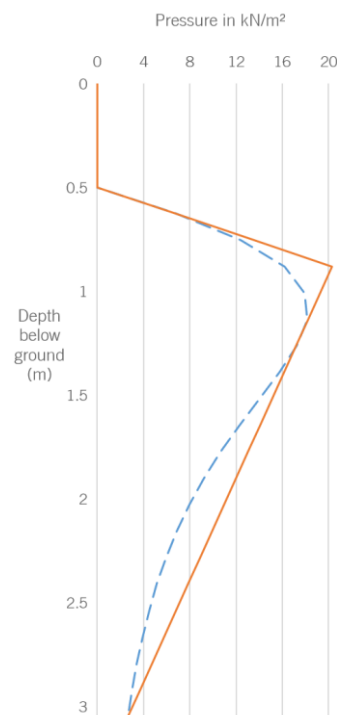
The active pressure coefficient for a 34° angle of repose is  $K_a = 0.29$  which results in a 4.4 kN/m<sup>2</sup> horizontal pressure at ground level and 20.6 kN/m<sup>2</sup> at 2.8 m below ground level.

The pressure from the neighbouring structures on the basement wall is assessed using Boussinesq's theory as shown below. To account for future alterations to the neighbouring buildings, an 8m-tall masonry wall supporting typical floors and roofs is considered.



Taken from: Das, B. M. (2010). Principles of Foundation Engineering, SI Edition. Chapter 7 Lateral Earth Pressure. Cengage Learning. Figure

7.14



## 7.6. Hydrostatic pressure

The subterranean structures must be designed to resist hydrostatic pressure and potential buoyancy uplift forces. The borehole records from the neighbouring property at 37 Liverpool Road dated 21/01/2020 state that no standing water was found up to a depth of 3.9 m below ground level. A detailed assessment of the water levels has not been undertaken yet, therefore the water table is assumed to be at ground level as recommended in BS 8102:2009 §6.1.

## 5. Ground Conditions

Information from nearby British Geology Survey Boreholes has been reviewed in determining the soils profile at the site. In discussions with our geotechnical advisor, an allowable bearing pressure of 200kPa has been adopted based on the founding depth of the extension and the soils profile obtained from local borehole logs. For the analysis model of the new extension, supports with a vertical spring stiffness have been adopted in determining the maximum applied bearing pressure.