



Figure 2.14 Pressure acting on trench supports

Maximum resultant thrust:

$$P_1 = \frac{qh}{2} = \frac{Wh^2}{2} \left[\frac{1 - \sin \theta}{1 + \sin \theta} \right]$$

Resultant thrust from any surcharge:

$$P_2 = Sh \left[\frac{1 - \sin \theta}{1 + \sin \theta} \right]$$

where

W density of retained material

h depth of excavation

θ angle of repose or angle of internal friction of retained material

S surcharge loading per unit area

Having obtained the forces acting on the timbering, the forces and bending moments induced in the members can be calculated and their size determined. In this context it is important to remember that the boarding and waling sections will be subject to bending about their minor axis, that is the *y*-*y* axis.

Owing to the repetitive nature of trench support work, various combinations of the basic components have been developed into patented systems. These are available from a number of suppliers who are usually also able to provide a design service.

2.17 References

BS4978 1988 Specification for softwood grades for structural use.

BS 5268 Structural use of timber.

Part 2 1988 Code of practice for permissible stress design, materials and workmanship.

BS 5975 1982 Code of practice for falsework.

BS 6031 1981 Code of practice for earthworks.

Timber Designers' Manual, 2nd edn.

J. A. Baird and E. C. Ozelton. BSP Professional Books, 1984.

TRADA Wood information sheets:

Section 1 Sheet 25 Introduction to BS 5268: Part 2.

Section 1 Sheet 26 Supplying timber to BS 5268: Part 2.

Section 1 Sheet 28 Timber and wood based sheet materials for floors.

Section 2/3 Sheet 15 Basic sizes of softwoods and hardwoods.

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