

FOUNDATIONS

GUIDE TO COLUMN INSTALLATION

Root Mounting

Abacus columns are supplied for root mounting with a root length (Z, figure 1) applicable to the height of the particular column.

For most applications, particularly on medium size columns having large overturning moments, it is recommended that the root is inserted into a prepared foundation (Fig 1).

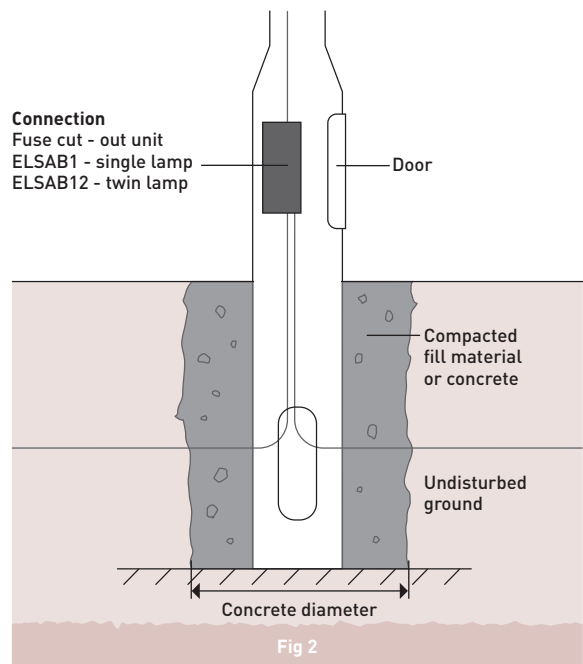
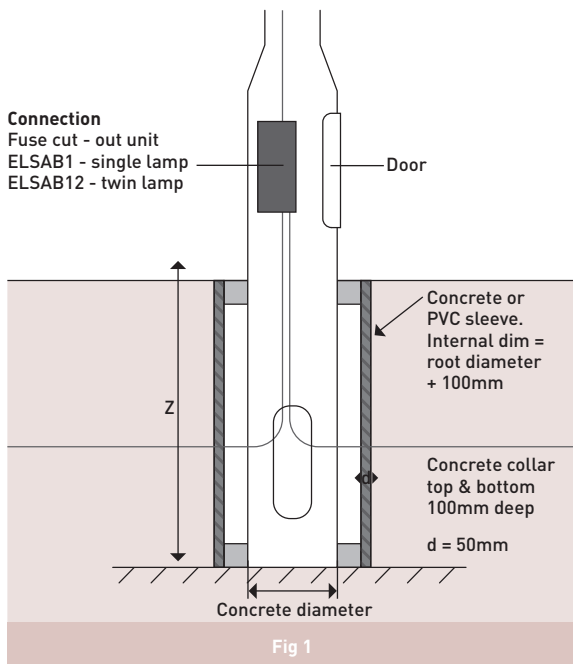
For smaller columns where the ground conditions are suitable, a prepared foundation is not always necessary (Fig 2). All that is required is a suitably sized excavated hole in undisturbed

ground, which is filled with concrete after erection of the column.

Back-filling

The standard stipulates the following guidelines to be followed:

- a) All back-filling material is to be placed in 150mm thick layers and be well compacted
- b) During compaction, care is to be taken to ensure that the corrosion protection system of the lighting column is not damaged
- c) Where the hole is back-filled with concrete, the concrete is to extend from the base of the lighting column to ground level
- d) Where paving or bituminous surfacing is to be applied around the lighting column, the top level of the concrete may be lowered by the thickness of this surfacing; and
- e) A duct with the same dimensions as the lighting column's cable entry slot is to be formed in the concrete using a suitable pre-formed lining tube.



Root diameter - For complete column data information see the columns section of www.abacuslighting.com

Ground Factor G

Extract from PD 6547:2004 on ground conditions, in conjunction with BS EN 40-3-1 and -3

G (kN/m ²) per m	Quality of Soil
630	Good: Compact, well-graded sand and gravel, hard clay, well-graded fine and coarse sand, decomposed granite rock and soil
390	Average: Compact fine sand, medium clay, compact well-drained sandy loam, loose coarse sand and gravel. Average soils drain sufficiently well that water does not stand on the surface.
230	Poor: Soft clay, clay loam, poorly compacted sand, clays containing a large amount of silt and vegetable matter, and made-up ground. Poor soil are normally wet and have poor drainage

The minimum root diameters given in this brochure are based on the poorest ground conditions, as provided for in the British Standard publication PD6547:2004. The diameter will be smaller if the ground is better.

Flange Plate Mounting

Abacus offers a choice of passive and non passive concrete foundations for flange plate mounting of lighting columns.

By taking the OTM (overturning moment) from the column data matrix in the brochure, and identifying the correct ground pressure, the fully factored concrete foundation dimension can be determined from the tables below.

Holding down bolt projection & final torque values

Bolt Size & Grade	Projection (mm)	Torque (Nm)
M16*500 Long Grade 4.6	125	25
M20*500 Long Grade 4.6	125	50
M24*600 Long Grade 4.6	125	160
M30*800 Long Grade 4.6	150	310

Passive mass concrete foundation dimensions

A passive foundation, where the ground pressure must be at least 150kN/m (or 1.5bar), takes into account the side forces applied from the firmer ground. As a result, the concrete is typically narrower and deeper than non-passive.

Foundation	O.T.M (KNm)	Bearing Pressure (KNm)	A Width (mm)	B Depth (mm)
3P150	3	150	650	750
4P150	4	150	700	800
5P150	5	150	750	800
6P150	6	150	750	900
8P150	8	150	850	950
10P150	10	150	900	950
15P150	15	150	950	1100
20P150	20	150	1050	1200
30P150	30	150	1200	1250
40P150	40	150	1250	1300
50P150	50	150	1350	1400

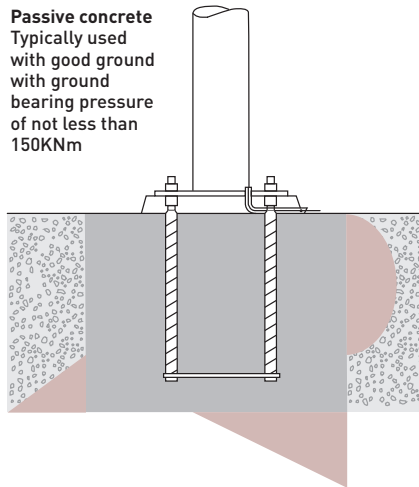
Non-passive mass concrete foundation dimensions

A non-passive foundation, where the ground pressure may be lower, takes no account of the side forces and is therefore shallower but wider.

Foundation	O.T.M (KNm)	Bearing Pressure (KNm)	A Width (mm)	B Depth (mm)
3M75	3	75	880	590
3M100	3	100	880	590
3M150	3	150	880	590
4M75	4	75	950	625
4M100	4	100	950	625
4M150	4	150	950	625
5M75	5	75	1050	675
5M100	5	100	1050	675
5M150	5	150	1050	675
6M75	6	75	1100	700
6M100	6	100	1100	700
6M150	6	150	1100	700
8M75	8	75	1150	725
8M100	8	100	1150	725
8M150	8	150	1150	725
10M75	10	75	1250	775
10M100	10	100	1250	775
10M150	10	150	1250	775
15M75	15	75	1400	850
15M100	15	100	1350	825
15M150	15	150	1350	825
20M75	20	75	1500	900
20M100	20	100	1500	900
20M150	20	150	1500	900
30M75	30	75	1700	1000
30M100	30	100	1700	1000
30M150	30	150	1700	1000
40M75	40	75	1900	1100
40M100	40	100	1800	1050
40M150	40	150	1800	1050
50M75	50	75	2100	1200
50M100	50	100	1900	1100
50M150	50	150	1900	1100

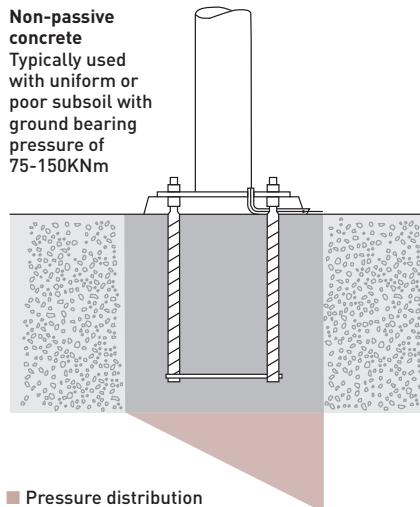
Soil pressure distribution

Passive concrete
Typically used with good ground with ground bearing pressure of not less than 150KNm



■ Pressure distribution

Non-passive concrete
Typically used with uniform or poor subsoil with ground bearing pressure of 75-150KNm



■ Pressure distribution

Typical section through foundation

