

Design & Performance Considerations

Load Range

From 0-300kN subject to ground conditions

Required Life Span/Material Specification

- 1) **Long Term** corrosion resistance for up to and in excess of 120 years using Grade 316 passive stainless steel.
- 2) **Medium Term** up to and in excess of 40 years using cast iron galvanised anchors fitted with stainless steel tendons.
- 3) **Short Term**, i.e. temporary works, using cast iron galvanised anchors with either carbon steel high yield bars or galvanised tendons.
- 4) **Light Weight** anchors are normally supplied in LM 25 aluminium.

N.B. All of the above are subject to prevailing ground conditions and the presence of any aggressive properties such as acids or stray electrical currents. Insulators or insulating membranes should always be used to separate dissimilar metals.

Performance requirements

Working and proof loads are achieved by selection of the appropriate anchor for the ground conditions. All components, including tie bar details, are designed to a safety factor as agreed with the specifier.

Programme considerations

The simplicity of the system and its speed of load application make the Duckbill system a favourite for tight programme situations.

Visual appearance

Top terminations for tie bars and tendons can be varied to suit the situation. These can be fully concealed for visually unobtrusive stabilisation of historic or listed structures. Pattress plates in various sizes, shapes and materials are available to suit specific requirements.

DUCKBILL ULTIMATE HOLDING CAPACITIES IN kNs

COMMON SOIL TYPE	GEOLOGICAL SOIL	Typical Blow Count 'N'	MR-88	MR-4	MR-3	MR-2	MR-1	SR1
Description	Classification							
Very Dense and/or Cemented Sands; Coarse Gravel and Cobbles	Caliche, Nitrate-Bearing Gravel/Rock	60-100+	20	40	50	90	100	300
Dense Fine Sand; Very Hard Silts and Clays	Basal till; Boulder Clay Cliche; Weathered Rock	45-60	20	40	50	90	100	250
Dense Clays, Sands and Gravels, Hard Silts and Clays	Glacial Till; Weathered Shales, Schist Gneiss, Siltstone	35-50	20	40	50	90	100	250
Medium Dense Sandy Gravel; Very Stiff to Hard silts and Clays	Glacial till; Hardpan	25-40	15	30	40	60	90	180
Medium dense Course Sand and Sandy Gravel; Stiff to Very Stiff Silts and Clays	Saprolites Residual Soils	14-25	15	30	40	60	90	180
Loose to Medium Dense Fine to Coarse Sand; Firm to Stiff Clays and Silts	Dense hydraulic Fill; Compacted Fill; Residual Soils	7-14	15	20	30	50	70	150
Loose Fine Sand; Aluminium; Soft-Firm Clays; Varied Clays; Fill	Flood Plain Soils; Lake Clays; Adobe; Gumbo Fill	4-8	4-7	7-11	13-22	22-26	50	100
Peat, Organic Silts; Inundates, Silts Fly Ash	Miscellaneous Fill; swamp Marsh	0-5	0.9-4	1.3-7	3.5-13	9-22	13-37	20-60

N.B. For guidance Purposes Only - True Capacity must be Tested with Load Locker

Tests have conclusively shown that if an anchor is grouted into poor ground, the results achieved are very good. Details are available upon request.

Note: All underground work requires proper safety and location procedures. do not install an anchor until you know what is below the surface. It is imperative in all cases that all anchors are fully load locked before being put into service.

Corrosion susceptibility of metals

LEAST SUSCEPTIBLE

to corrosive attack (more noble)

Platinum
Gold
Silver
Stainless Steel, Type 316 (passive) - Duckbills

Stainless steel, Type 304 (passive)

Titanium and its alloys

Monel

Copper-nickel alloys

Copper

Aluminium bronzes

Gunmetals

Brasses

Tin

Lead

Stainless steel, Type 316 (active)

Stainless steel, Type 304 (active)

Lead/tin solder, 50/50

Stainless steel, Type 410 (active)

Cast iron

Mild steel

Cadmium

Aluminium and its alloys

Zinc and its alloys

Magnesium and its alloys

MOST SUSCEPTIBLE

to corrosive attack (less noble)

DUCKBILL
Ground Anchor Systems