SEA
Engineering Excellence
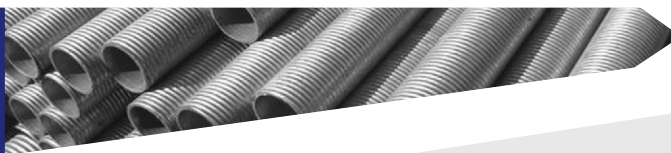## CONSTRUCTION

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Design information for SEA Piles

Load bearing length of pile bond length calculation key factors

L	load bearing length
T	soil skin friction factor (Tult)
Tw	safe working load
Fs	factor of safety
D	drill diameter + enlargement factor

Load bearing length of pile bond length calculation

installation	soil description	range kN/m^2
drill & grout	cohesion less soil	
1	non- plastic silt	20-30
2	med- dense sandy silt	50-75
3	dense silty sand/gravel	100-200
4	very dense sand/gravel	100-300
drill & grout	cohesive soil	
1	stiff clay	40-60
2	stiff clay silt	40-60
3	stiff sandy clay	100-200
drill & grout	soft rock	
1	weathered mud stone	100-200
2	weathered sandstone	200-300
3	weathered shale	100-150
4	marl and chalk	100-250

Pile Diameter calculation Table

min pile dia	ground type
2.0 x drill dia	medium & course cobbles
1.5 x drill dia	sand & gravelly sand
1.4 x drill dia	clay & marl
1.0 x drill dia	sandstone types & rock

Bond length calculation

$$L = \frac{Tw \times Fs}{3.142 \times D \times T}$$

Example using 120mm dia drill bit on 38mm drill bar
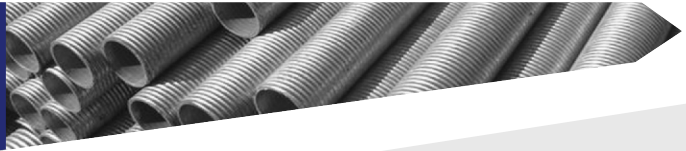
required pile load 300kN

$$L = \frac{300kN \times 3}{3.142 \times (0.120 + 0.05) \times 150kN/m}$$

$$L = \frac{900}{84.83}$$

L = 10.60 mts length of pile

Design and usage of the products should be in accordance with the appropriate safe practices and applicable codes and regulations.

Design information for **SEA** Piles

Safe Load Taken on SEA-Tech Piles

calculation for safe working load on grout

$$SWL = \frac{\text{area of grout x strength of grout}}{4} \quad (4 = \text{safety factor})$$

strength of grout = 40N/mm2 after 28 days

area of grout = area of pile - area of steel bar

example   using 120mm drill bit with 38mm bar in sandstone
(no enhancement factor)

$$SWL = (120 \times 120 - 38 \times 38) \times \frac{3.142}{4} \times \frac{40}{4}$$

SWL = 102kN

calculation for safe working load on SEA-Tech bar

SWL on 38mm bar from table is 459kN (yield value) with a safety factor of 2

$$SWL = \frac{459}{2} = 229$$

total safe working load of 38mm SEA-Tech pile with 120mm dia bit in sandstone

SWL 102+229 = 331kN

example results

1 pile of 38 x 25 SEA-Tech bar with 120mm dia bit installed to 10.6 mts in sandstone

SAFE WORKING LOAD OF 331kN

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