

Footing Design

HOW TO ARRANG A PILE

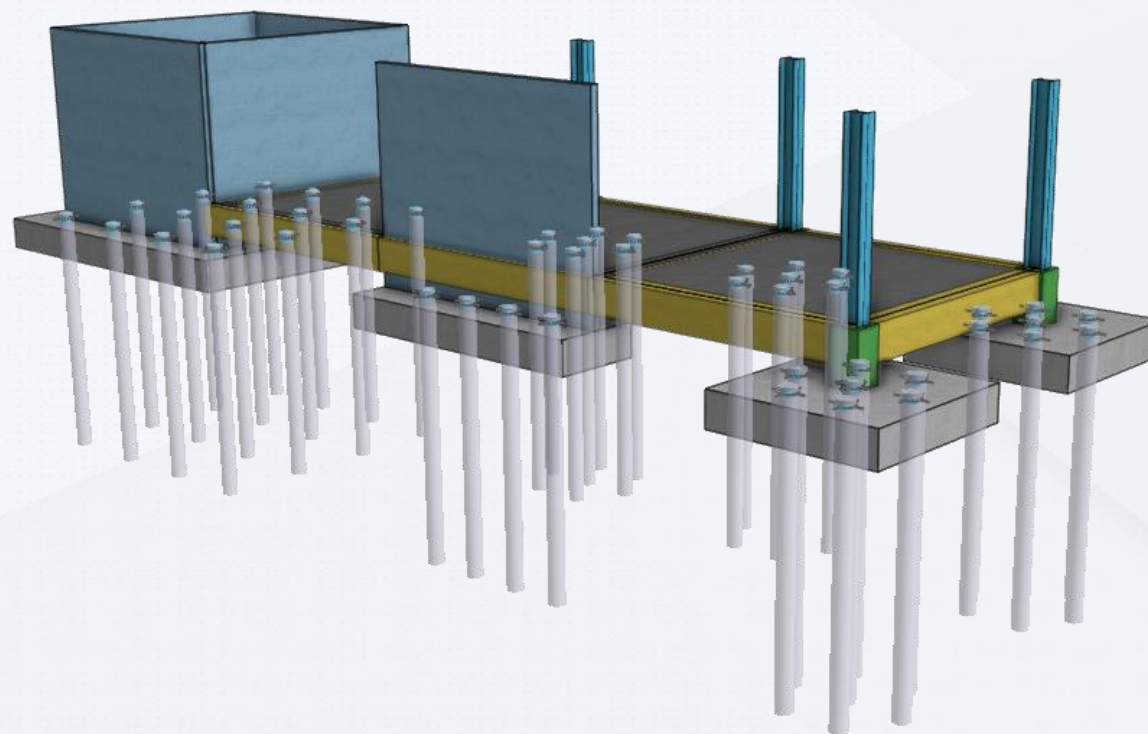
User's Guide

Footings Design - 06

How to checking a pile arrangement

- Instruction 01
- Checking Free Point 02
- Checking Space 03
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<i>midas nGen version</i>	<i>nGen 2021 (v1.1)</i>
<i>Revision Date</i>	<i>20, Feb., 2021</i>



Introduce

First, review the errors below for already placed piles.

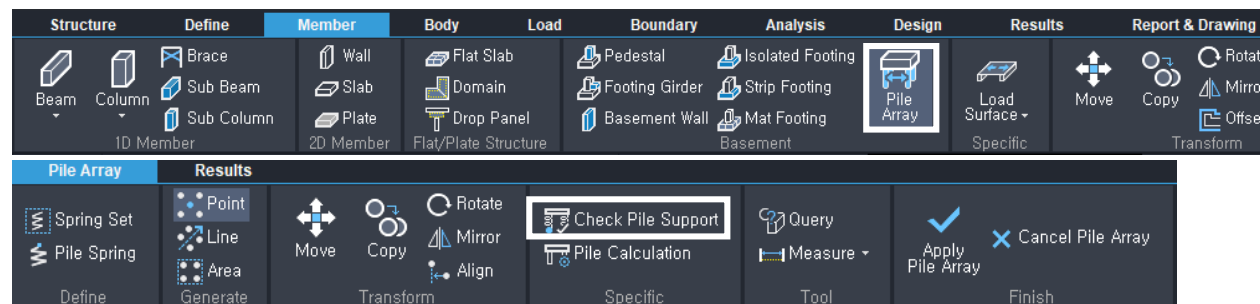
Error 1 : Pile is not contacted to the footing face.

Error 2 : The distance between placed piles is closer than tolerance.

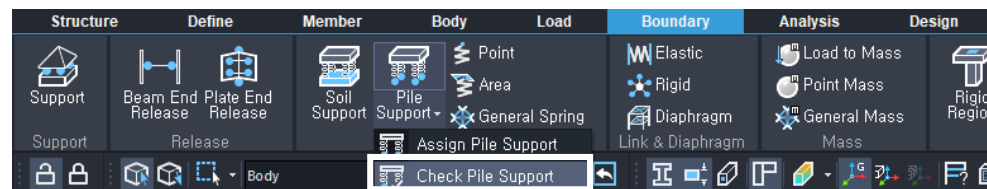
In addition, introduce the tool to place piles automatically according to the load applied on footing.

Checking Pile Support

1. Member > Pile Array > Check Pile Support

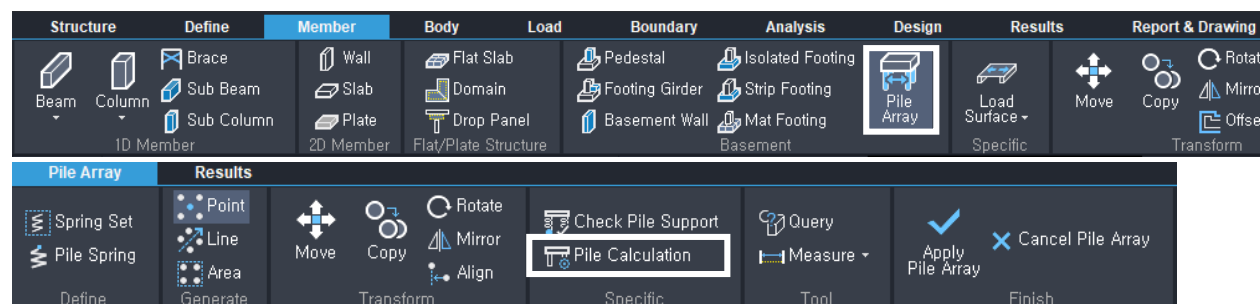


2. Boundary > Spring > Pile Support > Check Pile Support



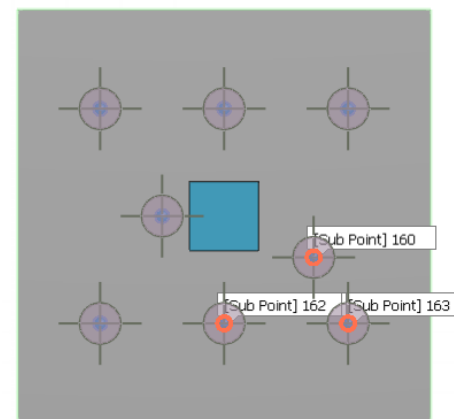
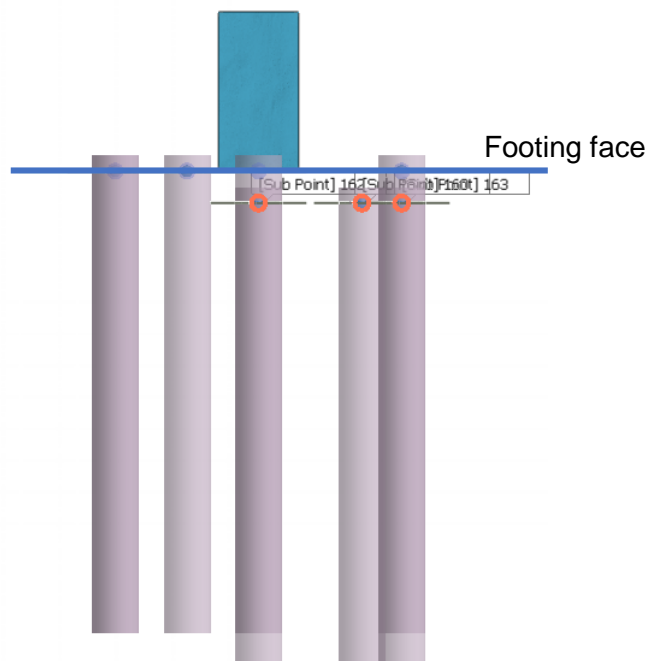
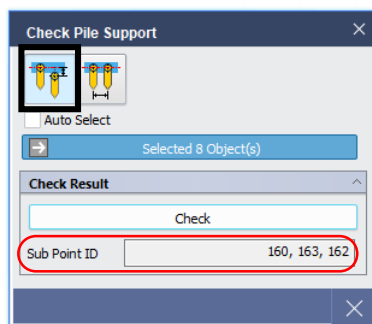
Pile Calculation

1. Member > Pile Array > Check Pile Support



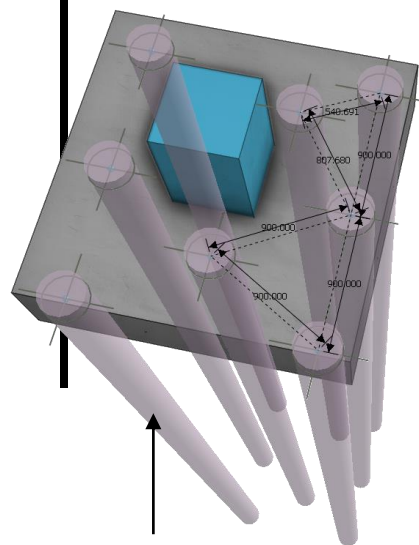
Checking Pile Support – Checking Free Point

Pinpoint the pile that none of its component is contacted to the footing face.



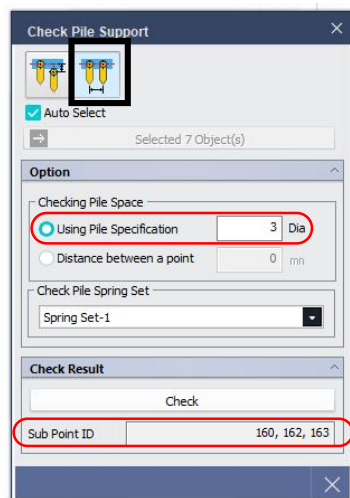
Checking Pile Support – Checking Space

Pinpoint the pile where the distance between near piles is closer than tolerance.

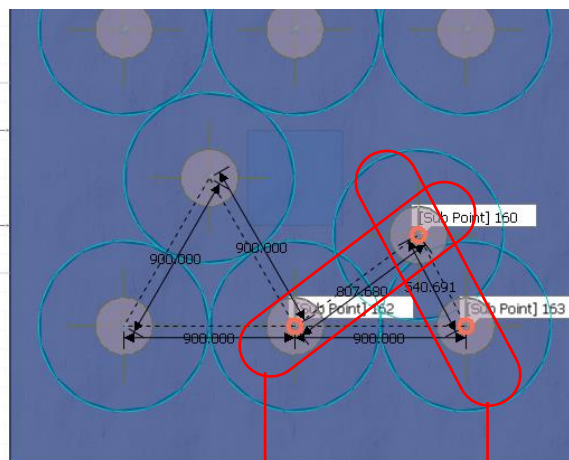


Pile Dia. = 300mm

Example : When “Checking Pile Spacing = 3*Dia.”



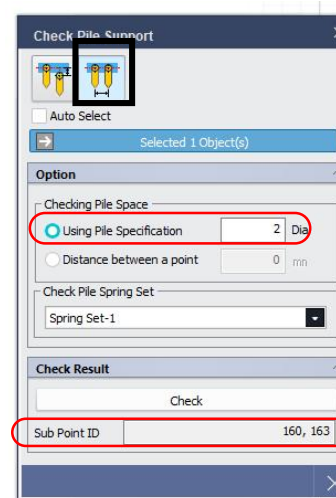
Allowable Pile Spacing = 3 * Dia. = 900mm



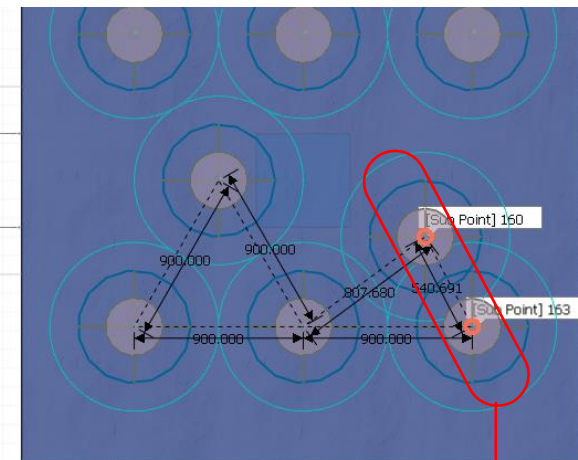
Pile Spacing between
Point 160&162
= 807.69mm < 900mm

Pile Spacing between Point
160&163
= 540.69mm < 900mm

Example : When “Checking Pile Spacing = 2*Dia.”

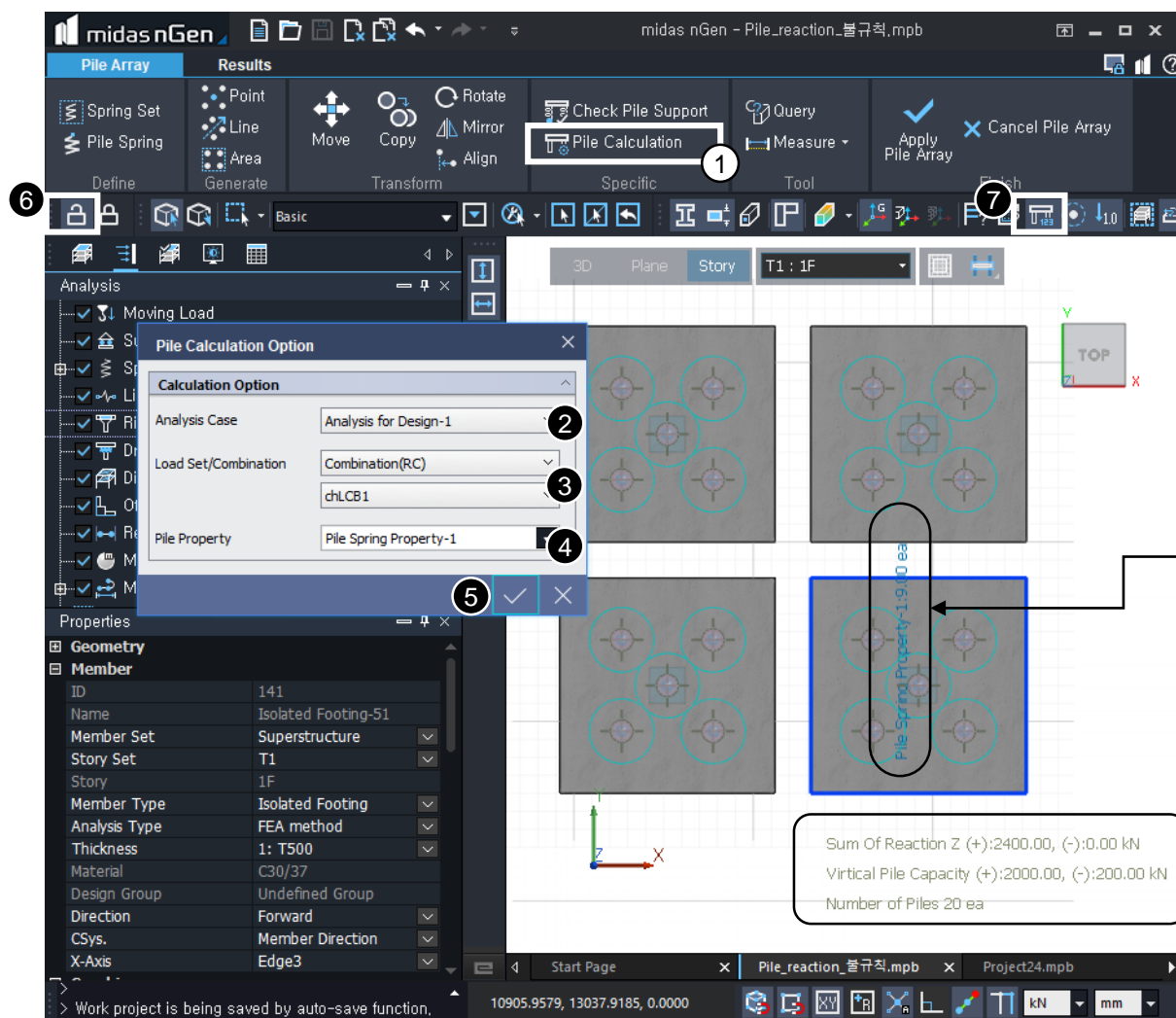


Allowable Pile Spacing = 2 * Dia. = 600mm

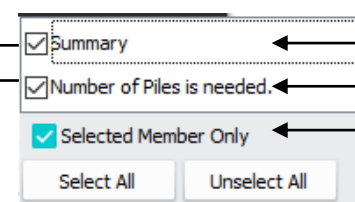


Pile Spacing between
Point 160&163
= 540.69mm < 600mm

Pile Calculation



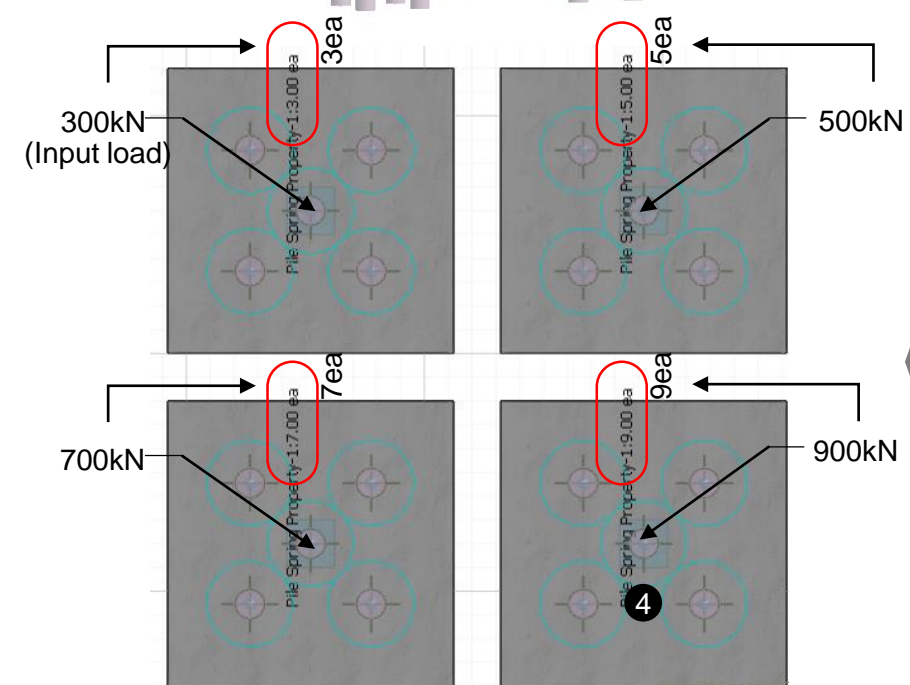
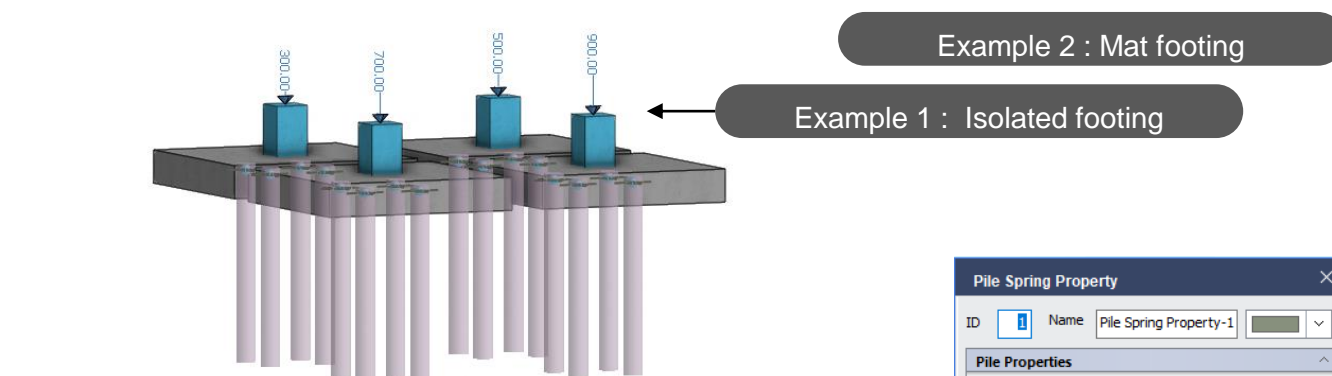
- 1 Click "Pile Calculation" after performing an analysis.
- 2 Select an analysis case.
- 3 Select a load case or combination name.
- 4 Select a pile spring property.
- 5 Click "V" button
- 6 Click "Pre-mode" Icon.
- 7 Click "Show/Hide Pile Calculation Information" Icon.



- ← The sum of all reaction forces and capacities of the piles.
- ← The number of piles required for each footing.
- ← The number of piles required only for the selected footing.

- 8 Check the footing for which you want to know the required number of piles.
- 9 Re-arrange the piles based on information.

Pile Calculation



Pile Spring Property

ID: 1 Name: Pile Spring Property-1

Pile Properties

☐ DB KS

Pile Type: PC Pile Round

Pile Section

Diameter(D): 300 mm

Thickness(T): 60 mm

Modulus of Elasticity(Ep): 39.227 kN/mm²

Area of Pile(Ap): 45200 mm²

Length(L): 3000 mm

Pile Bearing Capacity

Compression Capacity: 100 kN

Up-lift Capacity: 10 kN

* Pile capacity : 100kN / ea

Calculation Option

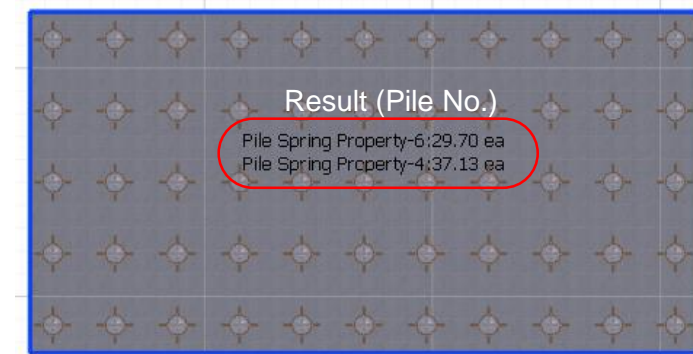
Analysis Case: Analysis for Design-1

Load Set/Combination: Combination(RC)

LCB6_1

Pile Property: Pile Spring Property-4, Pile Spring P

Node	Force-X (tonf)	Force-Y (tonf)	Force-Z (tonf)	Moment-XYZ (tonf·mm)	Moment-X (tonf·mm)	Moment-Y (tonf·mm)
13562	93.513352	7.956025	1.136753	93.167357	4168.309593	254.945683
13563	202.007378	5.613764	9.371856	201.711761	10867.274678	10595.922414
Linear Summation						
	7431.728236	48.308629	48.316407	7426.200683	709444.371131	132900.739612



Reaction Sum of footing for LCB6_1	7426.20 ton
Use Pile Spring Property-4 (Pila capacity = 200 ton/ea)	7426.20 / 200 = 37.13 ea
Use Pile Spring Property-6 (Pila capacity = 250 ton/ea)	7426.20 / 250 = 29.70 ea

Thank you