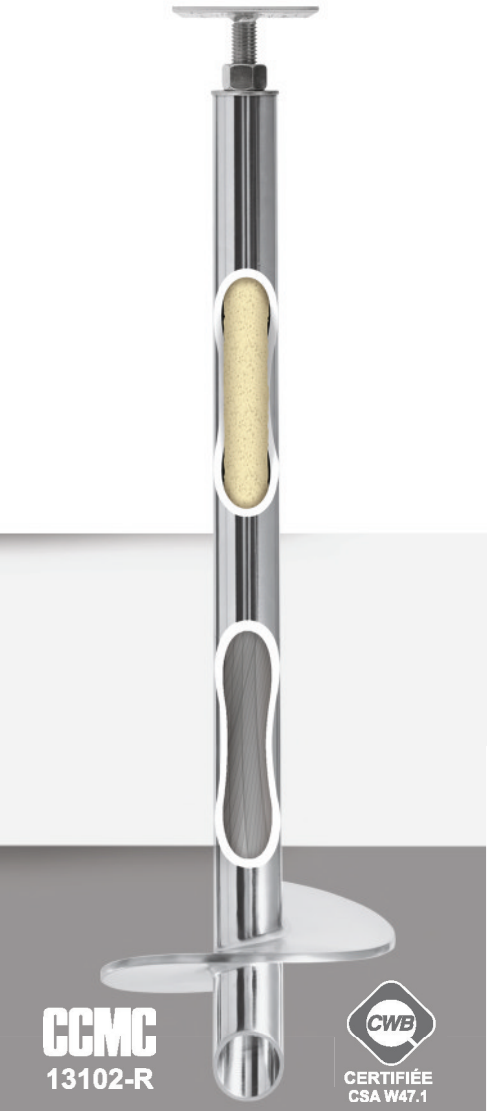
THERMAL PILES

TECHNICAL DATA SHEET
POSTECH PILE P312 (3 1/2")

POSTECH SCREW PILES



CCMC 13102-R

CWB CERTIFIÉE CSA W47.1

NORMATIVE INFORMATION

Postech products are approved by the Canadian Construction Materials Centre (CCMC 13102-R). They were tested on-site by an engineering firm recognized by the CCMC. The technical evaluation indicates that Postech products respect the requirements of the CCMC guidelines for augered steel piles. Their performance is equivalent or superior to prescribed NBC 2010 standards.

MANUFACTURER:
Pieux Vistech - Postech Screw Piles
10260, Bourque boulevard
Sherbrooke QC J1N 0G2
Tel. : 819.843.3003
Toll free: 1.866.277.4389
Fax. : 819.868.0793
postech-foundations.com

PRODUCT CHARACTERISTICS	
Physical and Chemical properties	
STEEL GRADE	Conform to CAN/CSA G40.21-350W and/or ASTM A500 class C
ARC WELDING	Conform to CSA W59-M1989
HOT DIP GALVANIZATION	Conform to ASTM-A123M
THERMAL INSULATION	Unique polyurethane foam
Standard characteristics	
TUBING DIAMETER	89 mm (3 1/2 in)
BLADE DIAMETER	From 255 to 455 mm (10 to 18 in)
TUBING LENGTH	Standard of 2.1 m and 3 m (7' and 10')
TUBING THICKNESS	5.5 mm (0.216)
BLADE THICKNESS	9.5 mm (3/8 in) for diameter from 10 to 14 in. 12.7 mm (1/2 in) for diameter from 16 to 18 in
ADAPTER HEADS	Various forms as needed according to the project specifications
EXTENSIONS	Available according to project specifications

ALLOWABLE MECHANICAL RESISTANCE (SLS)	
MAXIMUM COMPRESSIVE AND TENSILE OF TUBING	270 kN
BENDING MOMENT OF TUBING	7.9 kN.m

SLS = Service Limit State

DESIGN INFORMATION

BEARING CAPACITY

Postech products are designed to bear compressive and tension loads through the blade at the bottom of the shaft. The design of the shaft and the size of the blade depend on the load and on the bearing capacity of the soil. The monitoring of the applied torque on-site allows for the confirmation of the allowable bearing capacity (SLS) of the soil.

THERMAL INSULATION

Postech products are insulated by a process of injecting polyurethane foam in the piles shaft. The revolutionary insulation system ensures that the inside of the pile is maintained at a temperature that will prevent ice or frost build-up at the base of the pile; providing optimal protection against ground motion using our planet's heat.

SCREW PILE ADVANTAGES

- Product and installation is supplied, you only need to mark the spot!
- Can be installed in all climates, weather or ground conditions;
- No excavation usually required, minimal impact to your property;
- No waiting time, you can build as soon as the installation is ready;
- Reusable and recyclable, environmentally friendly;
- Can be installed under an existing structure;
- The most reliable & economical solution available.

LICENSED PROFESSIONAL ENGINEER
S.M. PETROVICH
100232480
April 2017
PROVINCE OF ONTARIO

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POSTECH SCREW PILES

COHESIONLESS SOILS (SILT, SAND OR GRAVEL)

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ALLOWABLE LOADS (SLS) DEPENDING ON APPLIED TORQUES

APPLIED TORQUES (LB-FT)	ALLOWABLE LOADS (kN)	
	COMPRESSIVE	TENSILE
750	15	-
1000	21	2
1250	26	7
1500	31	12
1750	36	16
2000	42	21
2250	47	26
2500	52	31
2750	57	35
3000	63	40
3250	68	44
3500	73	48
3750	78	50
4000	84	52
4250	89	54
4500	94	56
4750	99	58
5000	105	60
5250	110	62
5500	115	64
5750	121	66
6000	126	68

ALLOWABLE LOADS (SLS) DEPENDING ON SOIL DENSITIES

SOIL DENSITIES	ALLOWABLE LATERAL LOADS (kN)
kN / m3	P312
18	5.0
20	5.6
22	6.2

SLS = Service Limit State

Technical Notes

- For cohesionless soils, the safety factor varies from 2.0 to 3.0 in compressive loads and from 2.0 to 2.4 in tensile loads.
- The safety factor for the lateral loads varies from 2.0 to 6.4, for cohesionless and cohesive soils.
- If there are any boulders (> 200 mm in diameter) in the granular matrix, the above mentioned capacities will be overstated. In this case, the allowable loads will be established on-site using a confirmatory test.

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ALLOWABLE LOAD VALUES
OF POSTECH SCREW PILES

The geotechnical calculations for Postech's screw piles were carried out in accordance with the requirements of sub-section 4.2.4 of National Building Code (NBC). We used the design methods set out in Chapters 19 and 20 of the Canadian Foundation Engineering Manual (CFEM). These calcuations are based on the physical and mechanical properties of the on-site at the blade depth and along the steel tubing.

ALLOWABLE LOADS (SLS) – COHESIVE SOILS (CLAY)

Undrained shear strengths (kPa)	Allowable bearing capacities of soils (kPa)	ALLOWABLE LOADS (kN)									
		Blade 255 mm Ø (10" Ø)		Blade 300 mm Ø (12" Ø)		Blade 355 mm Ø (14" Ø)		Blade 405 mm Ø (16" Ø)		Blade 455 mm Ø (18" Ø)	
C=compressive, T=tensile		C	T	C	T	C	T	C	T	C	T
30	50	6	5	8	7	11	9	15	12	19	15
44	75	9	8	12	10	17	14	22	17	27	22
58	100	11	10	16	13	22	18	29	23	36	29
73	125	14	13	20	17	28	22	36	29	45	36
88	150	17	15	24	20	33	27	43	34	55	44
102	175	20	18	28	23	39	31	50	40	63	51
117	200	23	20	32	27	44	36	58	46	73	58
145	250	28	25	39	33	55	45	71	57	90	72
≥175	≥300	34	30	47	40	66	54	86	68	109	87

ALLOWABLE LOADS (SLS) – COHESIONLESS SOILS (SILT, SAND OR GRAVEL)

Compaction indexes N	Allowable bearing capacities of soils (kPa)	ALLOWABLE LOADS (kN)									
		Blade 255 mm Ø (10" Ø)		Blade 300 mm Ø (12" Ø)		Blade 355 mm Ø (14" Ø)		Blade 405 mm Ø (16' Ø)		Blade 455 mm Ø (18' Ø)	
C=compressive, T=tensile		C	T	C	T	C	T	C	T	C	T
3	50	6	4	8	6	11	8	15	11	19	14
5	75	10	7	14	10	19	14	25	18	31	23
6	100	12	9	16	12	23	17	30	22	37	27
8	125	16	11	22	16	30	22	39	29	50	36
10	150	20	14	27	20	38	28	49	36	62	46
11	175	21	16	30	22	42	30	54	40	68	50
13	200	25	19	35	26	49	38	64	47	81	59
16	250	31	23	43	32	60	44	79	58	99	73
20	300	39	29	54	40	76	55	98	72	124	91
≥25	≥ 350	49	36	68	50	95	69	123	90	155	114

SLS = Service Limit State

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COHESIVE SOILS (CLAY)

ALLOWABLE LOADS (SLS) DEPENDING ON APPLIED TORQUES

APPLIED TORQUES (LB-FT)	ALLOWABLE LOADS (kN)	
	COMPRESSIVE	TENSILE
750	5	4
1000	8	5
1250	11	6
1500	14	8
1750	17	11
2000	19	14
2250	22	16
2500	25	19
2750	28	21
3000	31	24
3250	34	27
3500	37	29
3750	39	32
4000	42	34

ALLOWABLE LOADS (SLS) DEPENDING ON SOIL DENSITIES

SOIL DENSITY	ALLOWABLE LATERAL LOAD (kN)
kN/m3	P312
16	4.5

SLS = Service Limit State

Notes techniques

- For cohesive soils, the safety factor varies from 2.0 to 2.9 in compressive and in tensile loads.
- The safety factor for the lateral loads varies from 2.0 to 6.4, for cohesionless and cohesive soils.
- If there are any boulders (> 200 mm in diameter) in the granular matrix, the above mentioned capacities will be overstated. In this case, the allowable loads will have to be established on-site using a confirmatory test.