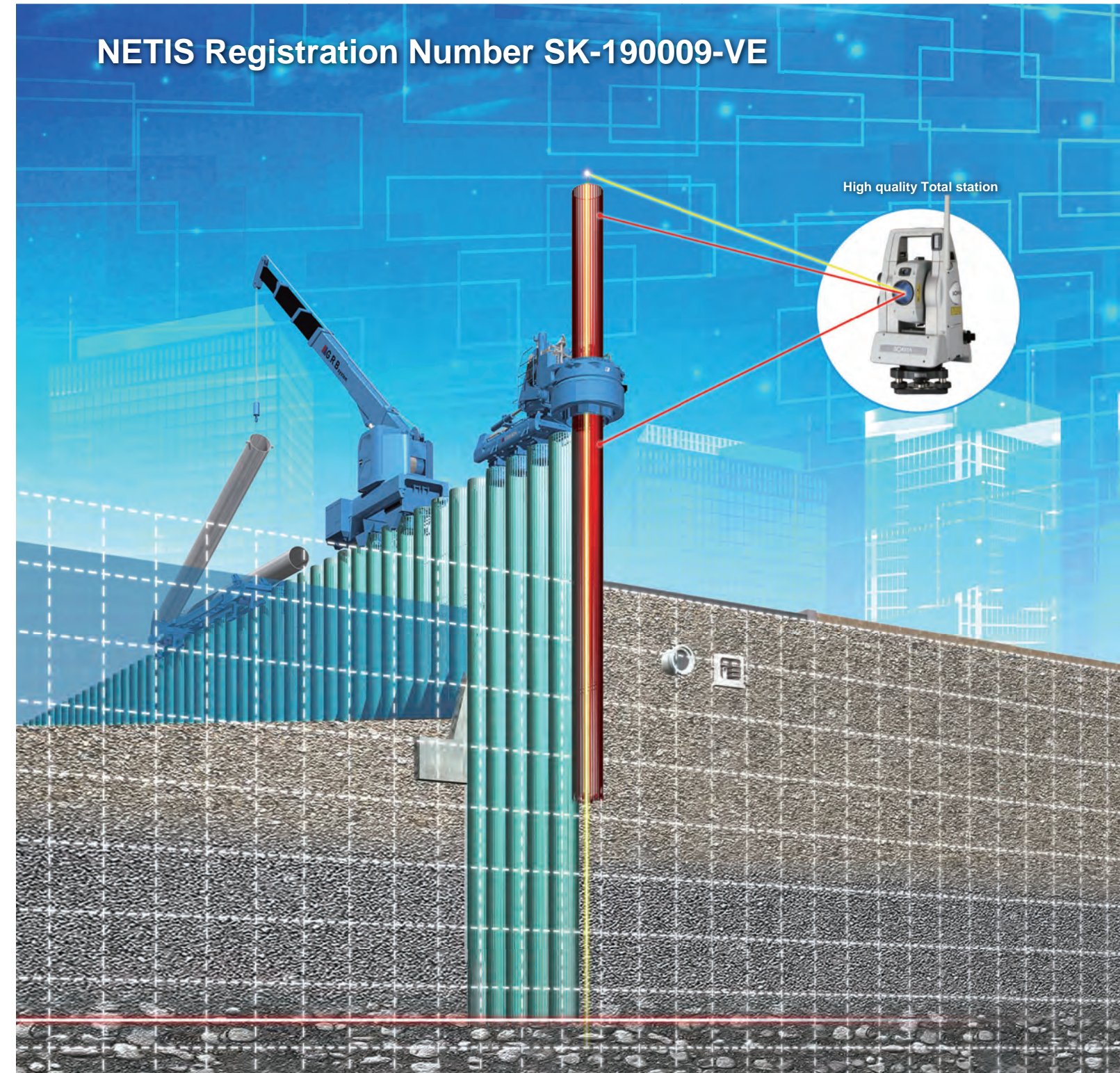


Implant NAVI™

NETIS Registration Number SK-190009-VE



High quality Total station

※Implant NAVI is developed in a joint effort by GIKEN LTD. and CITEC CO., LTD.



Construction Solutions Company

www.giken.com

CONTACT US



“SILENT PILER” is a registered trademark or trademark of GIKEN LTD. in the United States and other countries.

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Ver 1.0EN03 / 07 Jun 2023



A Total Package Solution that realizes high quality pile installation control, labor saving and speeding up for creating as-built drawings, as well as integration with 3D-CAD

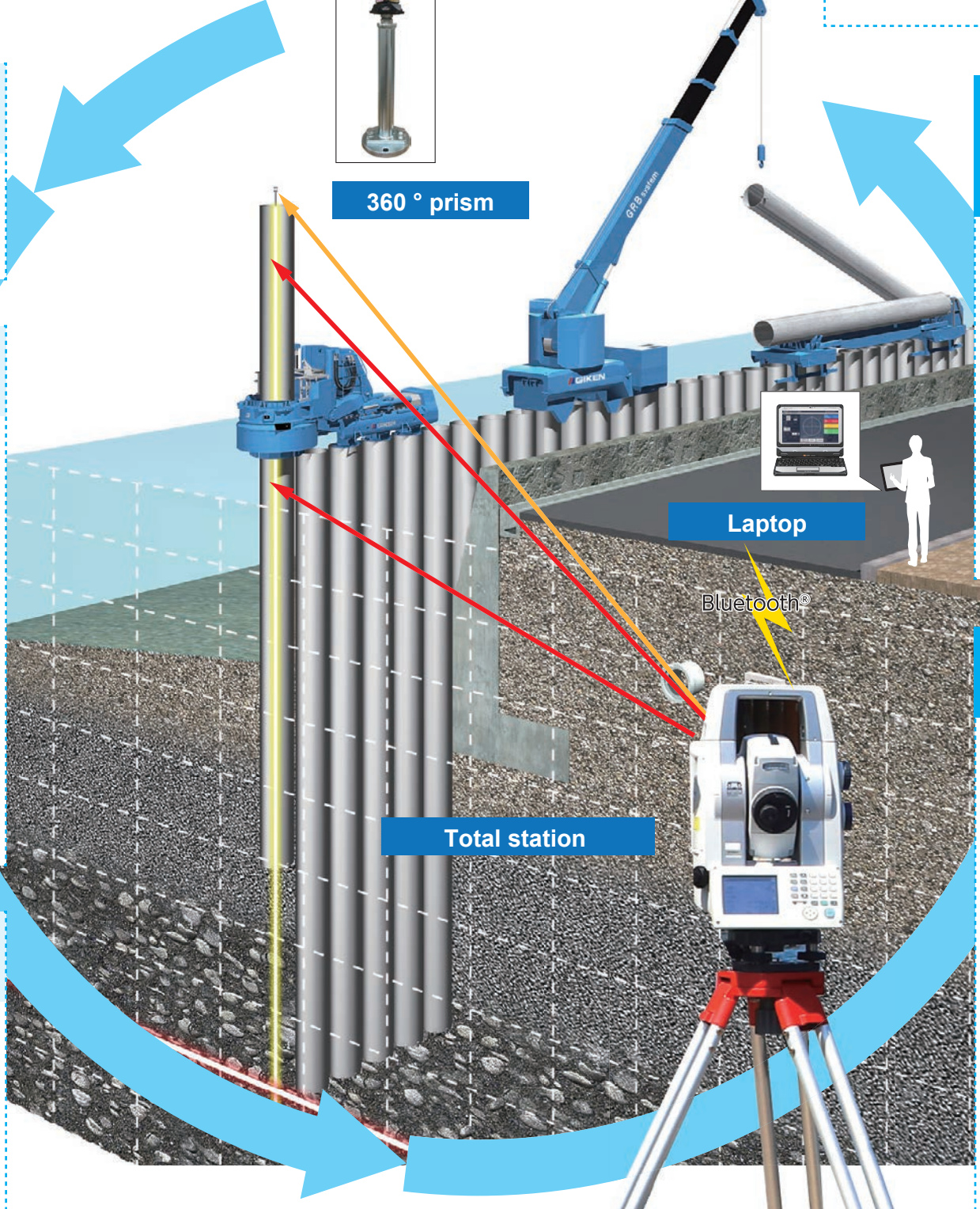
Implant NAVI™

"Implant NAVI™" acquires data of embedded depth, displacement, and inclination of the piles being installed in real time. It is an integrated system that realizes high quality pile installation control, automatic creation of various as-built documents, and creation of 3D drawings.

All in One



360° prism



Laptop

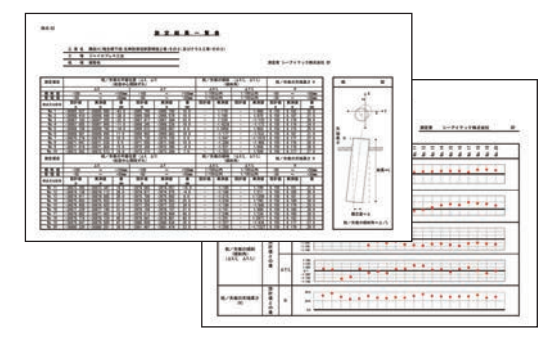
Bluetooth®

Total station

Automatic formatting for electronic submission

The measurement data is sent to PC in real time, and then those data can be printed in a format for electronic submission.

- Measurement result summary table
- Measurement result list
- As-built chart
- Pile deviation measurement diagram



Automatic Measurement (linked with press-in machine operation)

In conjunction with operations of the press-in machine "SILENT PILER™" such as Chuck Open / Close, Rotation, Up/Down, it can automatically provide ideal measurement. No special qualification is required for measurement.

Monitoring pile behavior in real time

Pile behavior (penetration depth, displacement, inclination) can be monitored accurately in real time on a PC connected via Bluetooth® during construction.



Remote monitoring

You can check the data in real time from distant places such as office. (Viewable on PC, tablet and smartphone)



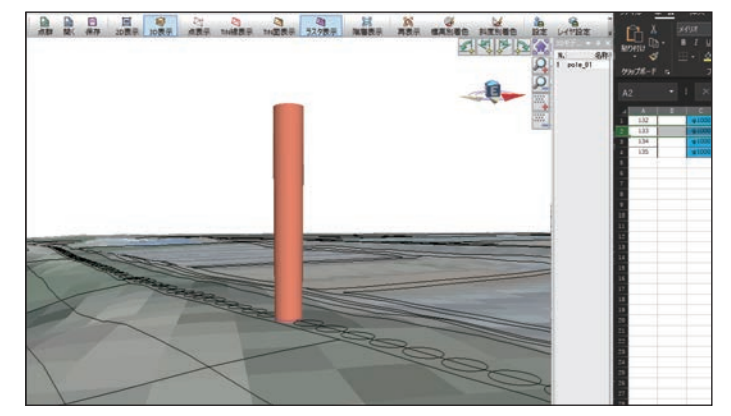
Measured values of the piles are automatically reflected on CAD.

Measured values of the acquired piles are automatically reflected on CAD drawing. It is exported in DWG format, so the data is highly compatible.



Integration with 3D-CAD

It can automatically create 3D drawings from pile diameter, coordinate values, pile length, etc. Those 3D drawings (CIM * data) can be utilized for later work processes and maintenance work.

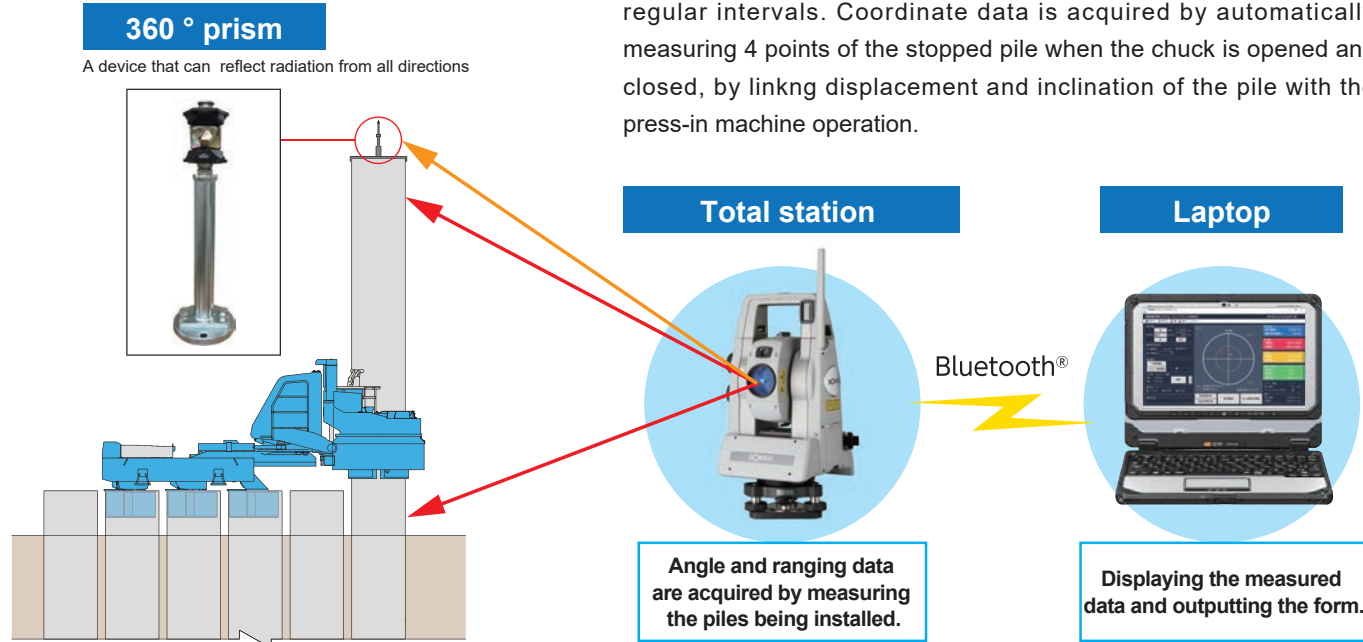


※CIM = Construction Information Modeling/Management
A chart created with any parameters by using 3D drawings of the structure.

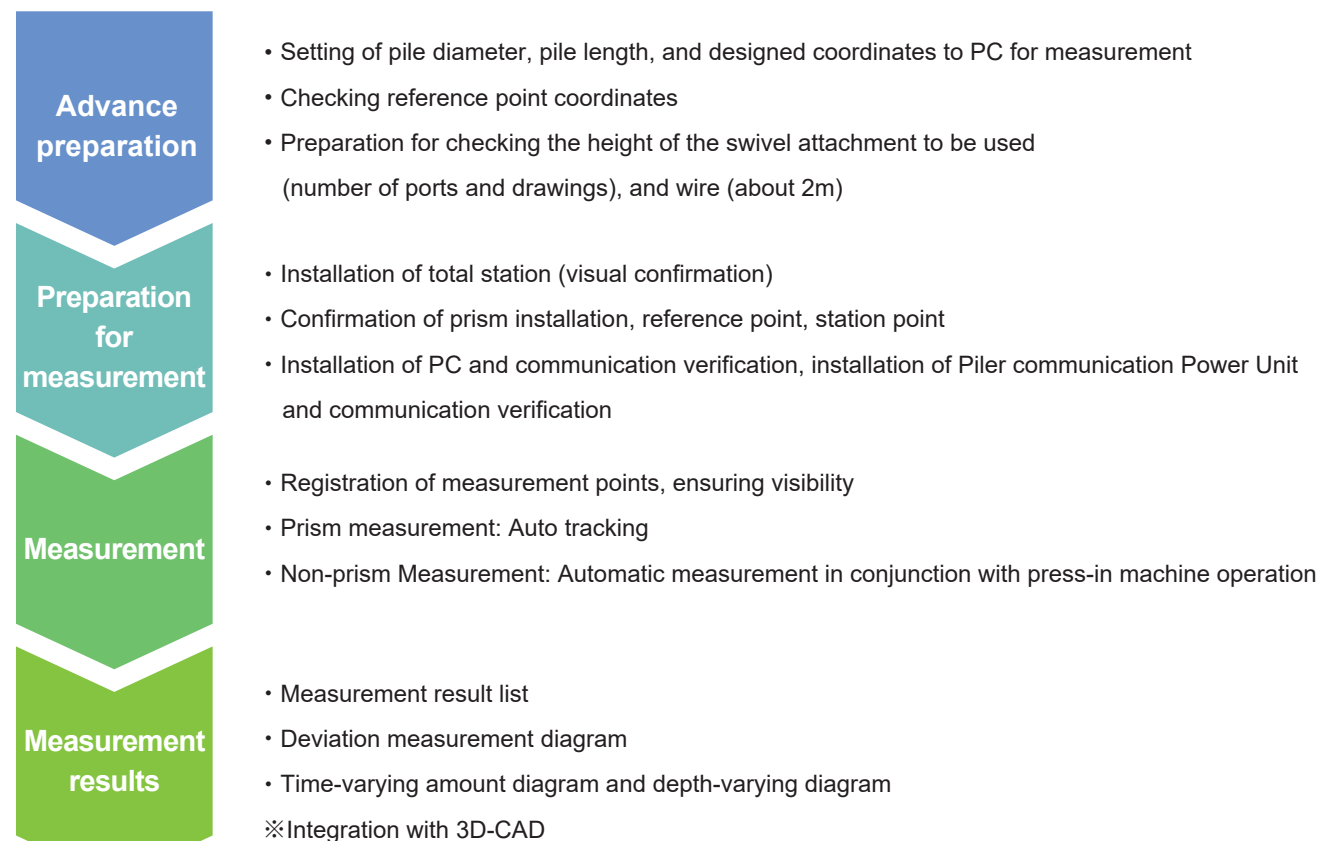
Measurement Method

Total station is used for prism measurement and non-prism measurement. 360 ° prism are installed on pile head and non-prism measurement is conducted at 2 points at each of the upper and lower parts of the pile.

Embedded depth is measured by automatically tracking 360 ° prism at regular intervals. Coordinate data is acquired by automatically measuring 4 points of the stopped pile when the chuck is opened and closed, by linking displacement and inclination of the pile with the press-in machine operation.



Measurement work flow

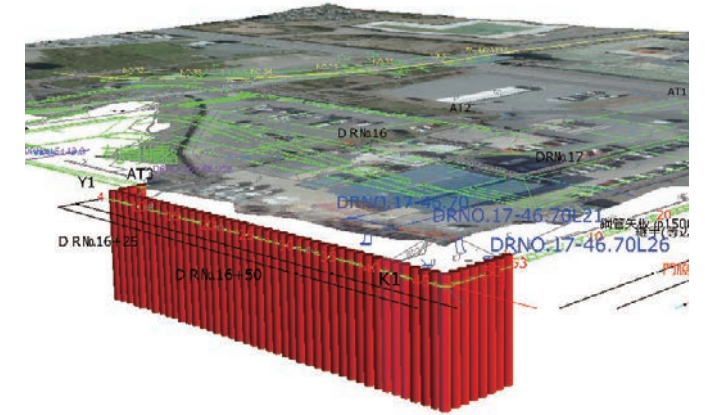


Integrated function with 3D-CAD

Solving problems in later process in advance with speedy and sophisticated agreement formation

It can automatically create 3D drawings from pile diameter, coordinate values, pile length, etc. Those 3D drawings can be submitted as CIM (Construction Information Modeling /Management) data promoted by Ministry of Land, Infrastructure, Transport and Tourism.

By making structures "visible" using as-built 3D drawings, agreement formation can be accelerated and advanced among the people involved. In addition, we can solve problems beforehand by examining later processes and maintenance level processes in advance.



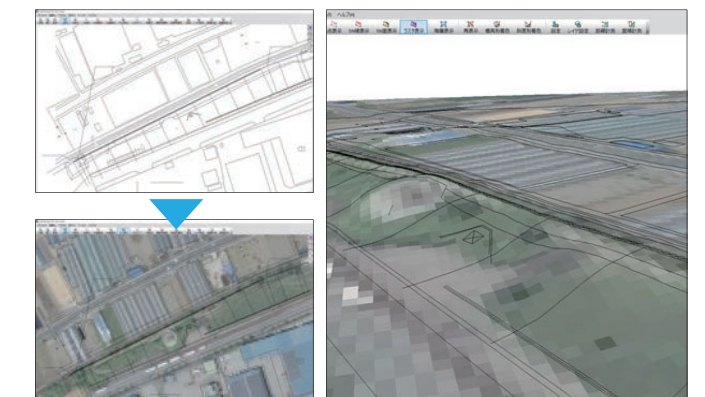
3D Data of Geographical Survey Institute is available.

Electronic Land Data published by Geographic Survey Institute can be used. The data can be freely selected according to the site range.



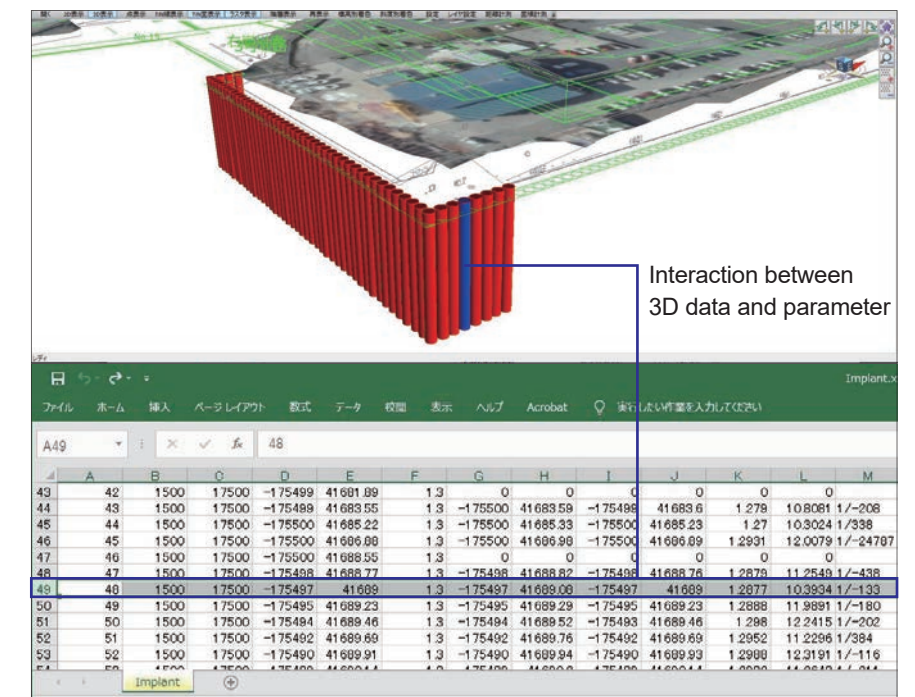
Data shot with drones is also available.

You can link 3D drawings with on-site data. Data can be checked on 2D or 3D and displayed in an easy-to-understand manner.



Integrated with EXCEL Data

You can integrate 3D drawing with EXCEL and check parameter from the both data. By clicking on the pile at 3D Data, you can see the appropriate information in EXCEL. On the other hand, by clicking on a cell in EXCEL, you can zoom to the appropriate pile and highlight it.



Project

Project name : Sumida River (downstream of Aioi Bridge) Left Tide Wall Seismic Reinforcement Work (Phase2) and Terrace Work (Phase 3)

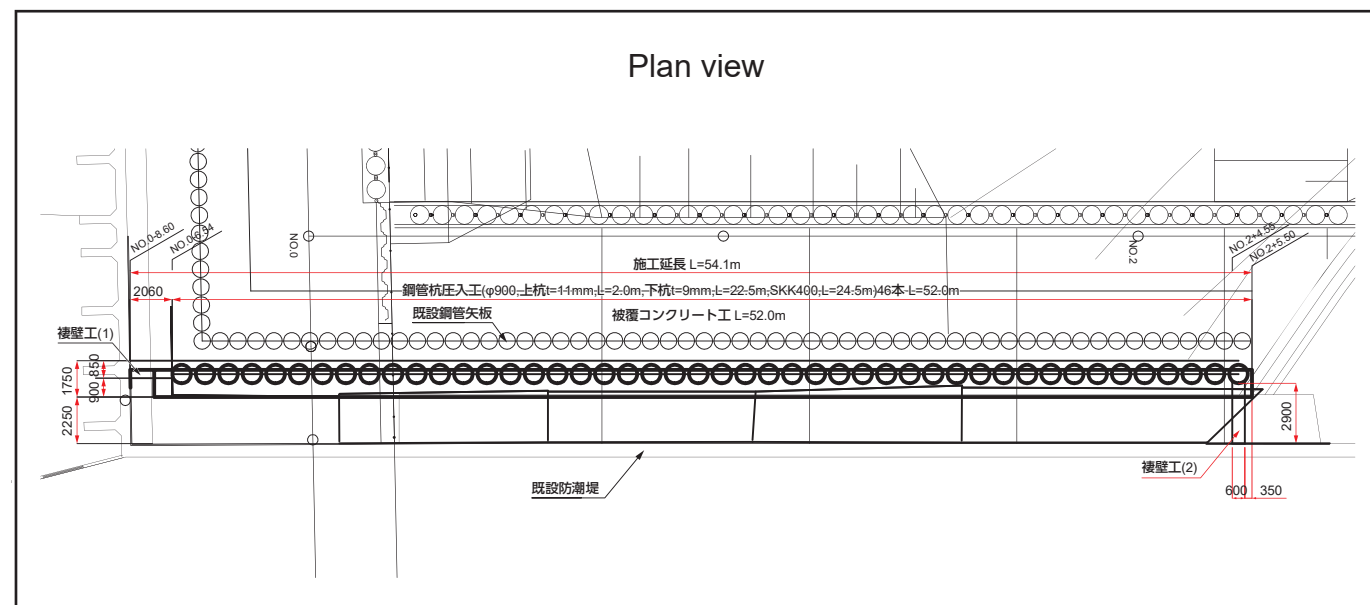
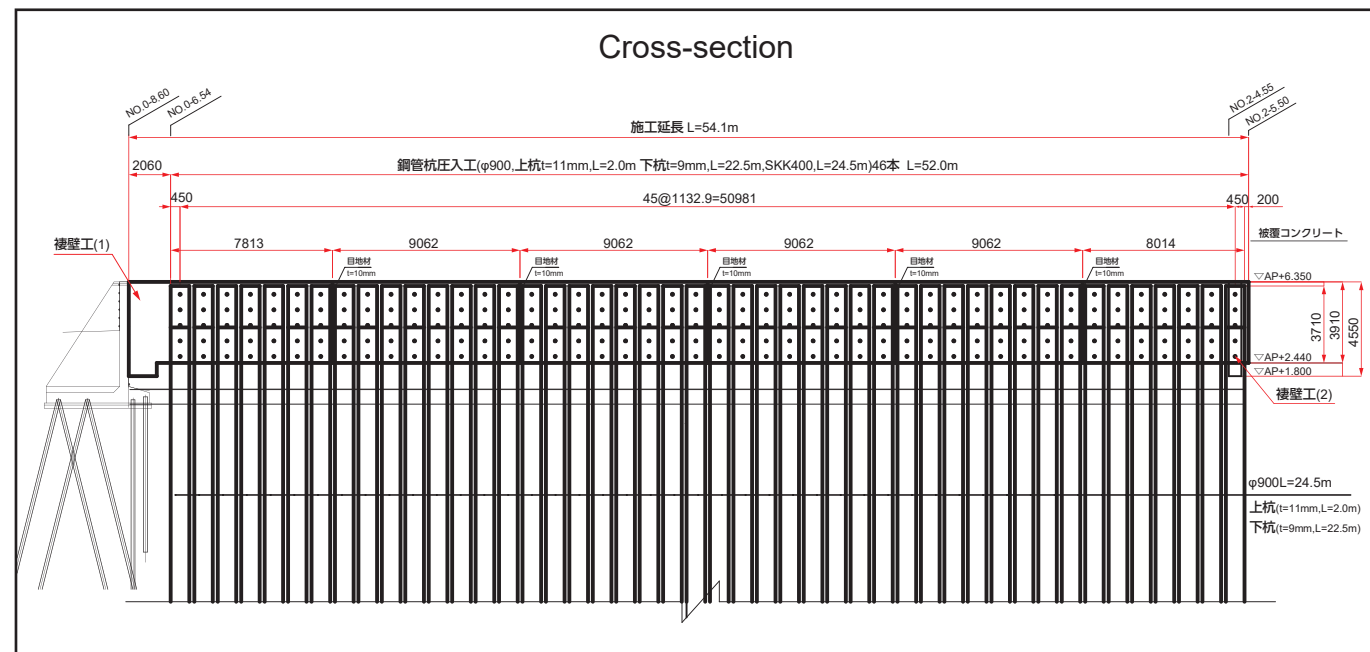
Type of work : Gyropress Method™

Pile type : Tubular Pile

No. of measured piles : 46 pcs

Duration* : June 11 to November 21, 2019

*Tubular Pile installation-as-built measurement after soil improvement



Measurement status



Result output in a format for electronic submission (PDF format)

様式-81

測定結果総括表

工種 ジャイロプレス工法

杭種 鋼管杭

測定項目	杭/矢板の平面位置 (ΔX, ΔY) (杭径中心間隔ずれ)						杭/矢板の傾斜 (ΔX/L, ΔY/L) (傾斜角)				杭/矢板の天端高さ H		
	ΔX		ΔY		傾斜		傾斜		H				
規格値	-100	~	+100mm	-100	~	+100mm	1/100以内	1/100以内	-50	~	+50mm		
管理値	-50	~	+50mm	-50	~	+50mm	1/150以内	1/150以内	-30	~	+30mm		
設計値	m		m	m		m			m		m		
実測値	m		m	m		m			m		m		
差			mm			mm					mm		
平均値			21.7			15.8	-	-1/347	-	1/1425	29.2		
最大値			67.0			62.0	-	1/155	-	1/133	39.0		
最小値			7.0			0.0	-	1/4236	-	1/13415	18.0		
最多値			31.0			10.0	-	-1/155	-	-	30.0		
データ数			n=46			n=46		n=46		n=46	n=46		
標準偏差			m±22.3			m±19.2		m±1/341		m±1/397	m±4.4		

様式-82

Measurement result list

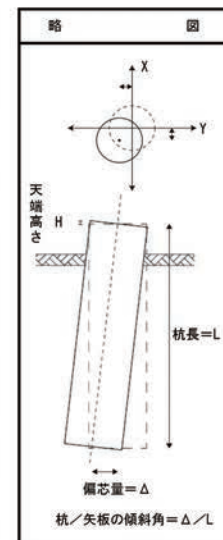
工事名 隅田川(相生橋下流)左岸防潮堤耐震補強工事(その2)及びテラス工事(その3)

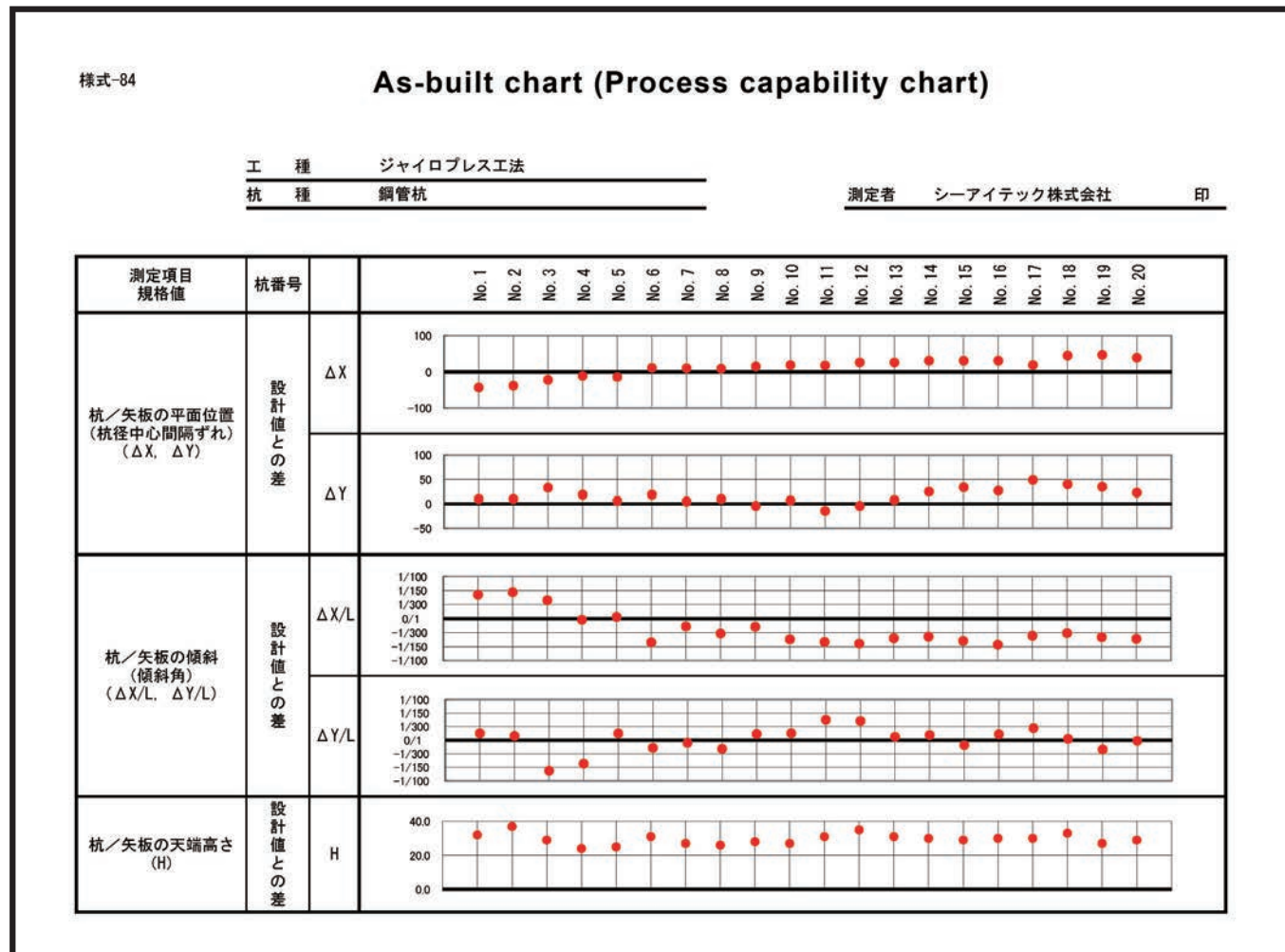
工種 ジャイロプレス工法

杭種 鋼管杭

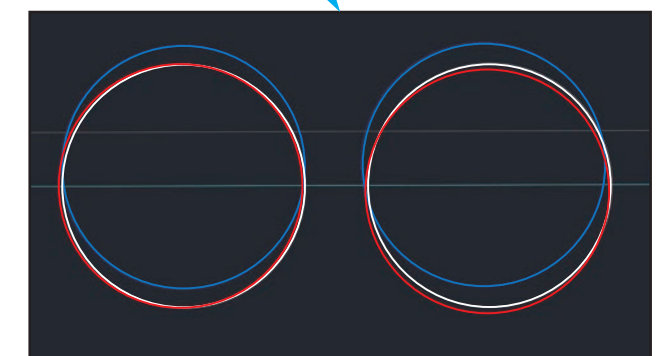
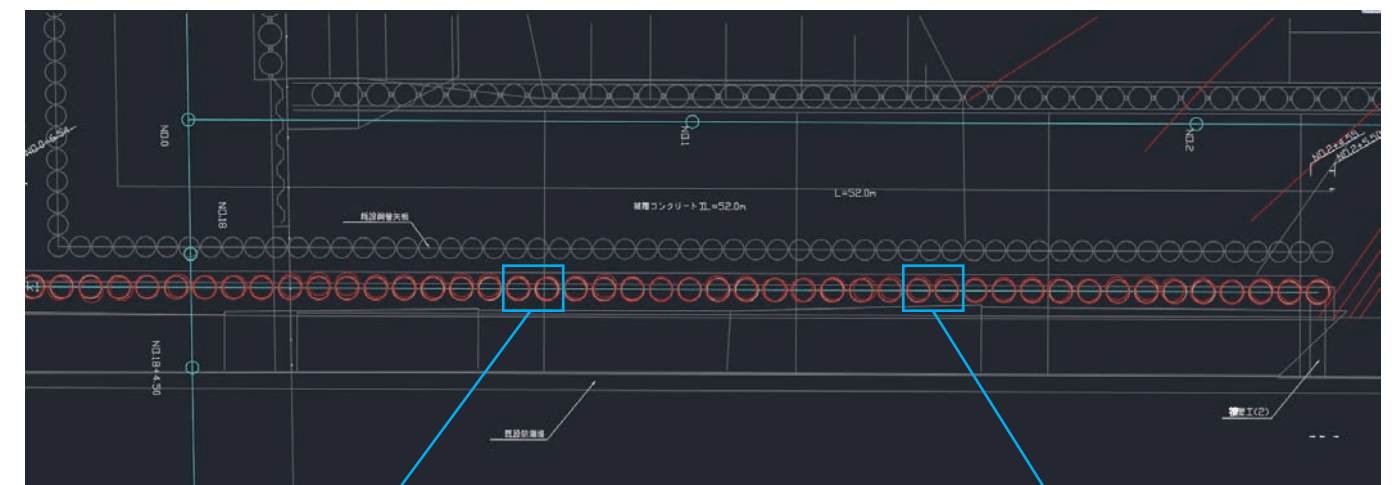
測定者 シーアイテック株式会社 印

測定項目	杭/矢板の平面位置 (ΔX, ΔY) (杭径中心間隔ずれ)						杭/矢板の傾斜 (ΔX/L, ΔY/L) (傾斜角)				杭/矢板の天端高さ H		
	ΔX		ΔY		傾斜		傾斜		H				
規格値	-100	~	+100mm	-100	~	+100mm	1/100以内	1/100以内	-50	~	+50mm		
管理値	-50	~	+50mm	-50	~	+50mm	1/150以内	1/150以内	-30	~	+30mm		
設計値	m		m	m		m			m		m		
実測値	m		m	m		m			m		m		
差			mm			mm					mm		
No.1	-36885.637	-36865.680	-43.0	-3985.760	-3985.750	10.0	-	1/176	-	1/600	6.150	6.182	32.0
No.2	-36866.410	-36866.448	-38.0	-3986.589	-3986.579	10.0	-	1/160	-	1/975	6.150	6.187	37.0
No.3	-36867.163	-36867.205	-22.0	-3987.417	-3987.384	33.0	-	1/230	-	-1/133	6.150	6.179	29.0
No.4	-36867.955	-36867.966	-11.0	-3988.245	-3988.226	19.0	-	-1/4238	-	-1/1133	6.150	6.174	24.0
No.5	-36868.728	-36868.742	-14.0	-3989.073	-3989.057	8.0	-	1/2456	-	1/603	6.150	6.175	25.0
No.6	-36869.501	-36869.490	11.0	-3989.902	-3989.883	19.0	-	-1/1177	-	-1/533	6.150	6.181	31.0
No.7	-36870.274	-36870.264	10.0	-3970.738	-3970.725	5.0	-	-1/547	-	-1/1615	6.150	6.177	27.0
No.8	-36871.047	-36871.038	9.0	-3971.558	-3971.548	10.0	-	-1/284	-	-1/468	6.150	6.176	26.0
No.9	-36871.819	-36871.804	15.0	-3972.386	-3972.390	-4.0	-	-1/521	-	1/658	6.150	6.178	28.0
No.10	-36872.592	-36872.573	19.0	-3973.215	-3973.208	7.0	-	-1/203	-	1/589	6.150	6.177	27.0
設計値	m		m	m		m			m		m		
実測値	m		m	m		m			m		m		
差			mm			mm					mm		

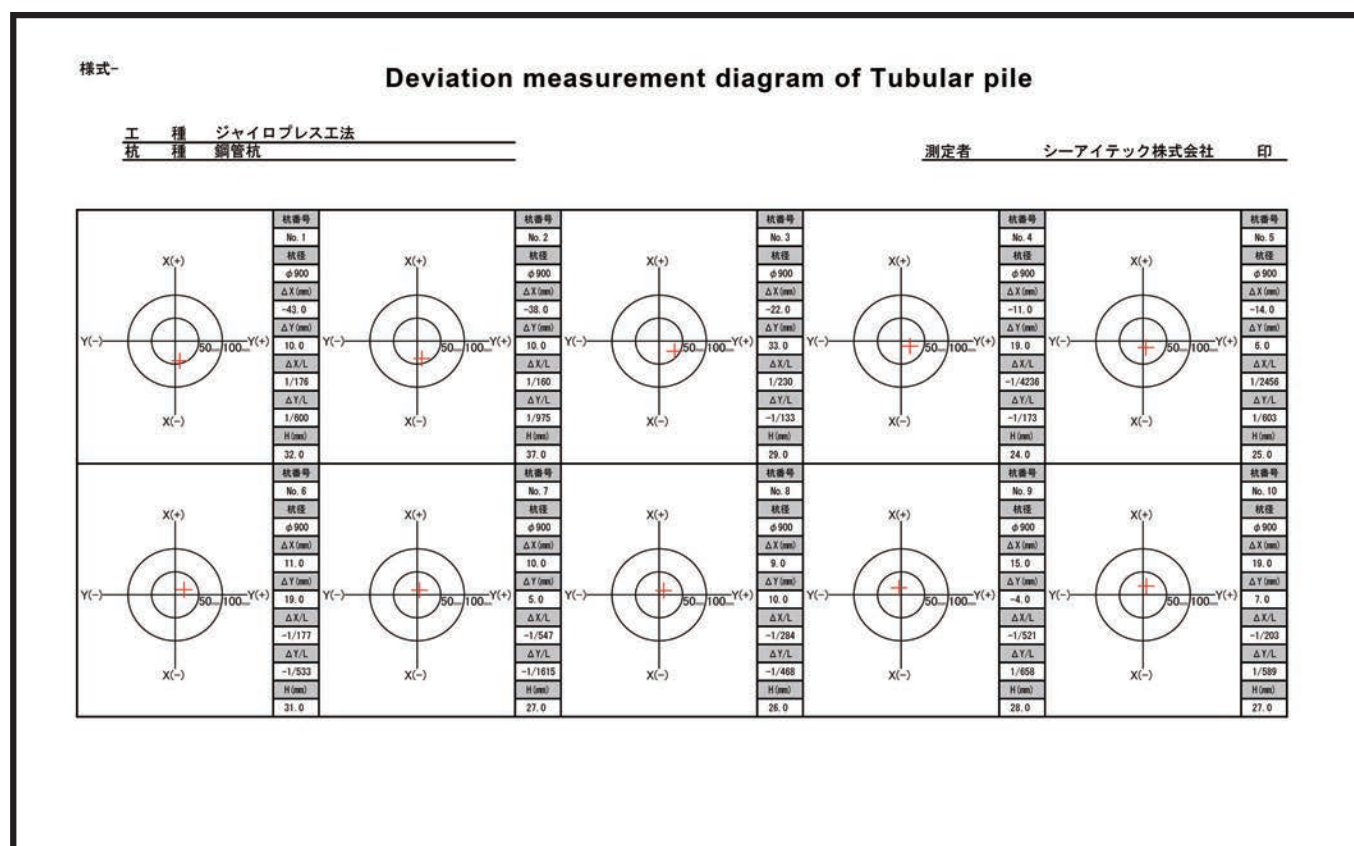
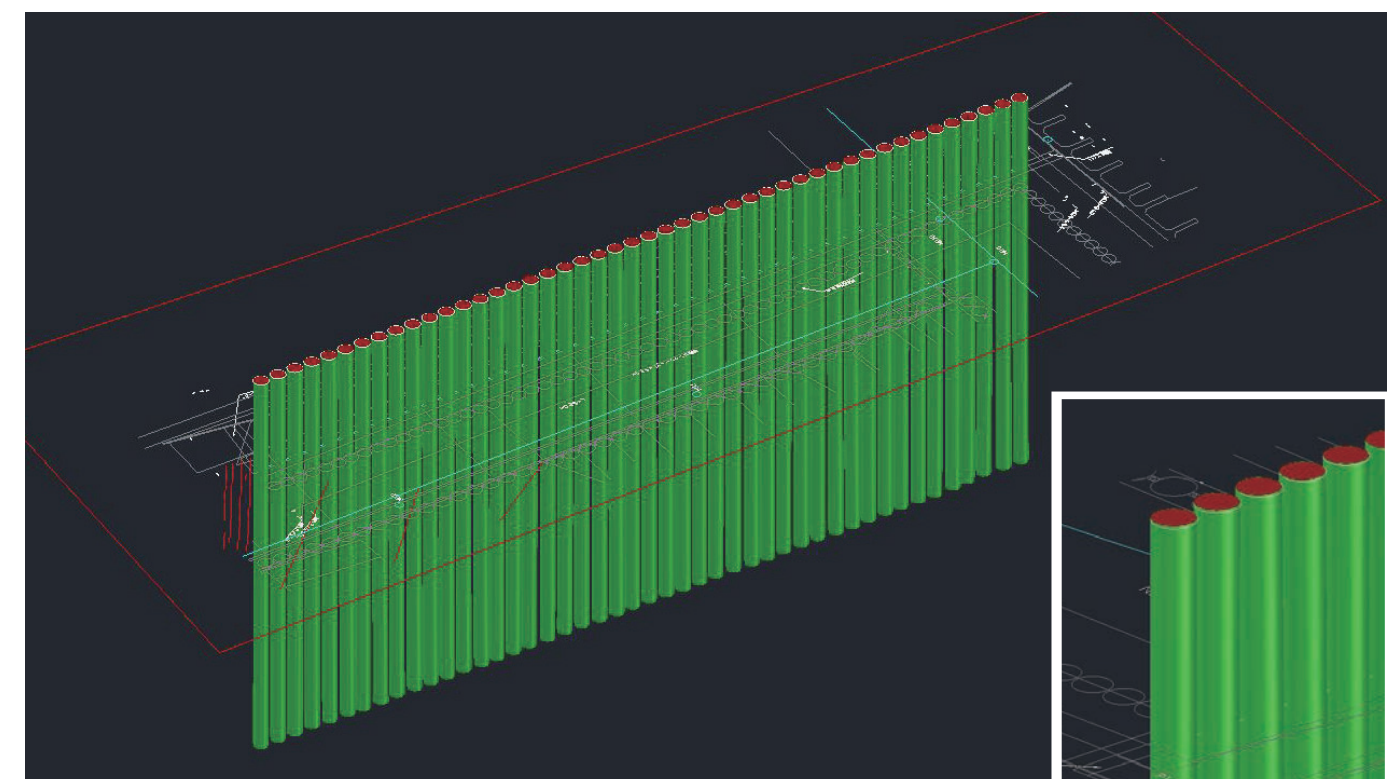




Reflecting the measured values on 2DCAD

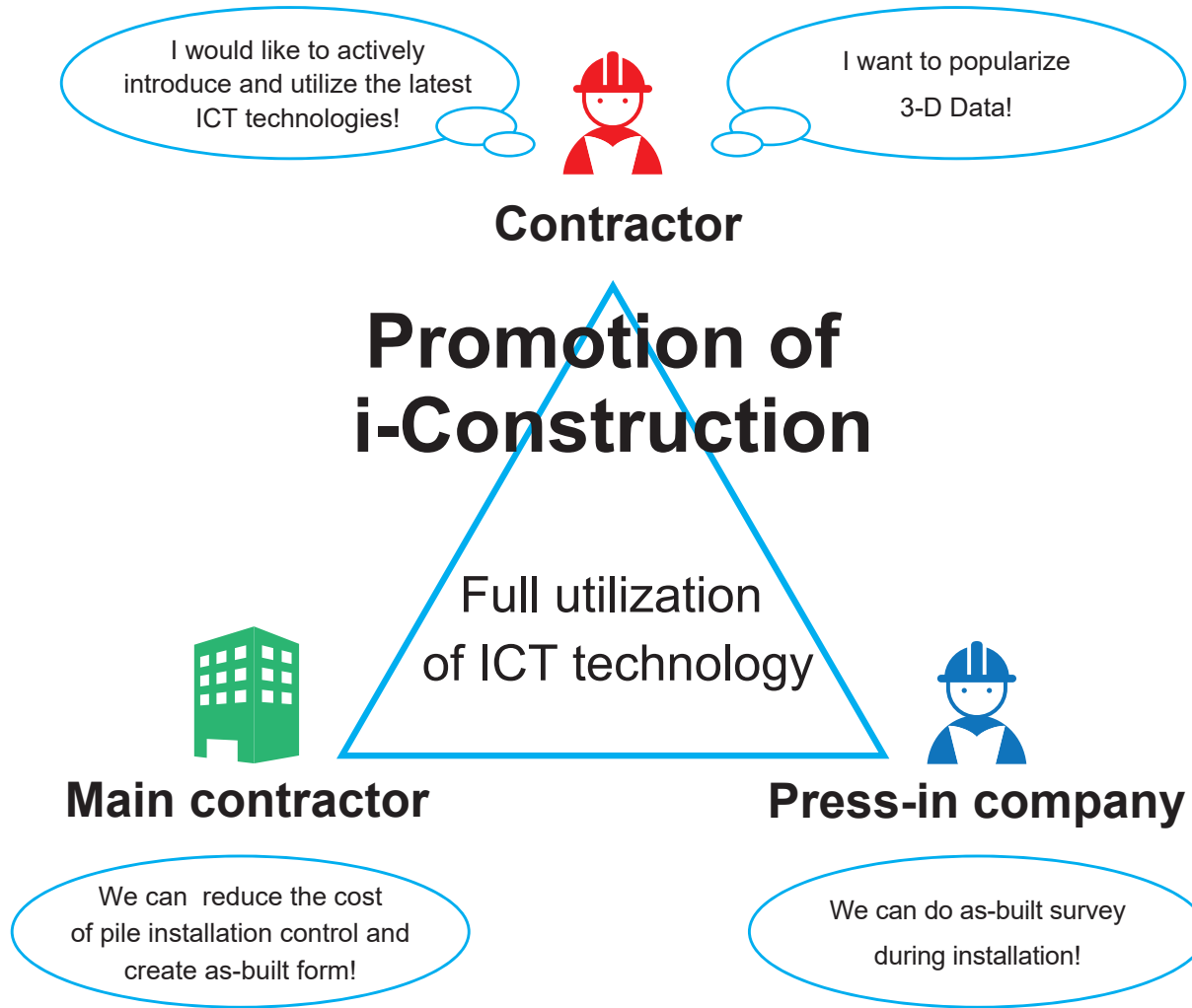


Outputting as 3D drawing data



Advantages of "Implant NAVI" Introduction

"Implant NAVI" realizes high quality pile installation control, confirming displacement and inclination of the pile during installation. Also, costs can be reduced by comprehensive creation of as-built drawings in a format for electronic submission. Visualization using 3D drawings allows construction status to be seen in an easy-to-understand manner.



- Labor saving and speeding up for creating as-built drawings and pile installation control
- Proposal of technology to a contractor provides an evaluation point. (Ingenuity of press-in company, evaluation points for bidding, etc.)
- By registering technology with NETIS, you can get additional points for construction.

- Piles can be installed more accurately.
- It is possible to prove reliable and high quality construction.
- Press-in company can manage as-built drawings by itself, so quality of the finished products will be enhanced. This builds great trust and credibility, making the company receive more orders of projects.



A maximum of 1.6 points will be added to the rating for construction if the technology registered with NETIS (New Technical Information Provision System of MLITT, Japan) is utilized. "Implant NAVI" was registered with NETIS in 2019.

Name of technology : Implant NAVI
Registration Number : SK-190009-VE

List of Equipment Used



1 Total station and Tripod

■ Specifications (3D Station NET 05AX II / NET1AX II)

Angle measurement	
Minimum Display	0.1° / 0.5°
Measuring Accuracy	0.5° / 1"
Dual-axis automatic compensator	Working range : ±6°
Distance measurement	
Measurable range (Weather conditions: Good) 1-element reflecting prism	1.3 ~ 3,500m
Minimum Display	0.00001 / 0.0001m、0.0001/0.001m
Measuring Accuracy (Fine measurement) Reflecting prism	(0.8+1ppm × D) mm / (1+1ppm×D)mm
Measuring Time (Fine measurement)	0.9s or less (initial 1.5s or less)

2 360 ° prism

3 Prism mounting jig

4 Laptop for measuring data

5 1-element prism/tripod (used as required)

