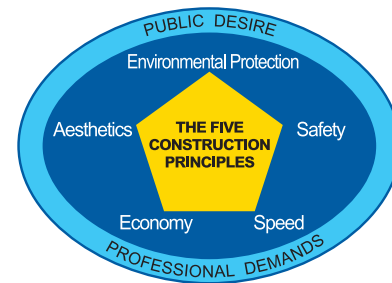


## THE FIVE CONSTRUCTION PRINCIPLES



If we analyse all the parties involved in any construction work, we can categorise them into three main groups: the client, the contractor and the general public. The ideal situation is when all three parties are in agreement and satisfied with the successful outcome of the construction work. Problems arise when one of the parties becomes a victim of imbalance in this relationship. The conventional construction methods based upon principles that "more is paid for less efficient work" are no longer appropriate to present-day society. Universally acceptable construction methods must embody the Five Construction Principles.

Environmental Protection	Construction work should be environmentally friendly and free from pollution.
Safety	Construction work has to be carried out in safety and comfort with a method implementing the highest safety criteria.
Speed	Construction work should be completed in the shortest possible period of time.
Economy	Construction work must be done rationally with an inventive mind to overcome all constraints at the lowest cost.
Aesthetics	Construction work must proceed smoothly and the finished product should portray cultural and artistic flavour.

**GIKEN**

Construction Solutions Company

[www.giken.com](http://www.giken.com)

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Ver 2.0EN07 / 07 Jun 2023

# HARD GROUND PRESS-IN METHOD

## SILENT PILER™ F301

for Hat Sheet Piles(900mm wide)

Technical Brochure



**GIKEN**

# Introduction

The F301 is the next generation piler featuring a new modular design, IT control system and is environmentally friendly.

All the parts are optimised by drastically modifying the structure, shape, and material. Not only are the main component parts more versatile, it is also equipped with a cutting-edge control system, realising high functionality and longer operation life.

The F301 is applicable to Hat Sheet Piles (900mm wide), which have advantages over conventional U sheet piles in terms of material costs and production rate.

Also, it is able to overcome difficult ground conditions by utilising the Super Crush System (Simultaneous Augering System).

Hence, the F301 can cover soft to very hard ground conditions. Suitable penetration modes can be selected depending on ground conditions:- Standard Mode, Water Jetting Mode and Super Crush Mode.

The F301 and hat sheet piles will create a new field in the foundation industry due to its advantages.

This brochure fully explains the specifications of the SILENT PILER™ F301 and we hope you will recognise the advantages of the functions and press-in mechanism of this SILENT PILER.

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Modular model applicable to Hat Sheet Piles (900mm wide)

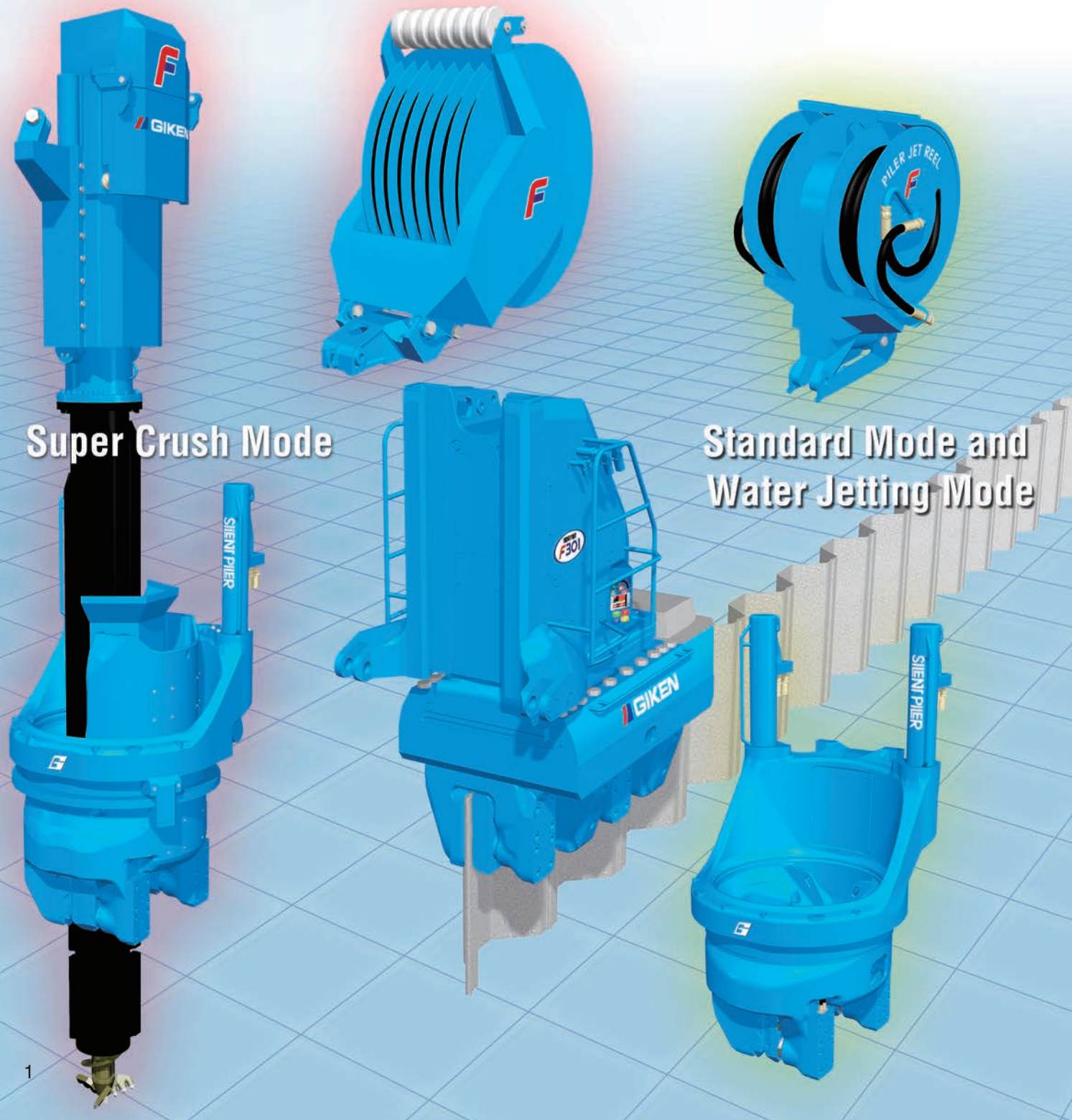
# SILENT PILER™ F301

SILENT PILER F301

## Flexible and Functional Formula

The F301 features a new modular design developed by optimising all the parts and drastically modifying the structure, shape, and material.

Not only are the main component parts more versatile, it is also equipped with a cutting-edge control system, and realising high functionality and longer operation life.



Super Crush Mode

Standard Mode and Water Jetting Mode

## Pile Installation into Hard Ground

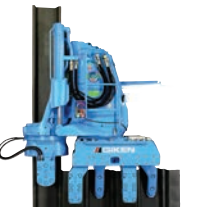
SILENT PILER 

### Overview

When sheet piles need to be installed into hard ground, such as cobble or boulder mixed soil and rock, a pile driver and an additional drilling rig are conventionally used, which may require a long construction period and extensive costs and involve potential concerns about the environment and safety issues. GIKEN has developed "the Hard Ground Press-in Method" to overcome these negative aspects. Noise and vibration generated from piling work can be minimised by pressing-in sheet piles with simultaneous augering. The SILENT PILER F301 is so compact and light that it can eliminate the negative psychological impact that massive conventional piling machines give to neighbours. It is also possible to carry out piling works on slopes or on the water, which require large temporary platforms with conventional piling methods. Since such temporary facility is not necessary with the systemised piling technology of GIKEN (GRB™ System), the environmental burden of the piling work is greatly reduced.

### Advantages of the Press-in Method

- Noise and vibration free
- No risk of piler overturning
- Compact and light machinery
- Load bearing capacity can be monitored during installation
- High accuracy of pile installation



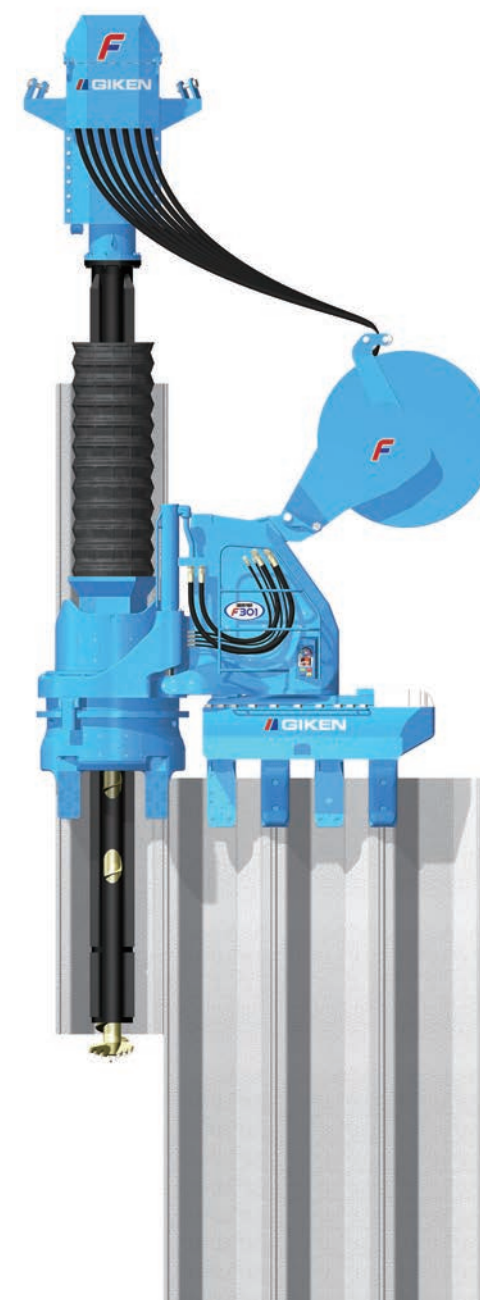
### The Coring Theory (Integrated Simultaneous Augering System)

"The Coring Theory", the original theory of GIKEN, is an integrated system which enables simultaneous augering and pressing-in operations, so sheet piling into hard ground is possible without losing the advantages of the Press-in Method.



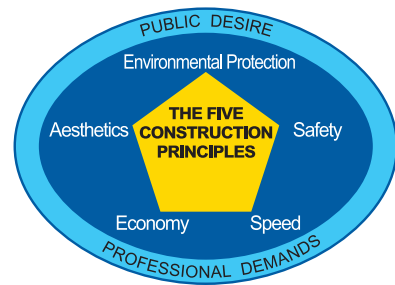
### Further Advantages

- Can install sheet piles into hard ground such as gravelly soil, cobble or boulder mixed soil and rock.
- No risk of piler overturning and no psychological impact that massive conventional machines have.
- Compact and light machinery makes piling work in limited working space and on slopes possible.
- The augering area is minimised just for sheet pile installation, so the amount of arising (spoil of disturbed soil) can be minimised. It provides proper stability on the sheet pile wall.
- The unique systemised piling technology, the GRB System, realises an environmentally-friendly "Green Construction Method".





## The Five Construction Principles



Construction of infrastructure and buildings is indispensable to create affluent societies with high living standards. On the other hand, sustainable development is necessary to minimise the impact on the limited natural environment. In order to achieve this, appropriate and balanced construction methods and quality standards need to be established at the design stage taking account of requirements through from the construction stage to the operational stage. GIKEN prescribes these evaluation guidelines as “the Five Construction Principles”, which ideal construction needs to satisfy.

**The Hard Ground Press-in Method is a piling method that fulfils “The five construction principles” in a well-balanced manner.**

### Environmental Protection

**Construction work should be environmentally friendly and free from pollution.**

- Press-in sheet piles are installed with static loading, so there is no construction pollution such as noise and vibration.
- The SILENT PILER is so light and compact that the site of piling activities can be minimised.
- GRB System does not require temporary platforms, thus minimising the environmental impact of construction work.
- Due to the minimum required augering area, ground disturbance and the amount of arising (spoil of disturbed soil) can be minimised.



### Safety

**Construction work has to be carried out in safety and comfort with a method implementing the highest criteria.**

- The compact SILENT PILER does not have any risk of overturning, because the clamps grip the reaction piles firmly.
- Both the Pile Auger and sheet piles are firmly gripped by the SILENT PILER to achieve a high standard of safety.
- The SILENT PILER can be controlled by a radio control system, so the operator can control it from a safe position.



### Speed

**Construction work should be completed in as short a period as possible.**

- The construction duration can be minimised with systemised machinery and equipment.
- Multiple sets of compact machines and equipment can be used at the same time to greatly shorten the construction period.
- Even in highly restricted areas and at night, where working hours are limited, the piling progress is faster.



### Economy

**Construction work must be done effectively with an inventive mind to overcome all constraints at the lowest cost.**

- GRB System does not require temporary platforms, so construction cost is greatly reduced.
- The systemised machinery and equipment can minimise the required workforce, so labour costs are greatly reduced.
- The compact system hardly interferes with public activities.



### Aesthetics

**Construction work must proceed smoothly and the finished product should portray cultural and artistic flavour.**

- Smooth piling works are available by selecting the most effective package of machinery and equipment for individual project conditions.
- Pleasant looking structure is available by installing decoration panels on sheet pile walls.
- With the advantages of the Press-in Method, highly accurate and high quality sheet pile walls are available.



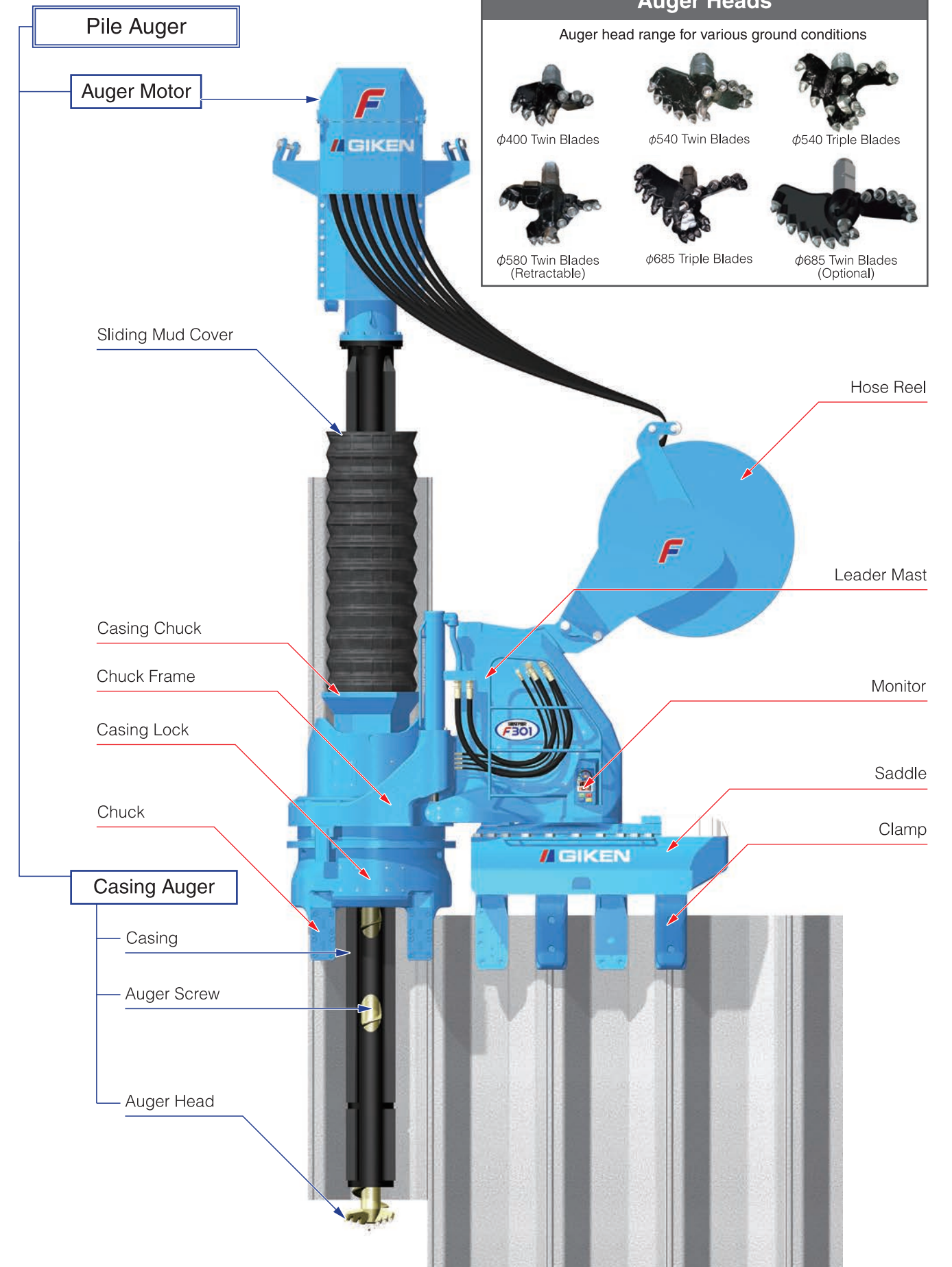
Under Construction



After Completion

## Component Names

### SILENT PILER F301

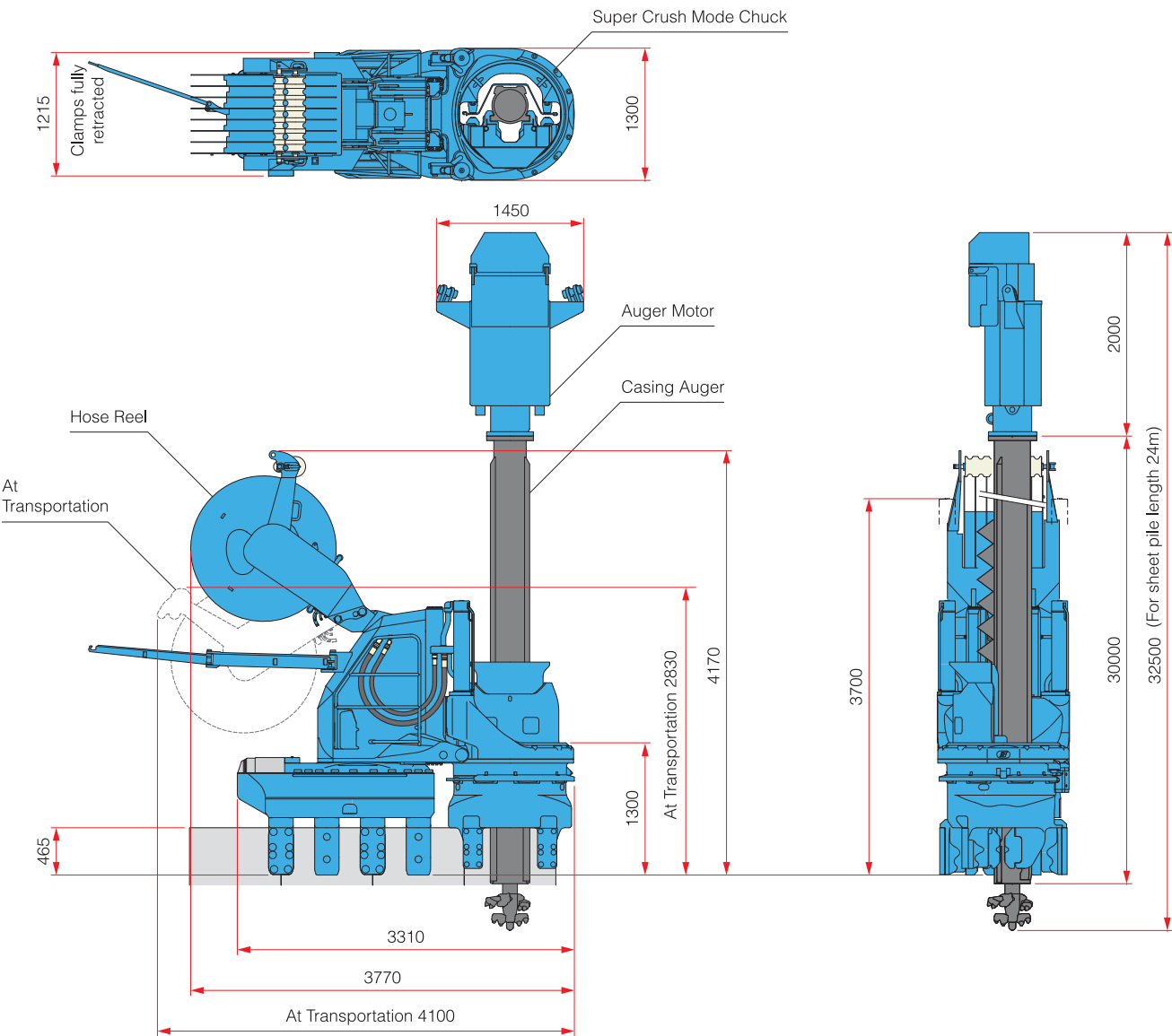




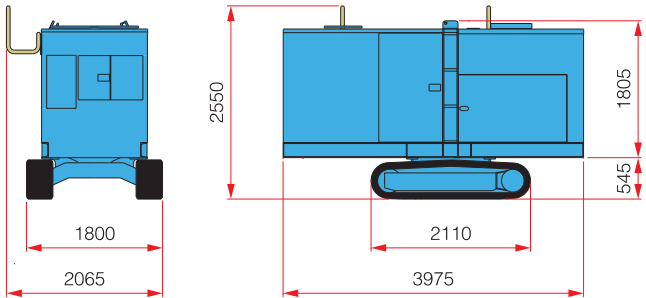
Machine Specifications

Super Crush Mode

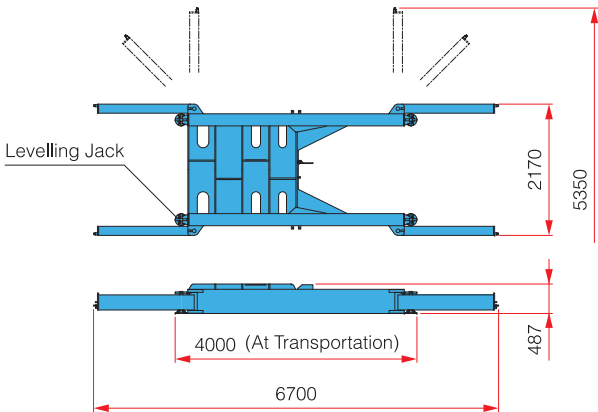
F301-C900



Power Unit



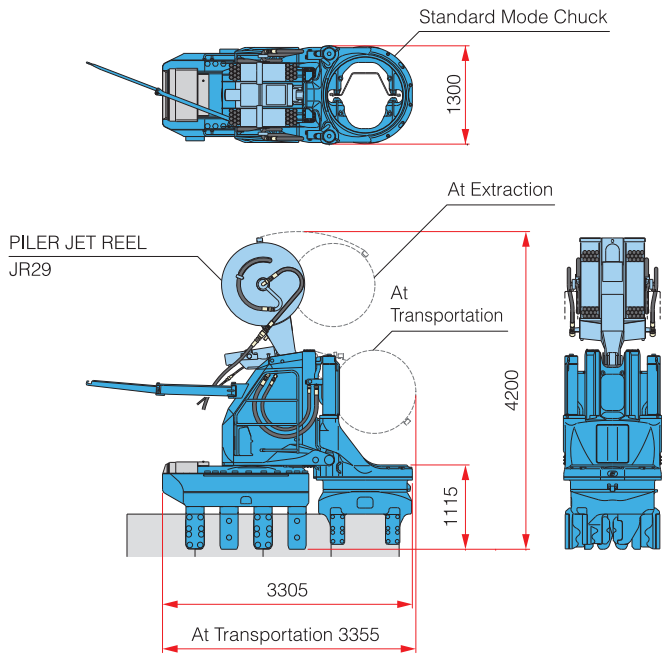
Reaction Stand



Water Jetting Mode

F301-900

\* PILER JET REEL is an optional item



SILENT PILER	SILENT PILER F301
--------------	-------------------

Applicable sheet piles	Hat Sheet Pile (900mm wide) (10H, 25H, 45H and 50H)
Max. Press-in Force	800 kN (Super Crush Mode) 1000 kN (Standard Mode)
Max. Extraction Force	900 kN (Super Crush Mode) 1200 kN (Standard Mode)
Stroke	850 mm
Press-in Speed	2.0 ~ 43.5 m/min
Extraction Speed	1.5 ~ 32.3 m/min
Control System	Radio Control
Movement	Self-Moving

Super Crush Mode (Main Body & Hose Reel)	14880 kg
Water Jetting Mode (Main Body & PILER JET REEL)	12250 kg
Standard Mode (Main Body)	11000 kg

Hose Reel	HR17
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Mass (Standard)	2780 kg (including Hose Reel Bracket)
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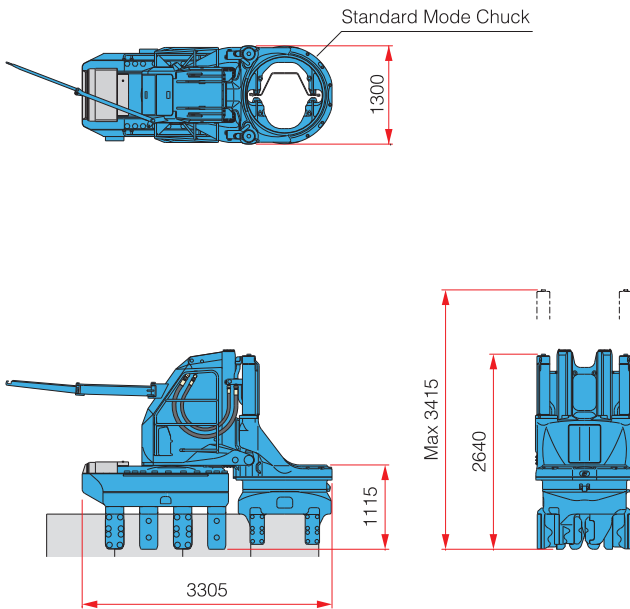
Pile Auger	PA22
------------	------

Applicable Pile Length (Standard)	Max 24 m
Mass	Pile Auger 1850 kg* Casing Auger 10050 kg
Total Mass	11900 kg

\*Up to 30m with extension

Standard Mode

F301-900



PILER JET REEL	JR29
----------------	------

Applicable Pile Length	Standard 17.0 m (Max. 27.0 m)
Mass	1250 kg

Power Unit	EU300I3
------------	---------

Power Source	Diesel Engine
Rated Power Mode	230 kW (313 ps) /1800 min <sup>-1</sup>
Rated Eco Mode	204 kW (278 ps) /1600 min <sup>-1</sup>
Rated Super Eco Mode	179 kW (243 ps) /1400 min <sup>-1</sup>
Fuel Tank Capacity	500 L
Hydraulic Reservoir	PILER ECO OIL 490 L
Moving Speed	1.4 km/h
Mass	6800 kg (with 30m Hose)

Reaction Stand (with Levelling Jack)
--------------------------------------

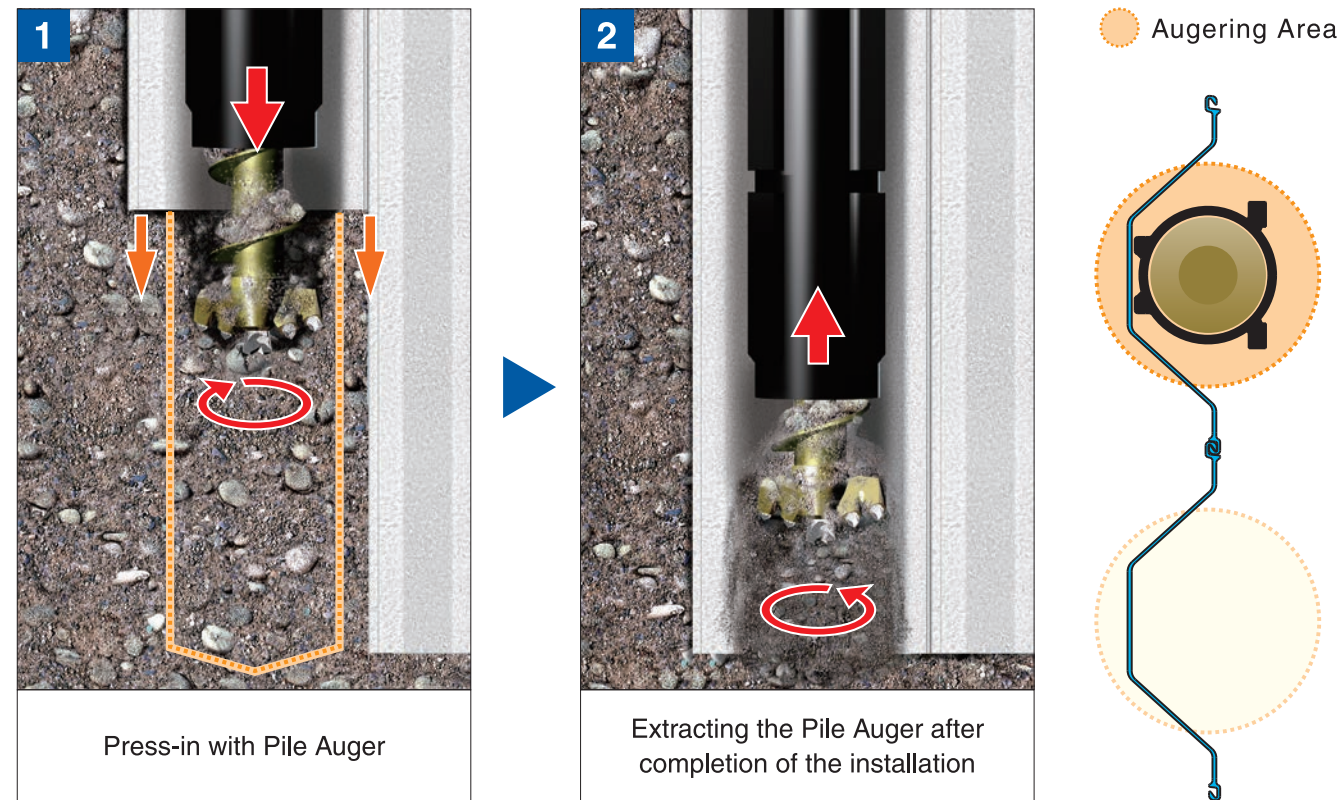
Mass	2000 kg
------	---------



## Pile Installation into Hard Ground

### Directional Coring Technique

Together with the Hard Ground Press-in Method, the "Coring Theory" of GIKEN enables pile installations under difficult ground conditions such as gravelly soil and cobble or boulder mixed soil without losing the advantages of the Press-in Method. The augering area can be reduced to assist pile installation, minimising volume of spoil and disturbance to the soil strata. Hence, high bearing capacity is available from sheet piles which are installed by the Hard Ground Press-in Method.



### Press-in work in progress

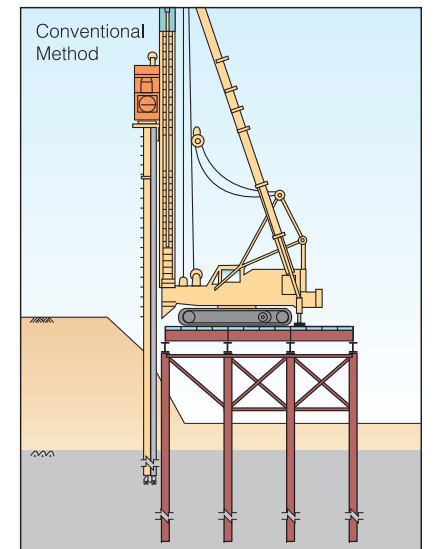
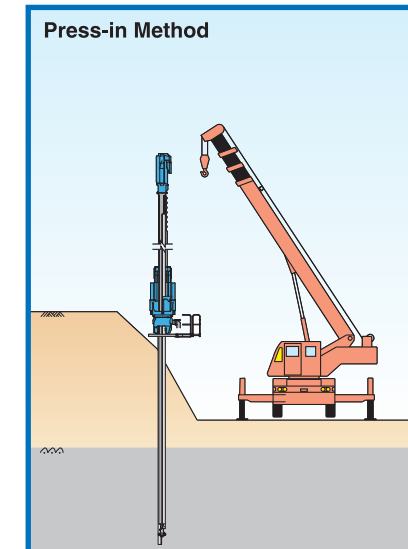


Cobbles being crushed by wedge effect

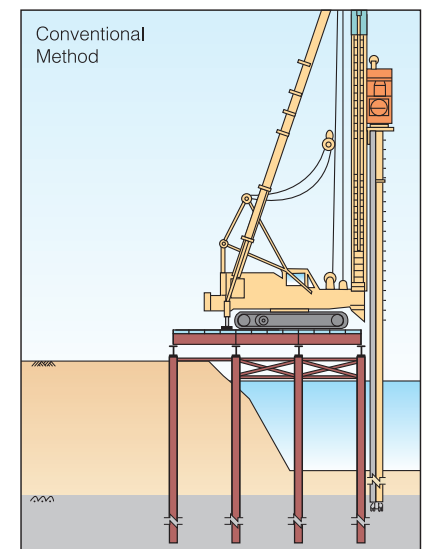
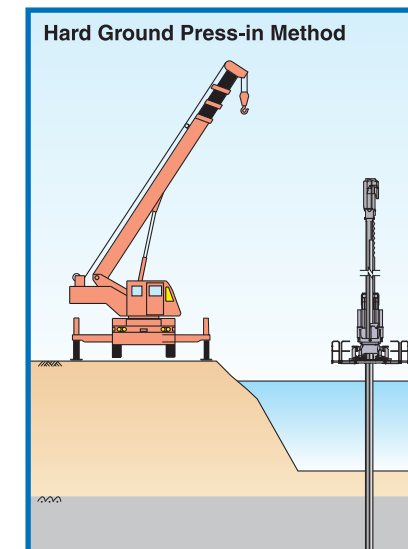


## Advantages of the Press-in Method under difficult working conditions

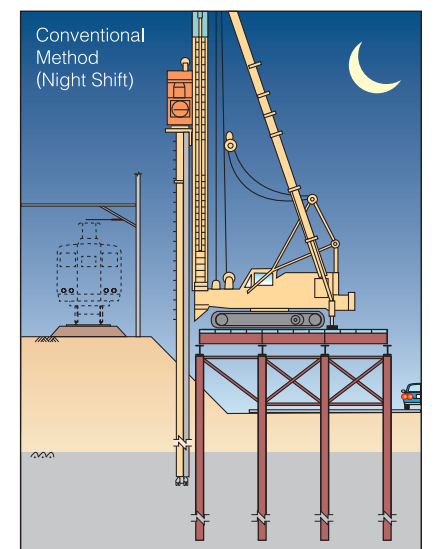
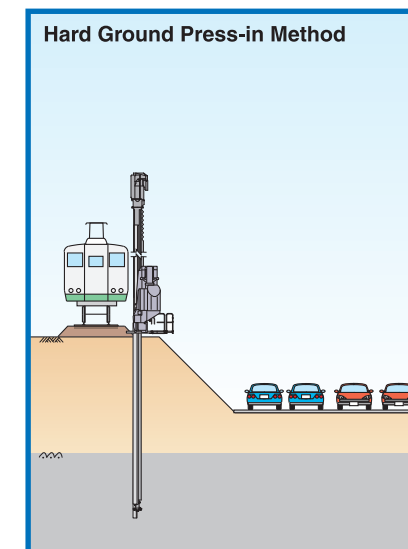
**Working on slopes :** No temporary working platform is required, shortening construction duration and reducing construction cost.



**Working above water :** No temporary working platform is required, shortening construction duration and reducing construction cost.



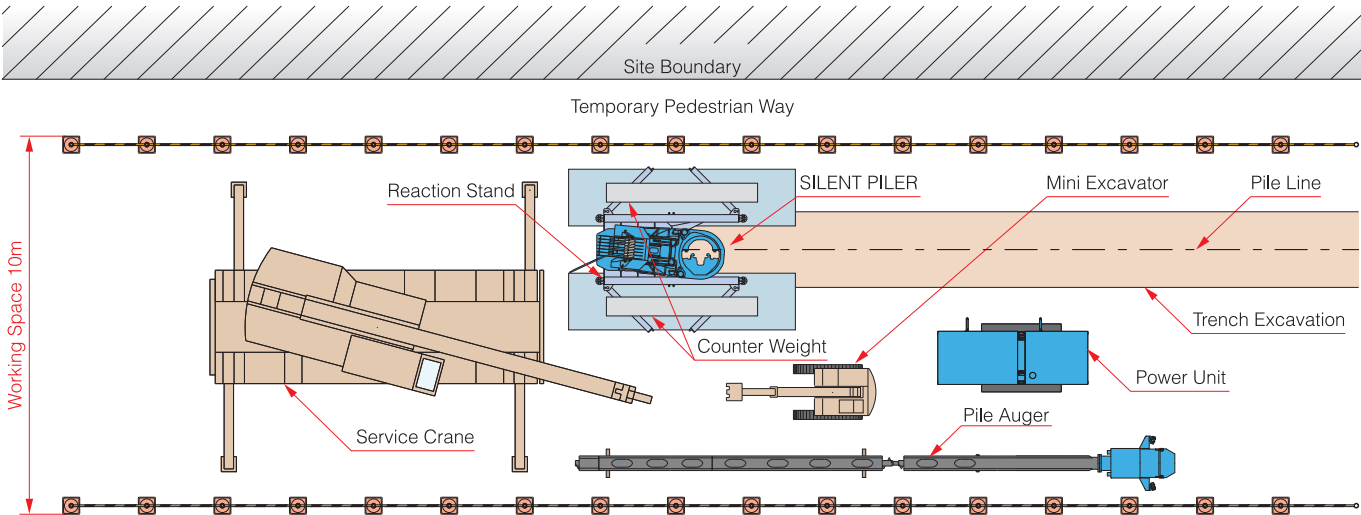
**Close to Existing Infrastructure :** Working hours can be maximised even near railway tracks due to no risk of piler overturning.



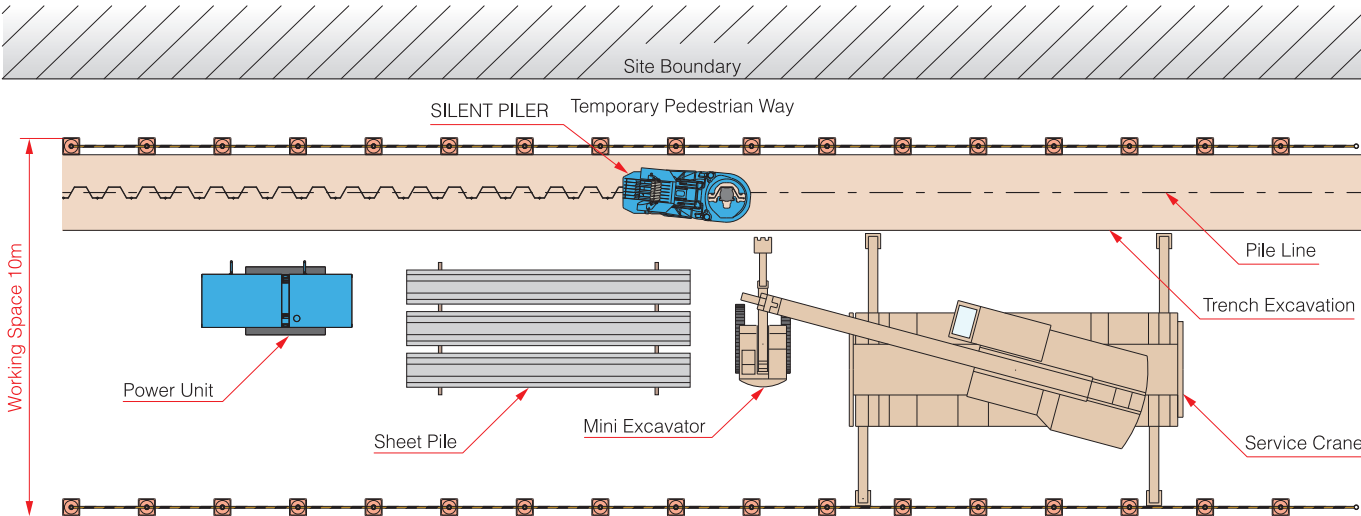


Typical Machine Layout

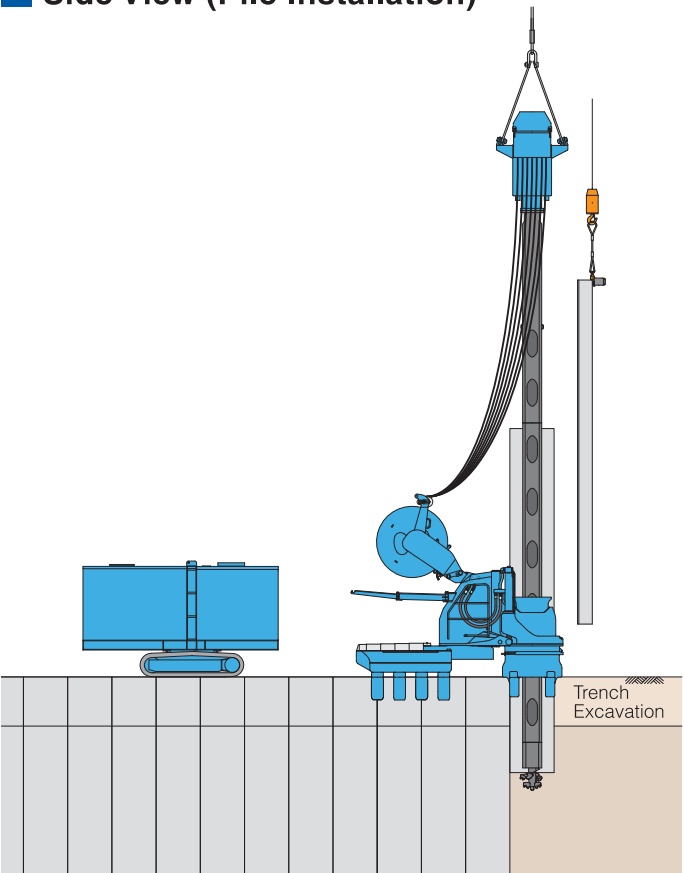
Plan View (Initial Piling)



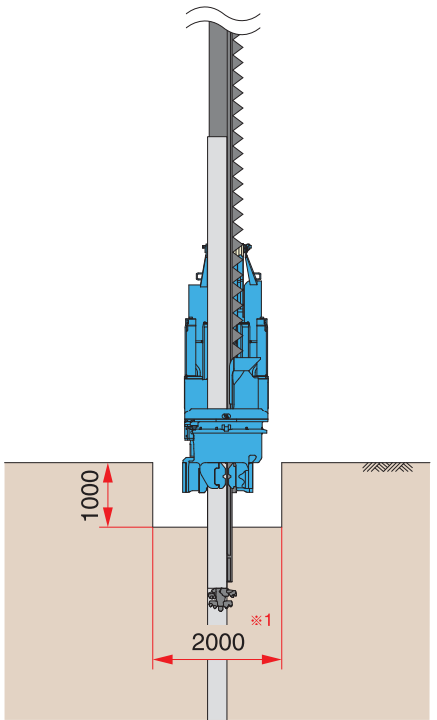
Plan View (Pile Installation)



Side View (Pile Installation)



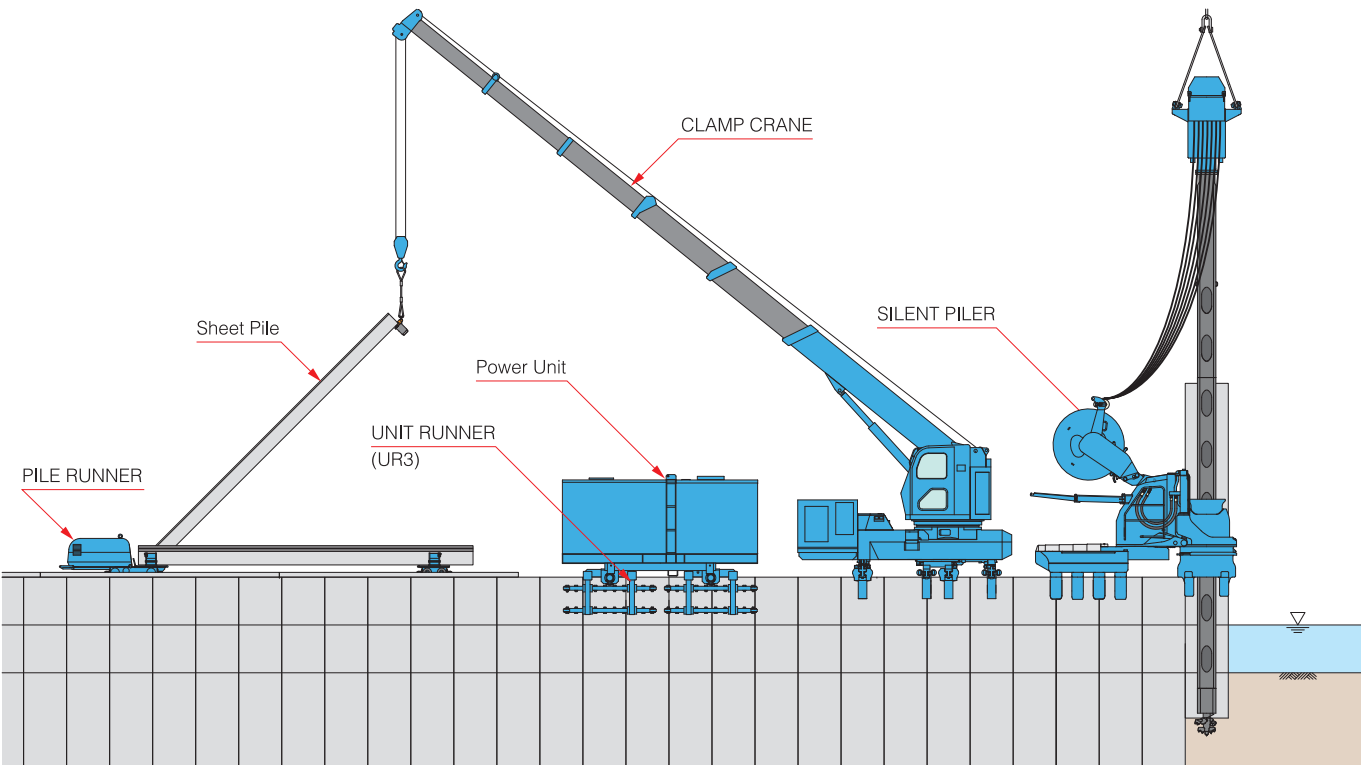
Cross Section



\*1 1450mm for Standard and Water Jetting Mode When the top of the piles is higher than the commencing surface, trench excavation may not be required.

Side View (GRB System)

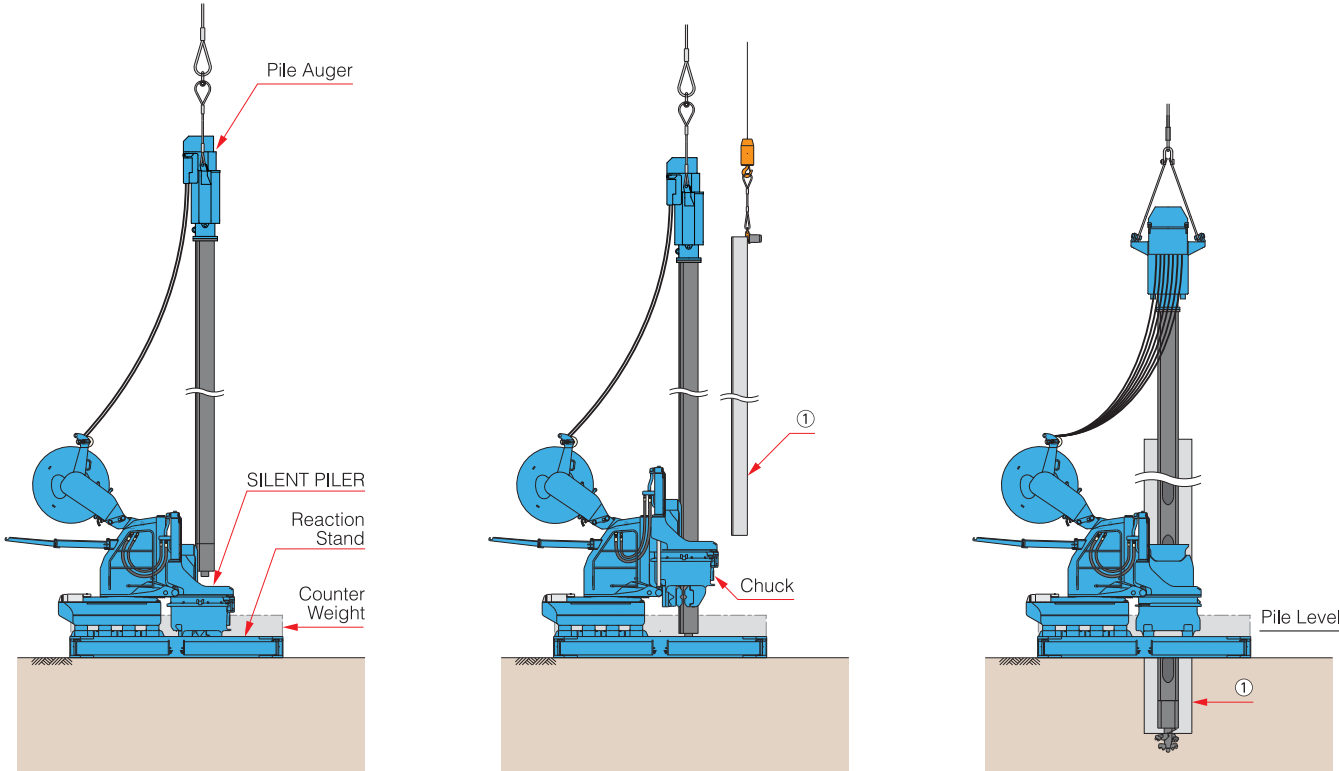
The GRB System (CLAMP CRANE™, UNIT RUNNER™ and PILE RUNNER™) enables piling works to be carried out above previously installed piles.



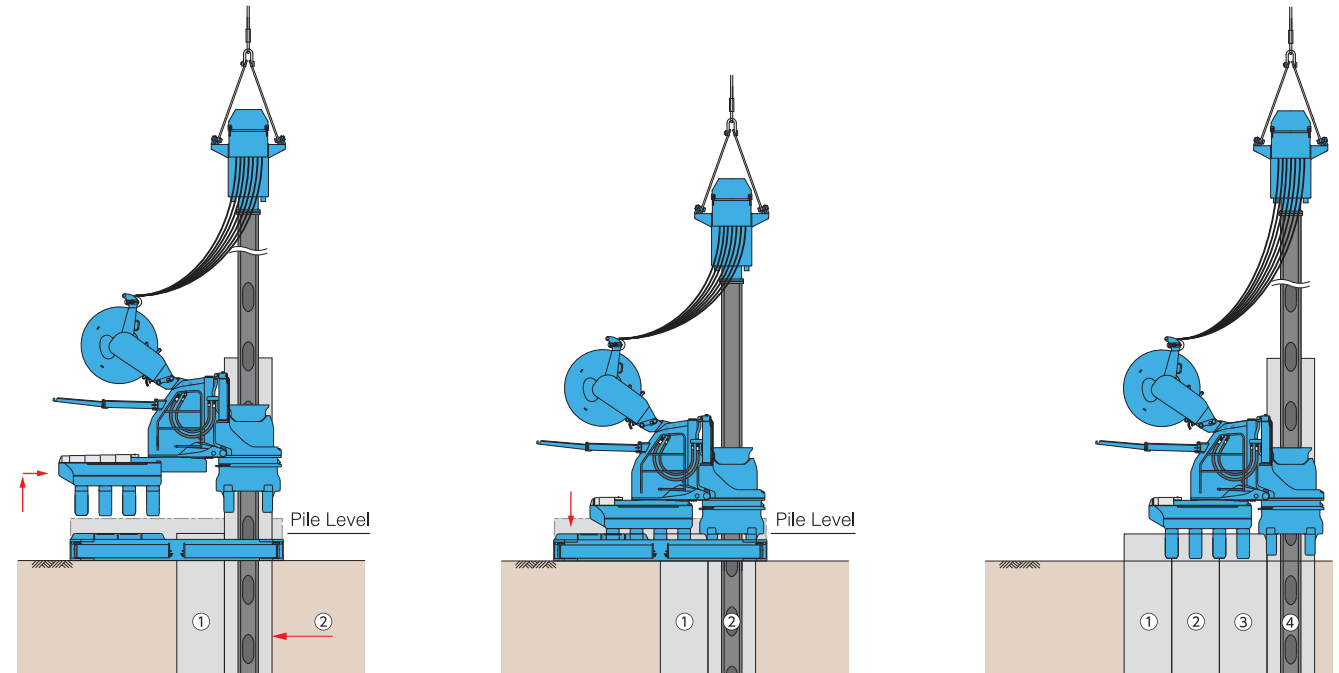


Typical Piling Sequences

Initial Piling

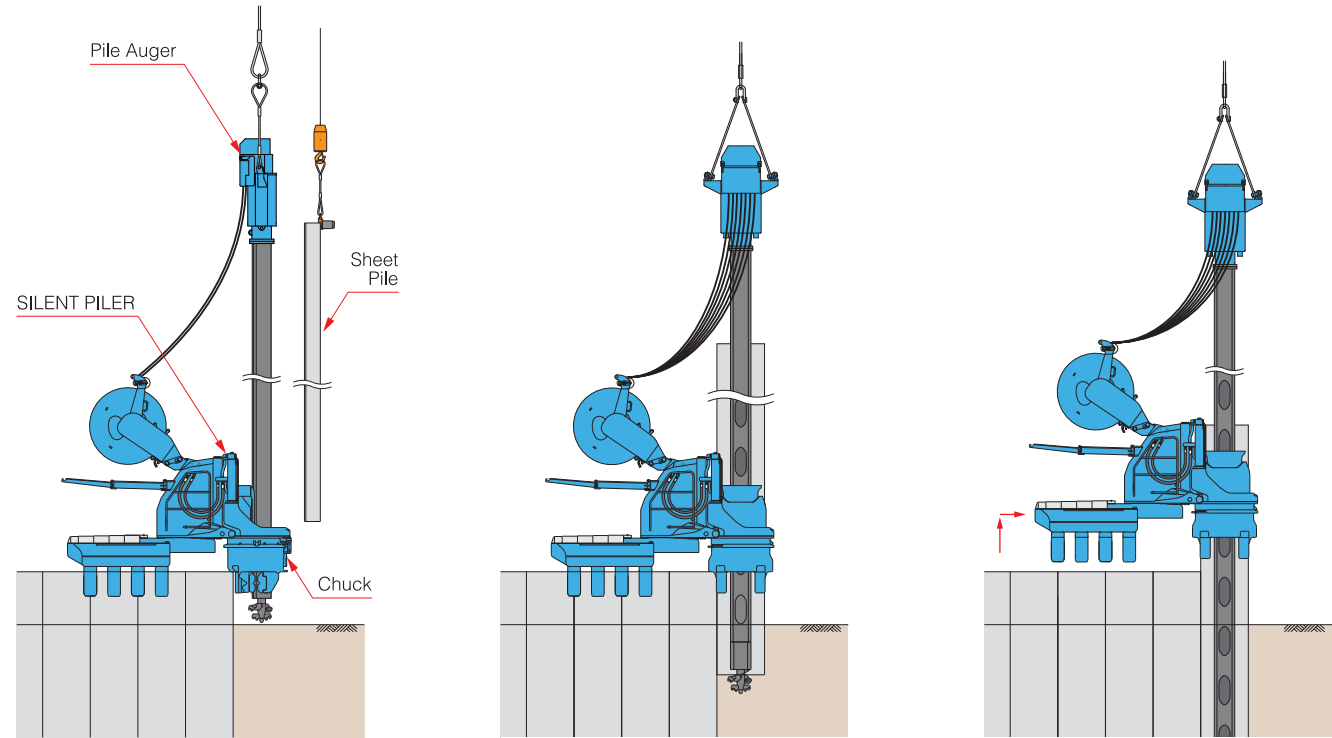


1. Set up Reaction Stand, SILENT PILER, Counter Weight and Pile Auger onto commencing surface.
2. Pitch the sheet pile ① into the Chuck.
3. Start installation of the sheet pile ① after checking the alignment and verticality.

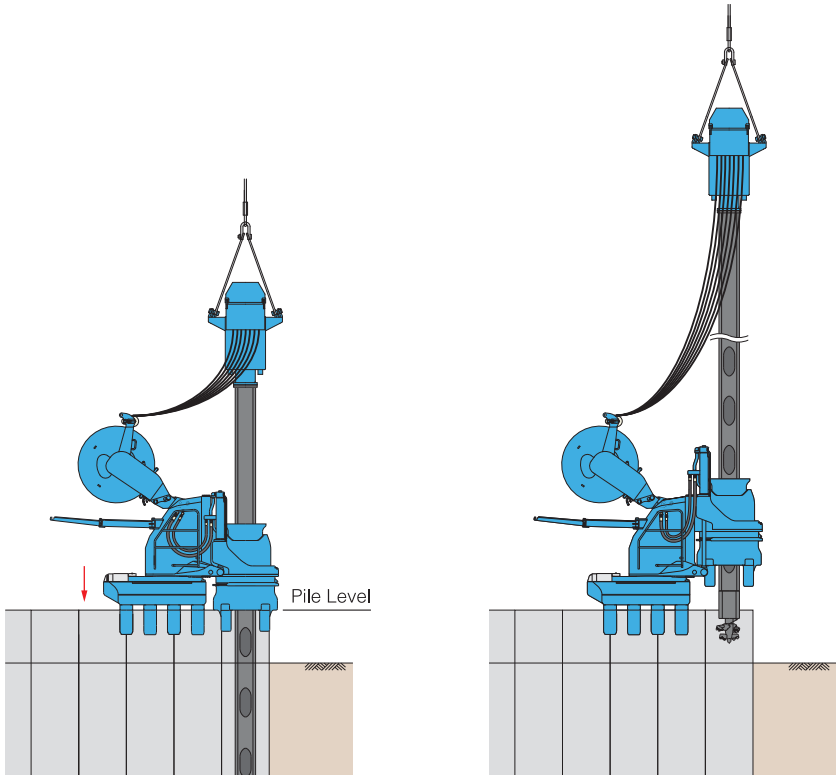


4. After the sheet pile ① is fully installed, extract the Pile Auger and repeat sequences 2 and 3 until the sheet pile ② gets sufficient bearing capacity for the machine to self-move.
5. After the SILENT PILER self-moves, complete the sheet pile ② installation.
6. Repeat sequences 2 - 5 to install the first 3-4 sheet piles. Remove the Counter Weight and the Reaction Stand.

Pile Installation



1. Pitch a sheet pile into the Chuck.
2. Start installation of the sheet pile with simultaneous augering.
3. Install the sheet pile until it gets sufficient bearing capacity, and make the SILENT PILER self-move.



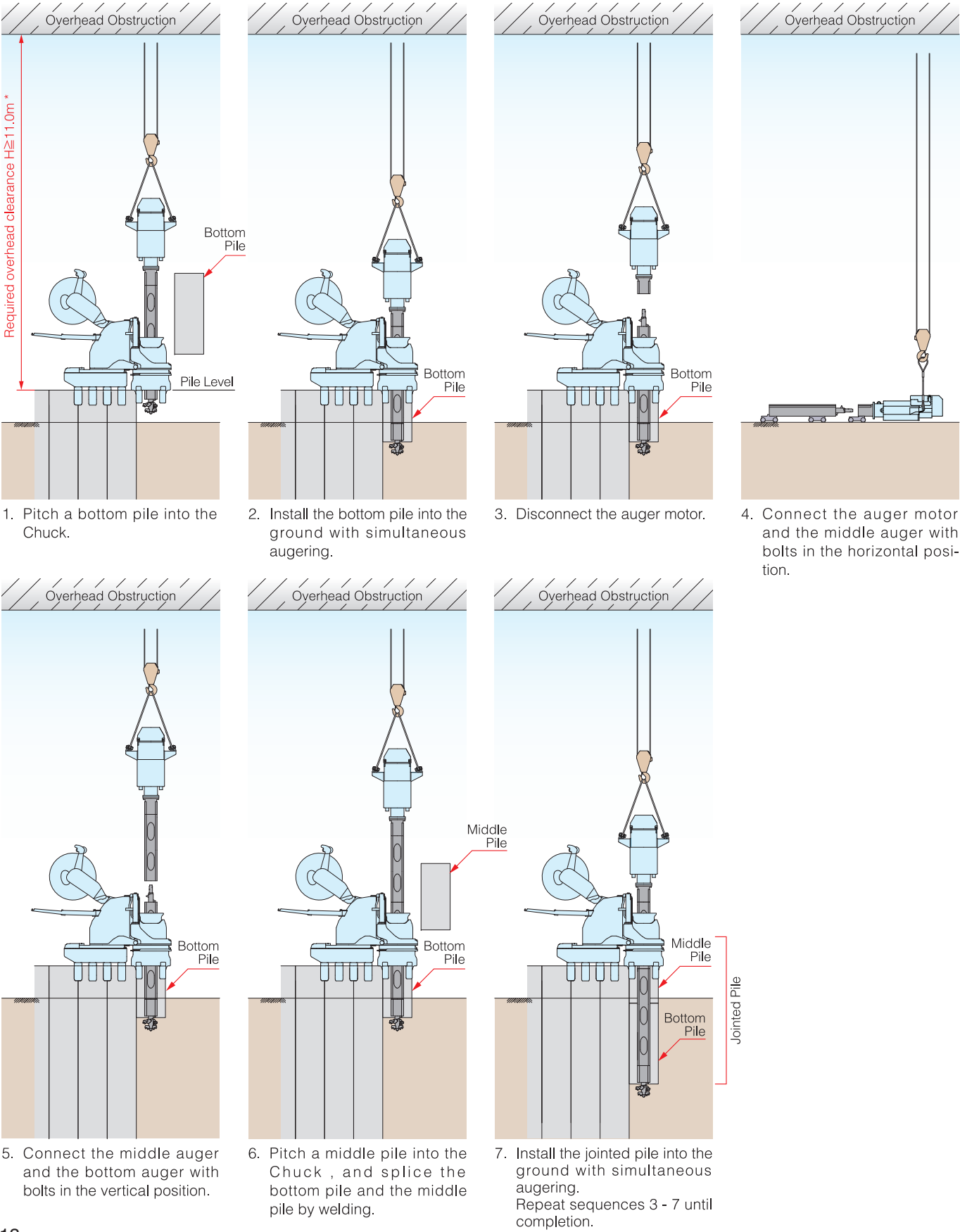
4. Complete the pile installation.
5. Extract the Piler Auger, and repeat sequences 1 - 5.



Typical Piling Sequences (Overhead Clearance Method)

Sheet Pile Installation under Overhead Obstruction

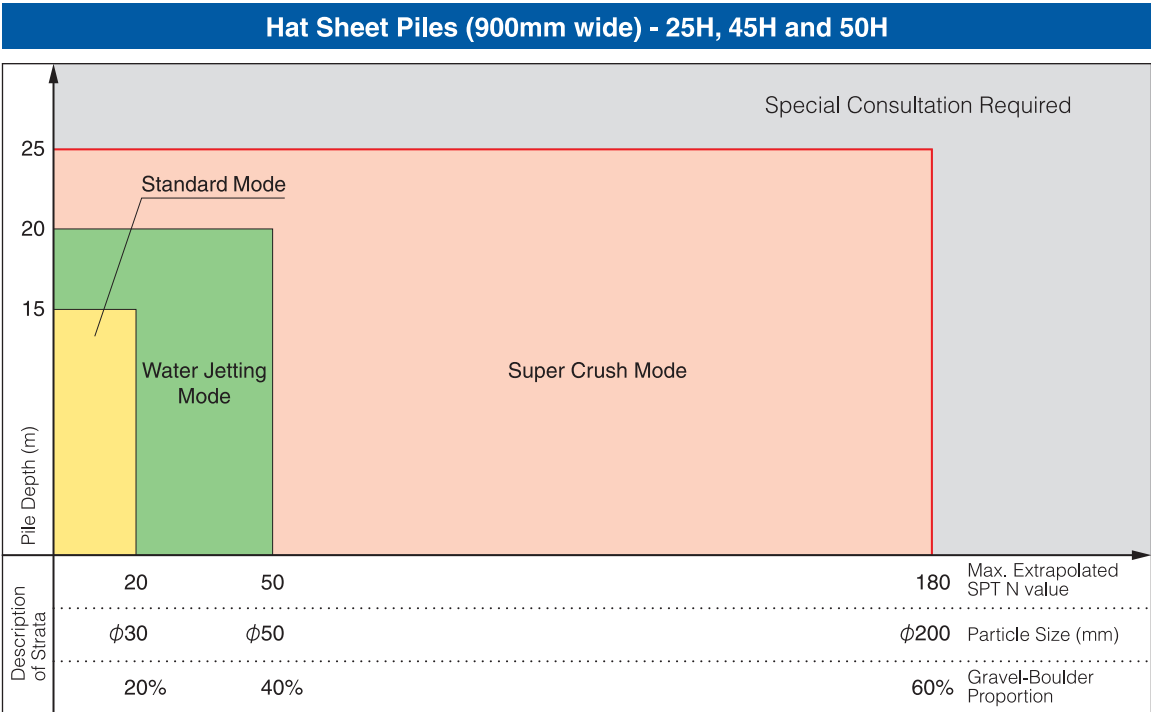
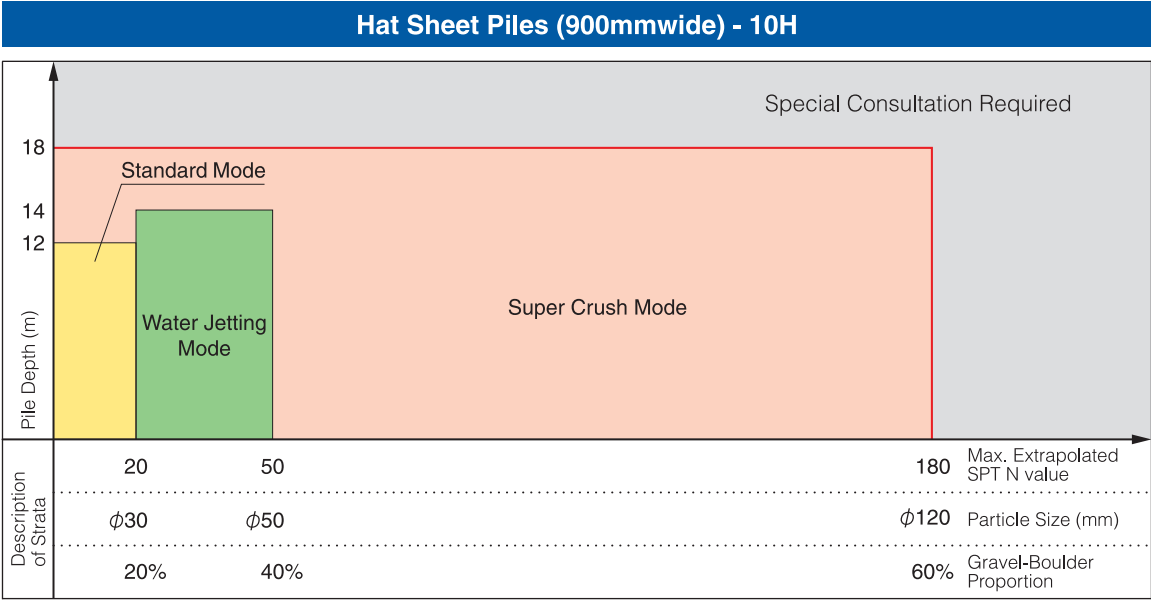
- Even within restricted headroom, pile installation is feasible by jointing the casing augers and splicing the sheet piles.
- \* Casing Augers for exclusive use in restricted headroom are required.
  - \* Applicable overhead clearance is generally 11m or greater depending on lifting height of service crane to be used.
  - \* In case the overhead clearance is less than 11m, please contact the nearest GIKEN office for individual consultation.



Applicable Ground Conditions

Applicable Ground Conditions and Pile Depth

• • • Nomal Applicable Range



Note: 1. "Pile Depth" means embedded depth of the pile, not pile length.  
2. Standard minimum pile depth is 4.0m.

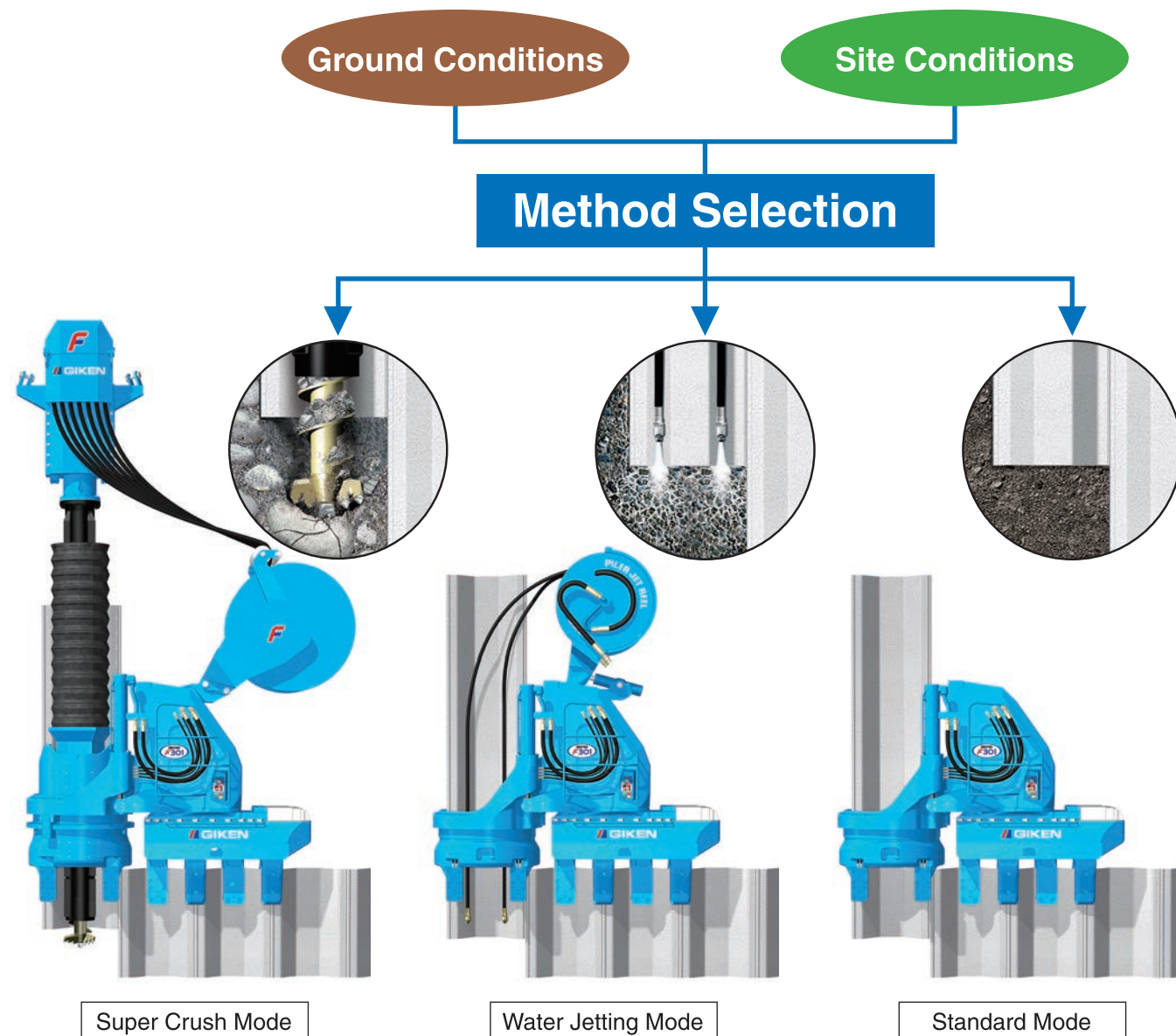
\* GIKEN has many achievements in areas defined "Special consultation required".  
Please contact the nearest GIKEN office for detailed information.

# Three Penetration Techniques Available

**SILENT PILER F**

## Optimising Work Efficiency with Modular Design

SILENT PILER F301 is applicable to standard, water jetting, and super crush press-in works by changing the chuck and chuck frame, and equipping attachments. The machine can be utilised more efficiently because it is adjustable to various soil conditions and working conditions.



## Longer Operational Life and Higher Functionality by New Control System

The new control system manages the position of the press-in machine and controls load generation from press-in work during operation, maximising the durability of each part.

Also, control of the machine is remarkably improved by the Press-in Force Control System and the Phaseless Linear Auger Torque Control System.



## Advanced Principles for Higher Accuracy

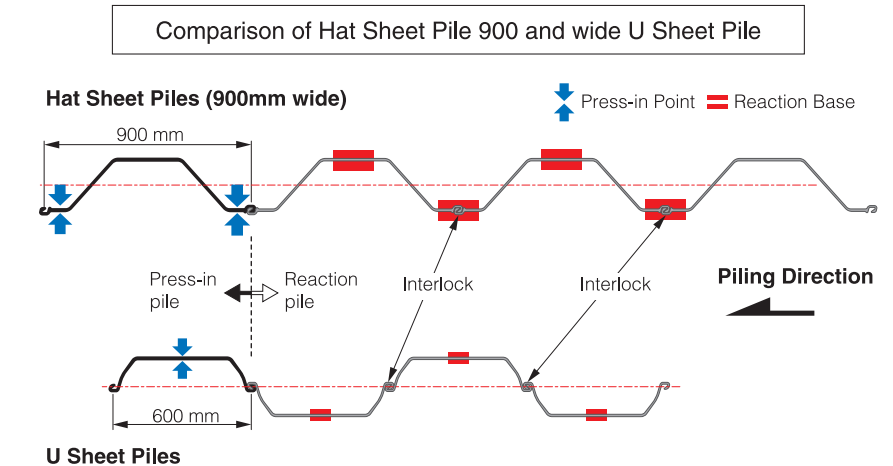
The combination of SILENT PILER F301 and Hat Sheet Pile achieves high quality installation.

### Two Press-in Points

Press-in force can be transferred efficiently by gripping the pile with two points.

### High Stability of Reaction Base

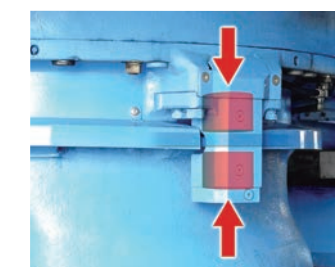
Clamping reaction piles at Interlock positions optimises the stability of the reaction base.



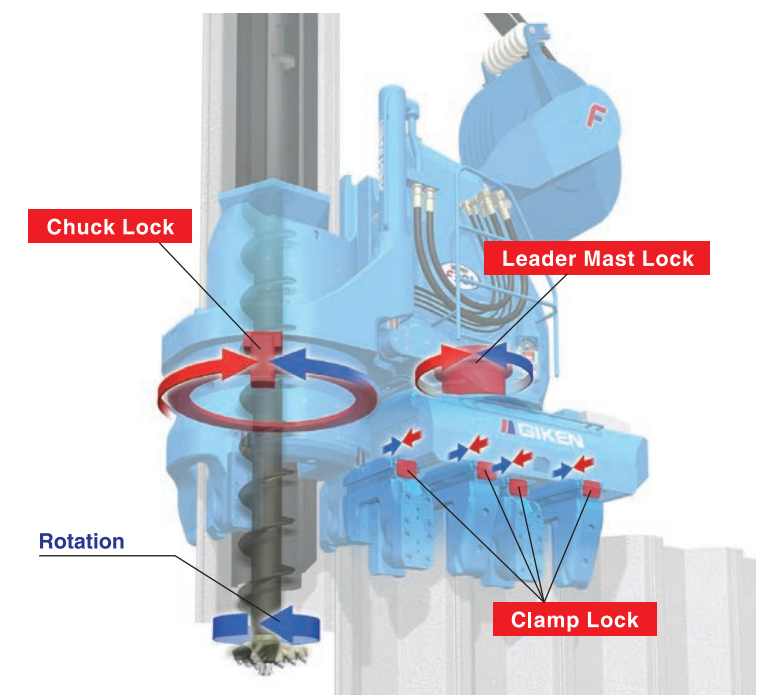
## Locking Function

### Locking Function

Lock functions in the leader mast, chuck and clamps secure SILENT PILER against drilling torque and increase drilling efficiency and accuracy of pile installation.



Chuck Lock



### Locking Function Features

- Securing position of SILENT PILER against drilling torque.
- Increasing drilling efficiency.
- Increasing accuracy of pile installation.
- Reducing stress at movable parts of the SILENT PILER to achieve longer product life.

\* The locking function is automatically activated for each operation in Super Crush Mode.

\* Each lock is automatically released, if Chuck Rotation or Leader Mast Swing switch is pressed.

\* Each lock is automatically released at machine self-moving.

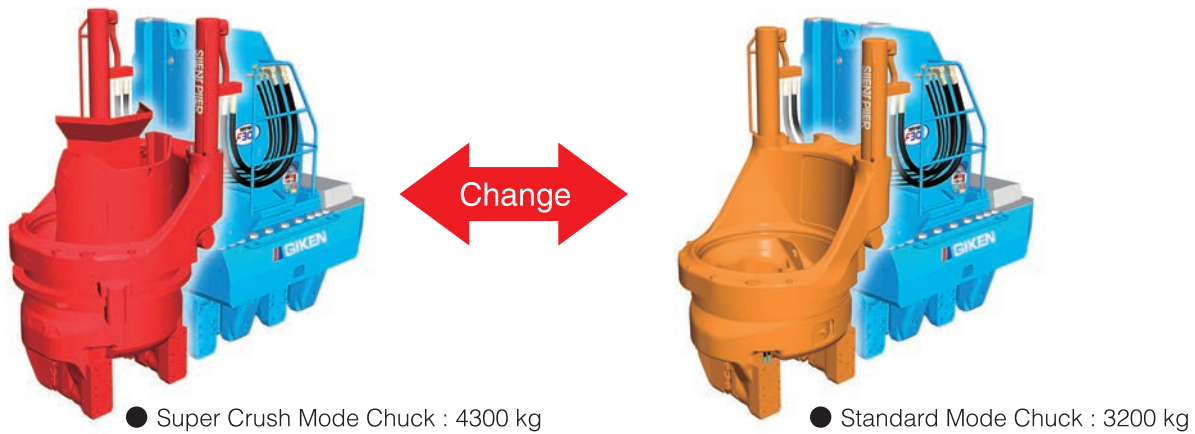


Super Crush Mode Chuck / Standard Mode Chuck

SILENT PILER F301 is compatible with various operation modes by changing the chuck without losing efficiency.

Super Crush Mode Chuck

Standard Mode Chuck

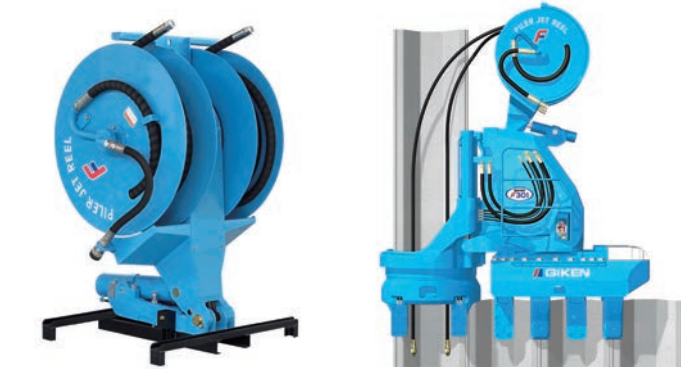


PILER JET REEL

Optional

This is an Auto Hose Rewind/Feed Reel for water jetting mode. GIKEN developed a new high tensile and abrasion resistant jet hose. Applicable sheet pile length is up to 17m as the standard and 27m with hose extension.

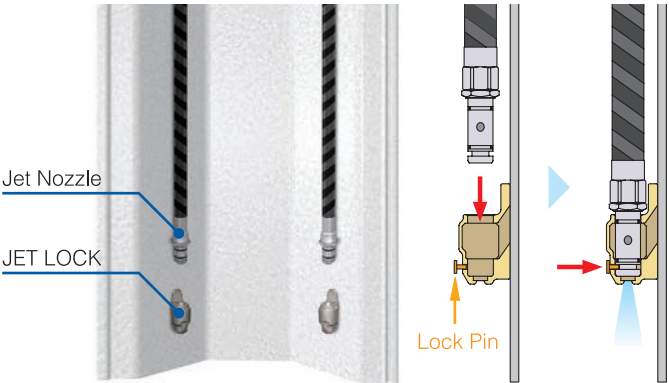
- Water Flow : Max. 700 ℓ/min
- Water Pressure : Max. 14.7 MPa
- Mass : 1250 kg



PILER JET REEL mounts atop the SILENT PILER to achieve high efficiency and save labour.

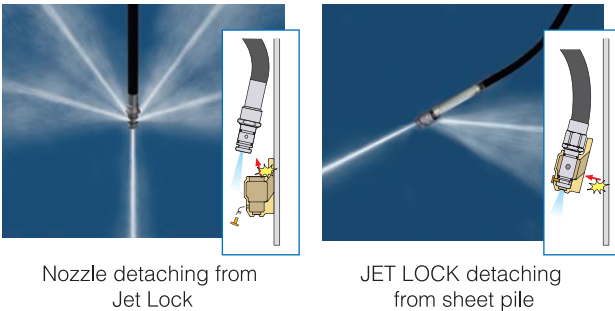
JET LOCK™ & Jet Nozzle

JET LOCK is welded onto the sheet pile toe to fix Jet Nozzle in place with a Lock Pin.



Dual Safety

If the Jet Nozzle accidentally detaches from the JET LOCK or the JET LOCK itself accidentally detaches from the sheet pile, the reverse jetting function maintains the control of jet nozzle.



Radio Controller



All operations in Standard Mode, Water Jetting Mode and Super Crush Mode can be controlled by a single radio controller. Operation mode is automatically selected when attaching JET REEL or Hose Reel.



Super Crush Mode



AUGER / JET REEL



Water Jetting Mode



AUGER / JET REEL

Multi-Function Monitor

This Multi-Function Monitor displays information for every press-in mode.

- Clear visibility with high luminous LEDs, adjustable over 10 levels of brightness

Axial Force Status Display

Setting status of down-stroke force and up-stroke force is indicated.

IT Indicator

Status (active or inactive) is indicated.

Working Mode Display

The selected working mode is displayed.

Operation Mode Display

The selected operation mode is displayed.

Clamp Selector

Status (active or inactive) of clamp selector is indicated.

Auger Rotation Mode Display

Auger rotation mode (rotation, reverse or stopped) is displayed.

Auger Rotation Speed Indicator

The set speed of normal rotation and reverse rotation is indicated.

Chuck Up/Down Speed Indicator

The set speed of Chuck Up / Down is indicated.

Axial Force Indicator

Down-stroke force and up-stroke Force are indicated by bar chart. \* Corresponding with the digital indicator below

Machine Inclination Display

Lateral and forward/ backward Inclinations are displayed in 0.1 degree increments. \* Corresponding with the digital indicator below

Radio Control Indicator

Status (active or inactive) is indicated.

Digital Display

Selected information is displayed with digital figures.

Setting Menu Display

Selected functions are displayed.

Machine Status Display

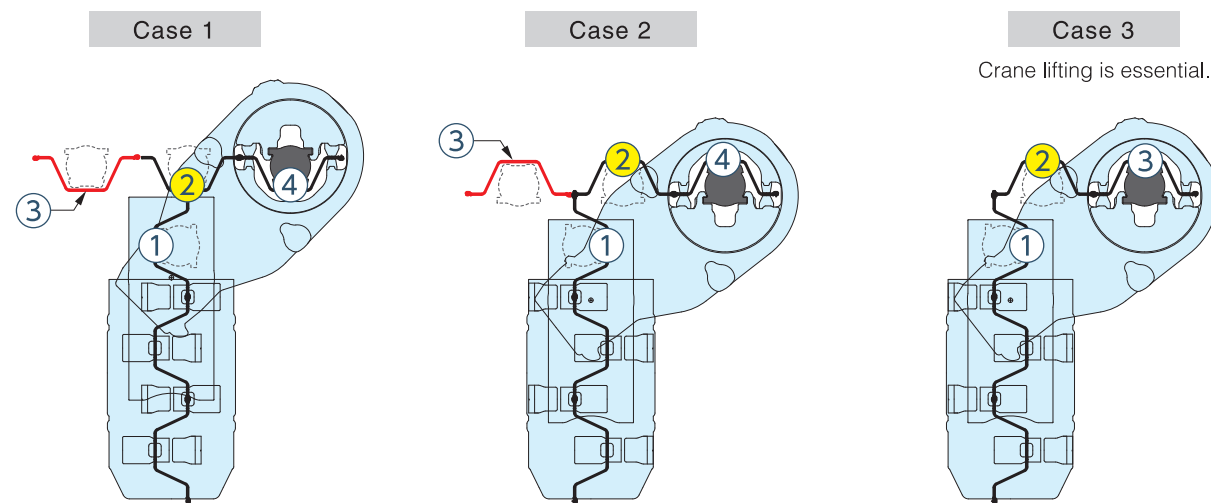
Status of SILENT PILER is displayed.



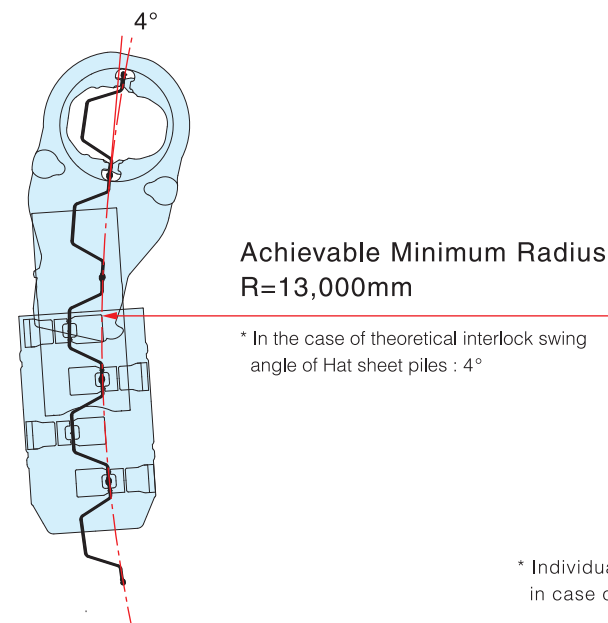
# Configuration and Elevation of Sheet Piles

## Corner Installation

● = Corner Pile ① = Installation Order 〰 = Corner Dummy Pile

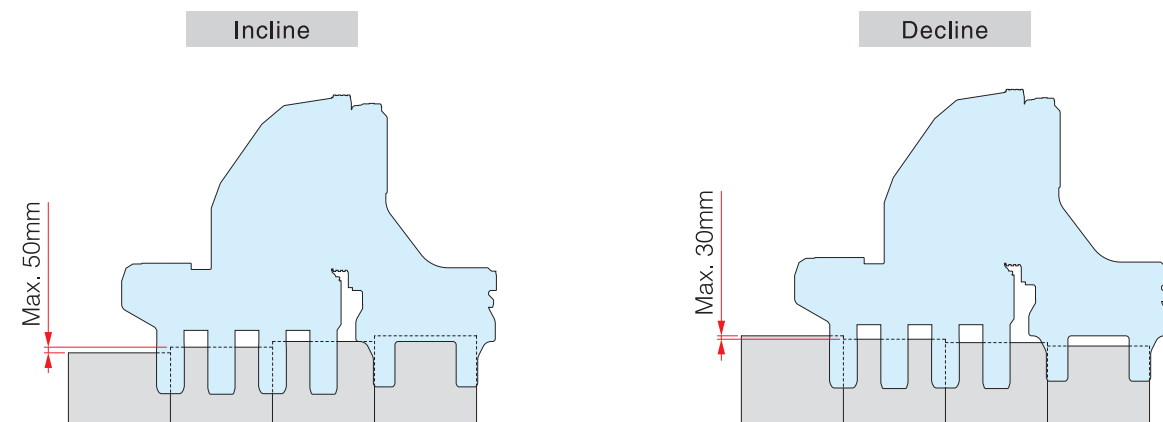


## Curve Installation



\* Individual consultation is required in case of R<13,000mm.

## Stepped Sheet Piling



\* Maximum height difference between adjacent sheet piles depends on ground conditions, projection and embedded depth of the sheet piles.

# Outstanding Environmentally-Friendly Design



## Power Unit

The Power Unit was developed following the concept of environmentally-friendly design.

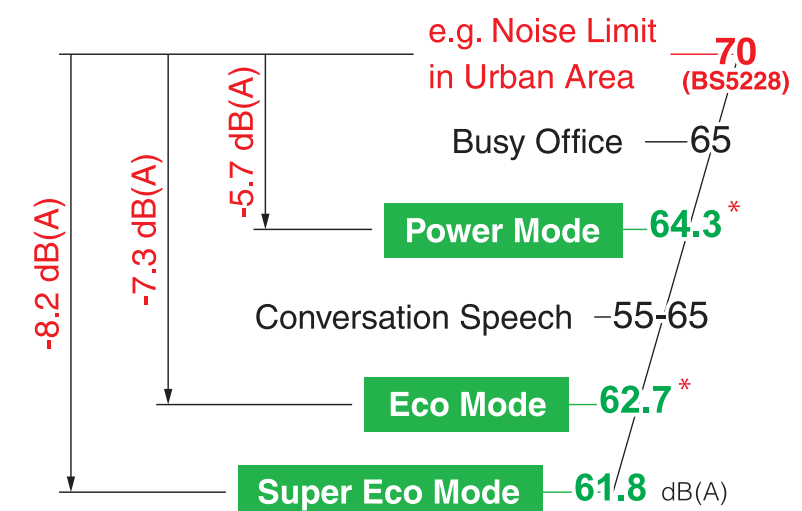


## Low Emission Engine

The Power Unit of the F301 is a new Biodegradable Oil generation model and has environmentally-friendly specifications. It is designed with strict concepts for clean emissions with high combustion efficiency. This engine would not have been developed without the original hydraulic control technologies of GIKEN.

## Ultra Low Noise Level

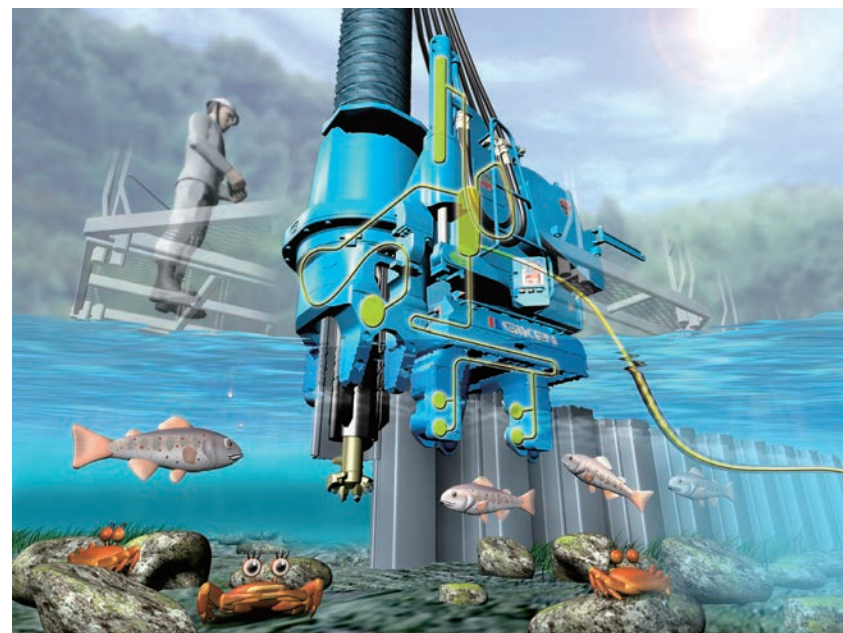
It clears allowable construction noise levels in many industrialised countries.





## Standard Application of Biodegradable Oil

The F301 uses bio-degradable PILER ECO OIL and PILER ECO Grease. Hence, if hydraulic oil or grease is spilled into soil or water, there will be no environmental damage to the surrounding ecosystem.

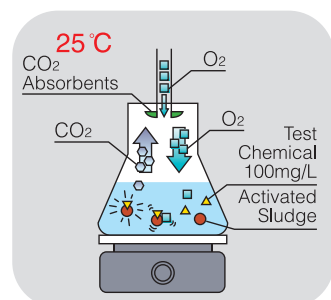


No risk of environmental damage



The label of PILER ECO OIL & PILER ECO Grease

## High Biodegradation



### Biodegradation Test : OECD\*1 301C

Activated sludge was used as microorganism source. Biochemical oxygen consumption (BOD) of test chemical (PILER ECO OIL & PILER ECO Grease 100mg/L) was continuously assayed by automatic assay system to evaluate biodegradability (percentage of volume of degrade into carbon dioxide and water) after 28 days.

\*1: The Organization for Economic Co-operation and Development Standards.

Required degradation rate  $\geq 60\%$  after 28 days

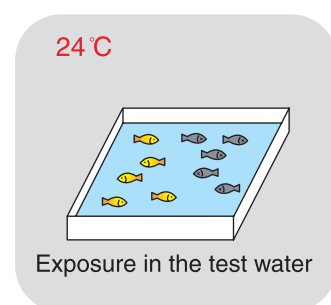
### Test Results (Degradation Rate)

**PILER ECO OIL**  
77.2% → Above standard

**PILER ECO Grease**  
66.2% → Above standard

\* Eventually 100% will degrade.  
\* The duration differs depending on the conditions.

## Avirulence is certified by Fish Toxicity Test.



### Acute Toxicity Test for Fish : JIS\*2 K0102

The purpose of this test is to determine the acute lethal toxicity of a substance to fish in fresh water. The fish are exposed to the test substance added to water at a 100 mg per litre concentrations for a period of 96 hours. The percentage mortality for exposure period of 96 hours against concentration is recorded.

\*2: Japan Industrial Standards

Required mortality rate  $\leq 50\%$  after 96 hours

### Test Results (Mortality)

**PILER ECO OIL**  
0% → Above standard

**PILER ECO Grease**  
0% → Above standard

# Scientific Execution of Press-in Work & Advanced IT Functions



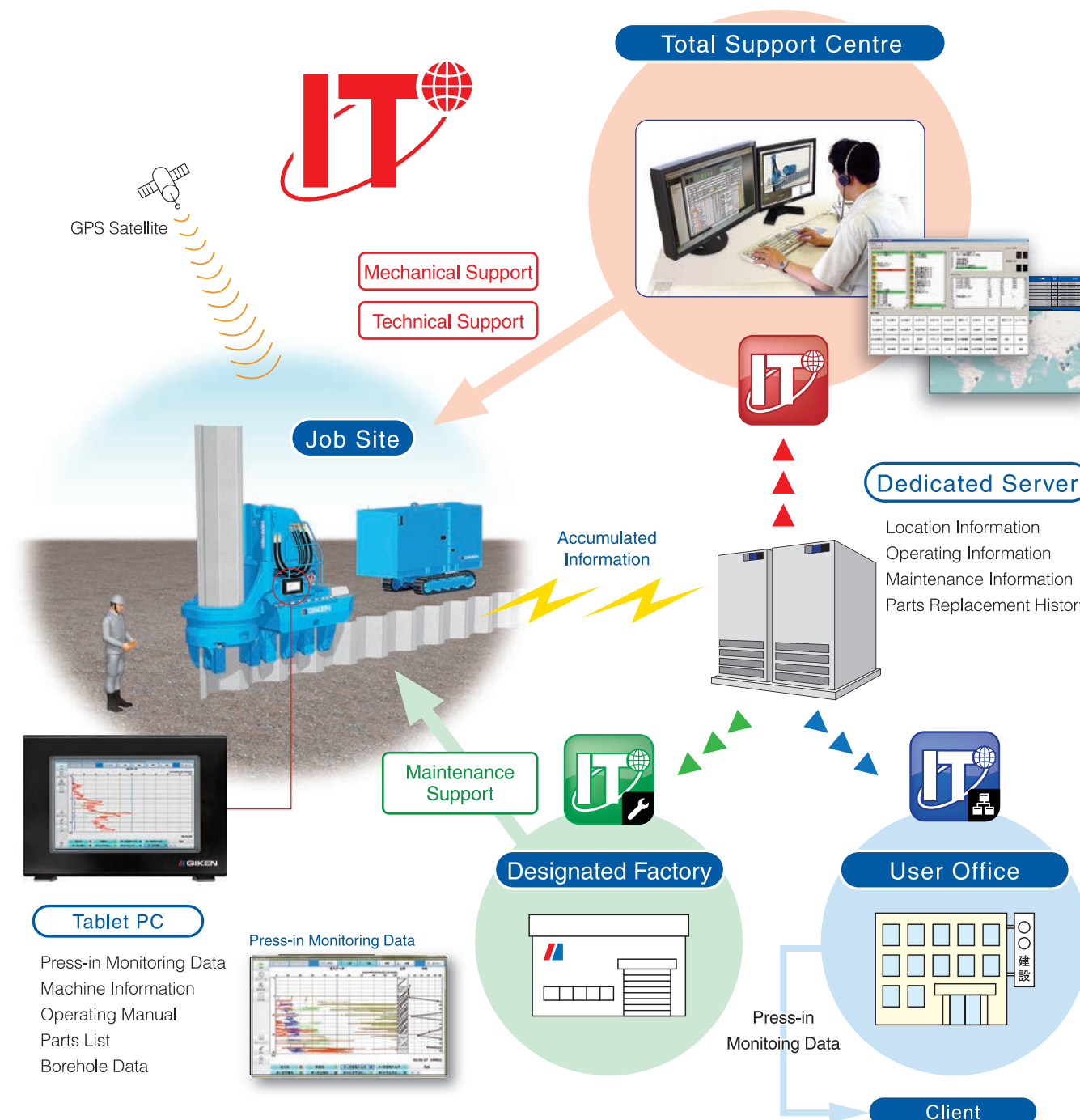
## GIKEN IT System

GIKEN engineers can monitor individual SILENT PILER, such as operating condition, maintenance records and location. Quick advice for any technical troubles is available promptly and appropriate information can also be provided to prevent troubles.

For example, information from the Press-in Monitoring System can be used for advice to improve piling procedure, and Maintenance Information can be used for advice to prevent machine trouble and to reduce repair time.

\* The system is not available in the countries where authorisation for usage cannot be acquired.

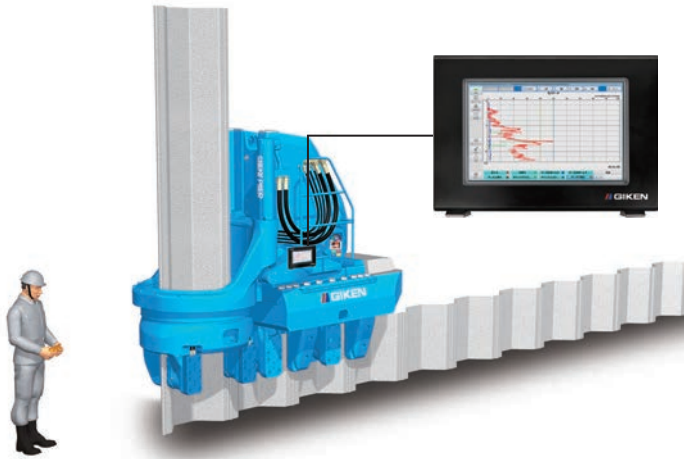
## GIKEN IT System





Tablet PC

The real-time information of piling operations can be displayed on a tablet PC which can be attached to the side of the SILENT PILER.



Main Functions

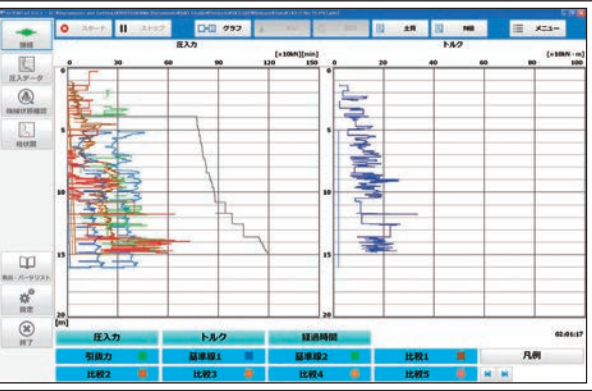
Press-in Monitoring and Data Logging System

▼ Profile Mode



Display the details of Press-in Monitoring Data.

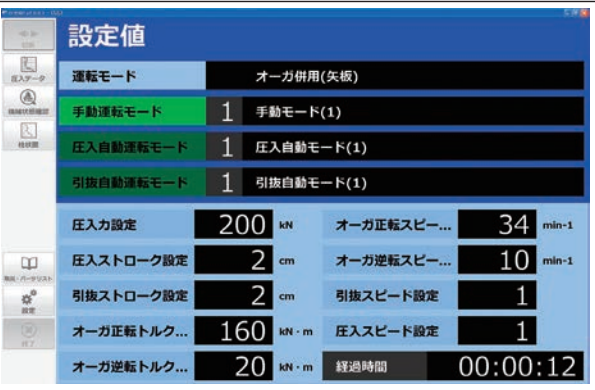
▼ Comparison Mode



Compare the current data to the previous monitoring results.

Machine Setting Profile

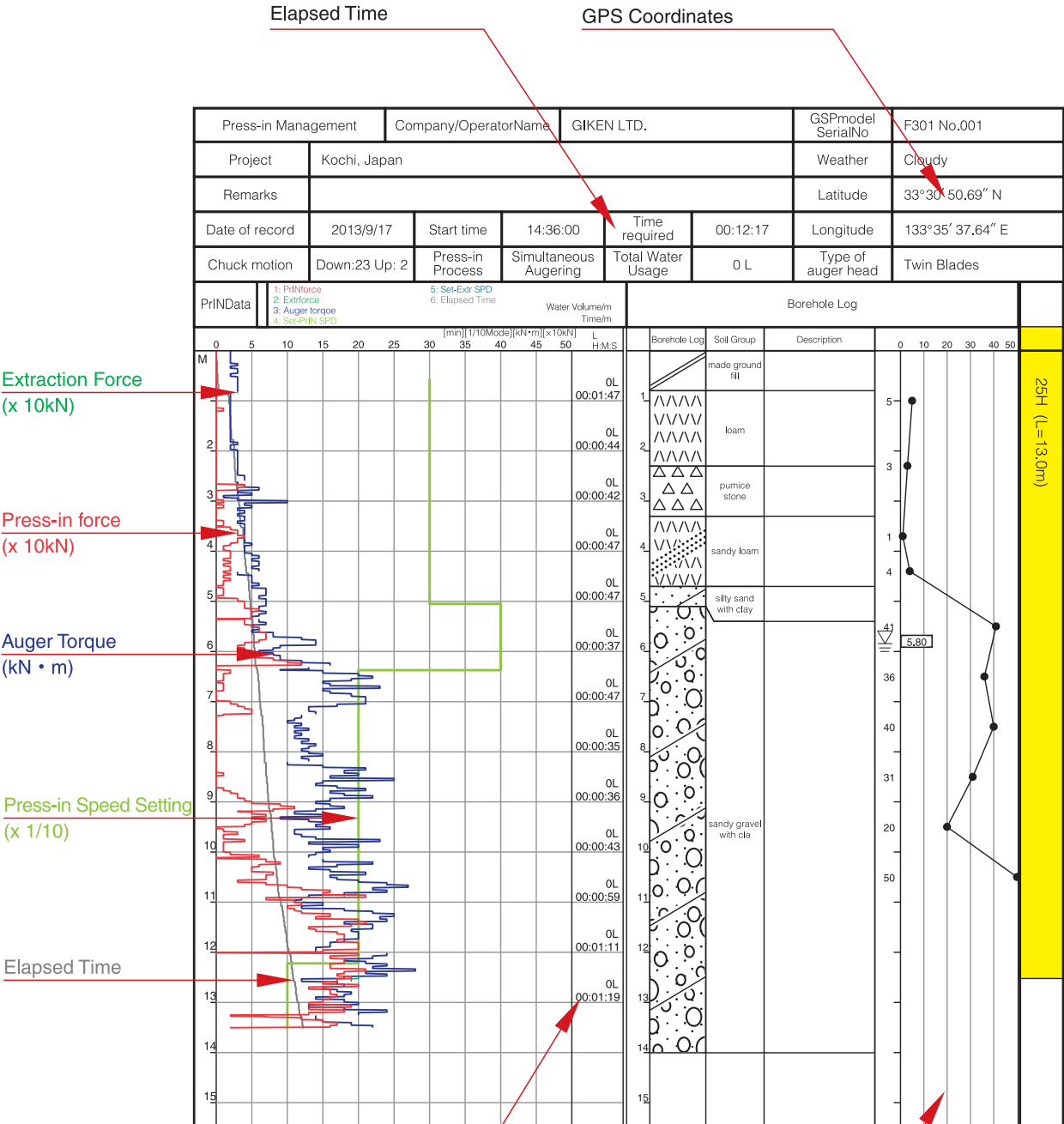
Display the details of the machine setting and status during press-in work.



Press-in Monitoring and Data Logging System

Press-in Monitoring Data of each pile installation, such as press-in force, auger torque and time spent, can be recorded and scientifically used for quality control. Such data can be linked to borehole data to optimise operation settings for particular ground conditions. Also, change in soil strata and presence of underground obstacles can be detected from the monitoring record.

The thorough monitoring record can be used as reliable real-time record of the piling works.



Borehole Log

Borehole log is automatically created by inputting soil type, depth, descriptions and SPT N values.

# Auxiliary Equipment for Better and Safer Working Environment with Higher Efficiency

SILENT PILER 

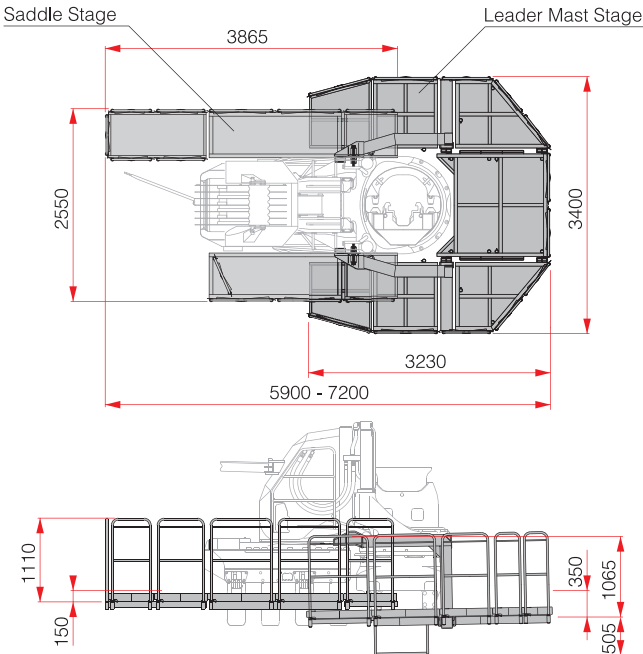
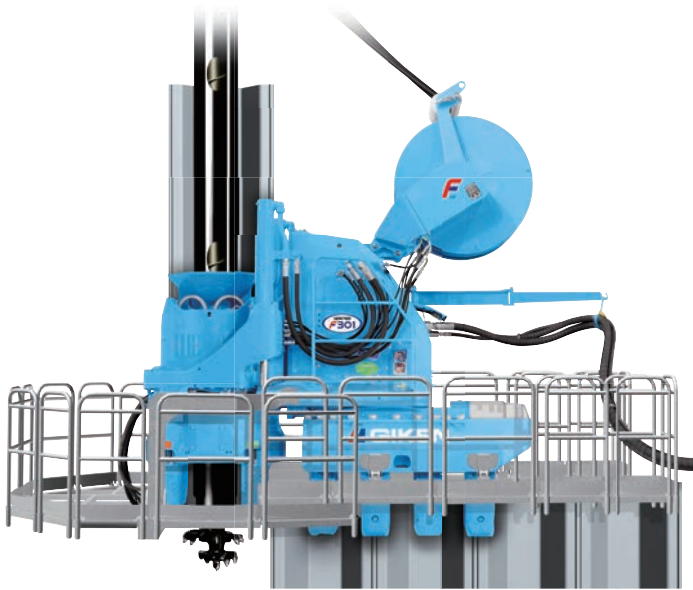
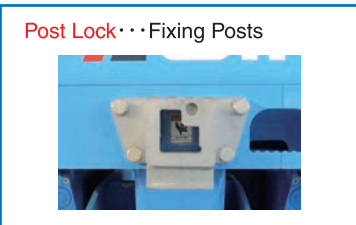
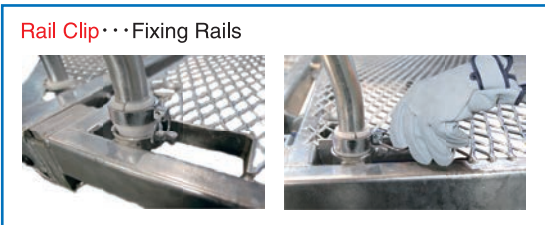
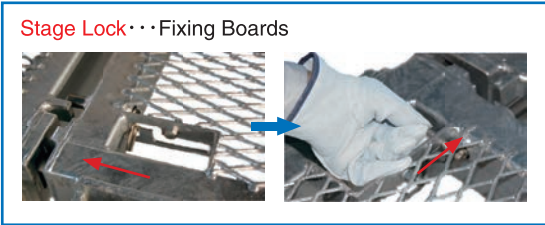
In general, many piling works are carried out where working platform is necessary, such as working above water, on slopes and at height. Under such difficult working conditions, GIKEN PILER STAGE and Auger Head Replacing Attachment make piling work safer and more efficient. In addition, there are many other auxiliary equipment are in our line-up to improve the working environment and efficiency.

## PILER STAGE

- Easy to assemble
- Easy to attach to or detach from the SILENT PILER and also can be attached to one-side only
- Rails can be used as a gate for easy access.

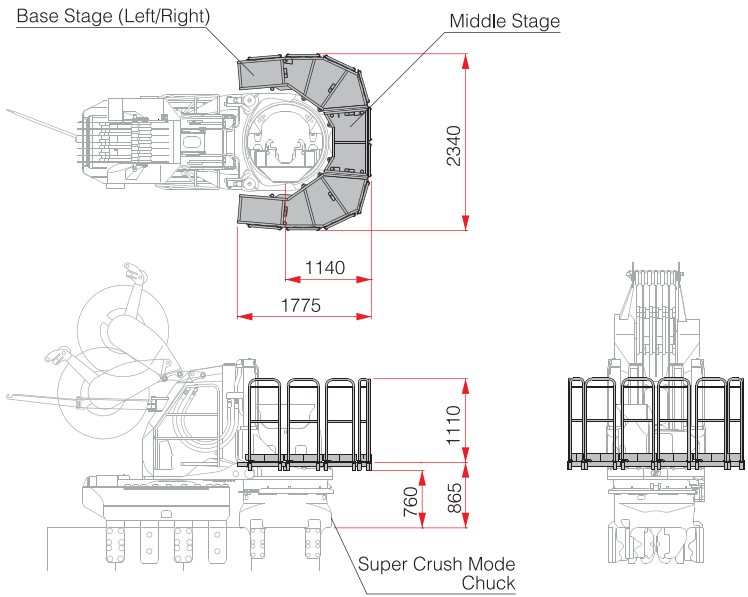
### Locking Function for safety

Each junction has a locking function so the stage and rails won't come off due to unexpected shocks.

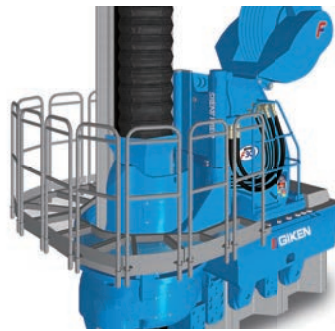


PILER STAGE		ST46
Maximum Load		
Leader Mast Stage		
Full Stage		400 kg
One Side Stage		300 kg
Saddle Stage		300 kg
Single Stage Component		200 kg
Mass	Stage	790 kg
	Rails	190 kg
	Total	980 kg
	Rail Rack	80 kg

## Chuck Stage (for Super Crush Mode Chuck)

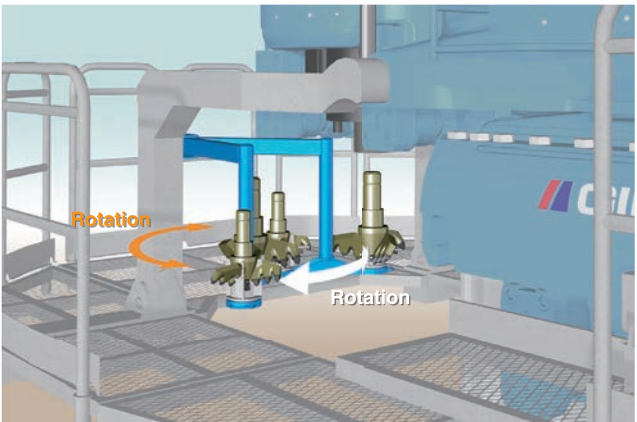


Chuck Stage		
Maximum Load		Each Stage 80 kg
Mass	Middle Stage	15 kg
	Base Stage (Left / Right)	30 kg per unit
	Rails	70 kg
	Total	145 kg
Rack		25 kg

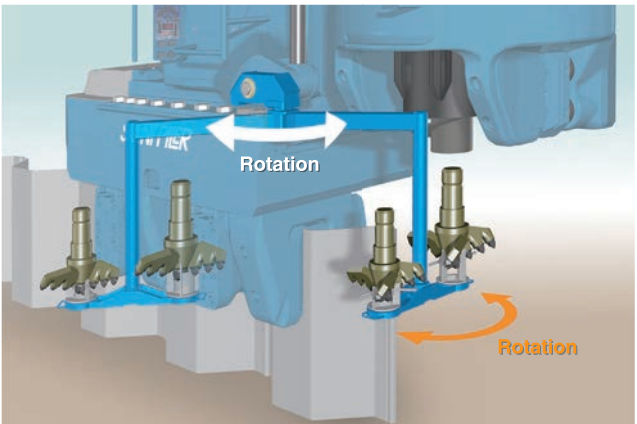


## Auger Head Replacement Attachment

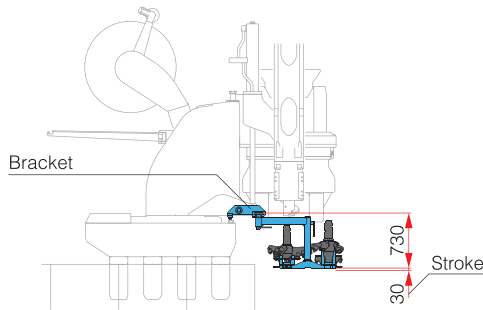
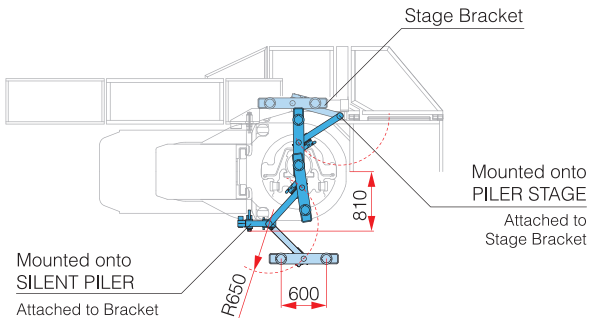
Type of auger head is selected in accordance with ground conditions. This compact auger head replacing attachment makes replacement work much faster and safer.



Mounted onto PILER STAGE



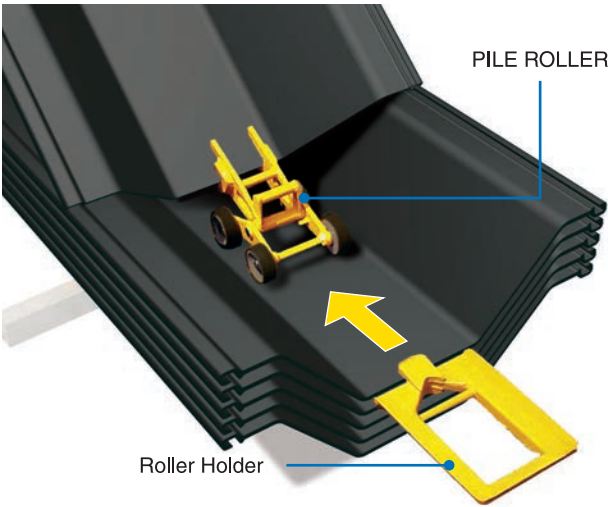
Mounted onto SILENT PILER



Auger Head Replacement Attachment		AM134
Maximum Load		3200 N
Maximum Stroke		30 mm
Swing Arm Mass (Including tools, excluding head pedestals)		50 kg
Bracket Mass		30 kg



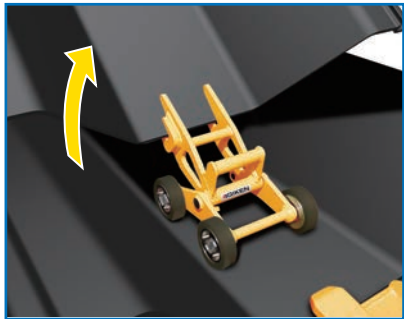
PILE ROLLER



PILE ROLLER eliminates grating noise from a pile bundle while the sheet pile is being lifted by crane. The working radius of the crane can be minimised for safer lifting works.

PILE ROLLER		OP98
Mass	PILE ROLLER	13 kg
	Roller Holder	12 kg
Applicable Sheet Piles	Hat Sheet Pile (900mm wide)	
Applicable Pile Length	Max. 16 m *	

\* Up to 20m without Roller Holder



Sheet pile pitching work can be done more efficiently.

PILE LASER

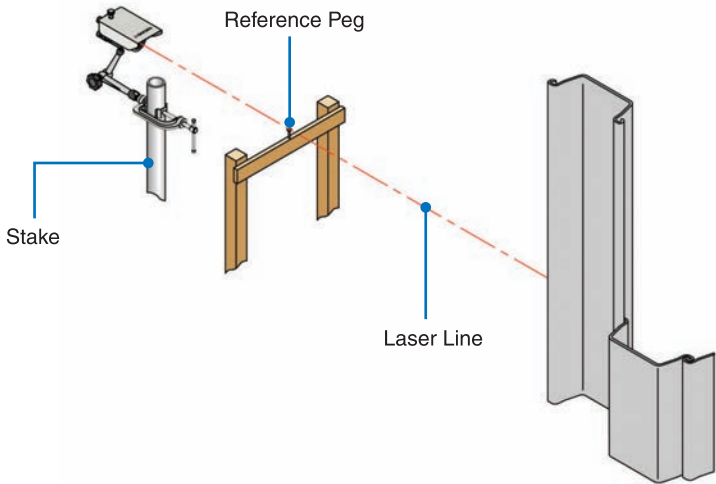


Sheet pile alignment is quickly and accurately set by the PILE LASER. The laser line is clearly visible even under sun light, and the universal joint arm allows quick set up.

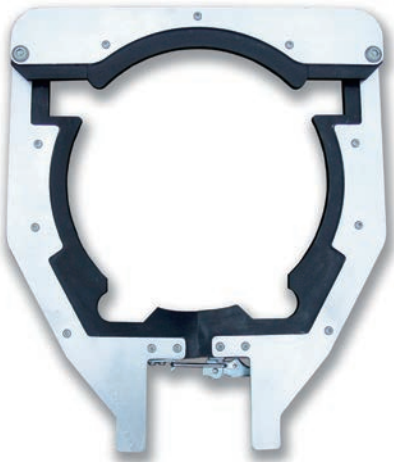
PILE LASER		PL3
Mass	1.5 kg (3.5kg with carrying case)	
Power Source	1no. D Battery More than 50 hours	



Carrying Case

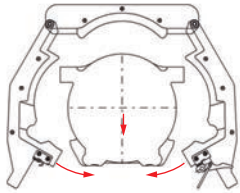


Casing Scraper

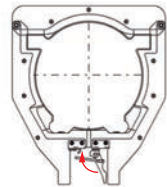


Automatically remove soils on the casing and manual cleaning work is no longer necessary.

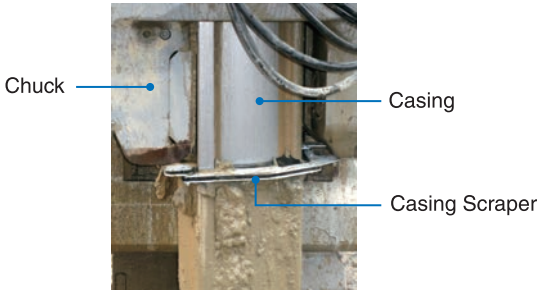
Casing Scraper	
Mass	7 kg



(1) Fitting Casing Scraper around the Casing.



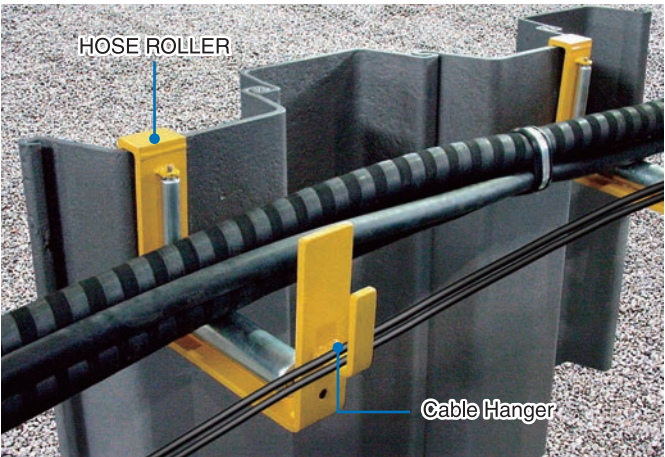
(2) Fixing the Casing Scraper with catch clip.



Removing soil adhered to the Casing

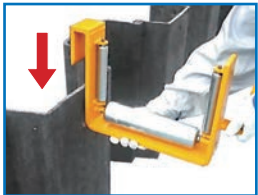


HOSE ROLLER



HOSE ROLLER prevents hydraulic hoses and power cable from being damaged.

HOSE ROLLER	
Mass	8 kg



Quick Fitting

Module Box

Optional



Tools can be stored at designated positions in Module Boxes, each box is designed for a particular operation mode.

Module Box	
Mass: MB10 (SMP Box)	670 kg
MB11 (Crush Box)	480 kg
MB12 (Sub Box)	380 kg
Total	1530 kg
(* Including all tools and spare parts.)	



# Hard Ground Press-in Method Project Data Sheets

Hat Sheet Pile (900mm wide)..... 30

Other Pile Sections ..... 32

Visit the following URL for more details.

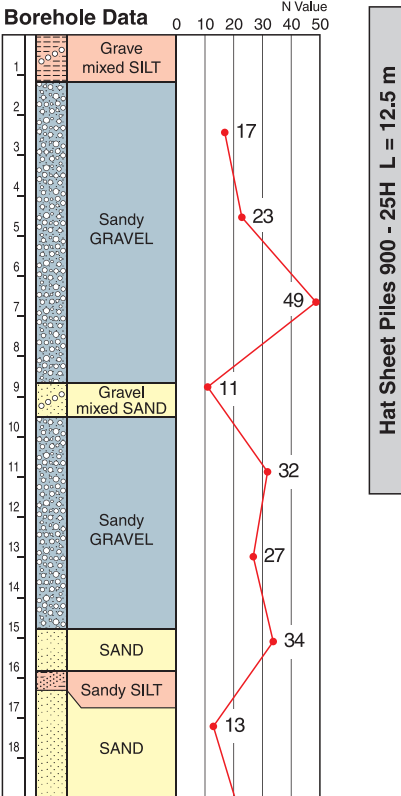
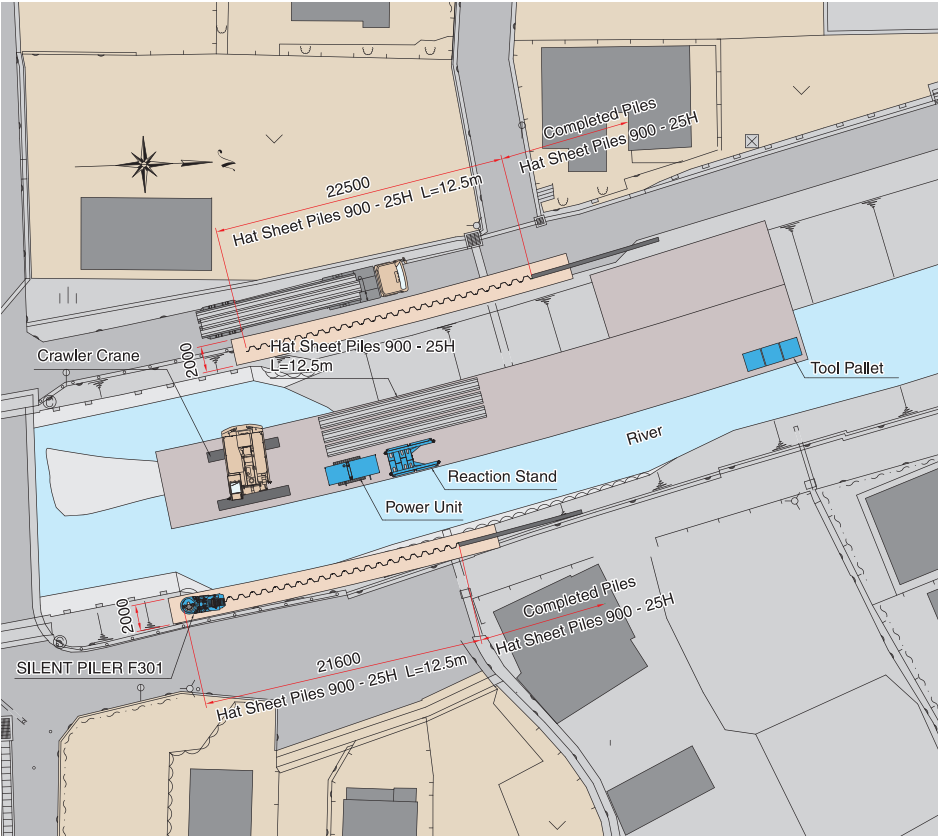
**GIKEN Project Leaflet Database**  
<http://www.gtoss.net/en/pressin-archive>



Data sheets can be searched and downloaded by category.

## Hat Sheet Pile (900mm wide)

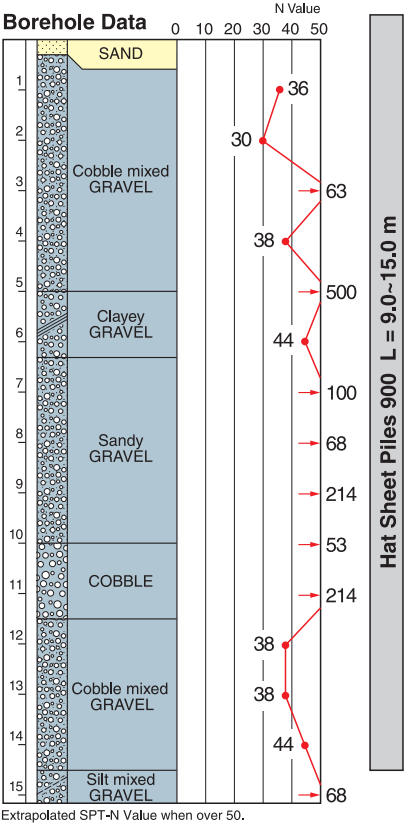
 **River Restoration Works in Residential Area with SILENT PILER F301**  
Kochi, Japan



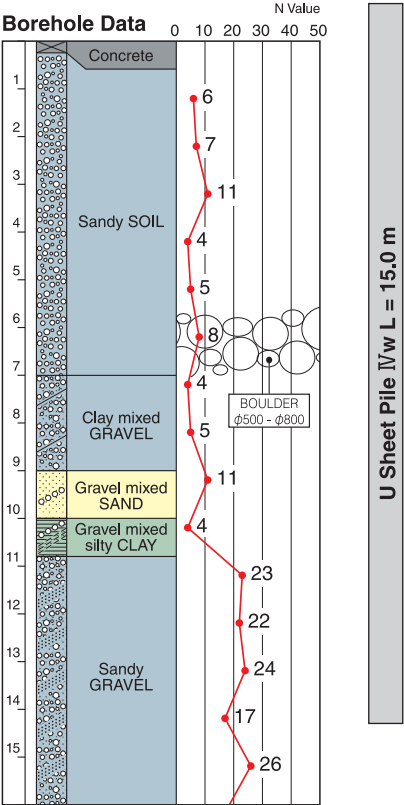
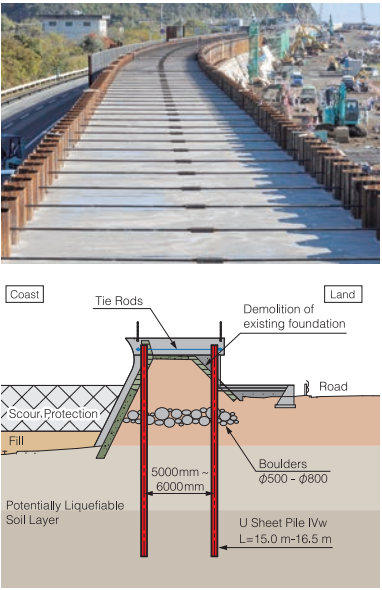


Other Pile Sections

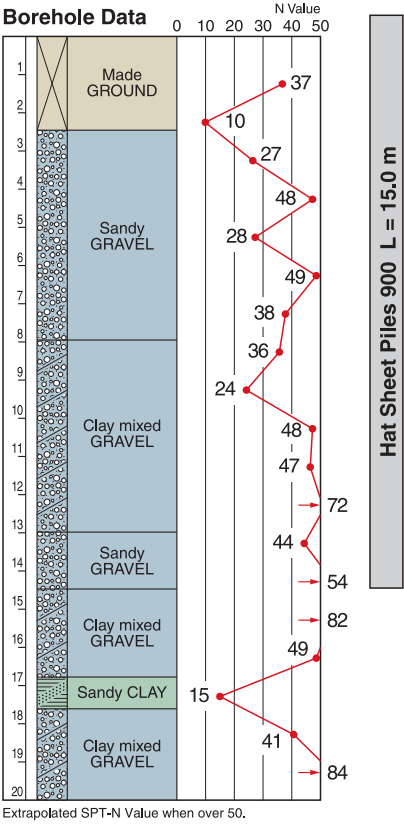
F301 Demonstration Test  
Kochi, Japan



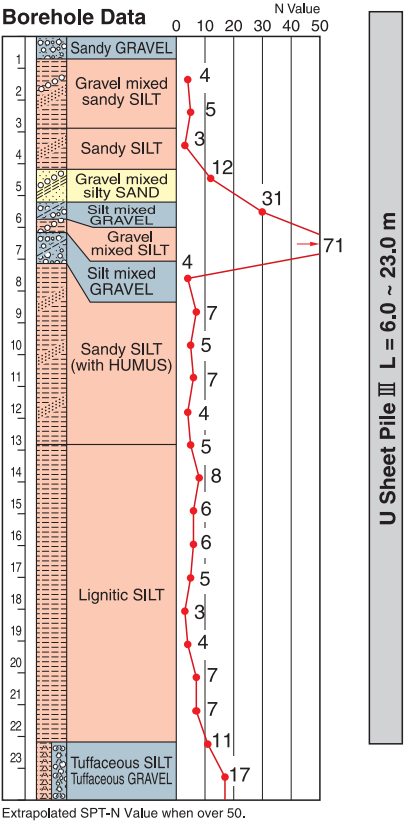
Liquifaction Prevention Works for Reinforcing Seacoast Levee with Double Sheet Pile Cut-off Wall  
Kochi, Japan



F301 Demonstration Test  
Hyogo, Japan



Trackside Works with Several Pilers  
Yamagata, Japan

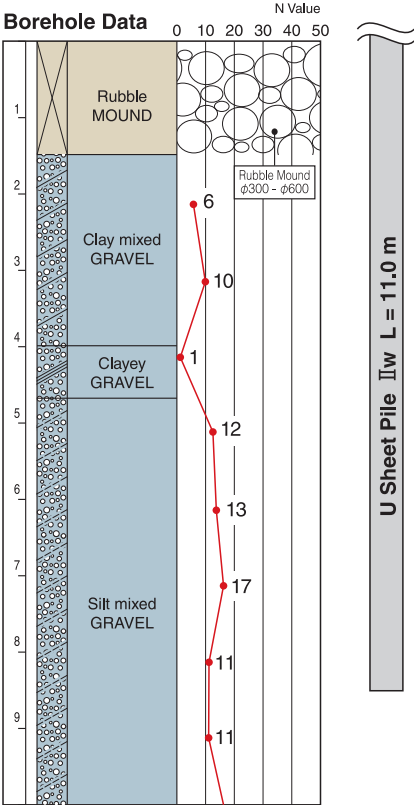
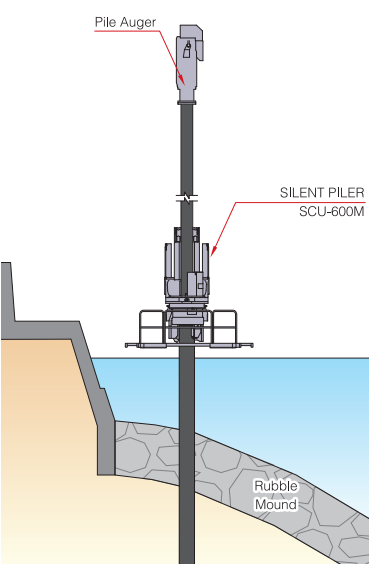






### Subsidence Prevention Works adjacent to Dense Residential Area

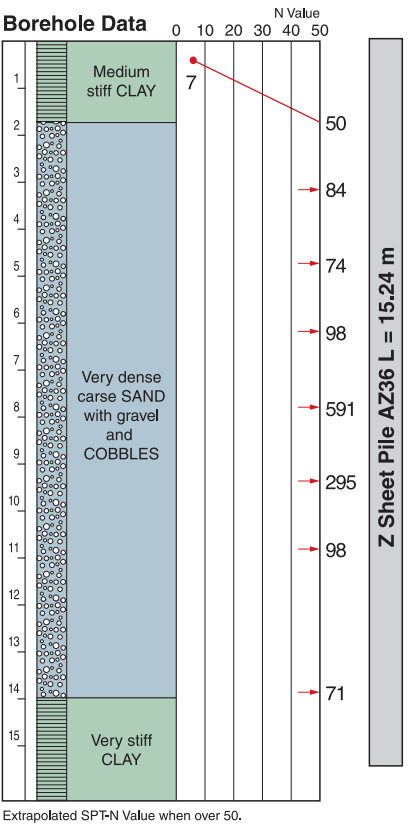
Mie, Japan






### EVO Condominium Project: Construction of under ground car parking structure

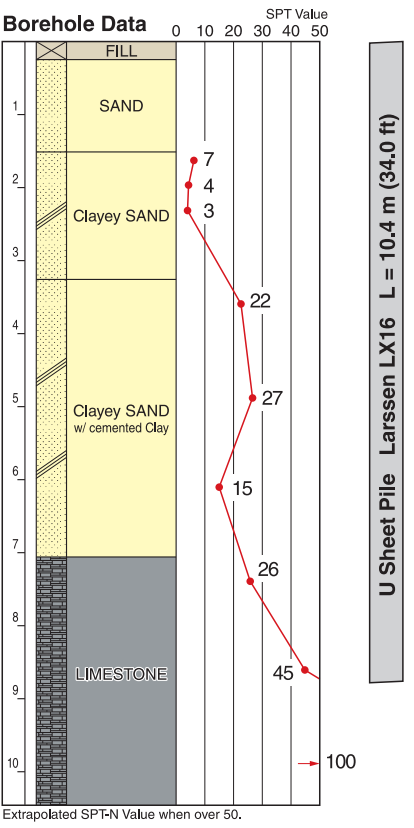
Los Angeles, California, U.S.A.





### Shands Hospital, Subterranean pathway

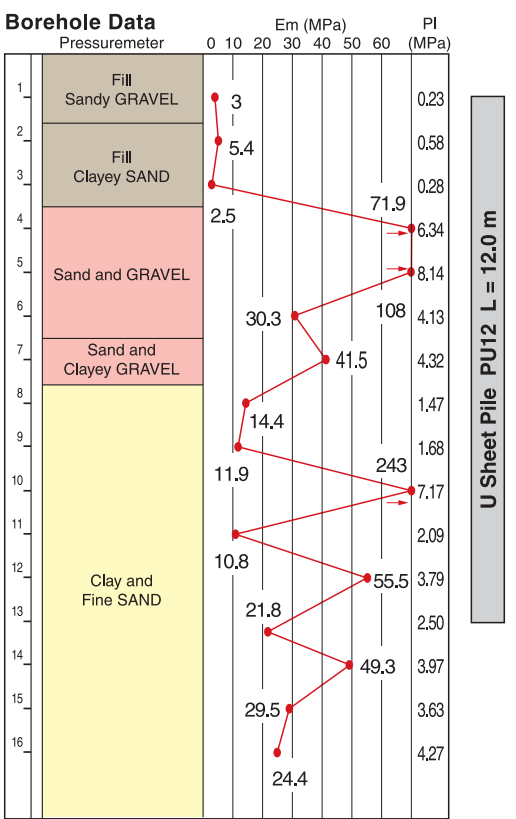
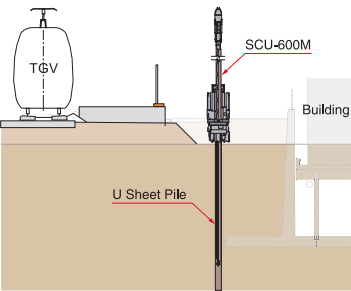
Gainesville, Florida, U.S.A.





### Pole d'Echanges Multimodal du Le Mans

Le Mans, France

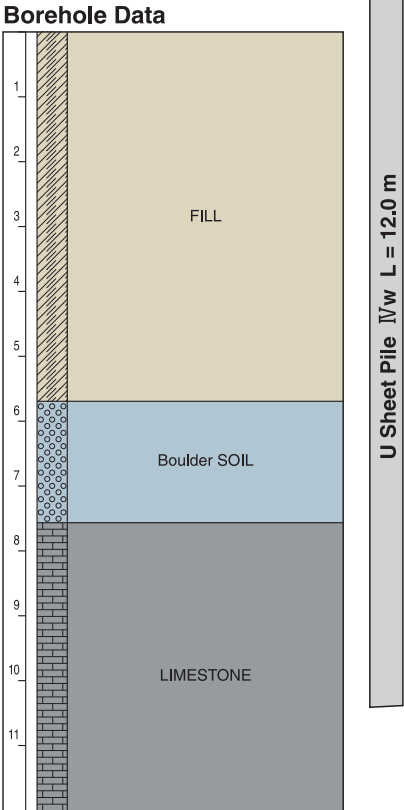







### Zi Jiang Bridge Construction Works

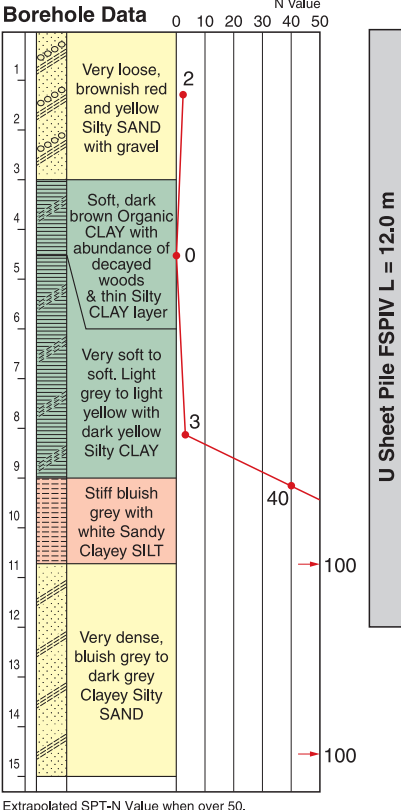
Hunan Province, China





### Underground Car Parking Construction

Tomlinson, Singapore



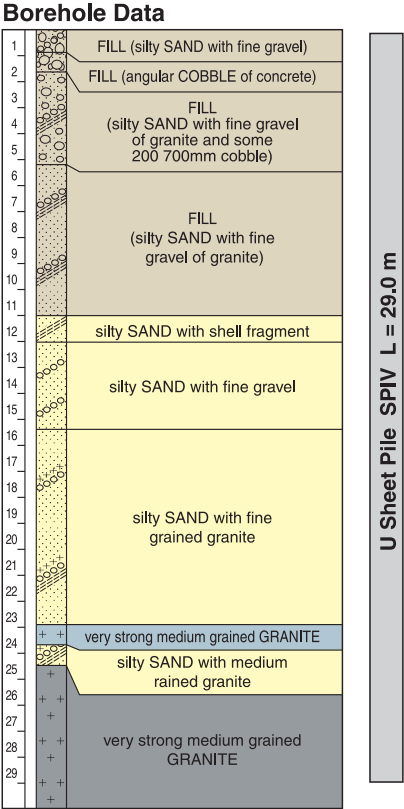


### Construction of East Tsim Sha Tsui Station and pedestrian subway

Kowloon, Hong Kong



Uniaxial Compressive Strength  
40N/mm<sup>2</sup> - 130N/mm<sup>2</sup>





### Construction of New Water Intake Pumping Station

Kandy, Sri Lanka

