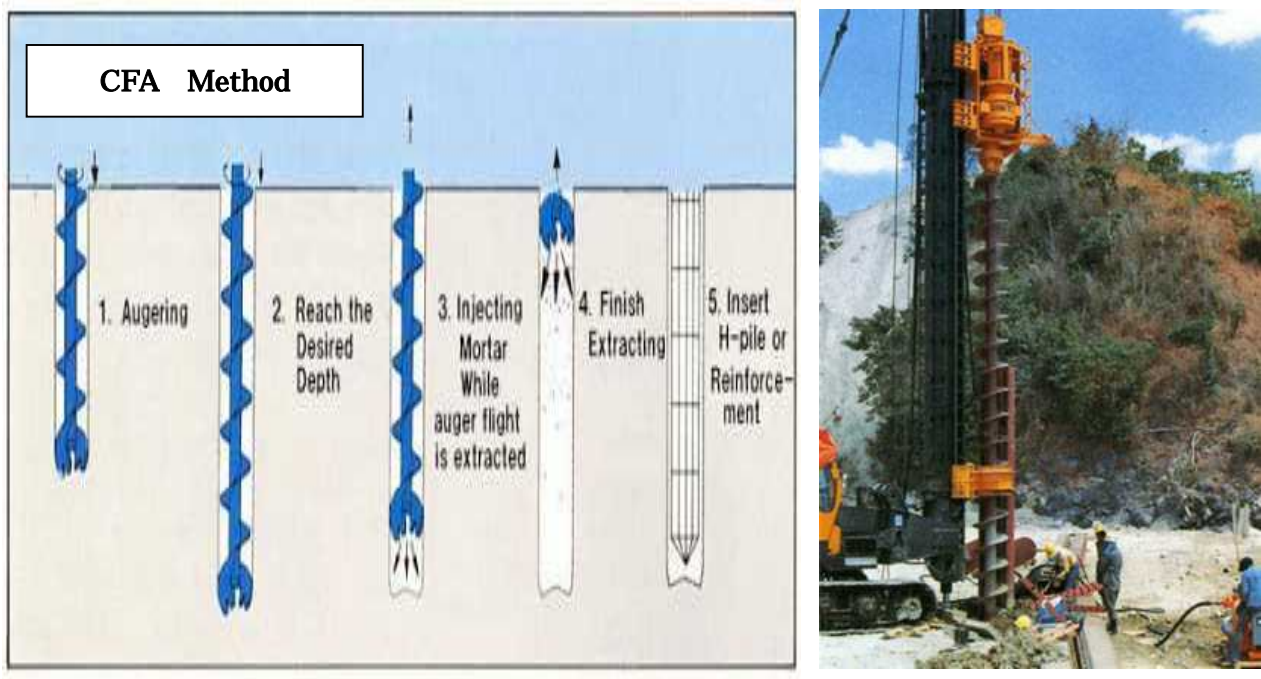


CFA Method

Continuous flight auger(CFA) piles are drilled foundations in which the pile is drilled to depth in one continuous process using a continuous flight auger. After the hole of desired depth is drilled, cement mortar is injected through the swivel device equipped with Auger Drive Unit into the drilled hole while the Auger Flight is extracted, and then reinforcing steel cage or equivalent is installed with its own weight into the hole filled with mortar. The mortar generally consists of water, fine sand, Portland cement and chemical additives. The method is applicable for foundation pile, frictional bearing pile, soil-retaining wall and earth anchor baring pile.

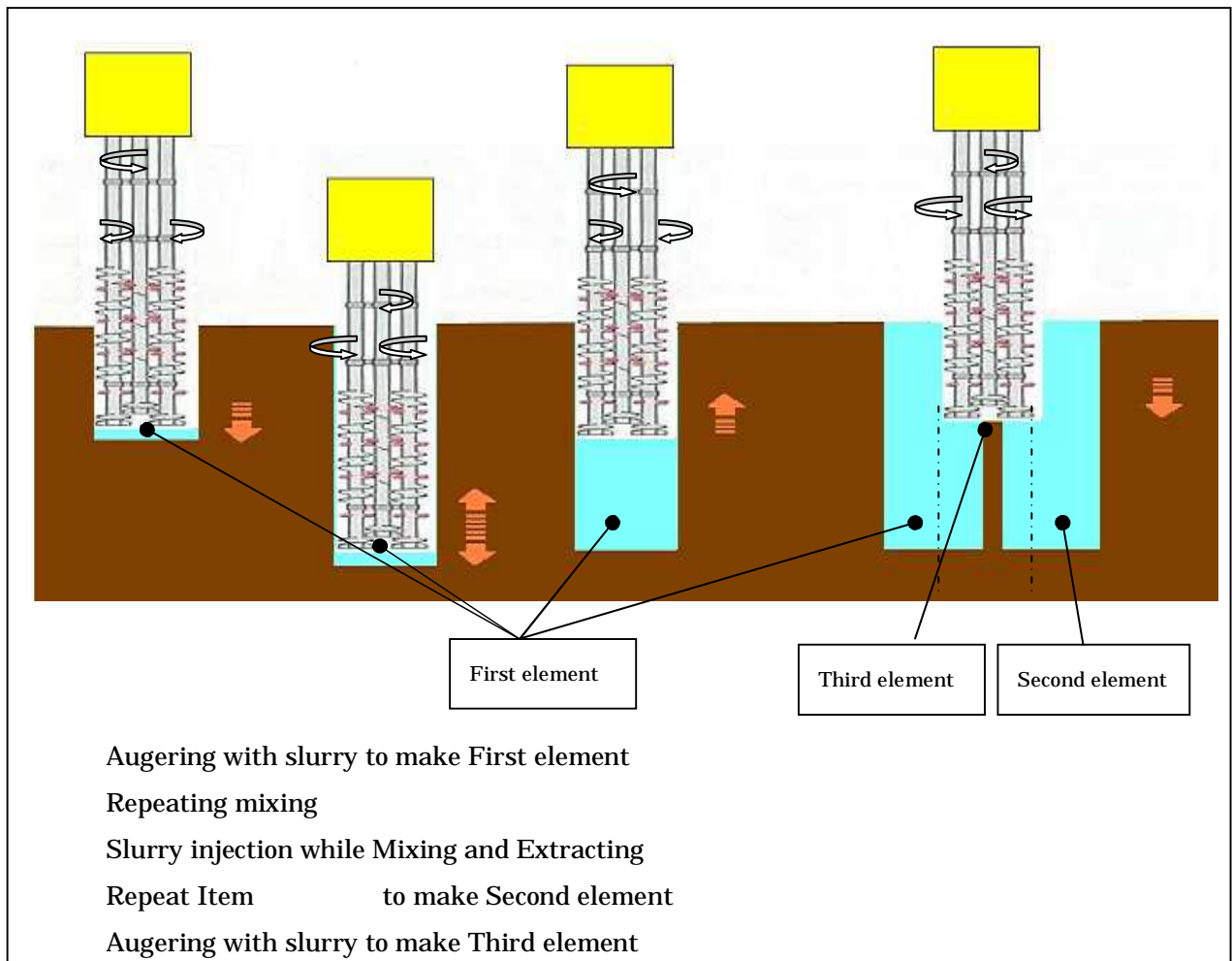


General Specification of Auger Drive Unit

Model	Motor	Rotation Speed	Rated Torque	Weight	Recommended Augering diameter
	Output×Unit×Pole	min ⁻¹	kN-m	(t)	(mm)
D-240HP	90kw×2×4/6P	19.5	131.92	10.5(9.8)	ø700 ~ 1500
D-150HP	55kw×2×4/8P	15.9	131.75	9.7(9.7)	ø600 ~ 1200
D-120NP	45kw×2×4/8P	30.9	55.56	5.9	ø450 ~ 1200
D-120KP	90kw×4/8P	32.2	53.39	5.2	ø450 ~ 1200
D-100KP	75kw×4/8P	32.1	44.59	4.5	ø450 ~ 1000
D- 80KP	55kw×4/8P	32.1	32.62	4.4	ø450 ~ 1000
D- 60KP(K)	45kw×4/6P(6P)	23.7(15.8)	18.08(27.13)	3.4(3.3)	ø280 ~ 800

- 1 Soil Retaining Wall Method

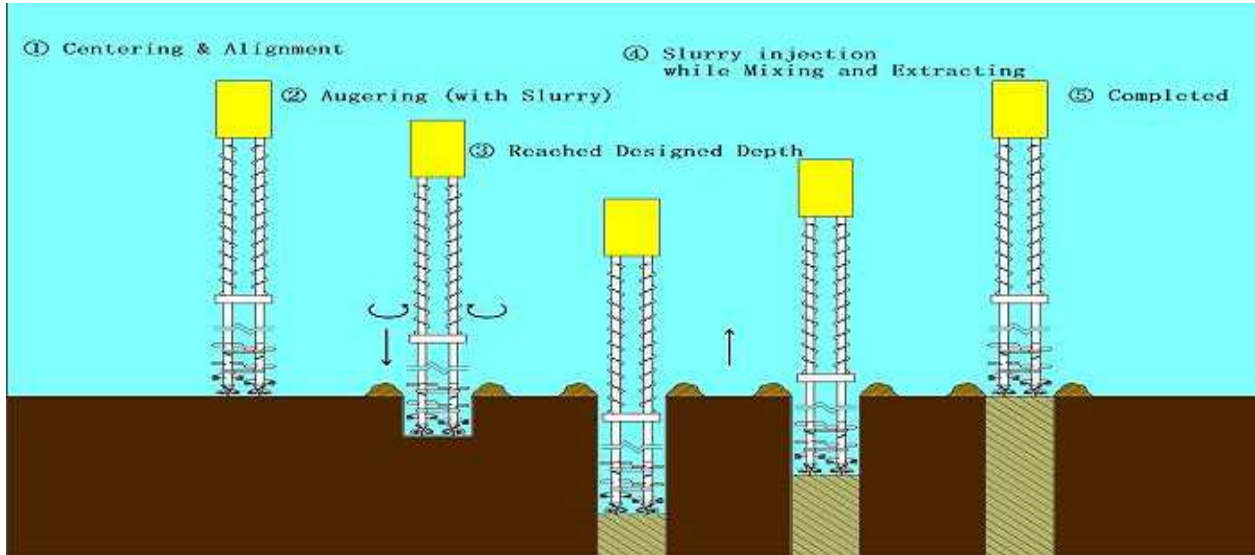
Soil cement-mixing wall method for making the soil-cement wall that does in situ by using the multi shaft auger equipment develop specially, but injection of cement slurry from the point and mixing it with the existing soil for making the soil-cement wall. As a soil cement-mixing wall of continual one body, the complete lap being able to the bored hole mixing axis of the element edge to the next element, it keeps creating. As for the Soil cement-mixing wall, it is possible to utilize wide-ranging in the waterproof earth retaining wall, in the resistance earth retaining structure and the dead water wall.



- 2 Deep Mixing Method

For cement Slurry Deep Soil Mixing Method

Sanwa Multiger series has plural output shafts to apply for retaining walls and /or soil consolidation (stabilization) using agitating auger flight and head. The reinforcement of soil method uses a hardener to harder the soft ground and is used to improve it into ground which is capable of supporting a structure. In this works, cement slurry is injected to ground through swivel device in Multiger and hollow stem in agitating auger flight and head. Existing soil is mixed and agitated with slurry by means of agitating flight and head that are connected with plural output shafts of Multiger.



General Specification of Muliger Drive Unit

Drive Unit	Number of Rod Shaft	Pitch between Shafts (mm)	Electric Motor	Rotation Speed	Rated Torque	Weight (t)
Model			Output×Unit×Pole	@4P / 8P min ⁻¹	@4P / 8P kN-m	
MAC-160-2S	2	800/1000/1200	55kw×2×4/8P	32.1 / 16.0	16.31 / 32.62	9.1
MAC-200-2S	2	800/1000/1200	75kw×2×4/8P	32.1 / 16.0	22.24 / 44.49	10.0
MAC-240-2S	2	800/1000/1200	90kw×2×4/8P	32.1 / 16.0	26.69 / 53.39	10.7
MAC-120-3J	3	450	45kw×2×4/8P	38.5 / 19.2	7.43 / 14.86	7.5
MAC-150-3J	3	450	55kw×2×4/8P	33.1 / 16.5	10.55 / 21.10	9.5
MAC-200-3B	3	600	75kw×2×4/8P	35.6 / 17.8	13.38 / 26.77	9.7
MAC-240-3B	3	600	90kw×2×4/8P	31.3 / 15.6	18.30 / 36.60	11.7

PIPE JACKING OR MICROTUNNELLING

Sanwa Kizai Pipe Jacking or Microtunnelling to lay the sewer pipes underground without digging has been proceeding not only in urban area but in medium size area worldwide. Now, it is essential to increase sewerage line occupancy rate as a modern and sanitary city.



Procedure of microtunneling

Place the guide frame in the launching shaft, and set the main unit & the pilot tube.

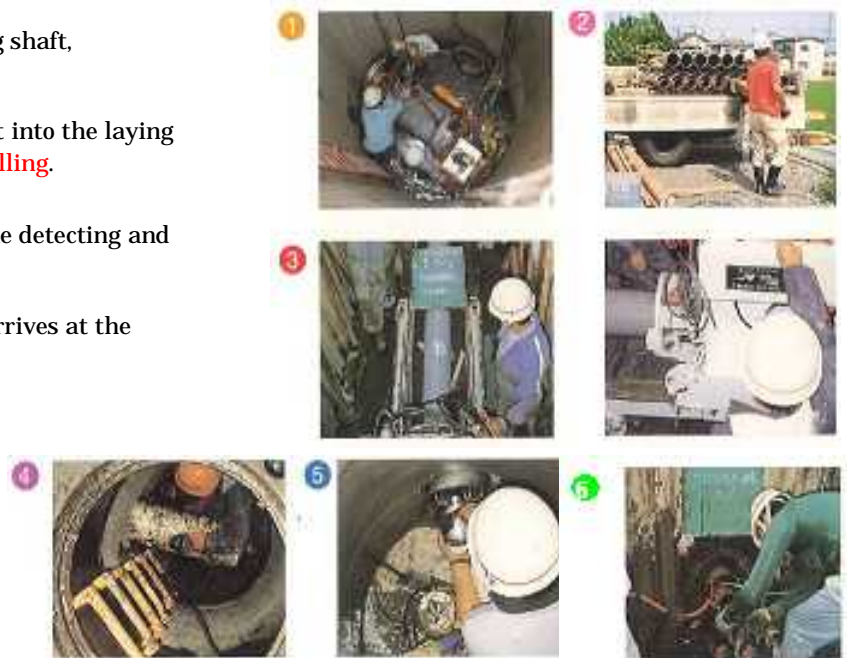
Insert the liner casing and auger flight into the laying pipe for preparation before **microtunnelling**.

Thrust the laying pipe one by one while detecting and steering the thrust direction.

Repeat Item , until the pilot tube arrives at the arriving shaft.

After the pilot tube arrives at the arriving shaft, collect the auger head and pilot tube from arriving shaft.

Collect the cables, hoses, the liner casings and auger flights from the launching shaft.



General Specification of Pipe Jacking Machine

Model	Rated Force	Rated Torque	Starting Shaft Size	Applicable Pipe	Weight	Applied Jacking pipe Internal Mini Diameter Outer Max Diameter
	kN (Max)	kNm (Max)	M		(t)	mm
SEH-823	2,300	30	2.5	PVC Pipe, ABS Pipe, Clay Pipe, RCP Pipe, Steel Pipe	5	ø250 / ø874
SEH-616	1,600	20	2.5		3	ø250 / ø774
SEH-508	800	10	2		1.4	ø200 / ø600
SEH-456	588	7.4	2		1.1	ø200 / ø580

Please note that some products may be subject to change due to continuous studies of design and performance.

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