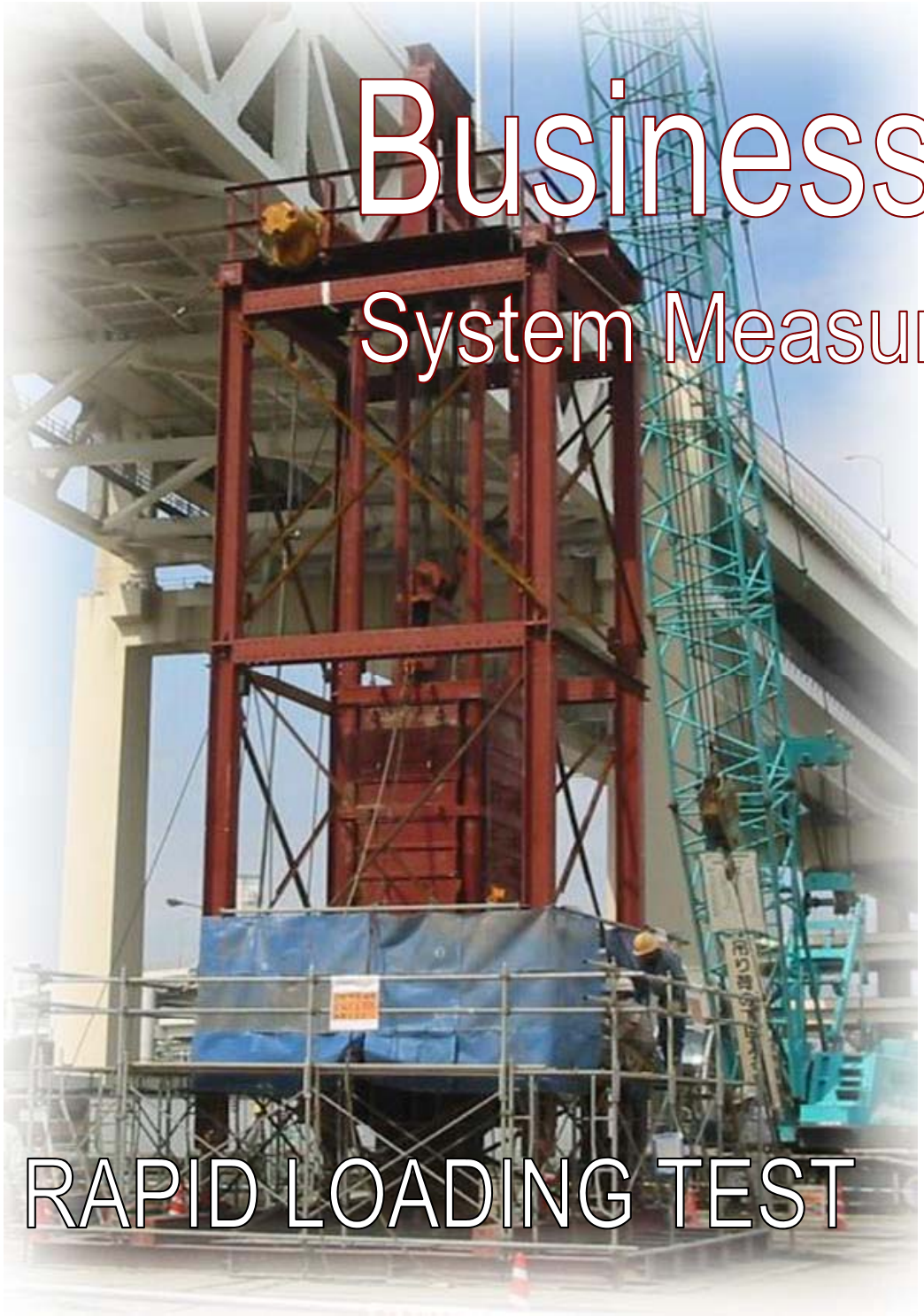
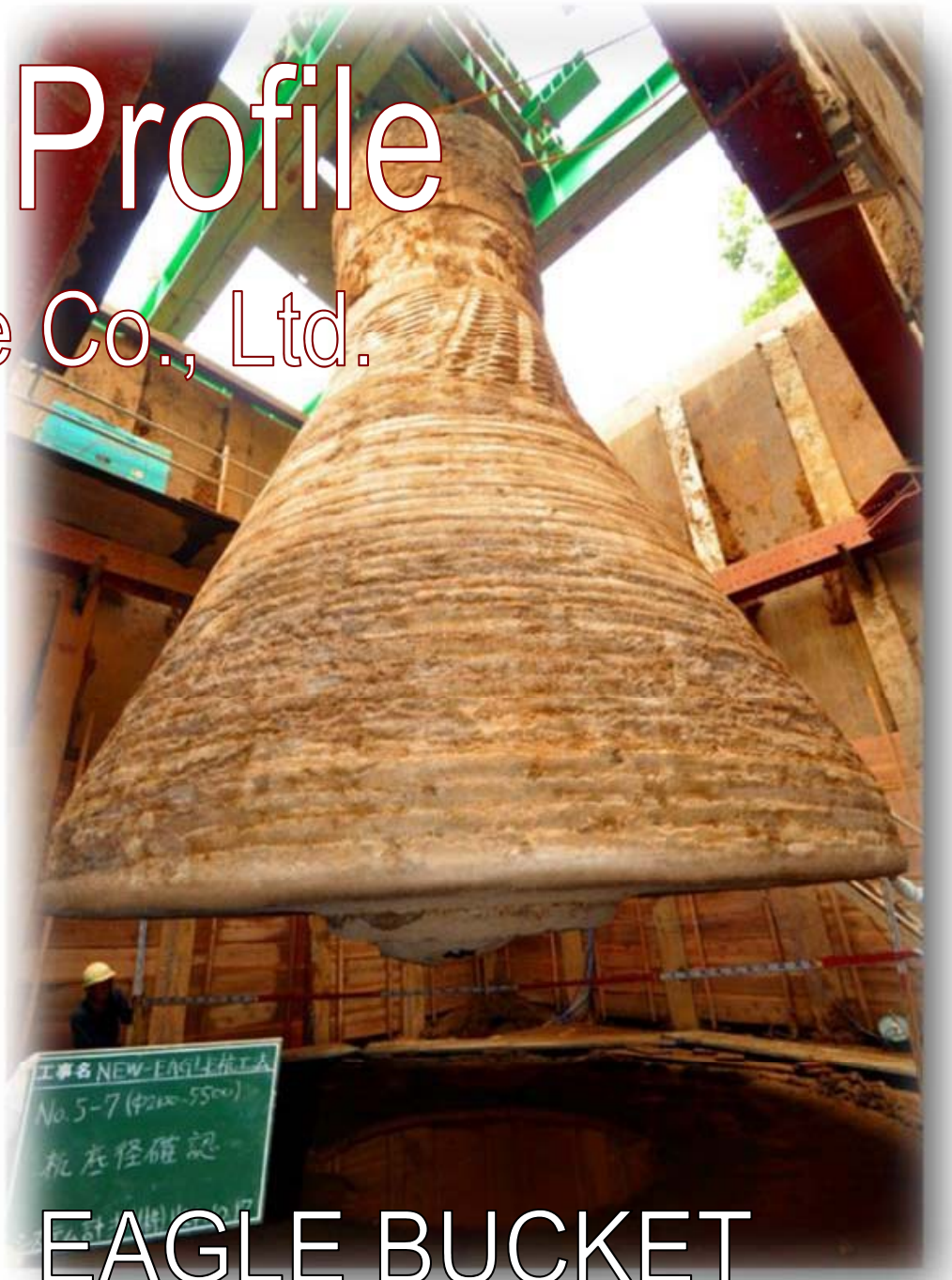
Business Profile

System Measure Co., Ltd.



RAPID LOADING TEST



EAGLE BUCKET

Company Profile

Established March 1989

1-26-4 Kamezawa, Sumida-ku, Tokyo 130-0014
Tel: 03-5611-2500, Fax: 03-3625-2100
E-mail: main@systemkeisoku.com
http://www.systemkeisoku.com/
Registration of Office of 1st Class Qualified Architects
Tokyo Metropolitan Registration No. 30394
Construction Business Permit
Tokyo Metropolitan Permit No. 91270
(Civil engineering, Building construction, Scaffolding construction, Steel structure construction, Drilling)
Construction consultancy registration
Ministry of Land, Infrastructure and Transport (Ken 16)
registration No. 6701
Geological surveyor registration
Ministry of Land, Infrastructure and Transport (Shitsu 17)
registration No. 1872
Capital: ¥10,000,000

Business Content

- Loading test (impact, rapid, static)
- Plate loading test, boring surveys
- Ground anchoring test
- Pile development consulting
- Pile reuse planning and surveys
- Seismic diagnosis
- Pile soundness testing (IT test), borehole sonar
- Measurement works for earth retaining condition
- Cast-in-place concrete bell pile construction methods

Qualified Personnel	
Ph.D in engineering	1
Professional engineers (Construction Division)	4
Structural design 1st class architects	3
1st class architects	5
Professional engineers for ground quality evaluation	3
1st class civil engineering works execution managing engineers	7
2nd class civil engineering works execution managing engineers	2
1st class building operation and management engineers	2
Environmental surveyors (noise and vibration)	1
Foundation construction engineers	16

Provision of Testing Grounds for Construction Method Development (Approximately 50 iron and steel, prefabricated pile and construction method manufacturers)

System Measurement Materials & Machinery Center

Testing ground (Test Center No.1)

Miyauchi Testing Ground No.16

- System Measurement Materials & Machinery Center
  4-4 ~ 6 Aza Miyauchi, Oaza Wago, Sakaimachi, Sashimagun, Ibaraki (3,300 ㎡)
  TEL＆FAX：0280-87-5796
- Inao Testing Ground No.3
  Sakaimachi, Sashimagun, Ibaraki (2,640 ㎡)
- Kuriyama Testing Ground No.5
  486-1,4, Aza Oyama, Oaza Kuriyama, Sakaimachi, Sashimagun, Ibaraki (5,280 ㎡)
- Chikusei Testing Ground No.6
  2158-1 Ebigashima, Chikusei-shi, Ibaraki (13,200 ㎡)
- Bando Testing Ground No.9
  1186-1,4 Aza Tatemichi, Matate, Bando-shi, Ibaraki (4,620 ㎡)
- Kawashima Testing Ground No.11
  919 Kamiyatsubayashi, Kawajimamachi, Hikigun, Saitama (1,980 ㎡)
- Iwaki Testing Ground No.12
  2-44 Aza Kameishicho, Takijiri, Izumimachi, Iwaki-shi, Fukushima (1,320 ㎡)
- Bando Sakasai Testing Ground No.13
  Aza Uchino, Sakasai, Bando-shi, Ibaraki (3,300 ㎡)
- Nishihara Testing Ground No.14
  1785-3 Aza Nishihara, Oaza Wago, Sakaimachi, Sashimagun, Ibaraki (6,600 ㎡)
- Takagakke Testing Ground No.15
  436-1 Aza Takatanido Minami, Oaza Wago, Sakaimachi, Sashimagun, Ibaraki (6,600 ㎡)
- Miyauchi Testing Ground No.16
  On the grounds of the Equipment Center (3,960 ㎡)

Static Loading Test

Pmax=60,000kN load-bearing equipment

Pile Push-in Test
(System Measure Co.,Ltd. Testing Ground No.3)

Pile Pull-out Test
(Tokyo Skytree)

Pile-toe loading test
(static load)

Rapid Loading Test

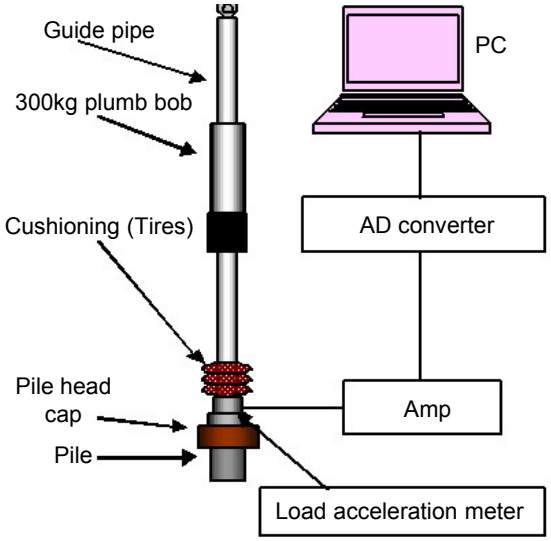
Management of small-diameter pile construction using F M rapid loading test

(Building technology performance evaluation acquired: GBRC Performance Certificate No. 08-01)

56t plumb bob, maximum
drop height: 3 m

Photograph-1: Pile driver type

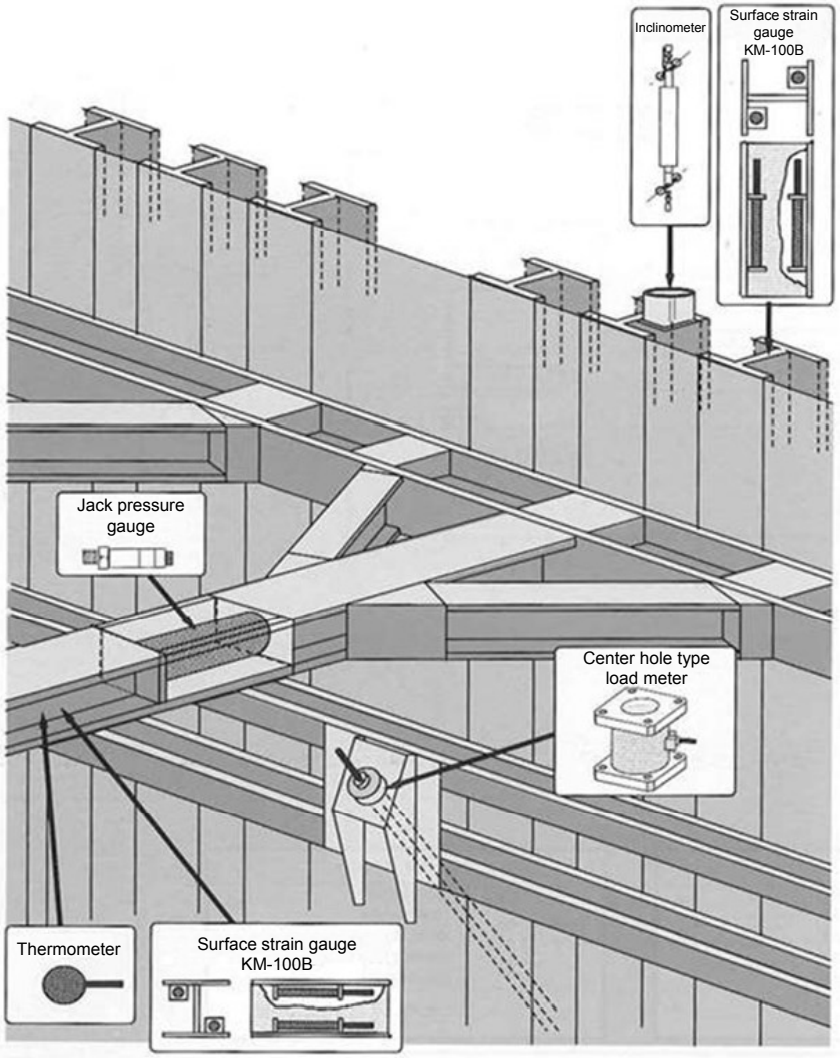
Photograph-2: Unic type



Rapid loading test device incorporated into the pile driver

○ Earth Retaining Wall Measurement

Hazardous changes such as earth retaining wall collapse, obstruction to the surrounding grounds, heaving and boiling are checked in advance and measured in order to quickly cope with such phenomena.



Earth Retaining wall measurement site

Switchbox

Measurements being taken in the site office

Manual inclination measurement

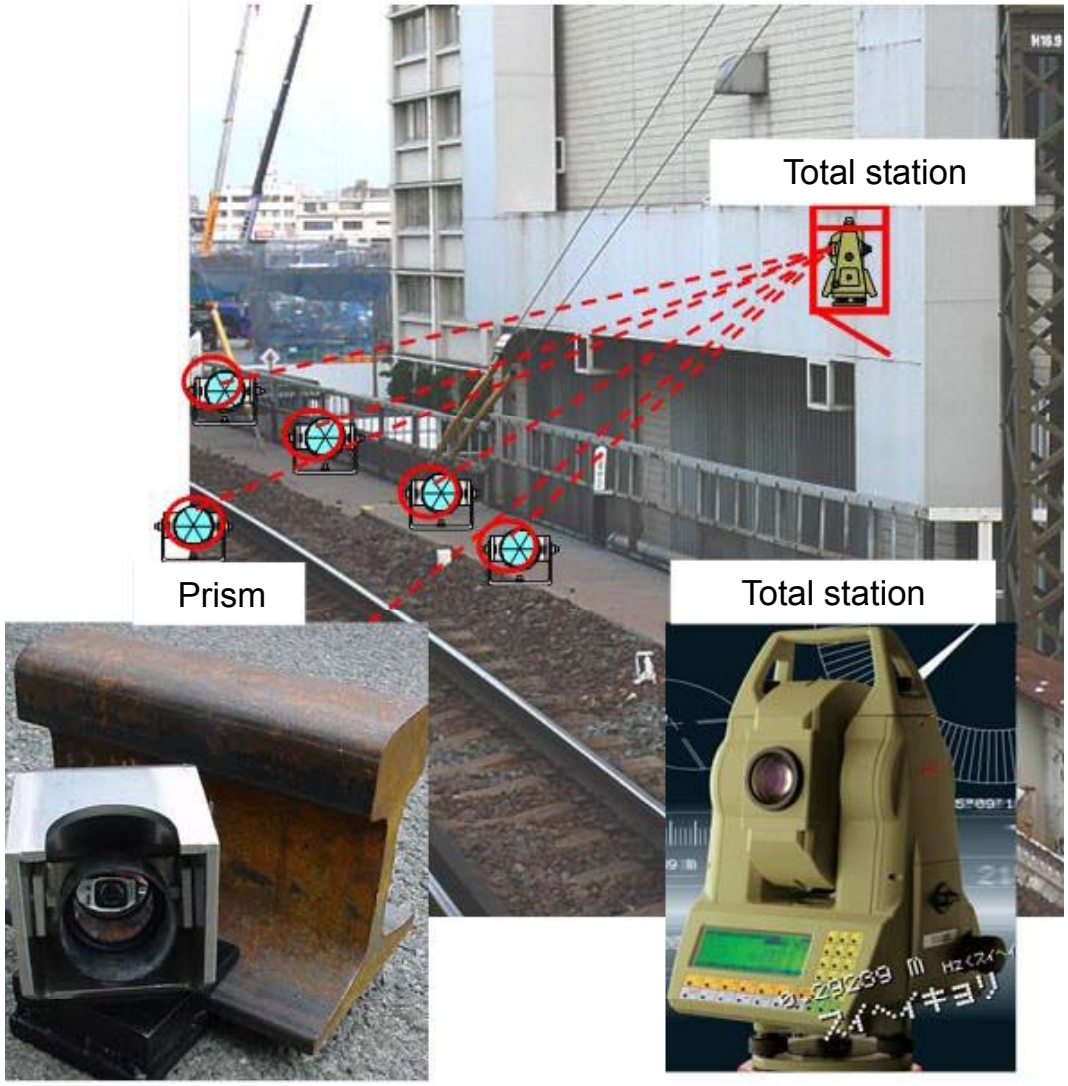
Installation of a multi-layer Clinometer

Earth pressure gauge

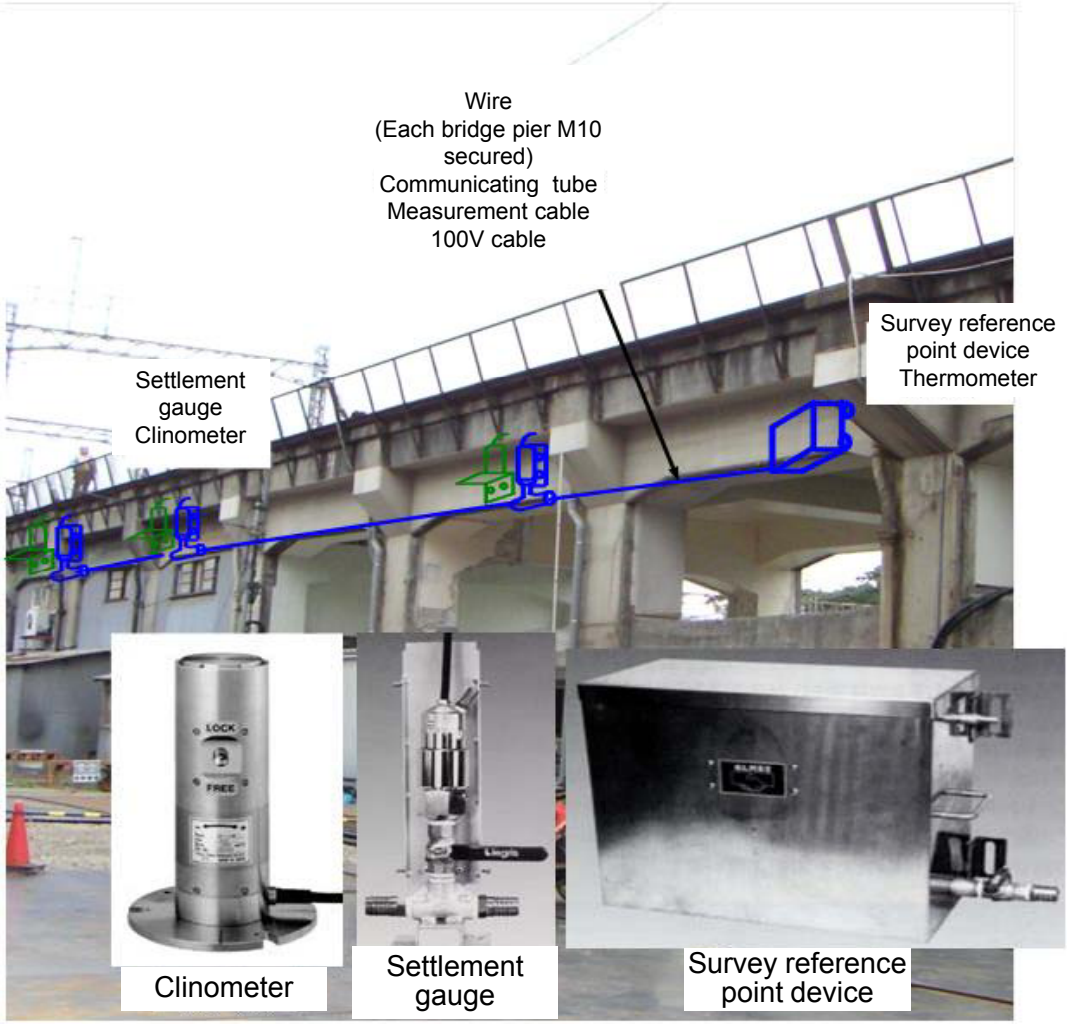
Strain gauge

Stress transducer

Displacement Measurement by Total Station



Deformation Measurement of Railway Bridge Using a Communicating-tube Displacement Transducer and Clinometer



NEW-EAGLE Pile Construction Method

NEW-EAGLE Pile Construction Method (Bell piles) (1)

BCJ(=The building Center of Japan) appraisals - FD0307–02, December 2012

- Enlarged pile base construction diameter D_w 900 - 5,500mm
- Angle of inclination $\theta \leq 21.1°$
- Enlarged pile base ratio 1.1 - 7.3
- Concrete strength F_c = 18 - 60 N/mm^2

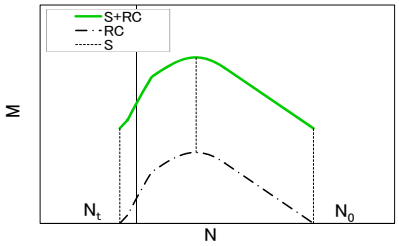
NEW-EAGLE Earthquake-resistant Pile Construction Method (2)

(Steel pipe-wrapped pile head)

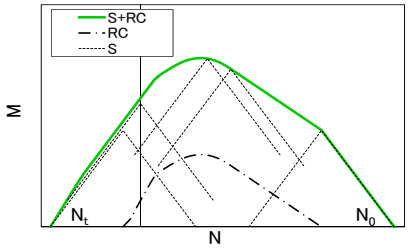
BCJ appraisals - FD0444–01, February 2014

GBRC(=General Building Research Corporation of Japan) performance evaluation No.10-25, Revised, December 2011

Flat steel pipe type
Simple superposed strength equation



Flat steel pipe + Welded reinforcing bars
Universal superposed strength equation



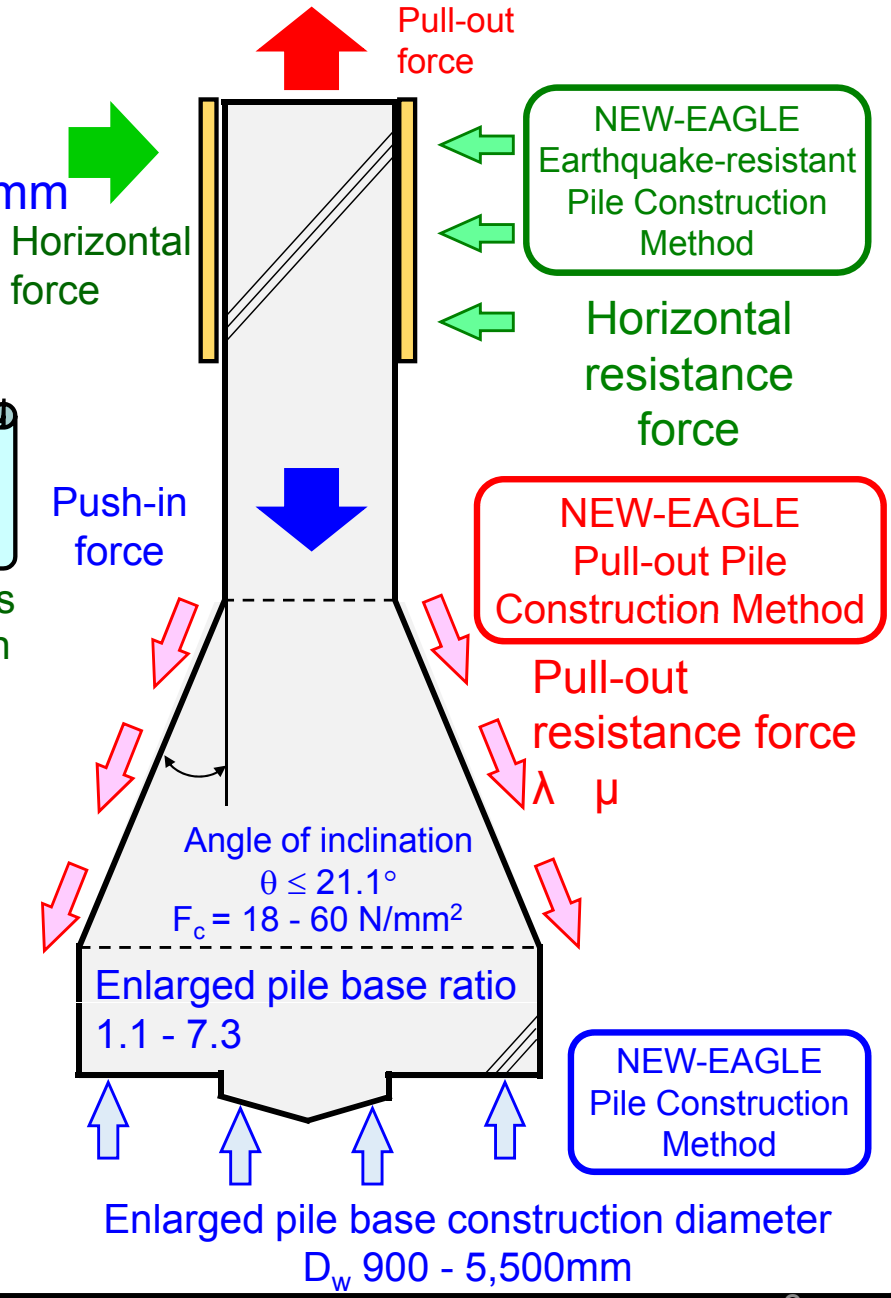
NEW-EAGLE Pull-out Pile Construction Method (3)

(Equation for the allowable bearing capacity in the pile pull-out direction)

Evaluation CBL(=Center for Better Living) FP016 – No.14 , June 2015

Enlarged pile base pull-out resistance (θ = 3° - 21°)

λ (Sand ground)= 4.0 - 14.5 μ (Clay ground)= 0.4 - 0.8



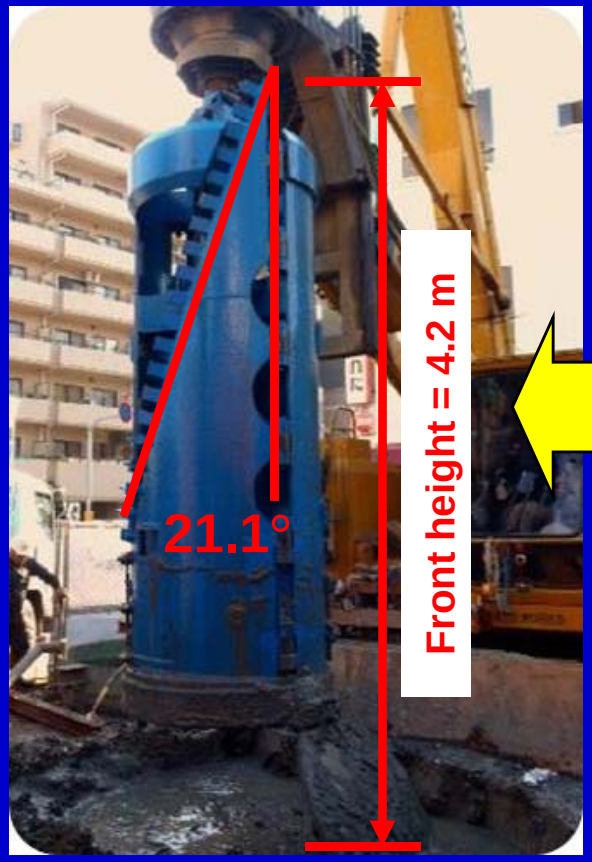
Effects of Inclination Angle during Construction (Mechanical Method)

Wing inclination of EAGLE bell pile machine = 21.1°

Low height compared to 12° bell pile machine

Conventional general-purpose large earth drill

Construction machine used with a bell pile bucket with 4100 mm diameter of enlarged base and 12° angle of inclination



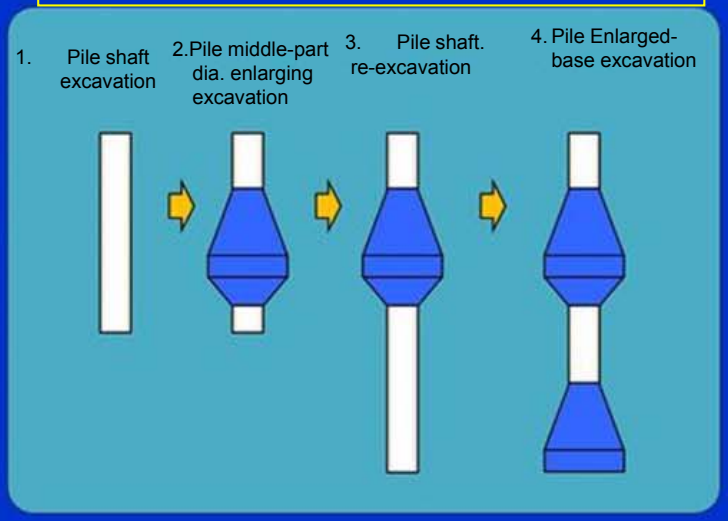
Compact earth drill KE1500

Diameter of enlarged pile base: 2800 mm
Enlarged pile base ratio: 7.29
Angle of inclination: 21.1°

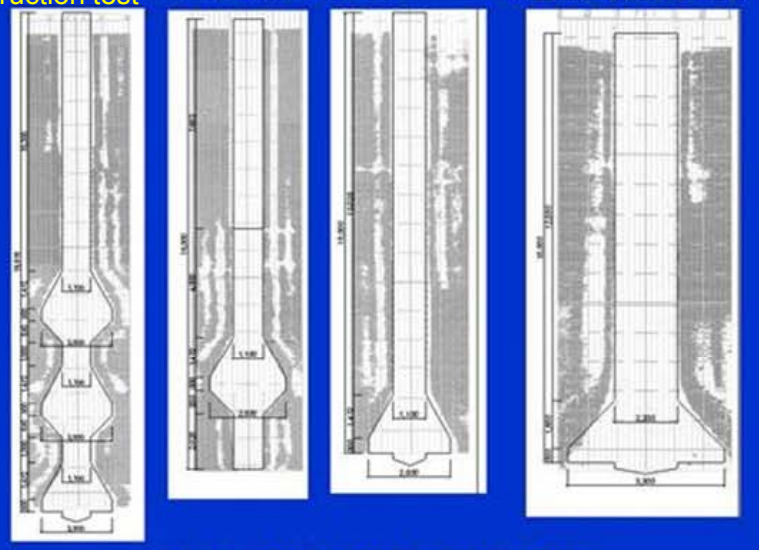
Large earth drill ED6200H

Diameter of enlarged pile base: 5500 mm
Enlarged pile base ratio: 6.61
Angle of inclination: 18.3°

Development of the multi-belled pile
Multi-belled pile excavation procedure



Construction test Φ1100−2800 θ=30° Φ2200−5500 θ=45°



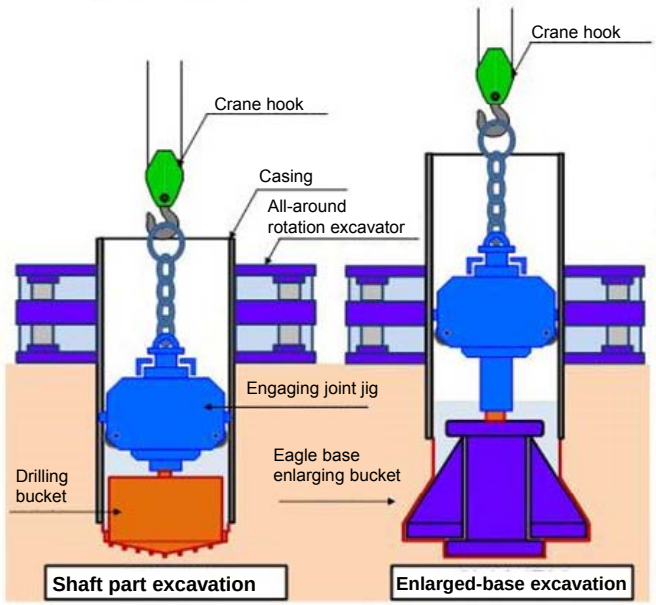
The shape of excavation has been retained with no pit hole collapse.

Pile Middle-part dia. enlarging bucket (AB-30°)

Excavation by 30AB Middle-part dia. enlarging bucket (Φ1000Φ2800mm)

EAGLE KZ Construction Method NETIS Registration (KT-120104-A) Registered on February 8, 2013

- Excavation using an engaging joint jig
- The engaging joint jig mechanically joins to the casing tube
- Excavation is performed by the EAGLE drilling bucket by rotating the casing.
- No hydraulic mechanisms are used.
- The all-around rotation excavator torque is transmitted directly to the bucket to improve construction performance.

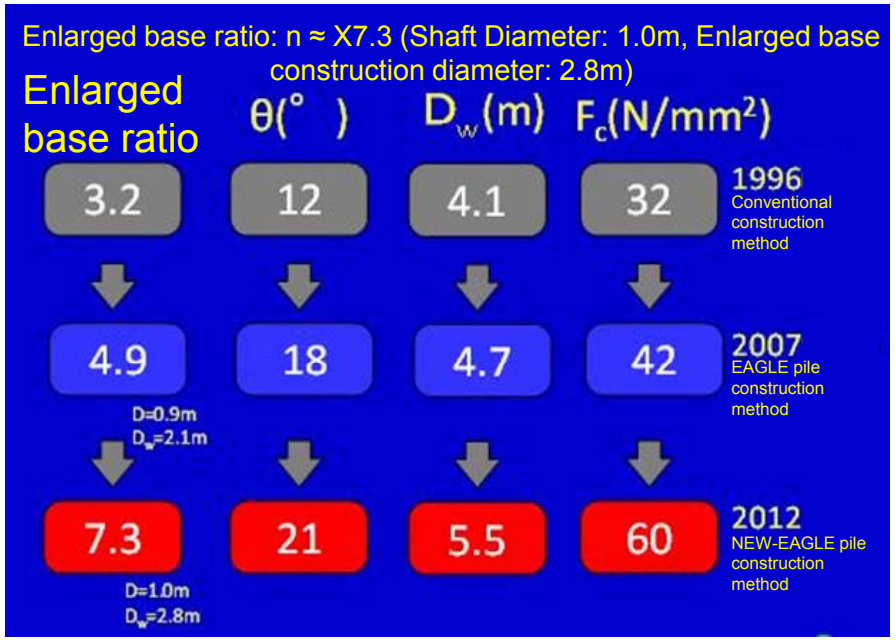


Dedicated casing

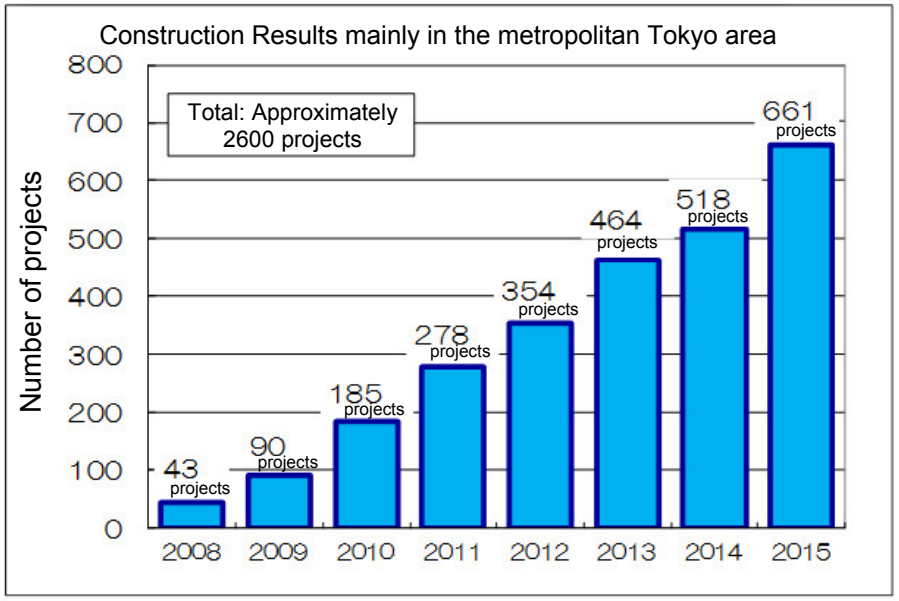
Engaging joint jig

65 Member Companies of the EAGLE Pile Promotion Association

Earth Techno Corporation
Earthtec
AITOP Co., Ltd.
Aoyama Kiko Co., Ltd.
Ajisawa Kiko. Co., Ltd.
Ambic Co., Ltd.
Ishikawa Kogyo, Inc.
Inoue Kiko Co., Ltd.
Iyo Bulldozer Construction Co., Ltd.
Eiko Inc.
Okadagumi
Kakuto Corporation
Kyobashi Bussan
Kinjyo Jyuki
Keiai System Co., Ltd.
Koki Co., Ltd.
Kouki. Co.
Goyo bussan
Sakamoto Shokai
San-ei Co., Ltd.
Sanyo Koji Co., Ltd.
Geotech Co., Ltd.
Shinji Co., Ltd.
Shinmei Gikou Co., Ltd.
Shinwa Kiko Co., Ltd.
Sugisaki Kiso Co., Ltd.
Seiwa Kiko Co., Ltd.
Seiwa Technos Co., Ltd.
Senki Industries Co., Ltd.
Sougou Chishitsu Co., Ltd.
Daiyo Kiko Industry Co., Ltd.
Taiyo Foundation Co., Ltd. (Tokyo)
Taiyo Seramu Co., Ltd.
Takaki Corporation
Takayama Kiso Kogyo Co., Ltd.
Tanabe Kogyo Co. Ltd.
Delight Co., Ltd.
Tohken Engineering Co., Ltd.
Tosei Sangyo Co., Ltd.
Toyoken Co., Ltd.
Trust Co., Ltd.
Nagae Kenzai Kogyo Co., Ltd.
Nichiei Kiko Co., Ltd.
Nissin Koei Corporation
Nozaki Kenko
Hayabusa Co., Ltd.
Hanshin Kensetsu Co., Ltd.
Fuji Industry
Futabashizai Co., Ltd.
Blast Co., Ltd.
Hokuei Sangyo Inc.
Horie Industries Co., Ltd.
Maruko Shoji Co., Ltd.
Marugo Foundation Corp.
Marumon Construction Co., Ltd.
Mitani engineering Co., Ltd.
MIK Corporation
Munehiro Kiso Kogyo Co., Ltd.
Yuken Co., Ltd.
Yushin Co., Ltd.
Yoki Co., Ltd.
Yoshida Construct
Wakasa Co., Ltd.
Washin Kogyo Co., Ltd.
Watanabe-toshi Kogyo Co., Ltd.



Transition of Bell Piles Specification



Design				
Enlarged base	41	52	69	104
Steel pipes	8	17	17	33
Total	49	69	86	137

Transition of the EAGLE Construction Method Sales Record