



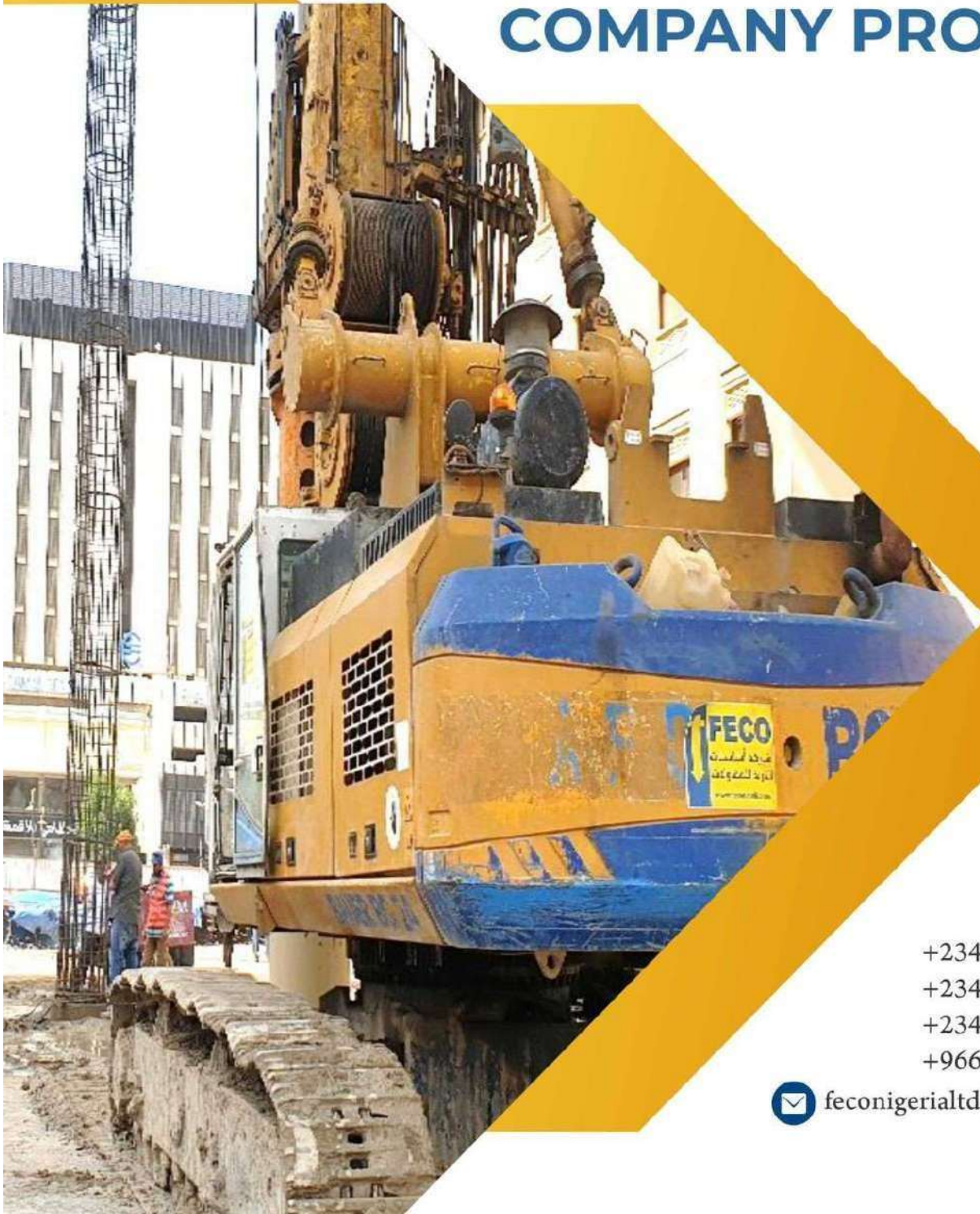
Foundation & Earthworks Company Ltd.

RC 1750604



Plot 1708a, Olugbosi close off Bishop Oluwole St,
Victoria Island, Lagos State,
Nigeria.

COMPANY PROFILE



+2347069933129
+2348036091177
+2348033052222
+966505678157



feconigerialtd@gmail.com

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Introduction

FECO (foundation and earthworks company)

Is a piling and geotechnical contractors Based in the Kingdom of Saudi Arabia for the last 15 years, the Company's structure utilizes many years of experience working with all sorts of difficult ground conditions to provide modern economical solutions to the construction and associated industries.

As we had, large range of piling and other foundation equipment, we reinforced recently our assets with a large range of modern piling equipment that can execute all types of piling works.

Our new states of art machinery were part into operation recently to cover the recent requirements for a large diameter pile with deeper drilling and with efficiency matching with the tight work schedules.

foundation provides the complete one step solution to basement and foundation construction with design, supply and installation expertise being available to give the best and efficient methods of working.

Company Activity List

1. Piling

We have one of the largest fleets of Modern Hydraulic powered drilling rigs in Saudi Arabia and use the most modern techniques available.

There are several factors considered when deciding what type of piled foundation is most suited to a project.

First factor is to be taken the soils presents on the site together with any contaminated spoil issues, ground water and site access. This factor will start themselves to identify the most suitable for the project.

Second factor is the pile capacity must be determined initially the required load to be carried will be viewed against the structure capacity of a pile, its durability, and any settlement limitations. Ultimately the geotechnical bearing capacity will be considered considering competence of the soil strata, installation method, site conditions and various subsoil data.

Thirdly, the cost is always an important consideration deep foundation with various previous projects and implementation for wide scope of piling at various locations kingdom wide together with the available updated data, out of each and every executed project can assist in determining the most cost-effective solution to a project.

Retaining walls

Secant Walls

Deep foundation contractors are experienced at designing and building hard/soft and hard/firm secant walls using continuous flight augur or bored piles techniques or segmental casings for applications of various pile diameters upwards.

The development of powerful high das led to an increase in the range of ground conditions and obstructions that can be penetrated and the wall thickness that can be constructed. We can install secant walls in the most challenging environment.

Where soils are saturated and water tightness is a required secant materials (soft) or weaker concrete (firm) are used in combination with reinforced concrete (hard) piles. These alternatives are generally used where temporary works are required. Permanent are retention can be provided with all reinforced piles (hard/hard) which can be incorporated within the final structure.

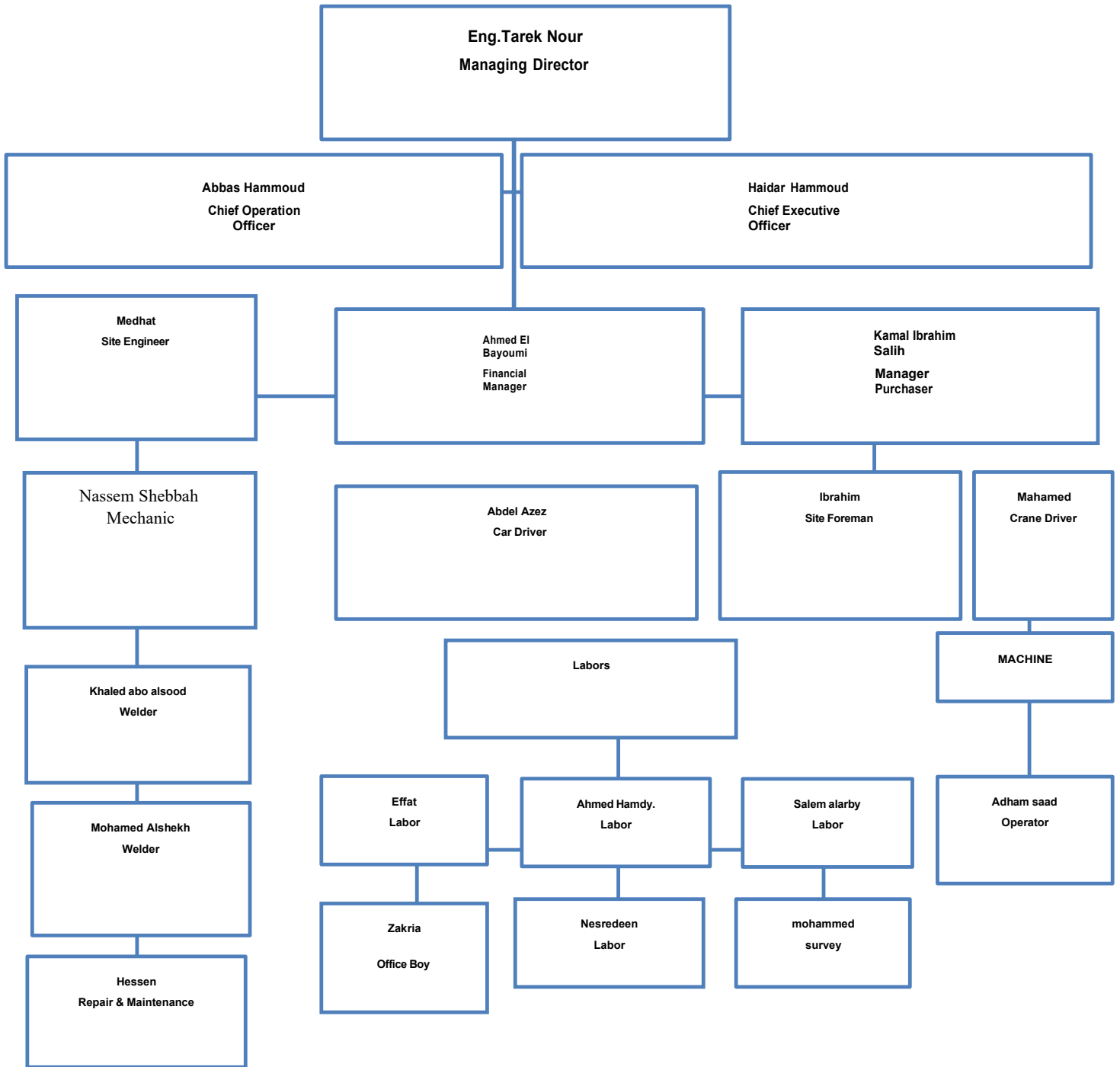
Piles in a secant wall are spaced at 0.8 to 0.9 pile diameters. Primary piles are secanted by secondary piles, thus providing a closed structure to act as a barrier in water bearing soils, and to prevent the ingress of soil between the piles.

Secant piling offers minimal vibration and low noise levels and the flexibility to fit complex site boundaries, maximizing land use. Secant piling also can go through underground obstructions such as steel, heavily reinforced concrete, granite and masonry while at the same time avoiding any risk of construction induced settlements to neighboring structures.



**FECO
Organizational
Chart**

Feco Organization Chart



A pile of dark brown soil, possibly coffee grounds, is centered on a white background. The soil is piled in a roughly oval shape with some scattered particles around the edges. Overlaid on the center of the soil pile is the text "Completion Certificates" in a bold, white, sans-serif font.

**Completion
Certificates**

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Engineering Consultant
ZAKI M.A.FARSI



المهندسين الإستشاريين
زكي محمد علي فترسي

الرقم: ٢/٢٠١١/٧٧٧ Ref.

التاريخ: ٠٨/٠٢/٢٠٢٠ Date

الموافق: ٠٨/٠٢/٢٠٢٠


Experience Certificate

This is to certify that M/S Deep Foundation for Soil Contracting have successfully finished a piling job being for Al (farsi7) kornich tower in Jeddah sea front.

The job was to install a 266 number of 1.0m. Diameter bored piles to a depth vary from 25 to 28m.

Deep Foundation did also a destructive load test to 2000 ton which was found very successful and according to their design assessment.

We recommend Deep Foundation with their machinery and experience manpower capacity for similar and larger projects.


Eng. Adel Redwan
Projects Manager





شركة
فريسينيه
السعودية العربية
للبناء والتشييد
بازن - جدة - المملكة العربية السعودية
111

TO WHOM IT MAY CONCERN

This is to certify that **M/s. FECO / Deep Foundation for Soil Contracting** worked for us as sub-contractor for piling works in our Project **"The Head Quarters Business Park"** – Jeddah. FECO had successfully completed their scope of work and executed 120 piles Ø 900mm 27Lm deep and 332 piles Ø1200mm 44Lm deep.

FECO selected best methodology to execute these piles which that efficient and achieved the best results for friction piles.

We appreciate FECO efforts and their good cooperation they showed while achieving project targets.

Best regards,
FREYSSINET S. A.


Ahmad Hammad
Project Manager




Keppel Land
International Limited
Co Reg No. 148903K-04
210 Victoria Street
#14-01/02 Buys Junction Towers
Singapore 188004
www.keppelland.com.sg

Tel: (65) 63381111
Fax: (65) 63381728

22 March 2011

**Al Mada Tower
Testing program**

- The Al Mada Project is situated along the sea front at Corniche Road, Jeddah. This project consists of two towers of 86 storeys (352m high). As it is to be constructed over coral limestone and on reclaimed land, coupled with a super high iconic tower, the design and construction of these 2 Nos. of 352m high towers foundation is absolutely crucial to mitigate the risks of overturning, settlement and capable of bearing the imposed forces on the sub structure. The underlying soils have cavities (osteoporosis) and highly cavitated coral and limestone with variable strengths through the depth.
- The exploration, trial piles and test piles conducted enabled the following to be identified, defined and characterized. The test pile program yielded the following -
 - Strength
 - Cavities location and volume
 - Capacity of piles different length
 - Best method to reduce cavitation
 - Selection of the method statement to be adopted for the "mass piling" tender
- (FECO) - a deep foundation contracting company has entered to the testing contract for Al Mada Tower to do 5 instrumented pile load tests for 1500mm bored piles, to a depths varying from 56m to 62m to a test load to 54MN. The methodology adopted by FECO helped to firm up for the cavity treatment in coral reef foundation project. This method conducted was simply to fill up the cavities along the pile depth with lean concrete of same strength as of coral reef 5 – 7MPa. This initial sealing up of the cavities enable the subsequent drilling and installation of the permanent bored piles to be made simpler, faster and more economical and yet secured better quality control and better load test results. The blinding will seal the cavity and not to create a collateral damage to the adjacent pile during drilling.
- The exploration and test pile program covered the whole area for the north, south towers and podium.



Letter of Accomplishment

This is to certify that **Deep Foundation Engineering Contractors** have successfully finished a piling job being for Bridge foundations.

The job was to drill and cast a 320 nos. of bored piles 900mm in diameter and 25m deep.

Deep Foundation Engineering Contractors also did eight number of static load tests with own equipments and Instrumentations to test the working capacity of piles which was found very successful.

We recommended deep foundation contractors with their efficient new drill equipments and professional staffing for similar and larger projects.



Advanced Construction Co.

Mitsubishi Corporation

NAHA Branch
Mail Address: P.O. Box 10391 Jeddah 21462
C.R. No. 110284/1771/02
Tel: 024989-993637
Fax: 024640
Telex: 80417 MCRB SJ



شركة ميتسوبيشي كورپوريشن

الرياض - جدة
البريد الإلكتروني: 024989-993637
الفاكس: 024640
البريد التلغرافي: 80417 MCRB SJ

Feco

Subject : Piling Works for the 380kV Switchyard Extension at the SWCC Plant, Yanbu, Saudi Arabia

Dear Sir,

We write to express our thanks for the excellent job that your company carried out in installing 77 No. 15m deep piles in extremely difficult situations at the above site.

We would be obliged if you could pass on our thanks and appreciation to your actual work crew for a good job well done.

Yours faithfully
for MITSUBISHI CORPORATION

Peter H. Collins
Project Manager



**ABDULLAH H. AL-SHUWAYER
TRADING & CONTRACTING COMPANY**
P.O. 245650 JEDDAH



**شركة عبدالله الشويعر
التجارة والتعاقدات
(تأسيساً)**

19 January 1998

COMPLETION CERTIFICATE

TO WHOM IT MAY CONCERN:

This is to certify that FECO-Deivation of Al-Karim Est., has completed successfully the dewatering job at PTA and Aromatics Plant Project, Civil Infrastructure, Piping, Roads and Drainage Works under Contract No. 2284-LCC-RC-004 (Saudi Arabian Sockel Company Ltd.).

The Contract value Was for Three million seven hundred and fifty thousand Saudi Riyals (SR 3,750,000.00). FECO's technical solution for such a massive dewatering project was very successful and highly appreciated by the Client SABCO and AL-SHUWAYER TRADING AND CONTRACTING CO. (A.H.E.S.)

The dewatering was performed by drilling deep wells with submersible pumps and drawing down the water from 8.5 m. level (5.5 m below ground water table) for a mesh of 12 m. wide and 6 to 12 meter in depth.

We would recommend FECO for a similar dewatering job in any project in the Kingdom.

MR. LEONARD MICHALSKI
Site Construction Manager



NELS CHRISTENSEN
Sr. Project Manager

HEAD OFFICE - ALJUBAYR
P.O. BOX 202 - DUBAIB
TEL. NO. 864-2621 864-2625
FAX NO. 864-2621
TELEX NO. 872641 ASESU SJ

CONSTRUCTION DIVISION
P.O. BOX 918 - DUBAIB
TEL. NO. 862-8852 862-8858
FAX NO. 862-8852
TELEX NO. 862-8852
ALJUBAYR - DUBAIB
CORNER TELECOM TOWER ROAD



**شركة المتكاتف والمقاولون العرب
CONSOLIDATED CONTRACTORS COMPANY W.L.L.**

شركة المتكاتف والمقاولون العرب - شركة مساهمة عامة مسجلة في سجل الشركات
P.O. BOX 8497 JEDDAH 21462 SAUDI ARABIA

Date : 30 December 1998

CERTIFICATION

TO WHOM IT MAY CONCERN :

THIS IS TO CERTIFY THAT MS FOUNDATION AND EARTHWORK CO. (FECO) JEDDAH, SAUDI ARABIA, HAS PROVIDED WITH SATISFACTION OF DEWATERING WITH NECESSARY SHEET PILING AND EXTRACTION AT OUR SHUAIBA POWER PLANT, PHASE 2 - LOT 1A PROJECT, JEDDAH.

THE ABOVE SERVICES PROVIDED BY MS. FECO WERE OF HIGH QUALITY AND IN ACCORDANCE WITH THE PROJECT SPECIFICATION.

WE APPRECIATE THEIR TIMELY RESPONSE AND EXECUTION OF THE JOB AND WOULD CONSIDER MS. FECO FOR OUR FUTURE JOBS OF SIMILAR NATURE.

MAHMOUD EL-ESSAWY
PROJECT MANAGER
Consolidated Contractors Company W.L.L.

شركة المتكاتف والمقاولون العرب - شركة مساهمة عامة مسجلة في سجل الشركات
P.O. BOX 8497 JEDDAH 21462 SAUDI ARABIA



Date: June 22, 1995

TO WHOM IT MAY CONCERN

CERTIFICATE OF COMPLETION OF WORK

SUB : MEDINA-YANBU DESALINATION AND POWER PLANT PROJECT
BOILER EFFLUENT POOL

This is to certify that AL-KATTAN EST., Sub-Contractor to YÜKSEL INSAAT SAUDIA CO. LTD., working on the subject project, successfully completed the following works :

1. Installation of sheet piles along the perimeter of Boiler Effluent Pool.
2. Installation of a grout blanket by cement injection for the Boiler Effluent Pool. This system of grout blanket and sheet piles was successful to lower the water table to -1.50m, draw down level with the minimum discharge pumps.

The above mentioned works were carried out by AL-KATTAN EST. under the supervision and direction of Mr. Tarek Hour El-Din Aly Izam.

This certificate is made to verify the completion of above mentioned works.

For and on behalf of
Yüksel İnşaat Saudiya Co. Ltd.

KARABET KURKCU
PROJECT MANAGER
Medina-Yanbu Desalination and Power Plant Project.

9th April 1996

TO WHOM IT MAY CONCERN

This certificate is issued at the request of Mr. Tarek Noor, Regional Manager FECCO

We confirm that FECCO under the direct control of Mr. Tarek Noor have successfully executed a sub-contracted work package of value SR 6,750,000 (six million seven hundred and fifty thousand Saudi Riyals).

The work scope includes :-

Sheet piling.

Ground improvement by low and high pressure grouting (5 to 90 bar pressure).

De-watering by surface pump for the construction works of Brine Recycling pump pits. (foundation 8 metres under sea water level).

The work is approximately 100% complete with an estimated finalisation date of 30th March 1996.

The method selected by Messrs FECCO was to install a retaining system of sheet piles braced at the top and to plug it at the bottom with a cement blanket by means of a combination of low and high pressure grout.

The proposed method was successfully executed and was able to minimize the water discharge to a minimum and the construction works was executed successfully 8.0 m under sea level.

T. H. KIM / SITE MANAGER
HANJUNG - SHOAIIBA SITE



DATE : 25.06.1994
OBJ. REF : YU-06-1301-L
ATTN TO : MR. TAREK HOUR/FECCO,
SUBJECT : HANDING OVER OF THE SITE.

Dear Sir,

Please note that, handing over of the site to you for installation and execution of the sheet piles and grout blanket of waste treatment plant was carried out on 23.06.94.

For your information and further action,

Yours faithfully,

TIMOR TIMBUKULU
SITE MANAGER.

C.C : YR.

Ongoing Projects (Nigeria)

Client: GLOCH STYLISTIC LIMITED,
Location: Kwara Street, Victoria Island, LAGOS NIGERIA
Status: Completed

Scope of work

- Installation of reinforced 154 piles of Ø 1000 mm a depth of 13m from working platform.
- Installation of steel cages.
- Casting concrete.
- Pile Integrity Test
- Pile Load test





Client: TETRAMANOR LIMITED

Project: TM HIGHGARDENS

Location: EKO ATLANTIC, VICTORIA ISLAND, LAGOS NIGERIA

Scope of work

- Installation of Ø 1000 mm to 415-ton capacity and Ø 800 mm to 110 ton capacity from working platform.
- Fabrication and Installation of steel cages.
- Pile load test
- Casting concrete.
- Survey work for pile location.

□



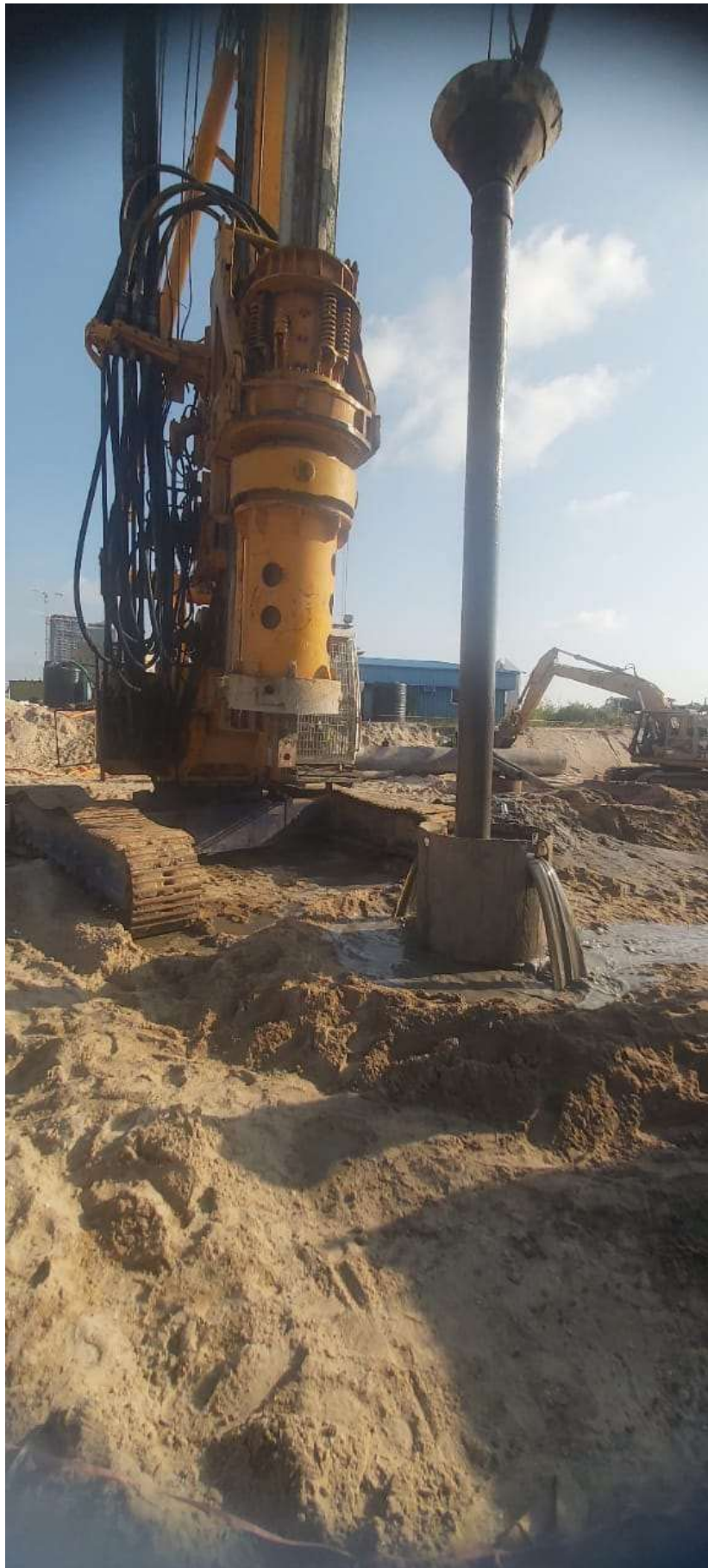


Project: CARNELIAN TOWER PROPOSED RESIDENTIAL DEVELOPMENT
Location: ONIRU VI, LAGOS

Scope of work

- Installation piles
- Installation of steel cages.
- Pile load test
- Casting concrete.
- Survey work for pile location.





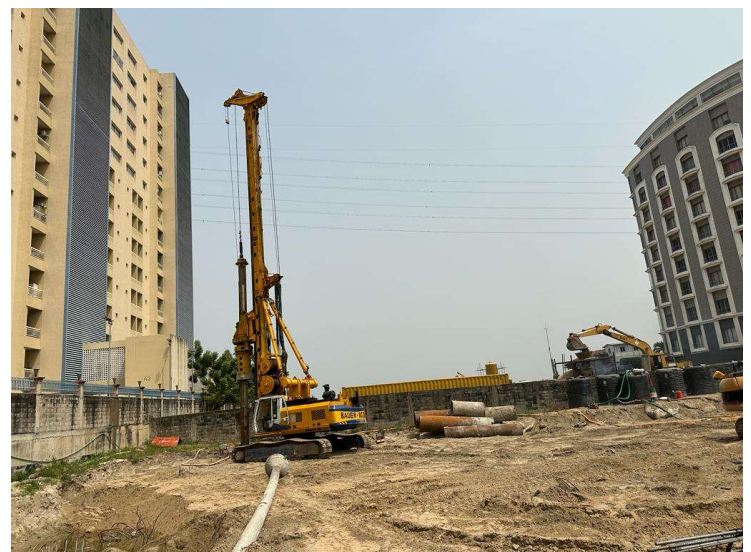
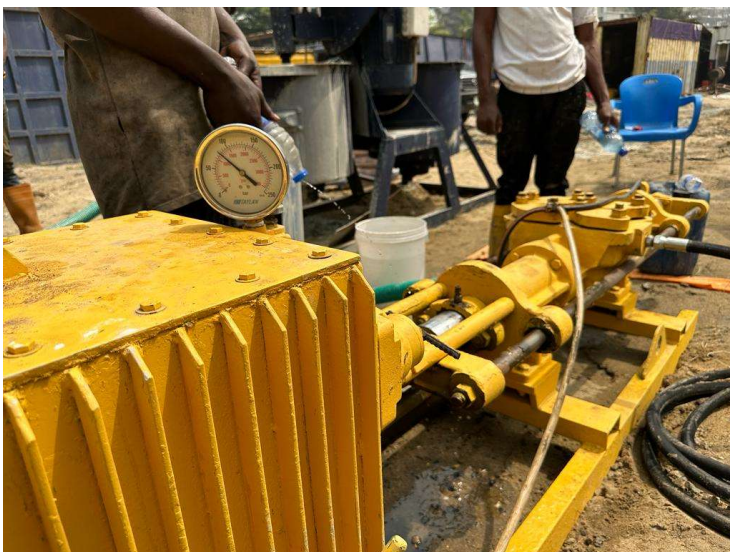
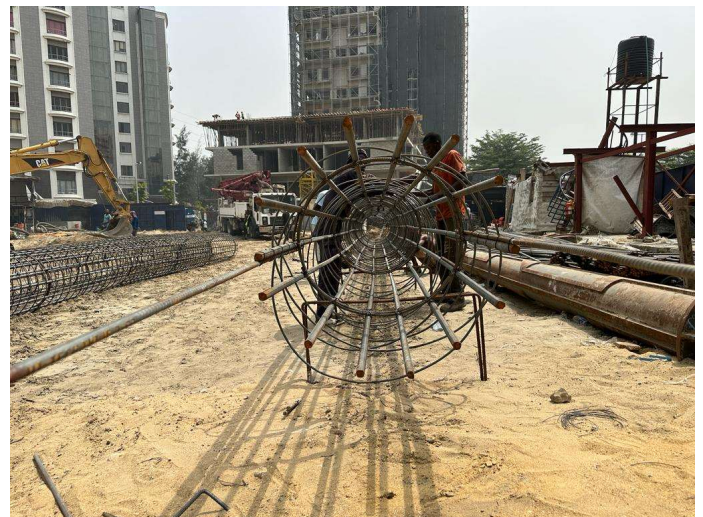
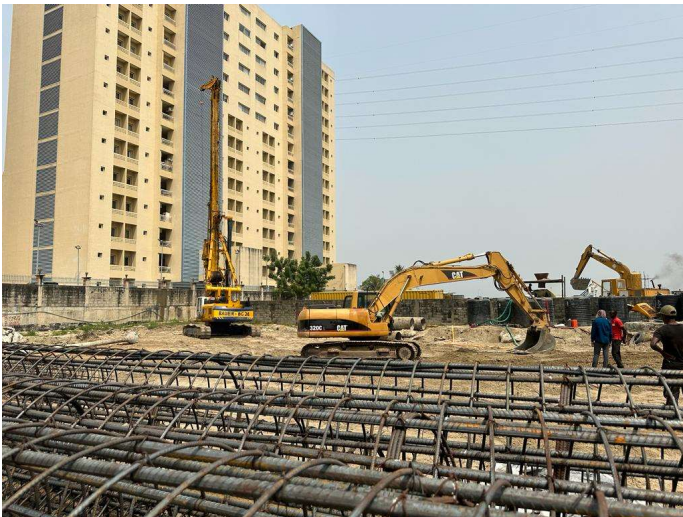
Project: 14 STOREY MIXED USE DEVELOPMENT

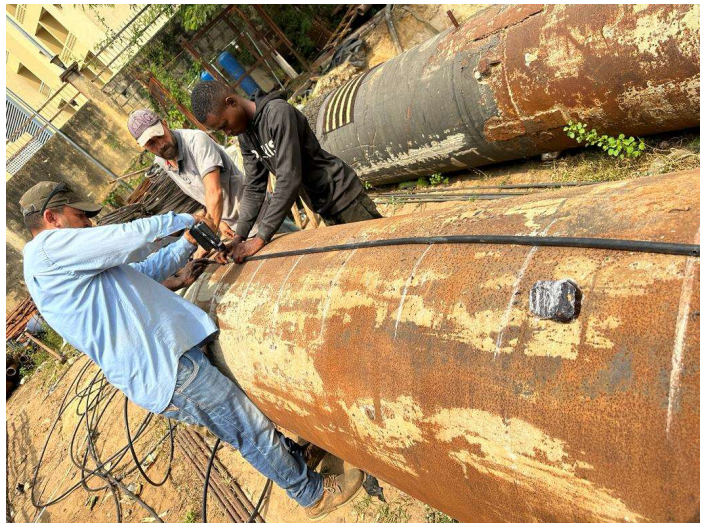
Client: Sermatech Nigeria Limited

Location: BANANA ISLAND, LAGOS

Scope of work

- Excavation
- Drilling and Installation of new piles
- Installation of steel cages.
- Grouting and strengthening of 50 piles
- Pile load test
- Casting concrete.
- Survey work for pile location.





Completed Projects (Overseas)

Client : SHERIF GHALIB COMMERCIAL AND BUSINESS CENTER

Scope of work

- Installation of 429 piles of \varnothing 1000 mm to \varnothing 800 mm a depth of 38m and from working platform.
- Installation of steel cages.
- Pile load test (800 Ton – 400 Ton)
- Casting tremie concrete.
- Survey work for pile location.





Client : SHERIF GHALIB COMMERCIAL AND BUSINESS CENTER

Scope of work

- Installation of shoring work 466 piles of Ø 800 mm to Ø 600 mm a depth of 27m from working platform.
- Installation of steel cages.
- Casting tremie concrete.





Client : SHERIF GHALIB COMMERCIAL AND BUSINESS CENTER

Scope of work

- Installation of piling work 300 piles of Ø 1000 mm depth of 38m from working platform.
- Installation of steel cages.
- Casting tremie concrete.

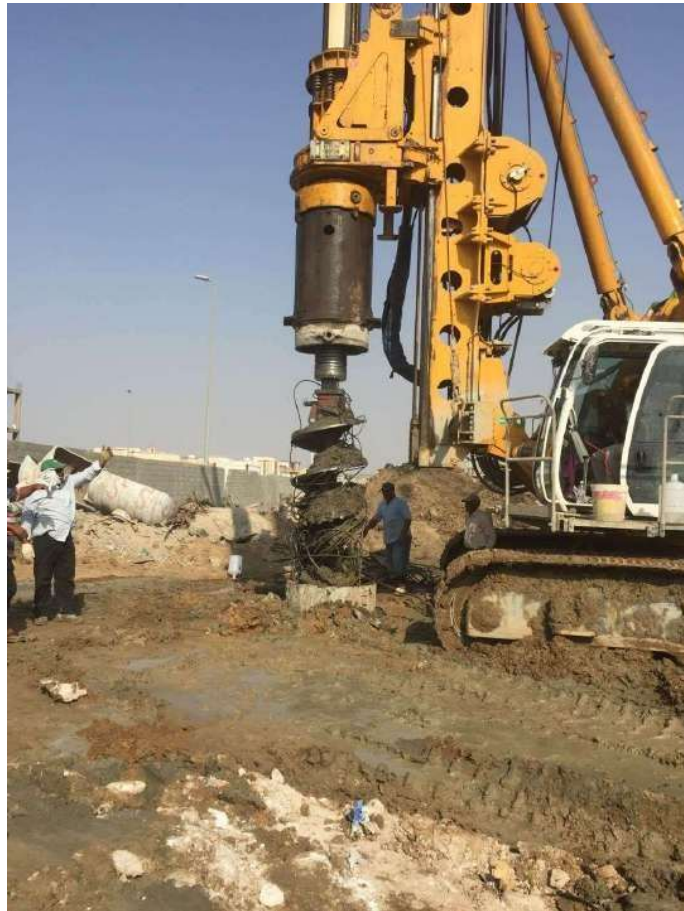


Client : **Shiek Taalat Lami**

Main Contractor: Zak construction

Scope of work

- Installation of 400 piles of \varnothing 1000 mm to a depth of 32m from working platform.
- Installation of steel cages.
- Casting tremie concrete.
- Survey work for pile location.



Client : **Mohamed Ali Farsi (Farsi 8)**

Main Contractor: Zaki Farsi

Scope of work

- Installation of 230 piles of Ø 1000 mm to a depth of 22m from working platform.
- Installation of steel cages.
- Casting tremie concrete.
- Survey work for pile location.



Client : **Rofan Building / Rawda distract**

Main Contractor: United Constructor (UCCL)

Scope of work

- Installation of 315 piles of Ø 1000 mm to a depth of 18m from working platform.
- Installation of steel cages.
- Casting tremie concrete.
- Survey work for pile location.



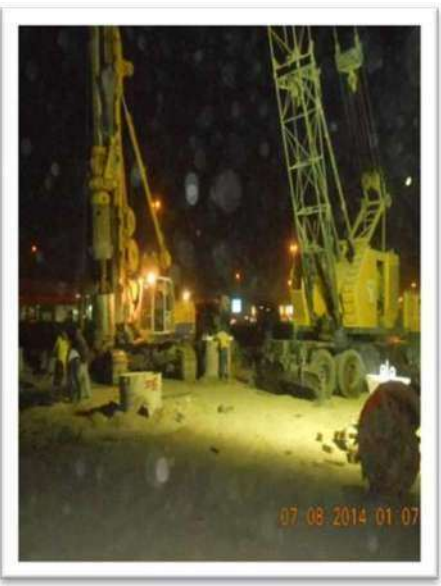
Project name : **HARAMAIN HIGH SPEED RAIL
Air Port East Interchange**

Contractor : Freyssinet

Scope of Work

450 trials bore of 1200 mm diameter to 41 m and 38m depth the loads test for piles were reacting to 1500 ton working loads and we developed the methodology to assure the max precautions as to guarantee such criteria





Project name : **HARAMAIN HIGH SPEED RAIL**

Contractor : alarrab

Scope of Work

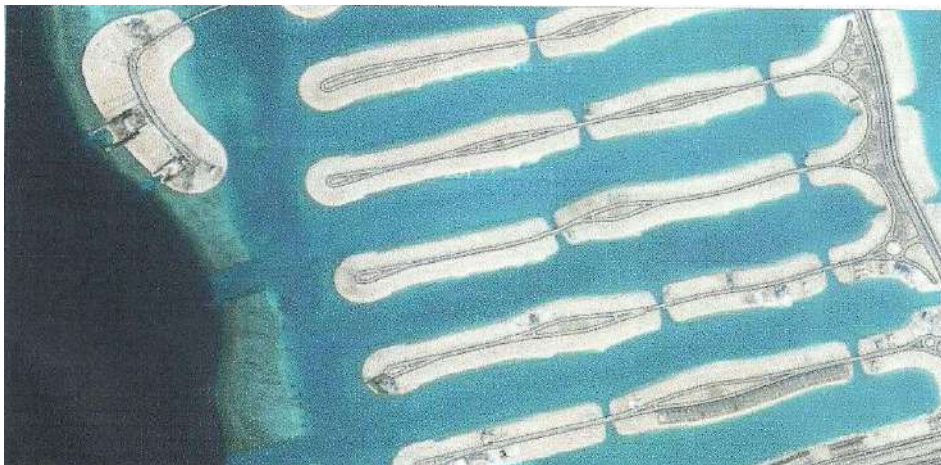
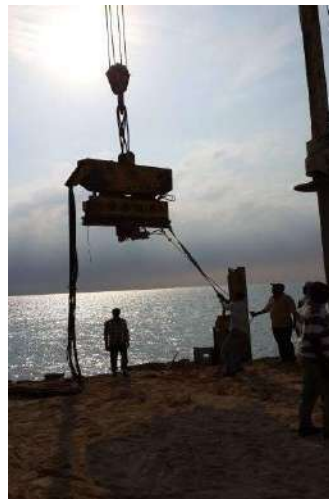
200 trials bore of 1200 mm diameter to 27 m from cut off level depth the loads test for piles were reacting to 1500 ton working loads and we developed the methodology to assure the max precautions as to guarantee such criteria



1

Villa Mr. Sharbatly Durrat Al Arous House

- Scope of work Vinyl sheet piles are prepared with lower groove and upper holding hole to enable to attach to a steel sheet pile for installation through hard layers.
- The vinyl sheets with steel sheet pile envelope installed by using a hydraulic vibro hammer of adequate vibration power and weight, ICE 416, and suspended from a crawler crane of 60 ton. Sheet installation follows a survey line as per drawings and layout.



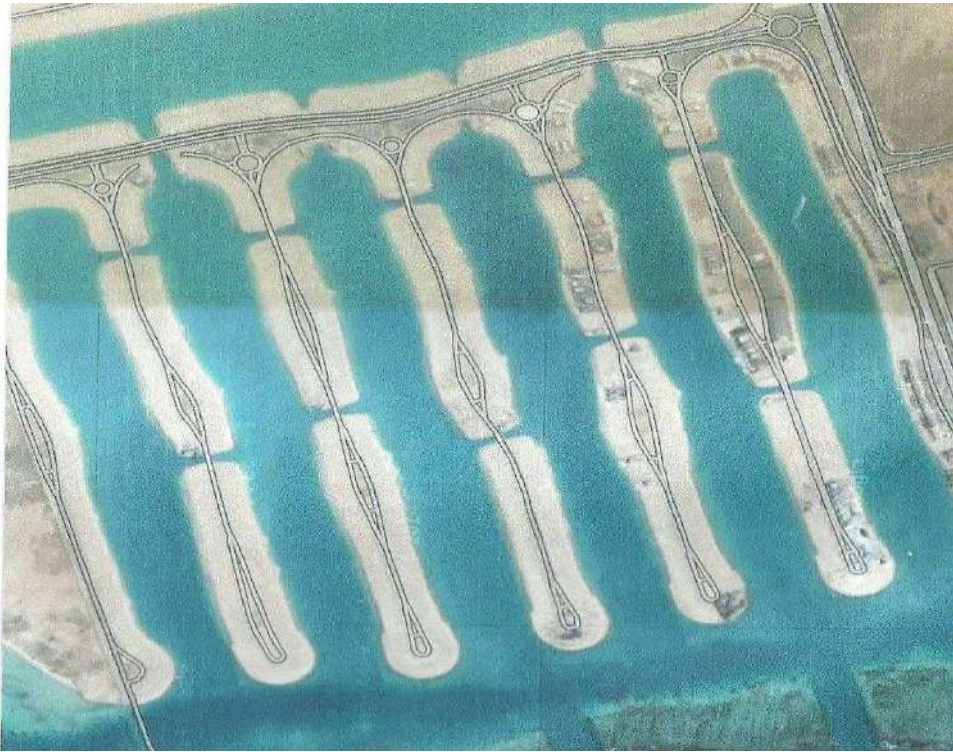




2

Villa Mr.Talal Yousef Zahid Durrat Al Arous House

- Scope of work Vinyl sheet piles are prepared with lower groove and upper holding hole to enable to attach to a steel sheet pile for installation through hard layers.
- The vinyl sheets with steel sheet pile envelope installed by using a hydraulic vibro hammer of adequate vibration power and weight , ICE 416 , and suspended from a crawler crane of 60 ton Sheet installation follows a survey line as per drawings and layout
- **Vinyl** is a reliable and proven construction material. It is used in construction more than any other plastic because it is extremely durable and cost effective. CMI vinyl sheet piles are manufactured from 92% recycled weather able PVC. Using XCR technology, recycled material guaranteeing weather ability and long term performance of the sheet piles















Project name : **HARAMAIN HIGH SPEED RAIL**
Air Port East Interchange

Contractor : Freyssinet

Scope of Work

450 trials bore of 1200 mm diameter to 23 m depth the loads test for piles were reacting to 1500 ton working loads and we developed the methodology to assure the max precautions as to guarantee such criteria



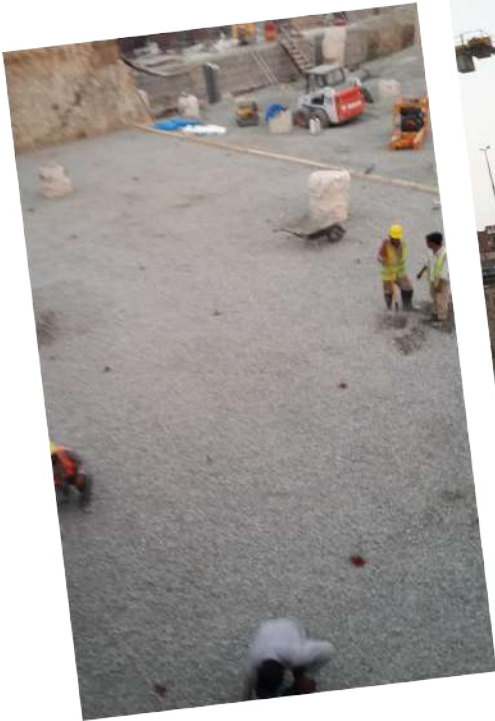
Client : **Eng. Zaki Farsi Tower Farsi 7**

Contractor : Specialized contracting Company

Scope of Work

Pile load testing, tension piles , dewatering system including discharge line and pumping excavation for Two Tower diameter1200mm depth 27m





FARSI
SEVEN



فارسي
سفتن



Bridge of intersection of king Abdul Aziz Road with Ismaeel Abu Dawood Road

100 trials bore of 1000 mm diameter to 23 m depth the loads test for piles were reacting to 1500 ton working loads and we developed the methodology to assure the max precautions as to guarantee such criteria





Jizan flour mills project sea port

The job is to investigate the site and report over findings over

- 50 trials bore of 1000 mm diameter to 19 m depth.



Yanbu commercial building port

The job is to investigate the site and report over findings over

- 133 trial bores of 800 mm diameter to 12 m depth.
- 73 trial bores of **1000** mm diameter to 25 m depth



Grain Silos and Flour Millis (JAS)

- The Job is to install 800 piles of \varnothing 1000 mm 32depth to a designed
- Testing for the methodology of installing deep and large diameter piles through a coral subsoil with lots of variables such as invites and sea bed silt deposits. To deep levels.
- The loads test for piles were reacting to 1500 ton working loads and we developed the methodology to assure the max precautions as to guarantee such criteria







Khayat hotel building Jeddah

- The Job is to install 296 piles of \varnothing 1000 mm 27m depth to a designed
- Testing for the methodology of installing deep and large diameter piles through a coral subsoil with lots of variables such as invites and sea bed silt deposits. To deep levels
-
- The loads test for piles were reacting to 1500 ton working loads and we Developed





Almada Tower

The job is to investigate the site and report over findings over

- 72 trials bore of 900 mm diameter to 62 m depth.
- 5 instrumented ultimate pile load tests (o-cell testing) to 54 MN
- Grouting works for both base and skin grout, using double packer technique.



Zaki Farsi 7 Abouhor Alcrnesh

- 264 pile depth 27 mm.
- The loads test for piles were reacting to 2000 ton



Deep ocean marina abouhr Jeddah

- 24 piles 1000 mm depth 11 m.
- Installation and tremi pipe concrete



Project: Business Park Head Quarters

The Job is to install 365 piles of 1200 mm and 118 piles \varnothing 900mm to 27depth to a designed to 45m.

Testing for the methodology of installing deep and large diameter piles through a coral subsoil with lots of variables such as invites and sea bed silt deposits. To deep levels.

The loads for piles were reacting to 1500 ton working loads and we developed the methodology to assure the max precautions as to guarantee such criteria



Advanced Construction Company

- Bridge foundation for
- Garnata Bridge
- Mutaib Bridge
- Kourash Bridge
- Makarouna Bridge
- Palestine Bridge

The job is to install 900mm diameter piles type (bored piles) to depth of 24m. Including all testing works for a total of 380 piles



Jubail Royal Commission Project

Main Contractor : Al Harbi
The job is to install utility support for the deep excavation passing through Aramco & desalination pipes together with high tension cables.



Aramco refinery piling works Jizan

Client : Saudi Aramco

Main Contractor: ABC – Ashi Bushnag Co. Trading& Contracting

Scope of work

- Installation of 30 piles of Ø 600mm to a depth of 13m from working platform.
- Installation of steel cages.
- Casting tremie concrete.
- Survey work for pile location.

Dehlawi Hotel Al Hamra - Jeddah

Client : M.Y. Dehlawi

Project : Hotel

Scope of work

- Our Job is to install 124 nos. Ø 800mm bored piles to depth of 21m.
- Pile integrity test for 124 Nos. piles.
- One Pile load test for 800mm piles (working piles) including reaction piles.
- Shoring for 146Lm shoring line to depth of - 3.3m from existing working platform level.

- Dewatering for 40X29m to –3.3 m from asphalt level for a period of 3 Months.

Dr. Hamza Hajara Residential & Commercial Building Al Hamra – Jeddah

Client : Dr. Hamza Hajara

Main Contractor : Bait Al Arab

Scope of work

- Our Job is to install 44 nos. Ø 800mm bored piles to depth of 22m.
Capacity of pile (working loads) = 210 ton.
- Installation of 25 nos. Ø 600mm bored piles to depth of 20m.
- Capacity of pile (working loads) = 120 ton.
- Dewatering to –3.80 m from asphalt level for a period of 3 months



Amoudi Commercial Center Piling works -2 Jeddah

Client : Osman Omer Al Amoudi

Consultant : MASS Consulting Engineers

Scope of work

- Our scope is to install 80 nos. Ø 800mm bored piles 19M from working platform level.
- To install 22 nos. Ø 1000mm bored piles 20m from working platform level.
- Load testing 500 ton & 350 ton.
- Pile integrity testing for total number.

Al Amoudi Piling works – Phase 1 Jeddah

Client : Mr. Omer Othman Al Amoudi

Consultant : Eng. Faisal Consulting Office

Scope of Work

Design and build for the pile foundation for high-rise building at Ballad Area Jeddah.

A combination of 800mm and 600mm bored piles were designed and installed to support the designed loads where 59Ø 800mm, 37Ø 600mm bored piles done including the installation of steel cages and tremie concreting.

Al Barrak Building – Piling works Jeddah

Client : Al Barrak Shipping Agencies Co. Ltd.

Consultants : Al Burouj Architectural/ interior Consultant

Scope of work

Our scope included the steel installation and tremie concreting

- Design and build for 17-story building Al Andalus St. Jeddah.
- Our scope is to install 104 bored pile of 800mm diameter at 25m length, Cut off level 1.5m
- Installation of 42 piles of 500mm diameter at 13 lengths cut off level –1.5m

110 kv Overhead Transmission Line Piling Works Shoaiba to Sawamlah

Consultant : Al Jazirah Engineering & Consultants

Main Contractor : Gulf Potential Co.

Pier foundation for 108 towers each of four legs of pier foundation.

- Pier is 900mm in diameter; depth varies from 10m to 23m deep. Drilling in all kind of soil starting from loose sand, boulders, and Sabkha and rock foundations.
- Scope including the installation of steel reinforcement cage and tremie concreting together with transporting machinery and tools from tower to Tower.

Al Musbah Piling Works - Ballad, Jeddah

Client : Mr. Ahmed Al Musbah

Consultant : Eng. Faisal Consulting Office

Scope of Work

- Design and build for 14 stories building in Ballad Dist.
- Our scope was to install 96 bored piles of 800mm diameter to a depth of – 19m.
- Shoring was done for 137 Lm circumferences to support excavation to 4.2m.
- Dewatering was performed to draw down ground water from – 1.8m to 4.50m.
- Pile load test to 280 ton was done to confirm the ultimate design

Aramco Piling Works Receiving & Shipping Facility at Jeddah Material Yard

Client : Aramco

Main Contract : Al Khodary & Sons Co.

Scope of Work

Our scope is to install a number of 162 Ø 300mm diameter bored piles to a depth of 13m including the following

- Fabrication of steel cages.
- Installation of steel cages.
- Pouring the concrete by tremie pipe.
- Pile integrity test for all piles.



Car Park & Commercial Building-Piling Job Al Ballad

Client : Bin Hameed

Main Contractor : DTC

Scope of Work

Installation of 89 Ø 880mm bored piles to a depth of 17m as a foundation for

a car park and commercial building.

Work scope includes the installation of steel cages and concreting works



Piling works for Bank AL JAZEERA Jeddah

Main Contractor : Soil & Foundation Co. Ltd.

Scope of work

Our scope is to install a number of 60 bored piles Ø 750mm diameter at 15m depth, top of reinforced at -2.5m from ground level, top of concrete at -2.5m from ground level.



Gazzaz Commercial Tower Jeddah

Client : Bakry Gazzaz

Main Contractor : Kaki & Kattan

Scope of work

Our scope of works was to install a shoring line to protect the adjacent structure against the excavation works for soil replacement required for the top three meters. Shoring was performed by using soldier piles and timber lagging for a line of 155m long.

PTT Mobile Phone Towers

Client : PTT Saudi Arabia

Scope of work

Sheet piling & dewatering for the construction of 12 Tower Foundation in Jeddah area each of 15X15m to a depth of 4m below ground water table

The job was mainly to protect the existing building adjacent to excavation and dewatering works.



Special Building Projects Shoring& Dewatering works

Client : Saudi Binladin Group

Main Contractor : Saudi Binladin

Scope of work :

Sheet piling & dewatering for the construction of drainage and supply water pipe line with the inspection, chambers and valve.

The job is to secure the existing utilities and structures for the excavation

& dewatering works prior to construction of foundations.



Shoaiba Desalination Plant Brian Recycling Pits

Client : SWCC – Hanjung (Korean Heavy Industries)

Main Contractor : Al Osais Est. (Young Pong Co. Korea)

Scope of work

- ❖ The job is secure to excavation for 10 numbers of Brian recycling pits each of 35X25 m diameter to be excavated down to 11.30m for the construction of the pump foundation.
- ❖ Our design was to construct an individual cofferdam for each pit of sheet piles driven 4.0m below the bottom of excavation and braced at the top by a water beams.
- ❖ A grout blanket of 2.5m thickness at 14m depth was necessary to avoid any uplift at the bottom excavation especially at the area.
- ❖ Dewatering was performed only by submersible pumps to collect the water leakage from the bottom blanket.

Pemref Cathodic Protection Yanbu

Client : Saudi Pemref

Main Contractor : Nesma & Al Fadel

Scope of work

The job was to drill a 1000Lm of 400mm dia. 7m deep each in zone 1 under a pipe rack structure with height clearance of 4.5m

Work was performed using down the whole hammer with a temporary steel casing for the anode to the installation of the anode to the designed depth. All machinery was modified to fit to the height clearance of -4.5m.

Armco – Navigation Improvement

At the Marine - Jeddah Refinery Piling works

Client : Saudi Armco

Main Contractor: Hutu Site Marine works Ltd.

Scope of work

Our scope is to install a number of 12 Ø 420mm bored piles at 15M depths for above mentioned project including the following works.

- Fabrication of steel cages.
- Installation of steel cages.
- Concreting works.



SST – Harad Drilling works Phase 2 Riyadh

Client : Saudi Aramco

Main Contractor : Saudi Sadelmi Technical Construction Co.

Contractor : 380 KVA Piling works.

Scope of work

Our scope is to drill 600mm auger in varying soil conditions to an estimated 1860 linear meters of depth as required for poles and anchors, distributed at 258 locations in 49 Km route length for 69KV OHTL & substation at Harad – Tinnat Gas field

ABB –SST- High Tension Tower Yanbu

Client : Yanpet

Main Contractor : Saudi Sadelmi Technical Construction Co.

Contract : 380 KVA Tower Foundation (Piling works.)

Scope of work

Installation of 800mm & 1000mm diameter bored piles being for 138 towers.

Piles depths were varying from 12m to 18m.

Towers were containing 4 piles each except for angle towers, which had 16 piles.

Our scope included the steel installation and tremie concreting.

Testing was performed for tension, compression and lateral force.

Shoaiba Desalination plant Sand Traps

Client : SWCC – Bechtel

Main Contractor : CCC – Saudi Arabia

Scope of work

Sheet piling & dewatering for the construction of three sand traps each of 5X5m height of 5m.

The job was done by driving closed to cofferdam, 4m - bellow excavation level.

Dewatering was performed by the use of submerged pumps.



Mitsubishi – Yanpet Power Plant Yanbu

Client : Yanpet

Scope of work

Bored piling Ø800mm being for the foundation of the extension to the power plant in desalination plant in Yanbu.

Our scope was design the piling required according to the given loads by Mitsubishi Corporation and the soil data. Piles designed to 800mm and 15m deep.

Ibn Rushed Polyester Plant

Client : IBN Rushed & Bechtel Saudi Arabia

Main Contractor : Al Taqadum Est. for construction

The job is to prepare a trench of 8.5m wide 8.0m deep, 1500m long for the installation of 3.7m & 3.0m pipes, double line for the use of a sea cooling water system.

A sheet piling shoring line had to be installed due to loose soil and adjacent utilities together with the deep excavation of 10.5m at the pipe crossing points.

Dewatering was done for a draw down of 5.5m where the ground water level was – 2.5m from ground level.

A number of tie rod & ground anchors where installed for the shoring line to secure the life line adjacent to the excavation.

Liebherr – Bentomate Plant Jeddah

Client : Saudi Liebherr

Scope of work

To install Ø 900 mm bored piles of 18m lengths fully reinforced to support 9000ton soils with lateral load of 1080 ton.

Sheet piling and dewatering works for 10m x 15m x 7m deep bunker where natural water level found at –2.0 m.

Buhairath Piling works Buhairath – Obhor

Main Contractor : Al Afandi Co.

Consultant : Consulting & Engineering Office

Scope of work

Installation of Ø 600mm bored piles, with micro silica concrete & epoxy coated steel being for bridge abutments.

Bored piles of 800mm diameter being for the support of bridge foundation

Drilling was performed through coral formation graded from medium dense to dense.

A material used was epoxy coated steel and micro silica concrete.

Water Intake Structure Dewatering Works.

Client : Yanpet

Main Contractor : Binladin

Our scope is to draw down the ground water to –4.0m for the construction of the intake structure of 26m X 16m.

Yanbu Desalination Plant Waste Water Treatment Plant Yanbu

Client : SWCC

Main Contractor : Yuksel Insaat Saudi Arabia Co. Ltd.

Scope of work

The job was preparing a pit of 35m X 40m dimensions to be excavated down to – 7.5m where the ground water level was 2.0m from the ground level.

The soil properties were between medium to dense coral with silt pockets sometimes large.

Our design was install a cofferdam of sheet piles length 12-14m and to create

Out blanket at –10m of 2.5m thickness to work against the up lifting force at the bottom of the excavation and to improve the bearing capacity at the founding level.

Dewatering took place by means of deep well and submersible pumps

Shoaiba Desalination Plant Fuel Oil Separator Pits

Client : SWCC – Bechtel

Main Contractor : CCC – Saudi Arabia

Scope of work

For the construction of two oil separator pits each 15 X 10m of 6m depths was necessary to protect the excavation by a sheet piles braced at the top.

Submersible pumps to draw down the water for 4m performed dewatering.

Yanpet Expansion: Seawater cooling pipeline dewatering works

Client : Yanpet

Main Contractor : Al Shuwayer Co.

Scope of work

Our scope of works was to secure the excavation for the installation of the seawater cooling return and supply line for package 1, 2, 3 of total 3,85KM.

The excavation were done to –7.6m bellow grid level where ground water at 2.5 below grid at most of the line.

Our dewatering system was by shallow wells to –2.5m bellow excavation level where most of the soil nature gravelly (loose to medium) soil.

Deep well line was staggered 7m apart, each well of 800mm diameter 8.5m deep with a perforated screen surrounded by a proper filter materials allowing no washing for the soil fine materials at the compacted soil below the new pipes.

Sheet piles were installed for the 12m deep excavation and at the very loose sandy area (beach sand area).

Hail Piling Works Jeddah

Main Contractor : DTC

Consultant : Consulting & Engineering Office

Scope of work

Installation of 150 Ø 600mm bored piles to a depth of 18.5m together with 120 Lm shoring.

Line & 3.8m dewatering being for the construction of high rise building

Project: Marsa Alam Port Egypt Piling works

Client : Al Kharafi

Main Contractor : Huta – Site Marine works Ltd.

Consultants : Bechtel International Egypt.

Scope of work

Installation for a marine wall of 1000mm bored piles to a depth of 15.0m and interlocked by means of high pressure grout.

The marine line was covered by 2083 piles were successfully installed in different soil profiles (limestone, coral reef and silt areas).

Design and build for 2300 Lm marine wall being for commercial marine in the area of Marsa Alam Southern part of Red Sea in Egypt.

Purpose of the marine wall was to create a retaining wall to support dredging to – 7.0m.

Our design was to install secant bored pile wall cantilevered in the rock foundation area and anchored in silt area with proper section inertia, diameter 1000mm fully reinforced and using micro silica concrete to resist aggressive marine environment.

We undertook the design for such and very conservative methodology to install the pile wall were each pile installed and position by distomate and reached after drilling using the same procedure.

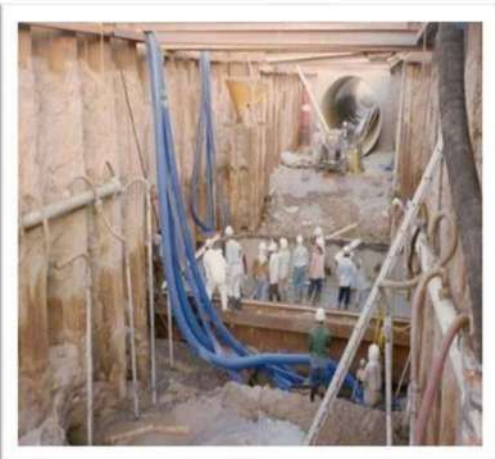
Piles were grouted in between to assure max anti – migration condition.

Two ways for piling were used, bored pile for hard foundations, and continuous flight augur for the silt are.

Systems Shoring & Dewatering

Different type of shoring systems and dewatering

- 1- Secant pile wall.
- 2- Sheet pile wall.
- 3- Reinforced soil mixing.
- 4- Berlin wall of soldier piles and timber.



Project: Marsa Alam Port Egypt Piling works



PTA Bin Rushed Polyester Plant Phase 1 Seawater Cooling Pipe Line Yanbu

Client : IBN Rushed - Bechtel (Yanbu)

Contractor : Taqadum

Scope of Work

The work scope was installing a sheet pile line to protect the existing pipe line from excavation for the installation of the new water supply line.

Dewatering works were performed for the installation of the 2.90 m line with gravel pack.

1200 Lm line was performed successfully with all relevant dewatering and sheet piling work

A pile of dark brown soil, possibly compost or mulch, is centered on a white background. The soil is piled in a roughly oval shape with some smaller clumps scattered around its base. Overlaid on the soil in white, bold, sans-serif font is the text "Equipment List & Catalogues".

**Equipment
List
& Catalogues**

Equipment List

1. Delmag drill rig type 1413 manufactured in 1992 with Liebherr 952 with base carrier and a 14m. M torque rotary head and all the drilling accessories & attachments.
2. Delmag drill rig type 1213 manufactured in 1989 O& K RH -20 base carrier and 14 tm m torque rotary head and al drilling accessories & attachments.
3. Bauer BG 36 H drill rig type 2008
4. Bauer BG 28 H drill rig type 2008
5. Bauer BG 24 H drill rig type 2008
6. Bauer BG 25 H hydraulic drilling rig 2008
7. Bauer BG 11
8. Bauer BG 11
9. Vibro hammer type ICE 415 manufactured in 1998 with a universal clamp and a hydraulic power pack.
10. Vibro hammer type Feco 1516 manufacture 1990 with universal clamp and hydraulic power pack.
11. Grouting unit type Bauer M80 with double piston, pump and agitator.
12. Grouting unit type Bauer M100 with double piston pump and agitator.
13. Anchor drilling machine type Klem 901 with all the drilling accessories & attachments.
14. Wide rang of dewatering pumps for:
 - Submersible 60 No's cap from 80m³ /h to 270m³ /h.
 - Peep well pumps 10 No's cap from 60m³ /h to 210 m³ /h.
15. Crawler cranes link belt and neck 50-80 ton capacity



BG 24

Großdrehbohrgerät

Rotary Drilling Rig



Technische Daten

Technical specifications

		Windenvorschub Crowd Winch	Zylindervorschub Crowd Cylinder
Gesamthöhe	Overall height	22.800 mm	22.800 mm
Einsetzgewicht ca. (mit BK25/394/3/24)	Operating weight (approx.) (with Kelly BK25/394/3/24)	76.500 kg	76.500 kg
Drehantrieb	Rotary Drive	KDK 220 K	KDK 220 K
Drehmoment bei 300 bar (nom.)	Torque at 300 bar (nominal)	229 kNm	229 kNm
Drehzahl max	Speed of rotation (max.)	38 U/min (RPM)	38 U/min (RPM)
Vorschubsystem	Crowd system		
Druckkraft / Zugkraft (effektiv)	Crowd force push / pull (effective)	930 kN / 930 kN	250 kN / 930 kN
Druckkraft / Zugkraft gemessen an Drehteller KDK	Crowd force push / pull measured at the casing drive adapter	270 kN / 250 kN	270 kN / 280 kN
Hub (Kellysystem)	Stroke (Kelly system)	8.100 mm	6.700 mm
Hub (SCS-System)	Stroke (CFA system)	15.730 mm	15.730 mm
Geschwindigkeit (abwärts)	Speed (down/up)	6,5 / 6,5 m/min	5,0 / 7,5 m/min
Schneifang (abwärts)	Fast speed (down/up)	20 / 20 m/min	20 / 20 m/min
Hauptwinde	Main winch		
Windenklasse	Winch classification	M6 / L3 / T5	M6 / L3 / T5
Zugkraft (1. Lage) effektiv/nominal	Line pull (1st layer) effective/nominal	200 kN / 250 kN	200 kN / 250 kN
Seildurchmesser / Länge	Rope diameter / Length	28 mm / 90 m	28 mm / 90 m
Windgeschwindigkeit	Line speed max.	80 m/min	80 m/min
Hilfswinde	Auxiliary winch		
Windenklasse	Winch classification	M6 / L3 / T5	M6 / L3 / T5
Zugkraft (1. Lage) effektiv/nominal	Line pull (1st layer) effective/nominal	80 kN / 100 kN	80 kN / 100 kN
Seildurchmesser / Länge	Rope diameter / Length	20 mm / 50 m	20 mm / 50 m
Windgeschwindigkeit	Line speed (max.)	70 m/min	70 m/min
Mastneigung	Mast inclination		
nach hinten / vorne / quer	Backward / forward / lateral	15° / 5° / 5°	15° / 5° / 5°

Serienausstattung

- Drehtriebe KDK 220 K (Konstantgetriebe)
- Hauptwinde mit hydraulischer Freilaufsteuerung
- Haupt- und Hilfswinde mit Spezialfällung
- Hubendehaler für Haupt- und Hilfswinde
- Wirbel für Hauptteil
- Schwenkbarer Anschlagpunkt für Haupt- und Hilfswinde
- Transportstützen für Mastoberteil und Mastunterteil

Mess- und Steuerungstechnik

- SPS Rechner für alle elektrisch angesteuerten Funktionen
- Neuer Komfortbildschirm inkl. Diagnosefunktion und digitale Anzeige der Pumpendrucke
- Anzeige von Fehlermeldungen in Klartext
- Notsteuerung Bohrgerät (Kernfunktionen)
- Mastneigungsmessung in x/y Richtung (Anzeige digital/ analog)
- Mastautomatik (automatische Vertikalstellung)
- Hauptwinde mit elektronischer Seilkraftmessung
- Hilfswinde mit hydraulischer Seilkraftmessung
- Tiefenmessung Hauptwinde
- Tiefenmessung Vorschub (bei Windenvorschub)
- Funktion "Wirbel aufstellen" Hauptwinde
- Drehzahlmessung KDK
- Schlappseilabschaltung Hauptwinde
- Anpresskraft-Einstellung

Standard equipment

- Rotary drive KDK 220 K (single gear drive)
- Main winch with hydraulically operated freewheeling
- Main and auxiliary winch with special grooving
- Hoist limit switch on main and auxiliary winches
- Swivel for main rope
- Pivoted anchor points for main and auxiliary ropes
- Transport supports for upper and lower mast sections

Measuring and control equipment

- PLC processor for all electrically actuated functions
- Newer extended monitor incl. diagnostic functions and digital display of pump pressures
- Display of fault messages as plain text
- Emergency mode of operation for drilling rig (core functions)
- Mast inclination measurement on x/y axes (digital/analog display)
- Automatic vertical alignment of mast
- Electronic load sensing on main rope
- Hydraulic load sensing on auxiliary rope
- Depth measuring device on main winch
- Depth measuring device on crowd winch
- Swivel alignment function on main winch
- Speed measuring device on KDK
- Rope slack prevention on main winch
- Crowd pressure setting

Abmessungen

Dimensions

Windenvorschub

Die BG 24, ein Gerät mit einem Einsatzgewicht von ca. 76 t und einem Drehmoment von 229 kNm dient zur Herstellung von

- verrohrten Bohrungen (Eindrehen des Bohrohres mit dem Drehgetriebe oder mit angebauter Verrohrungsmaschine)
- unverrohrten, flüssigkeitsgestützten Bohrungen
- Bohrungen mit langer Hohlstange (SOB) - mit oder ohne Kellyverlängerung
- Sonderverfahren wie VdW-Bohren, Verdrängerbohrungen, Soil-Mixing Verfahren (SMW und GSM)

The BG 24 rotary drilling rig has an operating weight of approx. 76 t and a torque of 229 kNm. It is ideally suited for

- Drilling cased boreholes (installation of casing by rotary drive or optionally by hydraulic oscillator - both are powered by the drilling rig)
- Drilling uncased deep boreholes that are stabilised by drilling fluid
- Drilling boreholes with long hollow stem augers (CFA system), with or without Kelly extensions
- Special drilling systems, such as: FOW piles, displacement piles, soil mixing wall system (SMW and GSM)

Bohrverfahren mit Serienausstattung:

Kellybohren (ohne Verrohrungsmaschine)

SOB-Verfahren (hydraulisch und elektrisch vorgerüstet)

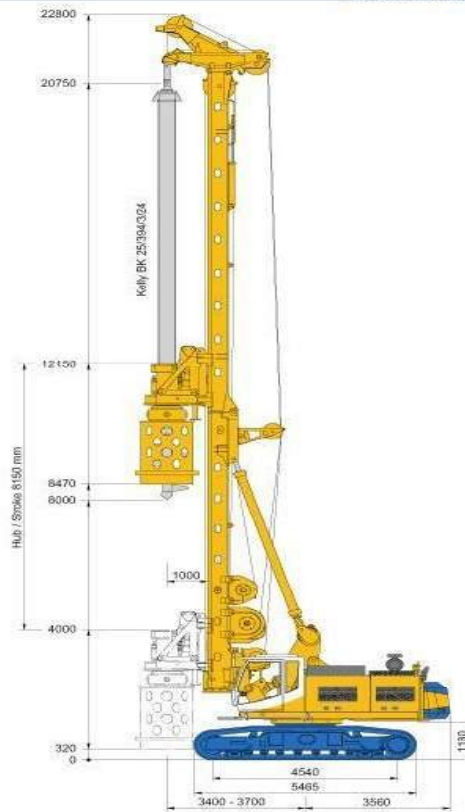
FDP Verdrängerbohren (hydraulisch und elektrisch vorgerüstet)

Drilling processes with standard equipment:

Kelly drilling (without casing oscillator)

CFA drilling (pre-equipped with hydraulic and electric installations)

FDP Full-Displacement-Piling (pre-equipped with hydraulic and electric installations)



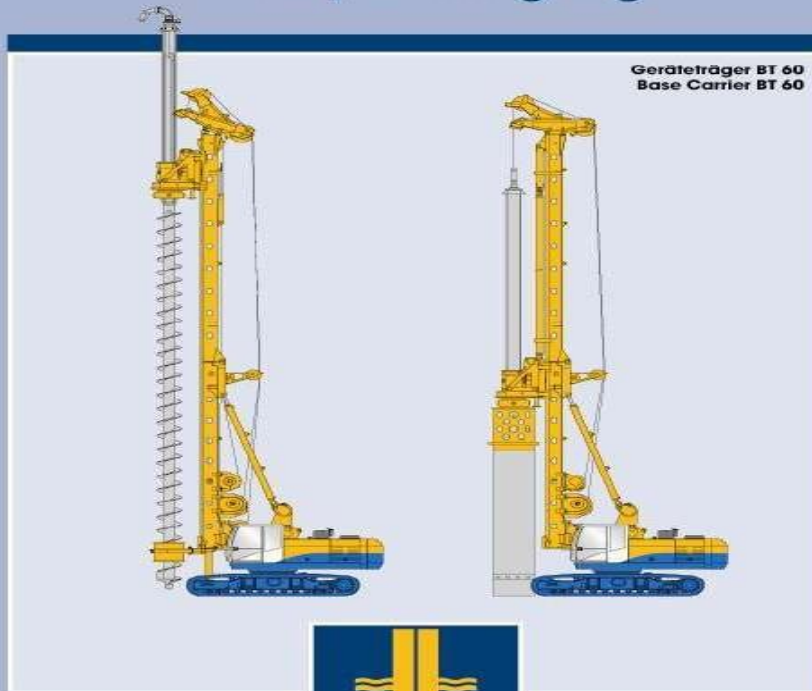
BG 24 – Großdrehbohrgerät

BG 24 – Rotary Drilling Rig



BAUER BG 25 C

Großdrehbohrgerät Rotary Drilling Rig



Drehgetriebe

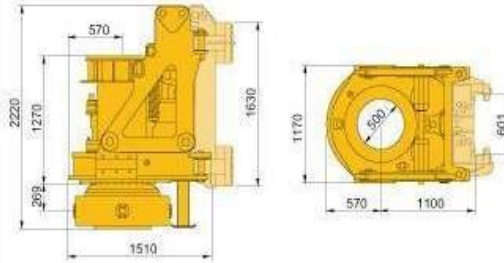
Rotary drive

Serienausstattung:

- integriertes Kellydämpfungssystem
- Gleitleisten sind ohne Demontage des Drehgetriebes austauschbar
- austauschbare Kellymitnehmer
- austauschbare Mitnehmerleisten
- Kardangelenk
- Hydraulische Verbindungen mit Schnellkupplungen
- 3 einstellbare Betriebsmodi (siehe Diagramme)
- Transportstützen
- Hebegeschirr

Standard equipment:

- Integrated kelly damping system
- Wear pads exchangeable without removal of rotary drive
- Exchangeable kelly drive adapter
- Exchangeable kelly drive keys
- Cardanic joint
- Quick-release couplers on hydraulic hoses
- 3 selectable modes of operation (refer to diagrams)
- Transport supports
- Slings gear for rotary drive



Gewicht ohne Schlitten 4,9 to
Weight without sledge

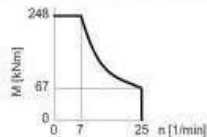
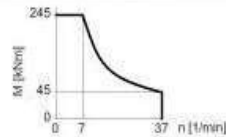
KDK 245 K (Standard)

Konstantgetriebe
Single gear rotary drive

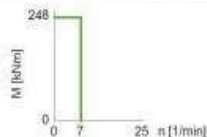
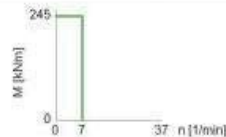
KDK 248 S (Optional)

Schaltgetriebe
Multi gear rotary drive

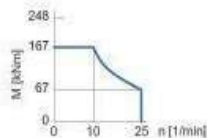
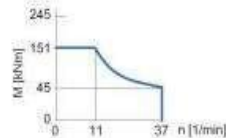
1. Gang Standardbetrieb
1st gear standard mode



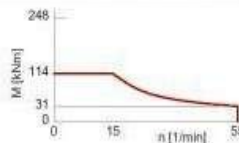
1. Gang Einrichten und Felsbohren
1st gear Set up and rock drilling



1. Gang M_r reduziert
1st gear M_r reduced



2. Gang Standardbetrieb
2nd gear standard mode



Darstellung nicht maßstäblich
not to scale

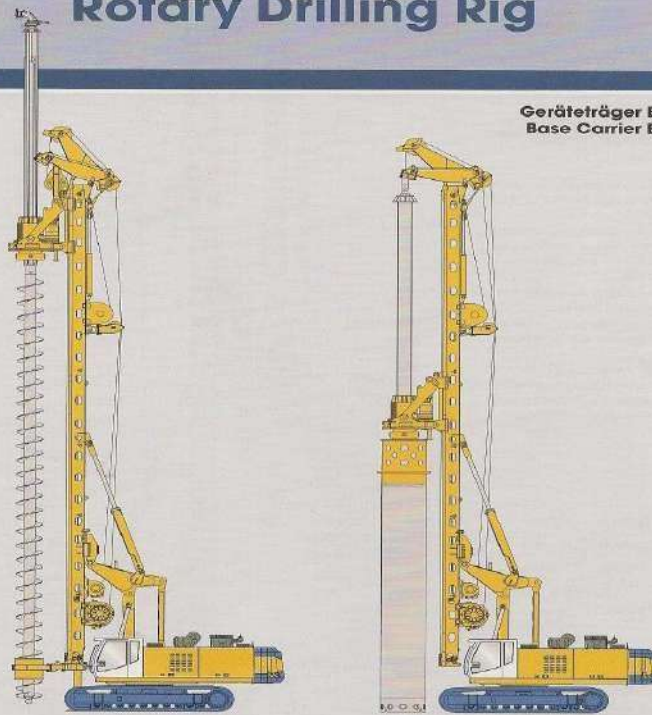


BG 36 H

Großdrehbohrgerät Rotary Drilling Rig

3/2009

Geräteträger BS 80
Base Carrier BS 80

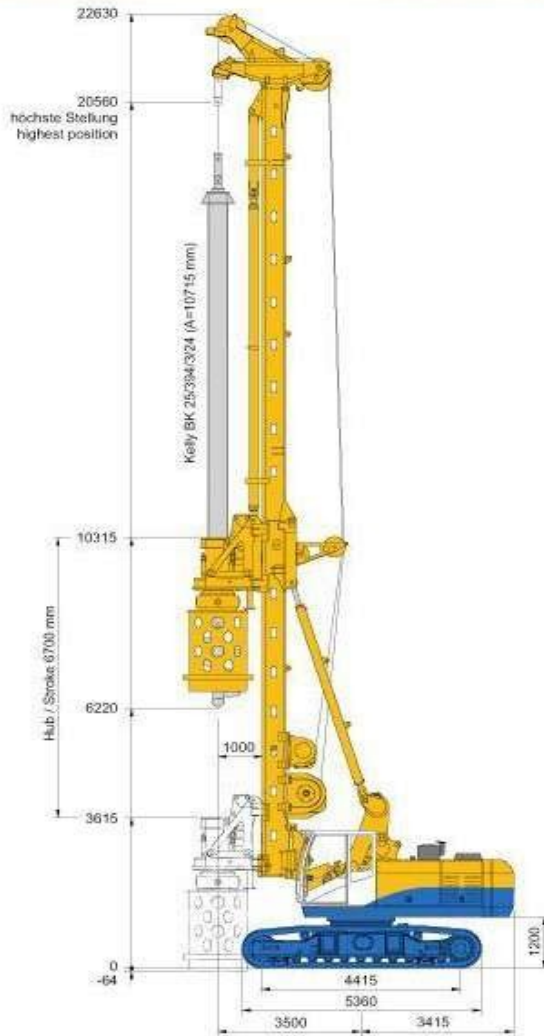


Abmessungen

Dimensions

Zylindervorschub

Crowd cylinder type



Bohrverfahren mit Serienausstattung:

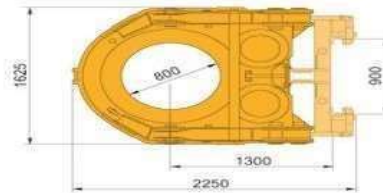
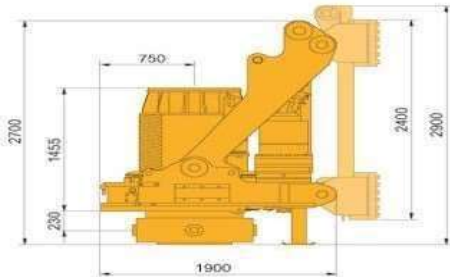
Kellybohren (ohne Verrohrungsmaschine)
SOB-Verfahren (hydraulisch und
elektrisch vorgerüstet)
FDP Verdrängerbohren (hydraulisch
und elektrisch vorgerüstet)

Drilling processes with standard equipment:

Kelly drilling (without casing oscillator)
CFA drilling (pre-equipped with
hydraulic and electric installations)
FDP Full-Displacement-Piling
(pre-equipped with hydraulic and
electric installations)

Drehgetriebe

Rotary drive



Gewicht ohne Schlitten 7,8 to
Weight without sledge

Serienausstattung:

- Integriertes Kellydämpfungssystem
- Gleitleisten sind ohne Demontage des Drehgetriebes auswechselbar
- auswechselbarer Kellymitnehmer
- auswechselbare Mitnehmerleisten
- Kardangelenk
- Hydraulische Verbindungen mit Schnellkupplungen
- 4 einstellbare Betriebsmodi (siehe Diagramme)
- Transportsützen
- Hebegeschirr

Standard equipment:

- Integrated kelly damping system
- Wear pads exchangeable without removal of rotary drive
- Exchangeable kelly drive adapter
- Exchangeable kelly drive keys
- Cardanic joint
- Quick-release couplers on hydraulic hoses
- 4 selectable modes of operation (refer to diagrams)
- Transport supports
- Slings gear for rotary drive

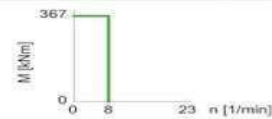
KDK 367 S

Schaltgetriebe Multi gear rotary drive

1. Gang Standardbetrieb
1st gear standard mode



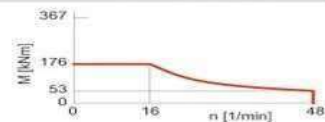
1. Gang Einrichten und Felsbohren
1st gear Set up and rock drilling



1. Gang M₀ reduziert
1st gear M₀ reduced



2. Gang Standardbetrieb
2nd gear standard mode



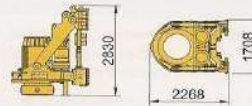
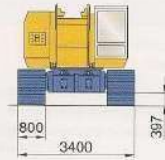
Darstellung nicht maßstäblich
not to scale

Transportdaten

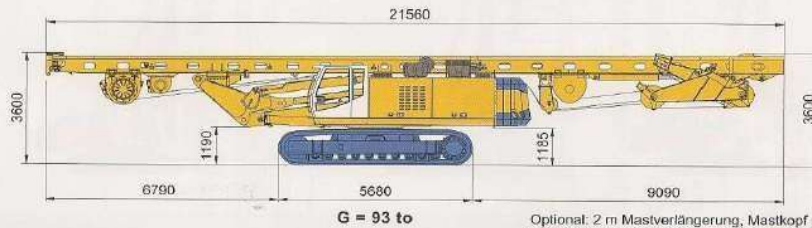
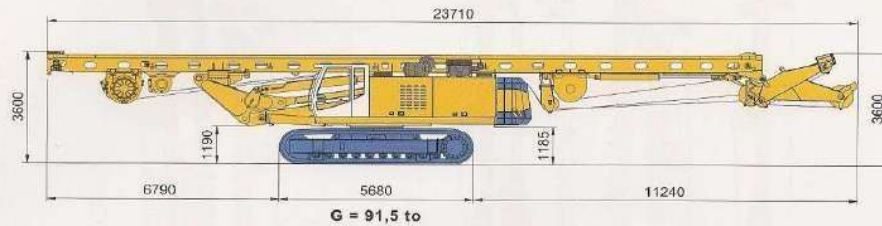
Transport data

Gewichtsangaben sind ca. Werte.
Zusatzrüstungen (Optionen) können
das Gesamtgewicht verändern

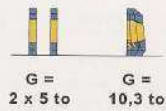
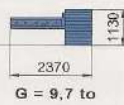
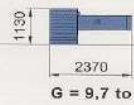
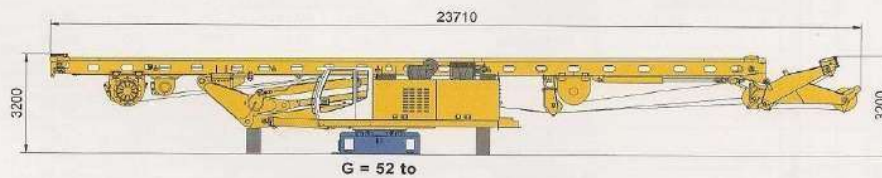
Weights shown are approximate values;
optional equipment may change
the overall weight



G = 11,1 to



Optional: 2 m Mastverlängerung, Mastkopf geklappt
optional: 2 m mast extension, masthead tilted



Anwendungen

Applications

Kellybohrverfahren

Standardverfahren: unverrohrt, oder Einbau der Bohrröhre mit Drehtriebe
 Option: Einbau der Bohrröhre mit angebauter hydraulischer Verrohrungsmaschine
 Standard system: Uncased drilling or installation of casing with rotary drive
 Optional: Installation of casing with hydraulic oscillator attached to the drilling rig

Kelly drilling system

Zusatzausstattung / optional equipment:
 Anbau Verrohrungsmaschine
 Attachment of hydraulic oscillator
 BV 2000 HD-07



Bohrtiefen Kellytyp Type of kelly bar	Drilling depths				
	A (m)	B (m)	Gewicht Weight (kg)	Hw (m)	T (m)
BK 40/470/3/27	12,25	30,16	7.100	8,60	28,00
BK 40/470/3/30	13,25	33,16	7.650	7,60	31,00
BK 40/470/3/36	15,25	39,18	8.750	5,60	37,00
BK 40/470/3/42	17,25	46,16	9.850	3,60	43,00
BK 40/470/4/40	13,25	42,79	10.500	7,60	40,60
BK 40/470/4/48	15,25	50,79	12.000	5,60	48,60
BK 40/470/4/52	16,25	54,79	12.750	4,60	52,00
BK 40/470/4/60*	18,25	62,79	14.250	2,60	60,60
BK 40/470/4/64*	19,25	68,79	15.000	1,60	64,70

* 3. Gegengewicht 5,0 to erforderlich (ab Kelly 4/60)

* allowed with 3rd counterweight 5,0 to only (from Kelly 4/60 and more)

Bohrdurchmesser		Drilling diameter
Unverrohrt	Uncased	2.300 mm
Verrohrt	Cased	2.000 mm

Bohrrohrlängen		Length of casing sections
Ohne BV	Without casing oscillator	Hw - 0,5 m
Mit BV	With casing oscillator	Hw - 1,5 m

Bemerkungen zur Bohrdatenermittlung
 siehe „Kellystangen 905.518.1“

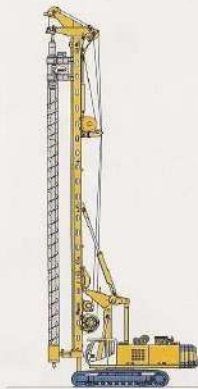
For further details on the acquisition of
 drilling data please refer to
 "Kelly Bars 905.518.1"

Anwendungen

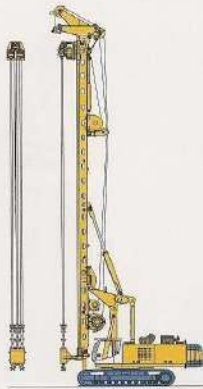
Applications

Weitere Verfahren

Additional systems



VdW
Vor-der-Wand Bohren
Front-Of-Wall drilling (FOW)



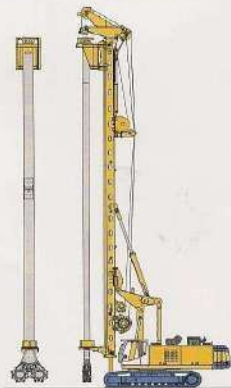
SMW
Soil Mixing Wand Verfahren
Soil Mixing Wall system



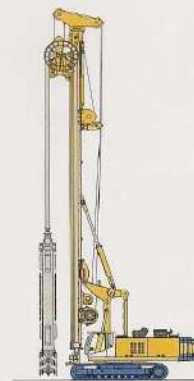
FDP
Verdrängerbohren
Full Displacement Piling

Anbauten Fräsverfahren

Cutter system attachments



CSM
Cutter Soil Mixing



BC / BG
Anbau Schlitzwandfräse BC
BC Diaphragm wall cutter on BG

Anwendungen

Applications

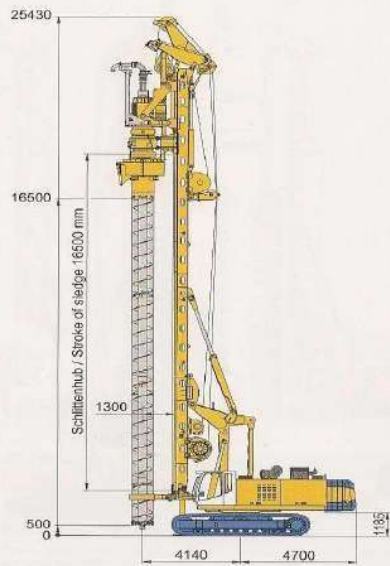
DKS – Doppelkopfverfahren

DKS mit Drehantrieb (Schnecke) und Drehmomentwandler (Bohrrohr)
DKS with rotary drive for auger and torque multiplier BTM for casing

DKS – Double rotary drive system

Systemvoraussetzungen:
3. Gegengewicht 5,0 to
Hydraulische Mastabstützung

System requirements:
3rd counterweight 5,0 to
Hydraulic mast support



KDK 367 S + BTM 400 DKS

Drehantrieb für Bohrrohr Rotary drive for casing	BTM 400 DKS
Drehantrieb für Schnecke Rotary drive for auger	KDK 367 S
Durchmesser (max.) Diameter (max.)	880 mm
Bohrtiefe Drilling depth	16,00 m
Zugkraft (max.) Extraction force (max.)	900 kN (500 + 400 kN)
Vertikale Relativverschiebung der Drehantriebe Relative vertical movement between rotary drives	550 mm
Einsatzgewicht (ca.) Operating weight (approx.)	135.000 kg

Drehgetriebe

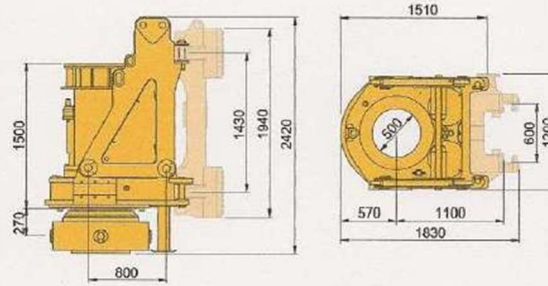
Rotary drive

Serienausstattung:

- integriertes Kellydämpfungssystem
- Gleitleisten sind ohne Demontage des Drehgetriebes austauschbar
- austauschbare Kellymitnehmer
- austauschbare Mitnehmerleisten
- Kardangelenk
- Hydraulische Verbindungen mit Schnellkupplungen
- 3 einstellbare Betriebsmodi: (siehe Diagramme)
- Transportstützen
- Hebegeschirr

Standard equipment:

- Integrated kelly damping system
- Wear pads exchangeable without removal of rotary drive
- Exchangeable kelly drive adapter
- Exchangeable kelly drive keys
- Cardanic joint
- Quick-release couplers on hydraulic hoses
- 3 selectable modes of operation (refer to diagrams)
- Transport supports
- Slings gear for rotary drive



Gewicht ohne Schlitten 5,1 t
Weight without sledge

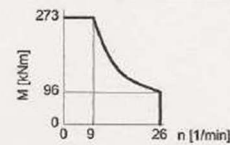
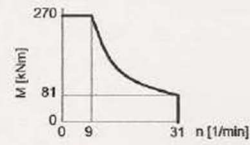
KDK 275 K (Standard)

Konstantgetriebe
Single gear rotary drive

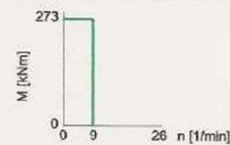
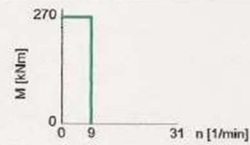
KDK 275 S (Optional)

Schaltgetriebe
Multi gear rotary drive

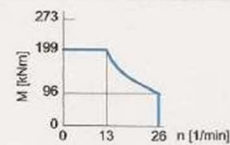
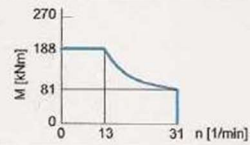
1. Gang Standardbetrieb
1st gear standard mode



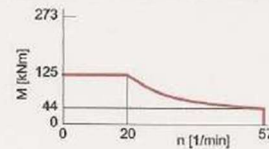
1. Gang Einrichten und Felsbohren
1st gear Set up and rock drilling



1. Gang M_n reduziert
1st gear M_n reduced



2. Gang Standardbetrieb
2nd gear standard mode



Drehmoment nominal
Darstellung nicht maßstäblich
nominal torque values
not to scale

Abmessungen

Dimensions

Windenvorschub

Die BG 28, ein Gerät mit einem Einsatzgewicht von ca. 95 t dient zur Herstellung von

- verrohrten Bohrungen (Eindrehen des Bohrohres mit dem Drehtriebe oder mit angebauter Verrohrungsmaschine)
- unverrohrten, flüssigkeitsgestützten Bohrungen
- Bohrungen mit langer Hohlschnecke (SOB) - mit oder ohne Kellyverlängerung
- Sonderverfahren wie VdW-Bohren, Doppelkopfböhrn ("verrohrtes SOB-Bohren"), Verdrängerbohrungen, Soil-Mixing Verfahren (SMW)

The BG 28 rotary drilling rig has an operating weight of approx. 95 t. It is ideally suited for:

- Drilling cased boreholes (installation of casing by rotary drive or optionally by hydraulic oscillator – both are powered by the drilling rig)
- Drilling uncased deep boreholes that are stabilised by drilling fluid
- Drilling boreholes with long hollow stem augers (CFA system), with or without Kelly extensions
- Special drilling systems, such as FOW piles, double rotary head drilling ("cased CFA system"), displacement piles, soil mixing wall system (SMW)

Bohrverfahren mit Serienausstattung:

Kellybohren (ohne Verrohrungsmaschine)

SOB-Verfahren (hydraulisch und elektrisch vorgertstet)

FDP Verdrängerbohren (hydraulisch und elektrisch vorgertstet)

Drilling processes with standard equipment:

Kelly drilling (without casing oscillator)

CFA drilling (pre-equipped with hydraulic and electric installations)

FDP Full-Displacement-Piling (pre-equipped with hydraulic and electric installations)

Crowd winch type

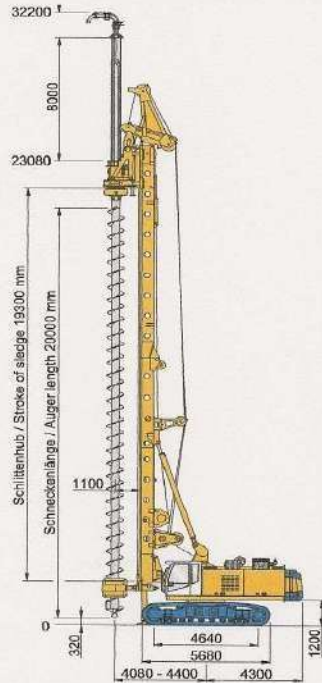


Anwendungen

Applications

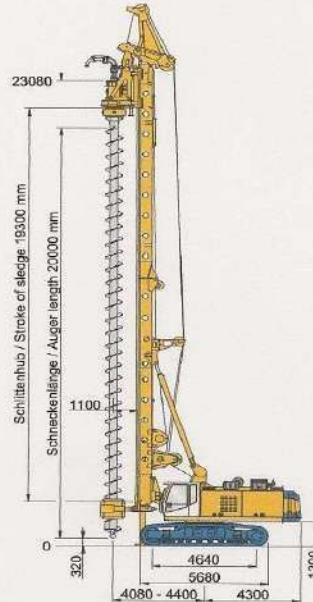
SOB – Bohrverfahren

hydraulische Mastabstützung erforderlich / hydraulic mast support required



CFA – Drilling system

Zeichnung mit Vorschubwinde + Hauptwinde (eingeschert)
Illustration showing crowd winch module + main winch (sheaved)



Vorschubsystem Crowd system	Windervorschub Crowd Winch		Zylindervorschub Crowd Cylinder	
Kellyverlängerung Kelly extension	–	8,0 m	–	8,0 m
Bohrtiefe mit Schneckenputzer Drilling depth with auger cleaner	17,40 m	25,40 m	16,70 m	24,70 m
Bohrtiefe ohne Schneckenputzer Drilling depth without auger cleaner	18,20 m	26,20 m	17,20 m	25,20 m
Max. Bohrdurchmesser Max. drilling diameter	1.200 mm	1.200 mm	1.200 mm	1.200 mm
Max. Zugkraft Max. extraction force	330 kN	330 kN	500 kN	500 kN
Max. Zugkraft mit Haupt- und Vorschubwinde (effektiv) Max. extraction force with main- and crowd winch (effective)	880 kN (500 + 330 kN)	880 kN (500 + 330 kN)	500 kN	500 kN
Max. Anpresskraft Max. crowd force	260 kN + Schnecken-gewicht 260 kN + auger weight		Gewicht KDK + Schnecke Weight of rotary drive + auger	
Schneckenlänge (inkl. Anfänger) Continuous flight auger length (incl. starter auger)	20,00 m	20,00 m	19,20 m	19,20 m

Company certificate



FEDERAL REPUBLIC OF NIGERIA

**CERTIFICATE OF INCORPORATION
OF A
PRIVATE COMPANY LIMITED BY SHARES**

COMPANY REGISTRATION NO. 1750604

The Registrar - General of Corporate Affairs Commission

hereby certifies that

FOUNDATION & EARTHWORKS COMPANY LTD

*is this day incorporated under the
COMPANIES AND ALLIED MATTERS ACT 2020*

as a private company limited by shares

Given under my hand at Abuja this 30th day of January, 2021



A. G. Abubakar
Registrar - General

TAX IDENTIFICATION NUMBER: 23807627-0001