CONSTRUCTION PILING COMPANY

CPC

CPC

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COMPANY

CONSTRUCTION
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COMPANY

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COMPANY

PHILOSOPHY / MISSION / VISION

COMPANY PHILOSOPHY

At Construction Piling Company we are committed to excellence, we are proud of our past success and we constantly strive to improve,

OUR MISSION

Our mission is simple - to provide our clients with top quality expertise and service in a safe, environment- friendly, cost-effective manner.

OUR VISION

To maintain and improve excellence in performance and service to exceed our clients' expectations and to support our strategic growth, continuing to build a strong, durable company, capable of extending our service into emerging markets,

Mr. Abdulrazzaq Yousef Abdulla
CEO

Mr. Mustapha El Hariri
GM

COMPANY

STRATEGY

Construction Piling Company goals and ambitions for the future are focused on continuous improvement, sustainable growth and expansion. To realize these aspirations, our management has developed the company with the following guidelines:

- Embrace core values that encompass integrity, ethics and commitment, promoting a culture of value and trust
- Stress adherence to local laws, rules and regulations and support our company's quality, health, safety and environmental policies
- Adopt a clear pragmatic vision for the future of our company
- Eliminate bureaucracy through a relaxed vertical communication policy
- Encourage horizontal communication to enhance cross-functional collaboration
- Promote an initiative/proactive approach throughout the company
- Reward employees as individuals and as teams to build confidence, satisfaction and endorse teamwork
- Work with top-of-the-line, latest-technology, well maintained fleet of equipment
- Hire only competent professionals and instate a generous training program
- Continue to provide the best possible quality of service
- Maintain highest possible percentage of repeat clients and onboard employees
- Allocate adequate resources
- Promote close working relationships with clients and among employees
- Build a culture of professional trust between the organization and its employees
- Earn a reasonable profit to facilitate sustainability, progress and growth

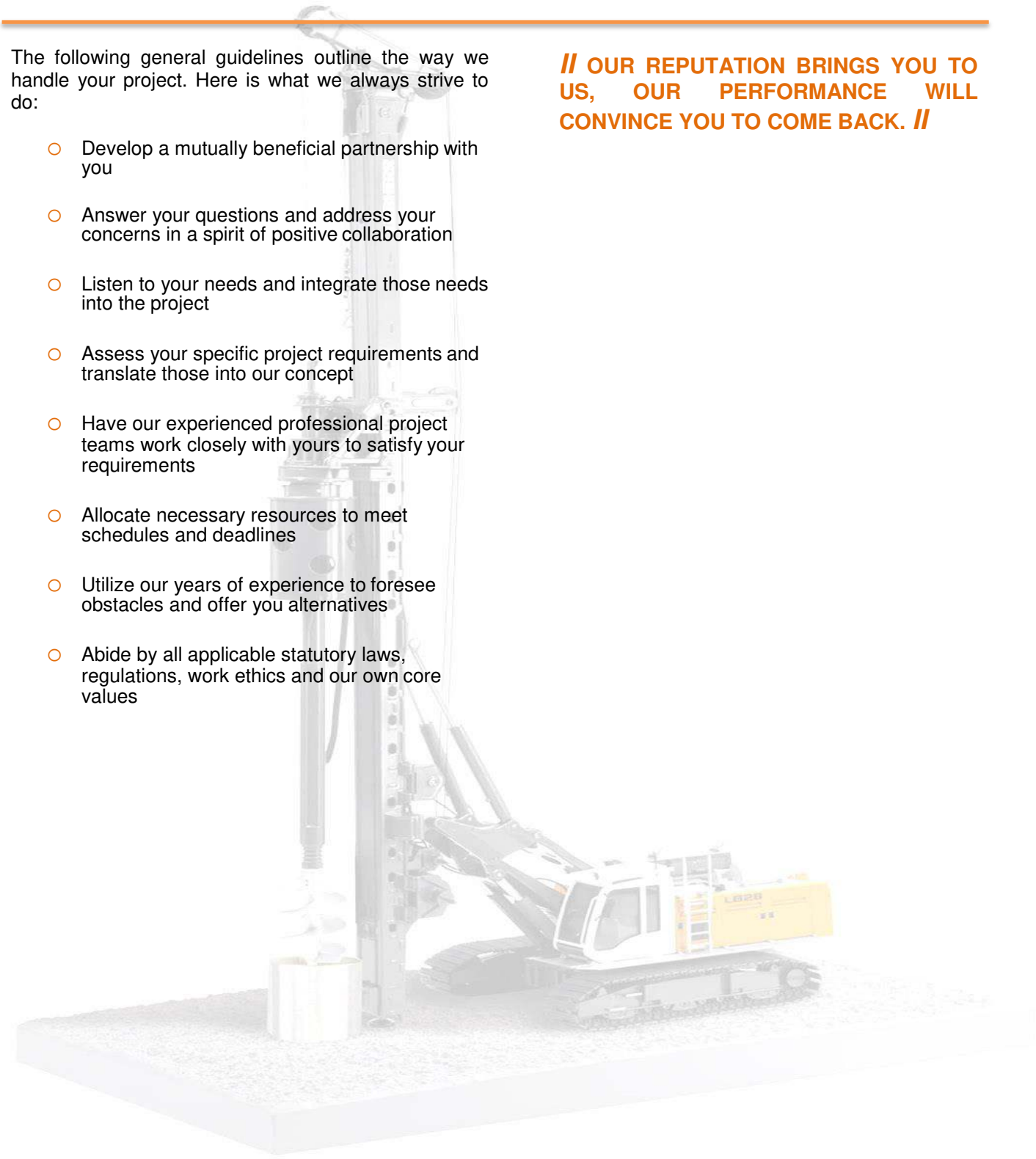
COMPANY

OUR APPROACH

The following general guidelines outline the way we handle your project. Here is what we always strive to do:

- Develop a mutually beneficial partnership with you
- Answer your questions and address your concerns in a spirit of positive collaboration
- Listen to your needs and integrate those needs into the project
- Assess your specific project requirements and translate those into our concept
- Have our experienced professional project teams work closely with yours to satisfy your requirements
- Allocate necessary resources to meet schedules and deadlines
- Utilize our years of experience to foresee obstacles and offer you alternatives
- Abide by all applicable statutory laws, regulations, work ethics and our own core values

// OUR REPUTATION BRINGS YOU TO US, OUR PERFORMANCE WILL CONVINCE YOU TO COME BACK. //



COMPANY
CORE VALUES

At Construction Piling Company, our core values provide the framework for our mission, vision, strategies, decisions and behavior. We believe that these principles are of paramount importance to the success of any business as they were, and continue to be behind ours. They are the standards by which we conduct our daily business and all our interactions.

HEALTH, SAFETY AND ENVIRONMENT

People are our most important asset. Hence, it is imperative to protect the health and safety of this great resource and protect the environment where they Live and prosper.

QUALITY

We are continually striving for excellence; improving and achieving the highest standards in everything we do.

RESPONSIBILITY AND ACCOUNTABILITY

As a corporation and as individuals, we take full responsibility for what we do and hold ourselves fully accountable for our actions.

TEAMWORK

Teamwork is important for any business; we think it is crucial to ours. We organize our project teams, choosing members with complementary skills who work together in full harmony.

INTEGRITY, ETHICS AND COMMITMENT

These essential values are at the core of everything we do.

OPEN COMMUNICATION

We strongly believe in open communication as an effective way for the smooth and efficient functioning of an organization.

OVERVIEW

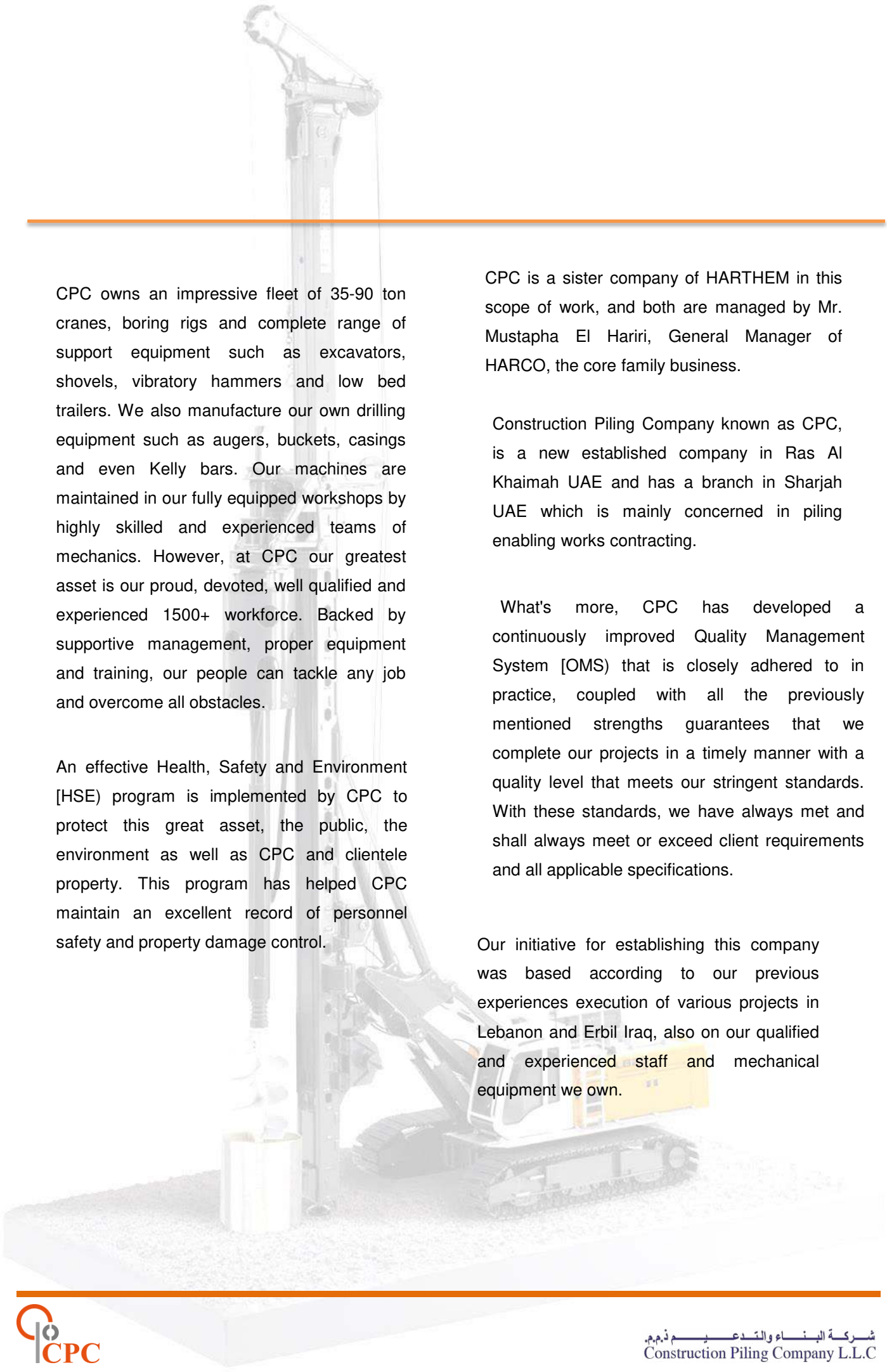
OVERVIEW

Construction Piling Company [CPC] is a vision realized through determination, dedication, integrity, ethics and hard work. We are proud of having a great deal to do with turning the soft sands of this part of the world into solid and resilient ground capable of holding great structures. Our strength comes from the safe and efficient utilization of latest-technology machinery and a workforce of highly trained and experienced professionals, with whom we always produce top quality foundations.

Construction Piling Company was established in 2006 in RAK as a foundation piling construction business. Since that time the company has continued to grow and expand. Today, CPC is a full-service engineering foundation company with projects successfully completed in most of the GCC countries and with independently managed fully operational sister companies in Iraq and Lebanon. The Organization Chart presented in this document illustrates the typical company structure for each of the sister companies.

We have proudly completed over 1000 projects with great efficiency and quality workmanship. The rate of our substantial ongoing growth, growing lists of satisfied clients and successfully completed projects, attests to our devotion to excellence, which has helped us to become one of the leading foundation engineering and construction companies in the GCC.

CPC has the qualifications, experience, latest technology, full range of equipment and a strong financial standing to undertake projects of the largest size in the GCC area and can easily mobilize to any neighboring country. We offer complete cost-effective solutions to your foundation projects, ranging from initial site investigation to overall design and build packages that encompass all aspects of foundation engineering and construction.



CPC owns an impressive fleet of 35-90 ton cranes, boring rigs and complete range of support equipment such as excavators, shovels, vibratory hammers and low bed trailers. We also manufacture our own drilling equipment such as augers, buckets, casings and even Kelly bars. Our machines are maintained in our fully equipped workshops by highly skilled and experienced teams of mechanics. However, at CPC our greatest asset is our proud, devoted, well qualified and experienced 1500+ workforce. Backed by supportive management, proper equipment and training, our people can tackle any job and overcome all obstacles.

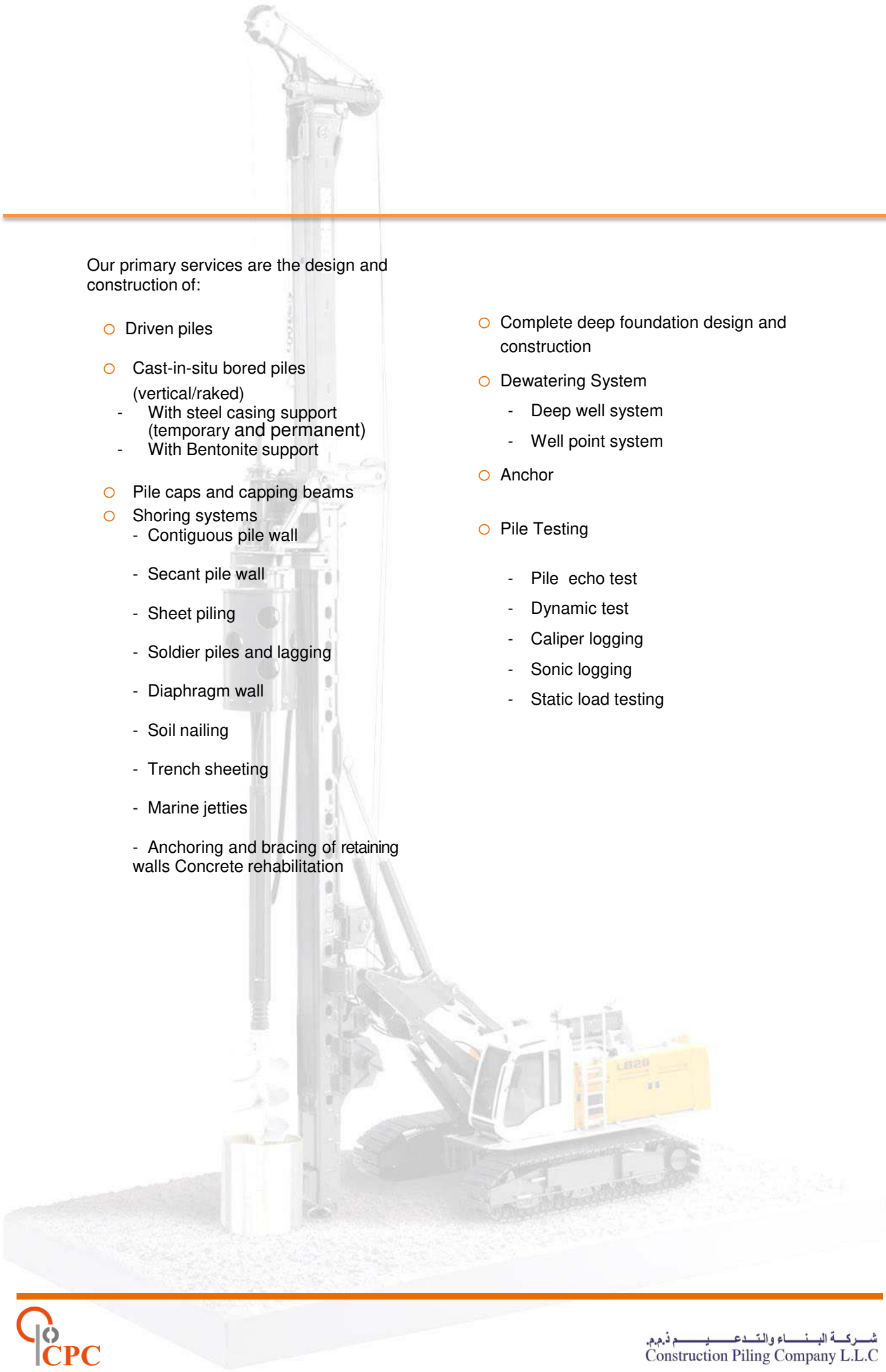
An effective Health, Safety and Environment [HSE) program is implemented by CPC to protect this great asset, the public, the environment as well as CPC and clientele property. This program has helped CPC maintain an excellent record of personnel safety and property damage control.

CPC is a sister company of HARTHEM in this scope of work, and both are managed by Mr. Mustapha El Hariri, General Manager of HARCO, the core family business.

Construction Piling Company known as CPC, is a new established company in Ras Al Khaimah UAE and has a branch in Sharjah UAE which is mainly concerned in piling enabling works contracting.

What's more, CPC has developed a continuously improved Quality Management System [OMS) that is closely adhered to in practice, coupled with all the previously mentioned strengths guarantees that we complete our projects in a timely manner with a quality level that meets our stringent standards. With these standards, we have always met and shall always meet or exceed client requirements and all applicable specifications.

Our initiative for establishing this company was based according to our previous experiences execution of various projects in Lebanon and Erbil Iraq, also on our qualified and experienced staff and mechanical equipment we own.



Our primary services are the design and construction of:

- Driven piles
- Cast-in-situ bored piles (vertical/raked)
  - With steel casing support (temporary and permanent)
  - With Bentonite support
- Pile caps and capping beams
- Shoring systems
  - Contiguous pile wall
  - Secant pile wall
  - Sheet piling
  - Soldier piles and lagging
  - Diaphragm wall
  - Soil nailing
  - Trench sheeting
  - Marine jetties
  - Anchoring and bracing of retaining walls Concrete rehabilitation
- Complete deep foundation design and construction
- Dewatering System
  - Deep well system
  - Well point system
- Anchor
- Pile Testing
  - Pile echo test
  - Dynamic test
  - Caliper logging
  - Sonic logging
  - Static load testing

SERVICES

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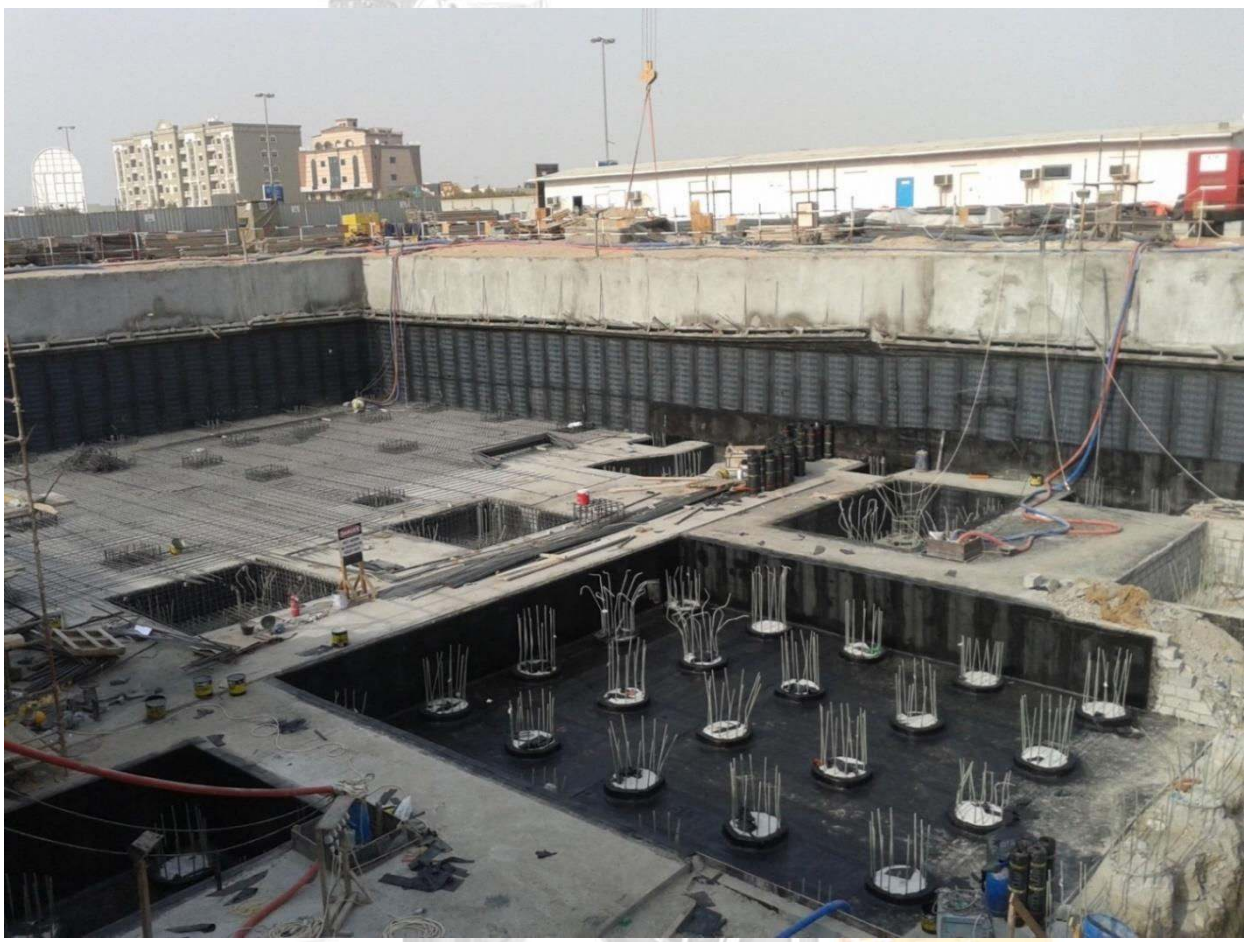
DEEP FOUNDATION PILING

Construction Piling Company main area of specialization is in deep foundation piling and associated works. The solutions presented hereinafter describe the main services that CPC offers. We also offer a variety of other solutions that are infrequently used in the area. With ample resources in addition to our experienced engineers and designers, we are able to provide innovative solutions to nonstandard deep foundation issues.



DEEP FOUNDATION PILING

The many available types of piles and associated construction methods are mainly used for foundation load transfer and earth retention systems. They are used in marine-based structures and in land-based structures where the surface soil layers cannot provide the required load-bearing capacity. In all situations, piles are utilized to transfer lateral, vertical or a combination of both loads through weak soil layers to a suitable bearing layer. The most common techniques used for deep foundation pile construction are described here.

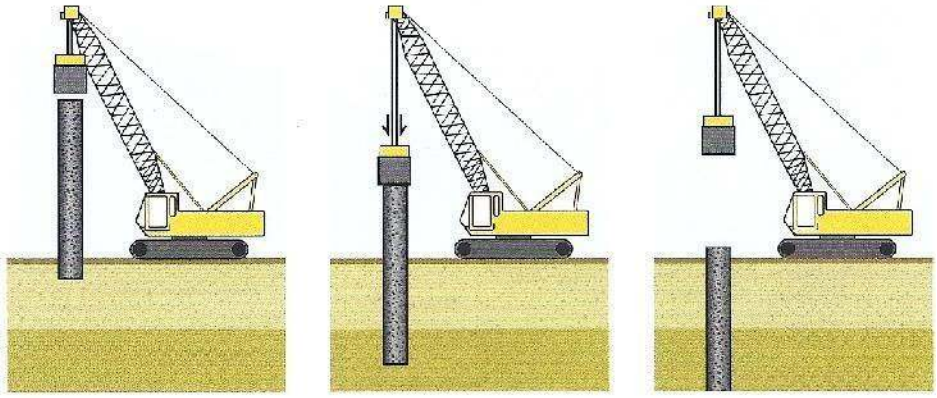
DRIVEN PILES

Prefabricated steel, wood or concrete piles are driven into the ground using impact hammers. Driven piles provide the fastest deep foundation solution and have the advantage over drilled shaft piles of higher skin friction, thus increasing their load-bearing capacity.

They are suitable for most land and marine applications, and offer a high performance piling system with up to 1,000 tons/pile design load capacity.

Steel piles such as sheet and H-beam piles [soldier piles] to form earth retention and excavation support walls, are the most commonly used. Wood and reinforced concrete are used in other Limited conditions.

DRIVEN PILES



PLACEMENT OF PILE | INSTALLATION OF PILE | REPETITION OF PROCESS

CAST-IN-SITU BORED PILES

This type of pile installation is used to replace soil removed by drilling rather than occupying the space of displaced soil as in driven piles and thus, it mostly relies on end-bearing capacity of the earth layer at the drilled depth. Bored piles provide the largest pile dimensions and thus the highest load bearing capacities.

One method of installation is to drill a shaft using a continuous auger with a hollow stem at its center which is later used to grout the drilled shaft. This method is known as Continuous Flight Auger [see following section].

Another technique is to drill the shaft, insert the reinforcement steel cage [if required] and then pour concrete under pressure to fill the entire shaft space. The shaft is drilled using an auger in dry land conditions and a drilling bucket in wet land conditions.

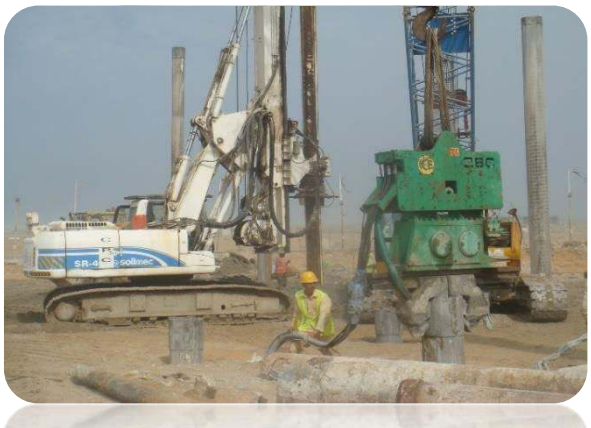
When shaft wall support is required, the drilling process takes place inside a steel casing or with the aid of drilling slurry such as Bentonite.

SERVICES

DEEP FOUNDATION PILING

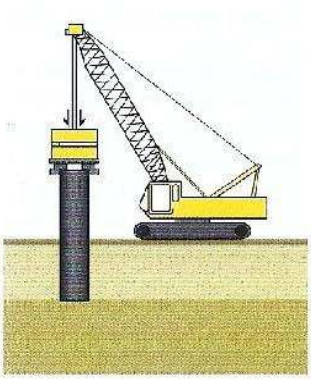
STEEL CASING SUPPORT

Steel drill casing is advanced into the ground using a vibratory hammer leaving a 1-meter protrusion. The casing is driven about 50 cm into hard stratum to provide shaft wall support during the drilling process. After drilling to the specified depth, the bottom of the shaft is cleaned using a drilling bucket, the shaft depth is measured and caliper logging is performed to ensure that no major collapses have occurred in the borehole walls under the casing. Steel cage reinforcement fitted with spacers [to provide uniform concrete cover] is placed within the borehole using a crane and concrete is poured into the shaft under high pressure using a tremie pipe and a suitable concrete pump. The temporary casing is then gradually extracted from the ground [for temporary casing installations only] by vibrating, oscillating or rotating and load is transferred to the formed concrete pile shaft.

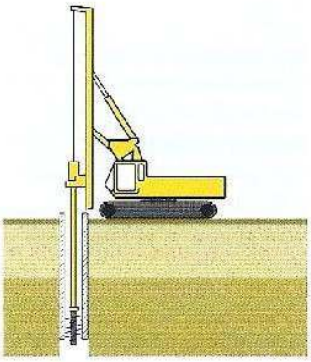


The same procedure is followed for permanent casing foundation piles, except that the casing is not extracted.

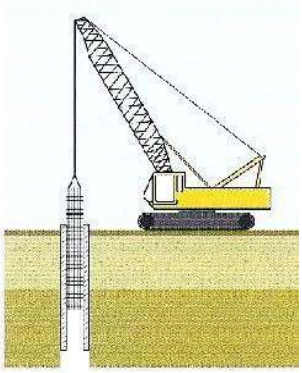
STEEL CASING SUPPORT



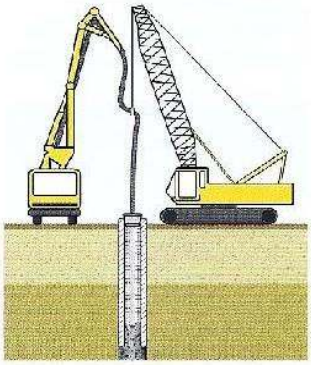
INSTALLATION OF CASING



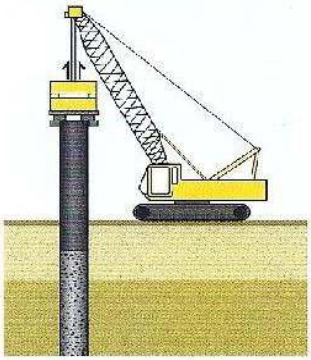
DRILLING OF BOREHOLE



INSTALLATION OF STEEL CAG



CONCRETING OF BOREHOLE



EXTRACTION OF CASING

SERVICES

DEEP FOUNDATION PILING

BENTONITE SUPPORT

Drilling mud or slurry such as bentonite is mostly used for drilling support in situations where the bore hole is unstable. A positive head of bentonite suspension above the water table is maintained during the drilling process, thus providing continual support to the borehole walls. Fluid concrete displaces the clean bentonite which is collected, cleaned and reused several times before it is discarded.

SERVICES

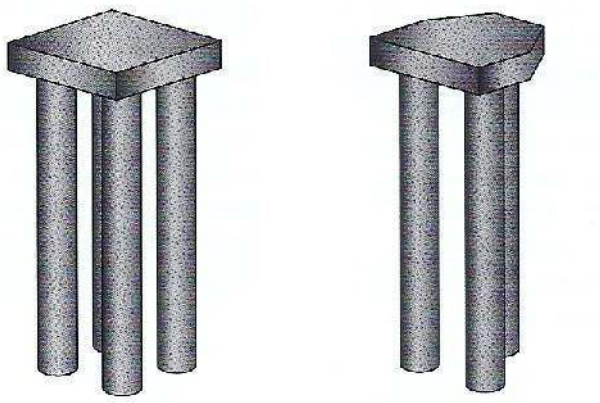
DEEP FOUNDATION PILING

The auger is simultaneously withdrawn at a rate synchronized with the concrete pumping process such that the pumped concrete promptly occupies the displaced volume exerting a positive pressure, which assists in the extraction process whilst maintaining lateral support to the surrounding soils. The steel reinforcing cage [if required), is then immersed into the wet concrete.

PILE CAPS AND CAPPING BEAMS

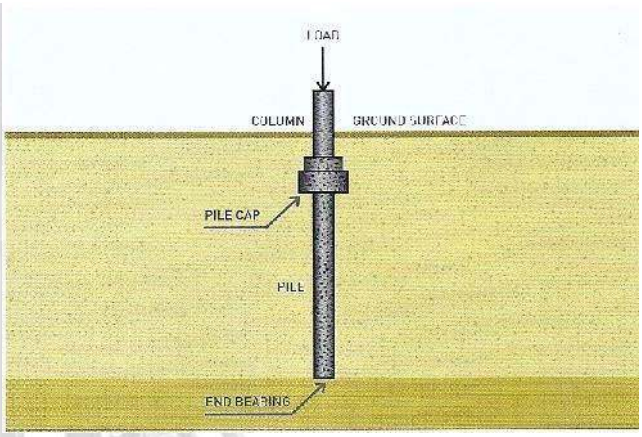
Pile caps connect groups of piles to distribute loads over the capped piles. Pile heads are stripped to expose the steel reinforcement to be projected into the pile cap. Steel reinforcement is placed at the desired location and a large concrete block is formed. Pile caps can assume a variety of shapes, but they are mostly rectangular or triangular.

PILE CAPS DIAGRAM



RECTANGULAR CAP

TRIANGULAR CAP



SERVICES

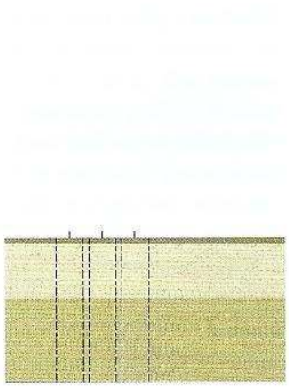
RETAINING WALLS (SHORING)

Retaining walls are structures that hold back soil or rock from falling due to landslides caused by gravity or erosion. Watertight retaining walls [cofferdams) are employed in conjunction with an appropriate dewatering scheme to hold back water and clay in wet areas. In deep excavations, these walls have to withstand great lateral earth pressures and hydrostatic pressures caused by ground water. Depending on design requirements, several pile types and configurations are used to construct retention systems.

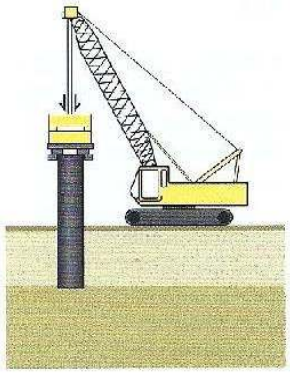
CONTIGUOUS BORED PILE WALL

Closely spaced piles used to form retaining walls in areas where water inflows are not significant. Their main use is in clay soils and they may also be used to retain dry granular materials or fills. In water bearing granular soils, seepage is likely to occur in the gaps between the piles which can be prevented by grouting these gaps to form a watertight retaining wall.

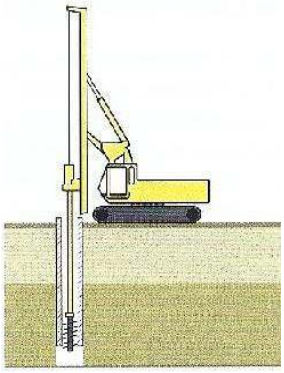
CONTIGUOUS BORED PILE WALL



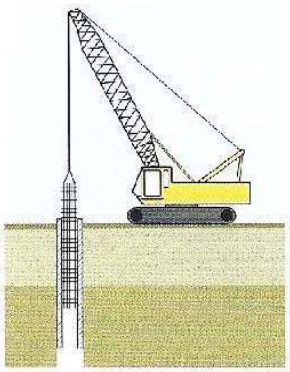
POSITION OF BORED PILE



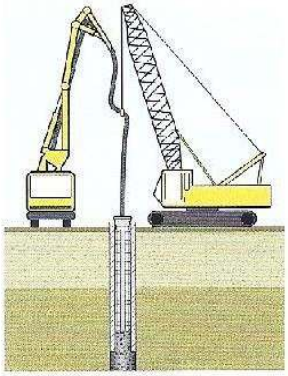
INSTALLATION OF CASING



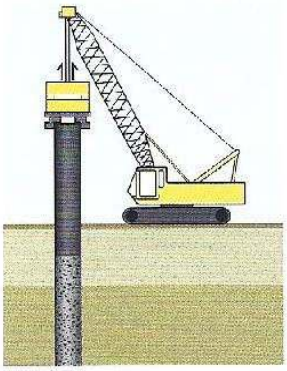
DRILLING OF BOREHOLE



INSTALLATION OF STEEL CAGE



CONCRETING OF BOREHOLE



EXTRACTING OF CASING

REPETITION OF PROCESS

SERVICES

RETAINING WALLS (SHORING)

SECANT BORED PILE WALL

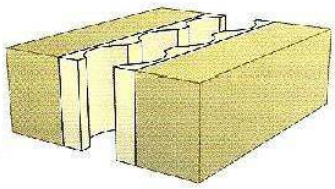
Secant (tangent] piles are interlocking piles that form a continuous watertight wall. A continuous reinforced concrete guide wall is constructed to pinpoint the location of each overlapping pile. Piles are spaced a distance which is a little less than one pile diameter.

The exact spacing depends on construction tolerances.

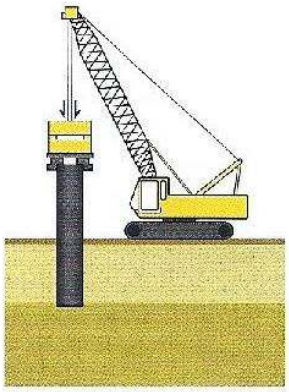
Alternate piles [known as "female", "intermediate" or "primary" piles] are drilled inside temporary steel casing and constructed without reinforcement using a slow setting concrete. Temporary casing is extracted while the concrete has not fully set and heavy casing is then driven into the intervening pile location cutting into the fresh concrete of the adjacent female piles, the "male", "secondary" or "king" piles are then promptly drilled.

The male pile steel cage reinforcement is inserted and structural concrete is poured adhering to the female pile concrete on either side to form a watertight continuous wall.

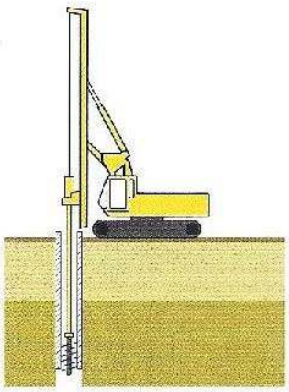
SECANT PILE WALL



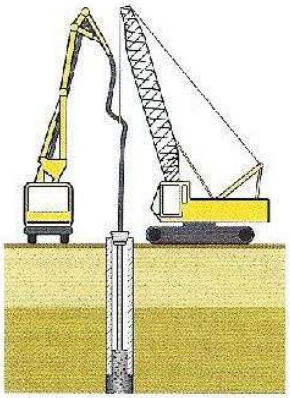
CONSTRUCTION
OF GUIDE WALL



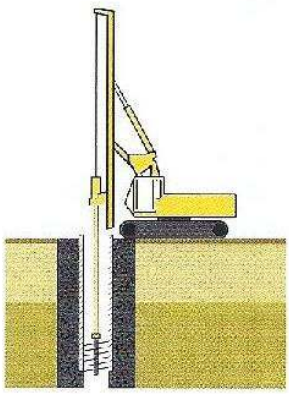
INSTALLATION OF CASING



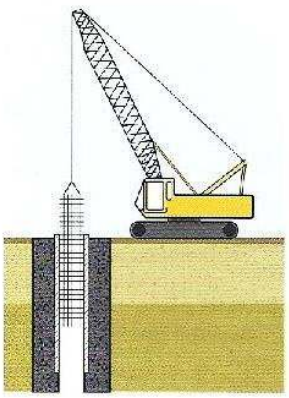
DRILLING OF SECONDARY
BOREHOLE



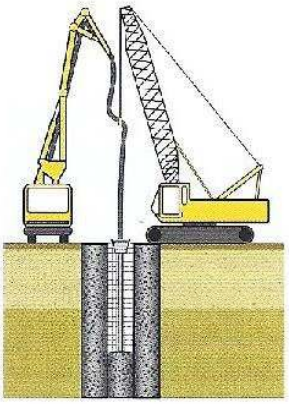
CONCRETING OF SECONDARY
BOREHOLE



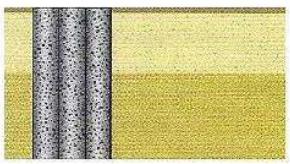
DRILLING OF PRIMARY
BOREHOLE



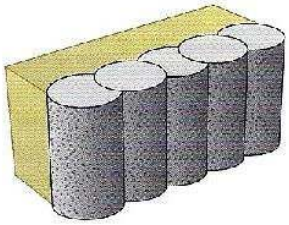
INSTALLATION OF STEEL CAGE



CONCRETING OF PRIMARY
BOREHOLE



REPETITION OF PROCESS



PILES OVERLAPPING
(TOP VIEW)

SERVICES

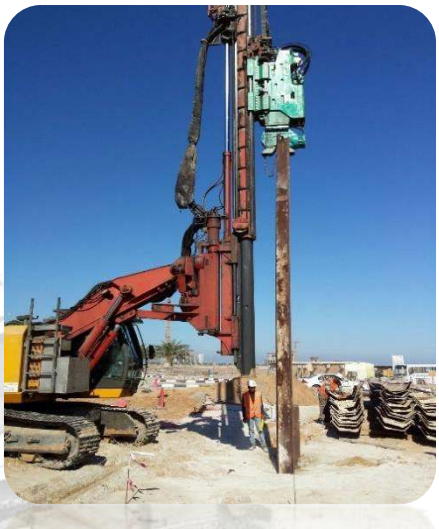
RETAINING WALLS (SHORING)

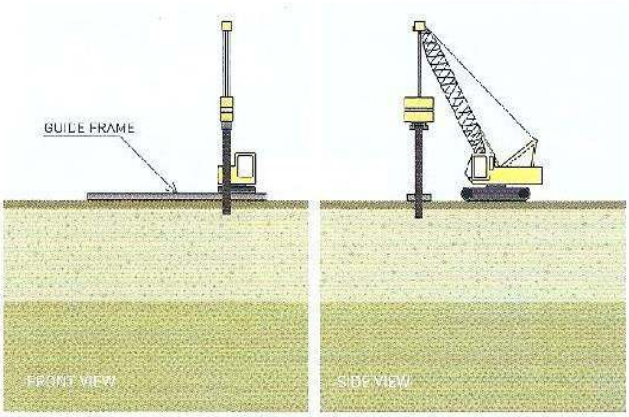
SHEET PILE WALL

Sheet pile walls are constructed by driving prefabricated reusable panels into the ground. These panels are driven into ground using a vibratory hammer in such a way that each panel interlocks with the adjacent one on each side. Soil conditions may allow the interlocking sections to be vibrated into ground instead of being hammer driven. The series of panels vertically interlock to form a continuous impermeable wall.

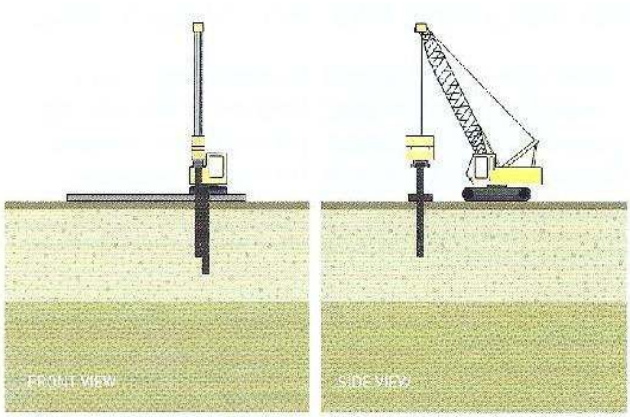
The full wall is formed by connecting the joints of adjacent sheet pile sections in sequential installation. Sheet pile walls provide structural resistance by utilizing the full section. The reusable panels are made from a variety of materials such as steel, wood, plastic and fiberglass. Steel sheet piles are however, the most commonly used in deep excavations.

Sheet piling provides an efficient, economical and timesaving solution in certain types of applications such as cofferdams, cut and cover tunnels, retaining walls, seawalls and containment walls. They are however; constrained by the depth of excavation, the magnitude of the lateral pressures, and the stratum they can penetrate.

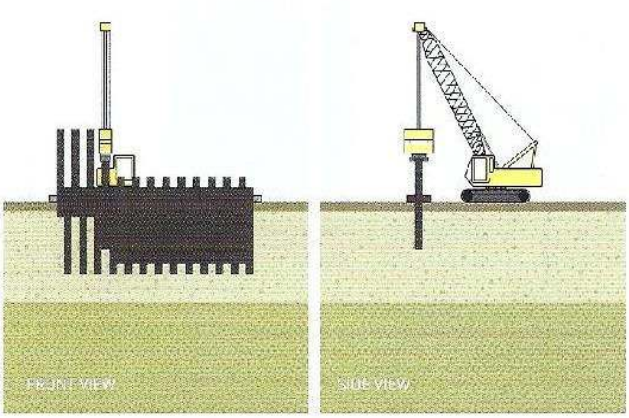




INSTALLATION OF FIRST SHEET PILE



INSTALLATION OF SECOND SHEET PILE



REPETITION OF PROCESS

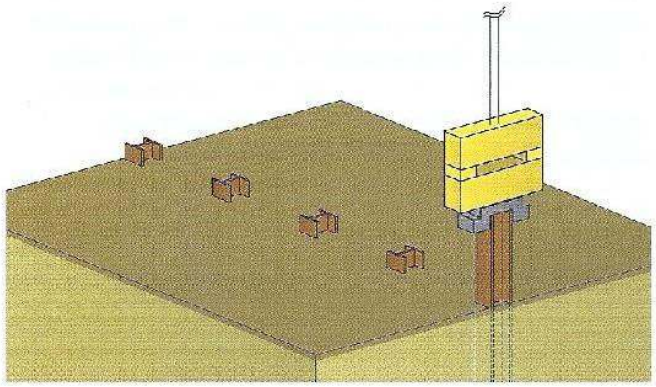
SERVICES

RETAINING WALLS (SHORING)

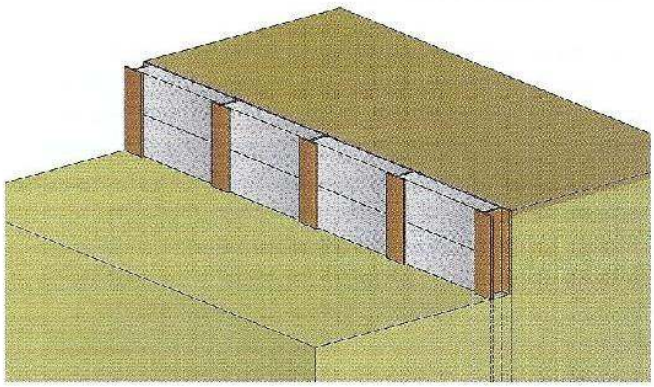
SOLDIER / KING PILE AND LAGGING WALL

Soldier piles, are steel wide flange H-beam piles spaced 1 to 3 meters apart. They are driven into the ground prior to excavation by a vibratory or impact hammer or may be installed in drilled shafts and backfilled with concrete. Their main purpose is to provide permanent or temporary shoring for vertical excavation.

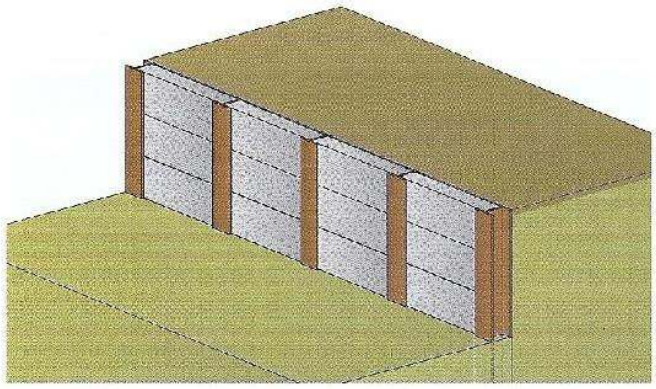
After insertion into the ground, the area between each two piles is excavated and timber, steel or pre-cast reinforced concrete panel lagging is inserted between the H-pile flanges as the soil is excavated in stages downward. The void space behind the lagging is then backfilled and compacted. Lateral earth pressures are transferred from the lagging onto the soldier piles. In high water table conditions, an extensive dewatering scheme is required with this type of retention system.



INSTALLATION OF SOLDIER PILES



AREA EXCAVATED AND PANEL LAGGING INSERTED



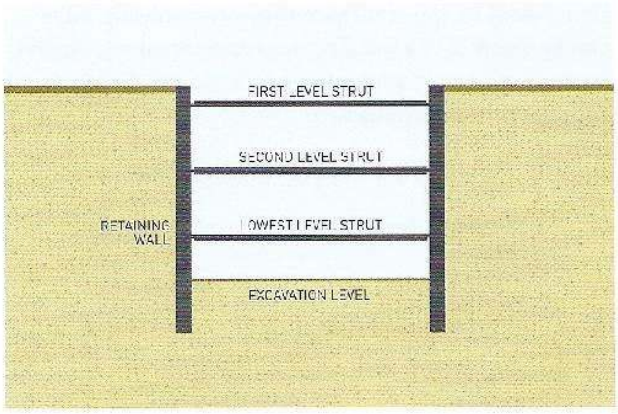
REPETITION OF PROCESS

SERVICES

RETAINING WALLS (SHORING)

STRUTTING AND BRACING SUPPORT

In situations where anchors cannot be used or only temporary retaining wall support is required, or for other reasons, struts are used to provide such support during excavation. Strut dimensions and layout is pre- determined by design engineers. After underground installation of the retaining wall system, ground is excavated and struts are installed at each specified level once it has been reached. The base slab is then constructed, the lowest level strut is removed and side walls are constructed. The same procedure is followed progressing upwards towards other strut levels until the roof slab is constructed. The area between the retaining and side wall is backfilled and then the first level strut is removed.



STRUT SUPPORTED RETAINING WALL

SERVICES

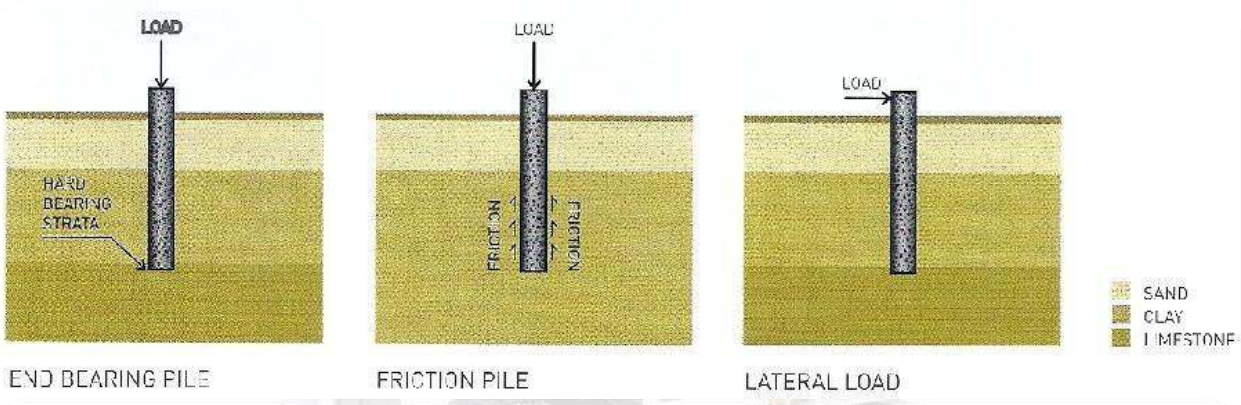
PILE DESIGN

Construction Piling Company design engineers follow a performance-based design approach that provides the most cost-effective foundation system whilst fulfilling project requirements. Our team is equipped with all necessary facilities, knowledge and years of design and hands-on experience, all integrated to produce efficient, high performance deep foundation solutions at a minimized cost.

Construction Piling Company designers implement the most commonly used theoretical design techniques and powerful software. However, our strategic design methodology relies on our decades of experience and extensive geotechnical knowledge in our areas of operation to complement theoretical findings and produce an optimized design in terms of safety, efficiency, performance and cost.

Depending on the structure they are carrying, piles can be subject to axial (tension/compression), lateral loads or a combination of any or all loads. Some of the sources for such loads are:

- The weight of the supported structure
- Earth and water pressures on retaining wall Systems
- Wind loads
- Eccentric vertical loads
- Loads from waves and currents for offshore structures
- Slope movements



Piles are arranged in a number of ways so that they can support load imposed on them. Vertical piles can be designed to carry vertical [compressive and uplift or tension] loads as well as lateral loads. Vertical piles are sometimes combined with raked piles to support lateral and vertical forces. Pile caps distribute axial loads evenly over individual piles in a group. However, when a group of piles is subjected to a lateral load or a combination of vertical and lateral loads the resulting moment forces are taken into account during calculation of load distribution.

Several factors are taken into consideration when designers select pile types, grouping and distribution:

- The loads that the foundation system will carry [magnitude and direction]
- Load-bearing capacity of the foundation soil and all other pertinent geotechnical data
- Safety factors to be incorporated into the design
- The type of structure being built
- Special design needs, such as resistance to vessel impact or seismic forces
- All relevant codes, standards and project specifications
- All applicable statuary and regulatory requirements.

Pile foundations develop their load carrying capacity by transferring the loads to the bearing ground. End-bearing piles transfer these loads to the hard strata or rock where it rests, while friction and cohesion piles transfer loads to the adjacent ground grabbing the surface of the pile through skin friction. Designers rely on any or a combination of both of these supports in their design.

SERVICES

PILE DESIGN

RETAINING WALL DESIGN

The variables, unknowns and constraints involved in retaining wall design are many, making it a complex and challenging task. A retaining wall design has to account for a number of factors, foremost being the stability of the wall itself. A thorough analysis of the geotechnical investigation report, project requirements, construction sequence, type of proposed structure and other factors is initially performed by design engineers.

This analysis, coupled with the experience of the designers, generates the first input for computer software [such as ReWaRD® from Geocentric and STtAD.pro® from Bentley] to further analyze the c01plex loads and perform the calculations. Typically, a retaining wall designer has to consider the following:

- **PRESSURE**
  Earth and water pressures that are expected to act on the wall.

- **EXTERNAL STABILITY**
  The overall external stability of the retaining wall acting as one whole body [sliding and overturning]. Sliding instability is caused by horizontal forces while overturning is caused by the moments generated from these forces.

- **BEARING STABILITY**
  Overturning increases stresses at the wall toe and decreases them at the heel; the bearing capacity of the foundation soil has to be c01sidered to ensure that wall settlements are kept within acceptable levels.

GLOBAL STABILITY

Even when external and bearing stabilities are acceptable, retaining walls may still be susceptible to an overall rotational type failure. This type of failure originates well below the retaining wall itself due to weaker soil zones.

STRUCTURAL INTEGRITY

After a satisfactory stability design, structural calculations are made on the wall itself to determine the proper sizing of longitudinal and shear reinforcement.

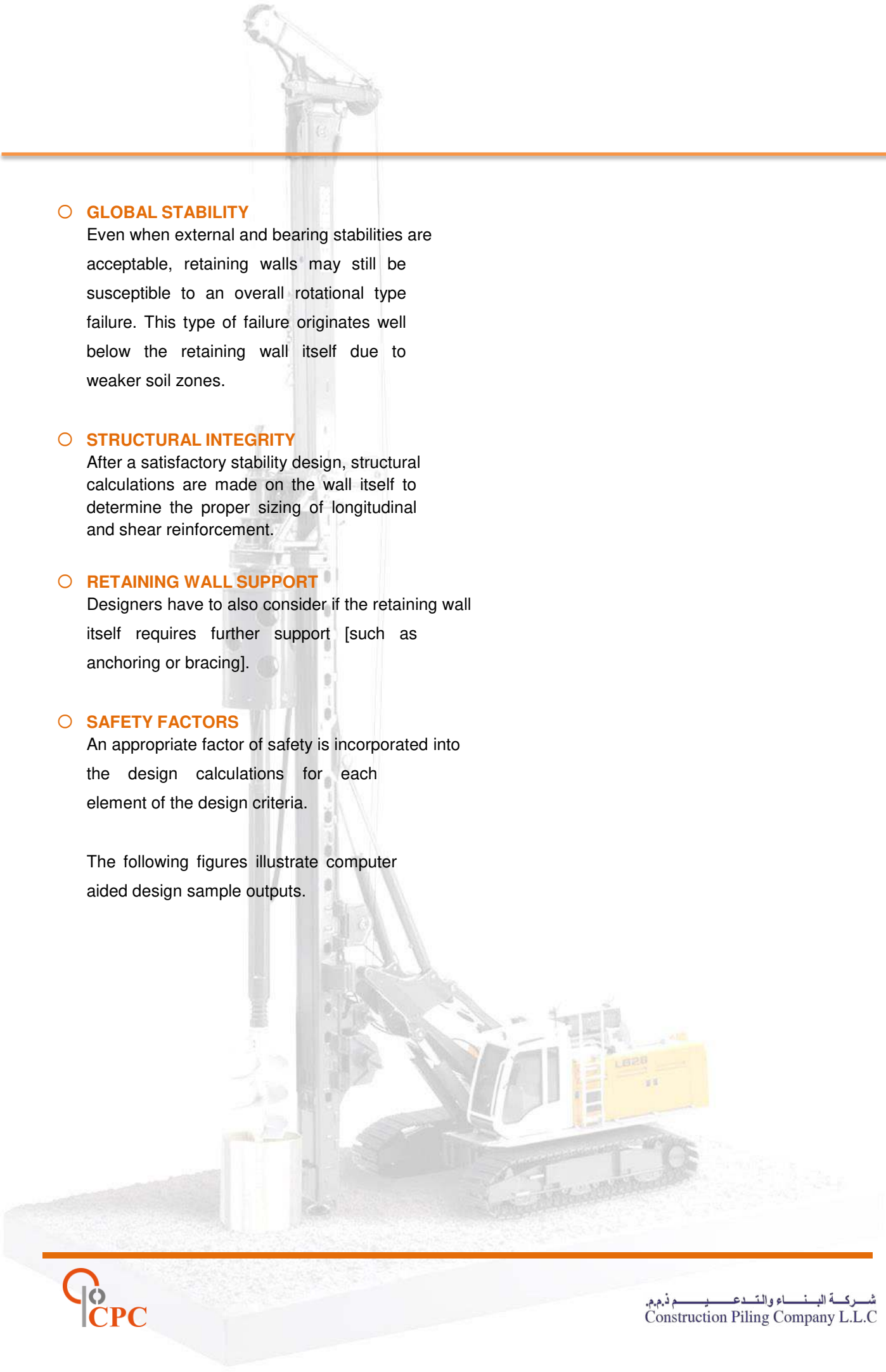
RETAINING WALL SUPPORT

Designers have to also consider if the retaining wall itself requires further support [such as anchoring or bracing].

SAFETY FACTORS

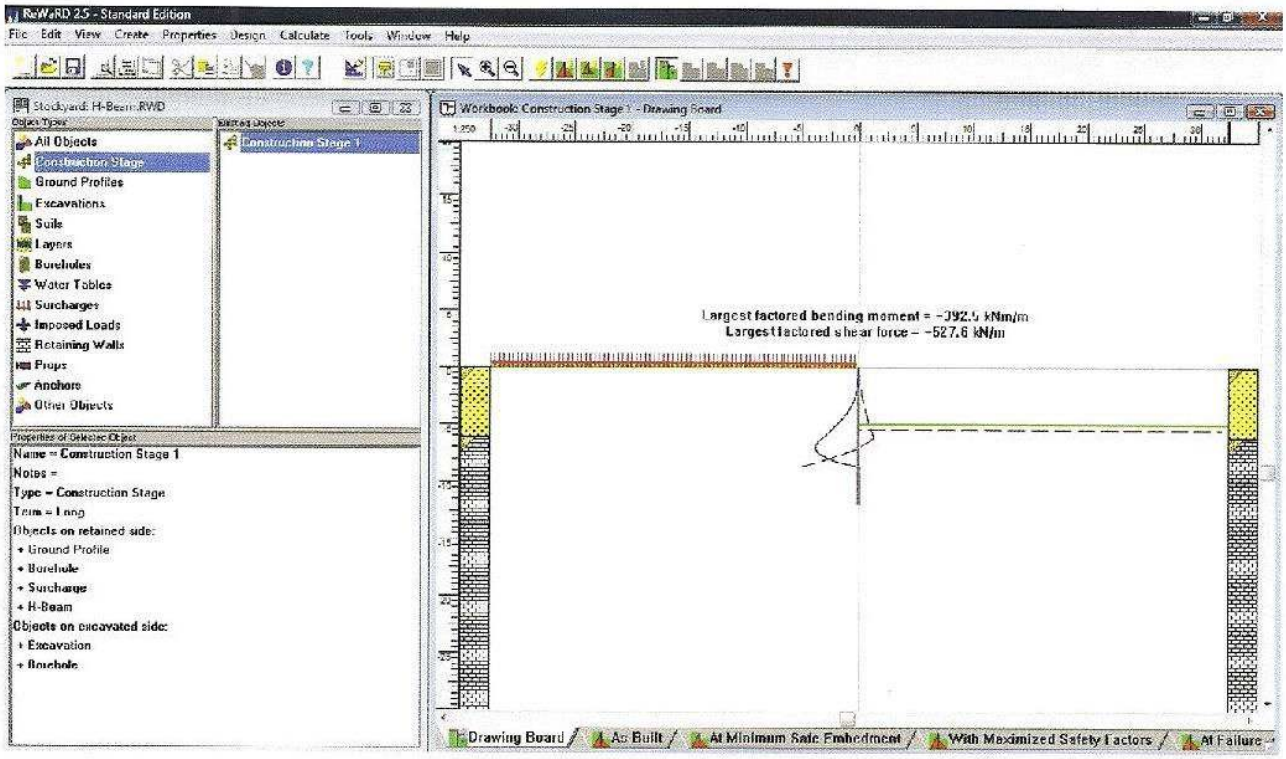
An appropriate factor of safety is incorporated into the design calculations for each element of the design criteria.

The following figures illustrate computer aided design sample outputs.

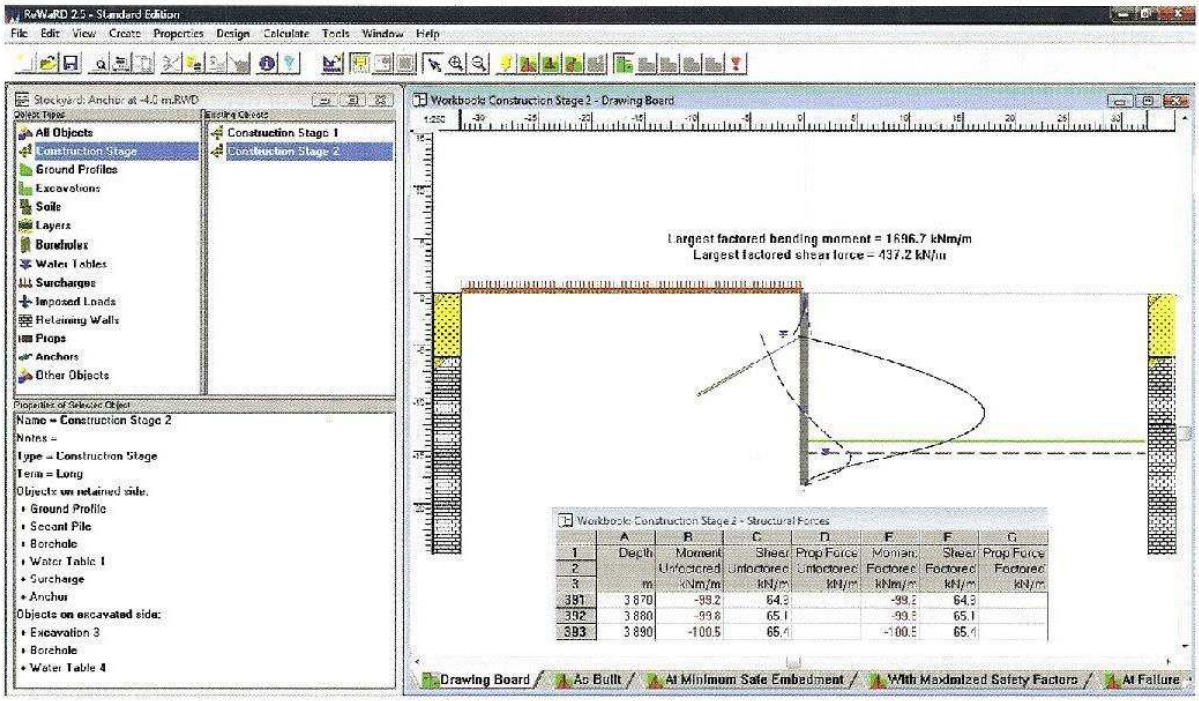


SERVICES

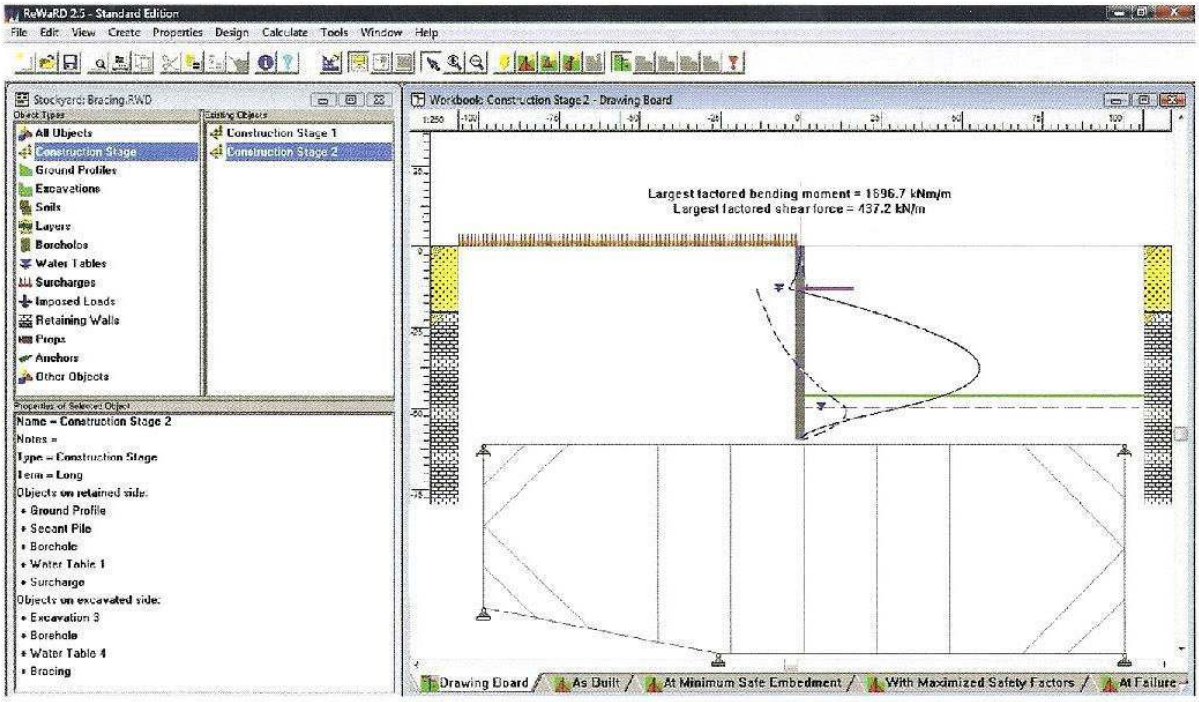
PILE DESIGN



H-BEAM WALL WITH LAGGING



SECANT PILE WALL WITH ANCHORS



SECANT PILE WALL WITH BRACING

QUALITY SYSTEM

CONSTRUCTION
PILING
COMPANY

www.cpc-uae.com

PROJECT QUALITY CONTROL AND TESTING

At Construction Piling Company, we take great pride in the quality of work we produce. We spare no effort or expense to maintain our exemplary health, safety, environmental and quality records. Our reputation in our areas of operation and the very high percentage of returning clients are clear indications of our performance. This is all achieved by our very well trained, dedicated and experienced project teams, by maintaining an impressive top of the line fleet of equipment and by a quality department with the highest standards. This quality system is composed of policies, procedures and records that are integrated into everything we do.

Though continuously improving, this system has provided us with a robust framework that allows for smooth operations and facilitates consistency in project quality control and services.

The characteristics that compose and define our proactive quality system and associated processes are as follows:

- People are behind the success of our business.

  Proper recruitment, training and a generous incentive program bring out the best in our employees.
- We hold individuals and groups responsible for achieving the expected level of quality.
- Clear, concise and practical quality policies and standards and process end goals.
- A clear, well organized, carefully planned system of verification and inspection.
- A corrective and preventive action system that minimizes or eliminates the repetition of nonconformance and reduces rework.
- Continuous review and update of the whole system.

Conformance is the measure of quality; hence quality requirements should be clear and verifiable so that they are easily understood by all parties. Construction Piling Company puts into practice an effective quality control system implemented by qualified engineers to observe, monitor, verify and inspect all definable features of work on a project in order to assure conformance.

Quality and Inspection and Testing Plans are developed specifically for each project to encompass all project quality assurance requirements. Experienced test technicians are directly involved in all testing operations, while an alert team of quality control engineers observe and ensure that all test setups, piling operations and activities comply with project requirements. Comprehensive piling records are punctually completed, reviewed for accuracy and filed by the quality assurance department.

According to project requirements, various tests, measurements and inspections are conducted to ensure the integrity and reliability of the constructed piles. Material tests are performed on concrete, its constituents and on steel to be used for the fabrication of the reinforcement cages. All finished piles are inspected for verticality and location and tested for integrity. A percentage of all other piles are subjected to other types of testing as required.

Construction Piling Company performs all static load tests and inspections in witness of the consultant representative and the expert assistance of a third party when and if required. A qualified, certified and approved third party performs all other material and pile tests.

The sampling frequencies for these tests are determined by the project specifications or by referenced standards. All required testing is clearly identified and listed in the project Inspection and Testing Plan for ease of reference and control.

MATERIAL TESTING

Concrete constituents are tested to ensure conformance to project specifications:

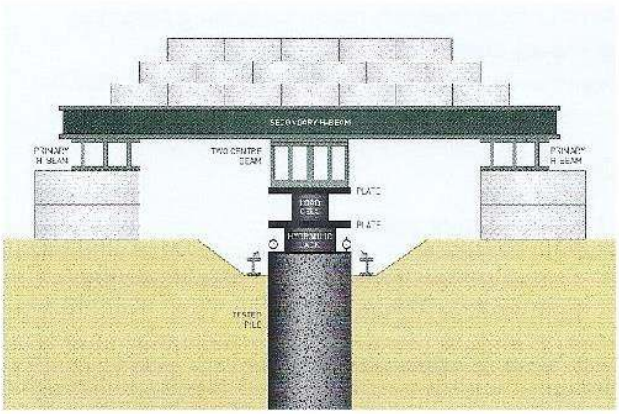
- Physical properties of cement
- Chemical analysis of aggregates
- Organic impurities in fine aggregates for concrete
- Potential alkaline reactivity of aggregates
- Particle density [spec. Gravity] and water absorption of aggregates
- Aggregate moisture content
- Aggregate crushing value
- Particle size distribution of aggregates
- Soundness of aggregates
- Ten percent fines value
- Aggregate impact value
- Flakiness index
- Elongation index
- Los Angeles abrasion of aggregates
- Shell content
- Sulfate content of aggregates
- Chloride content
- Admixture test
- Chemical analysis of water

A trial mix is routinely made for testing purposes to ensure that proposed mix designs meet requirements. The following tests are conducted on ready mix concrete:

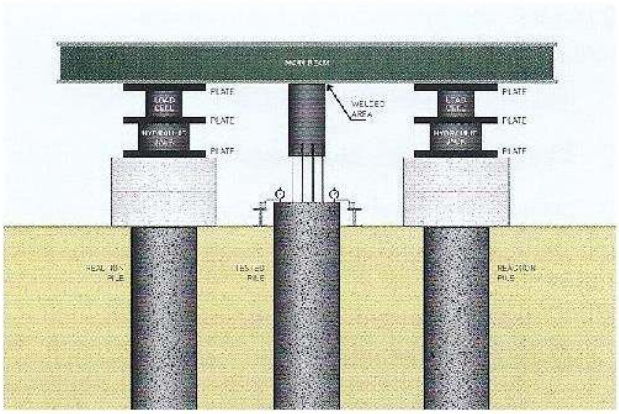
- Slump
- Temperature upon delivery
- 3 days' compressive strength [depending on project requirements]
- 7 days' compressive strength
- 28 days' compressive strength
- Durability
  - Initial surface absorption
  - Water permeability
  - Water absorption
  - Rapid chloride permeability

In addition to supplying mill certificates for all deformed steel rebar to be used for the fabrication of reinforcement cage, batches are also tested for the following:

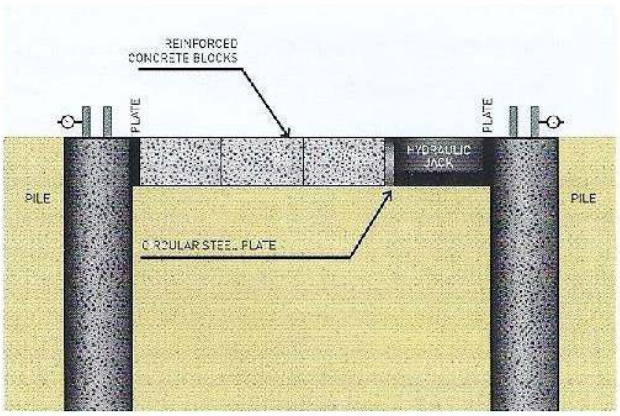
- Tensile strength
- Bending /re-bending
- Chemical analysis



COMPRESSION STATIC LOAD TEST SETUP



TENSION STATIC LOAD TEST SETUP



LATERAL LOAD TEST SETUP

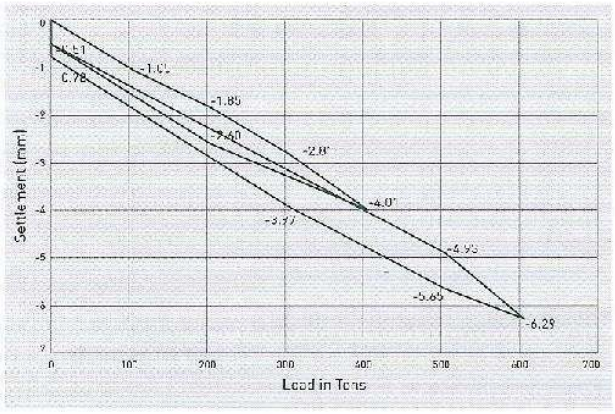
STATIC LOAD TESTING

Static load test [SLT] is the most reliable method of determining pile load capacity. It is the most fundamental form of pile load test and is considered as the bench-mark of pile performance. It involves the direct measurement of pile head displacement in response to a physically applied test load. Testing a pile to failure provides valuable information to the design engineer and is recommended for load tests performed prior to the foundation design or working piles construction. This method is applicable to all types of piles regardless of their method of installation. Piles can be tested for:

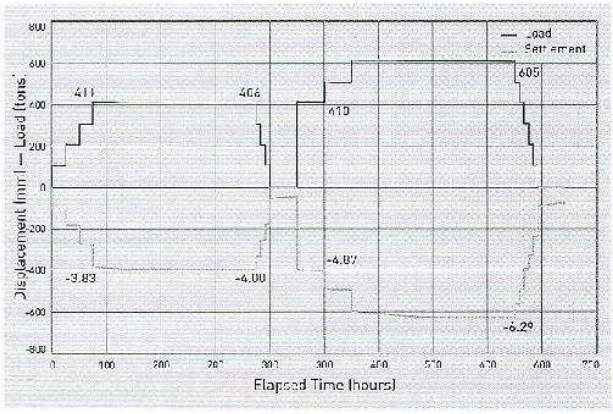
- Compression
- Lateral
- Tension

For the SLT the load is most commonly applied via a jack acting against a reaction beam, which is restrained by an anchorage system or by jacking up against a reaction mass [“kentledge” or dead weight].

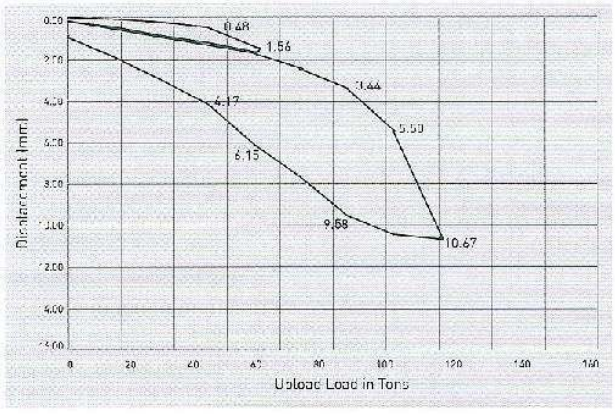
The anchorage system is usually in the form of reaction piles installed into the ground to provide tension resistance. The nominated test load is usually applied in a series of increments in accordance with the appropriate code, or with a pre-determined load testing specification for a project. Each load increment is sustained for a specified time period, or until the rate of pile movement is less than a nominated value. Static load testing methods are applicable to all pile types, on land or over water, and may be carried out on either production piles or sacrificial trial piles. Trial piles are specifically constructed for the purpose of carrying out load tests and therefore, are commonly loaded to failure. Testing of production piles however, is limited to prove that a pile will perform satisfactorily at the serviceability or design load, plus an overload to demonstrate that the pile has some [nominated] reserve capacity. Test results are presented in graphical format showing the applied load versus pile head displacement.



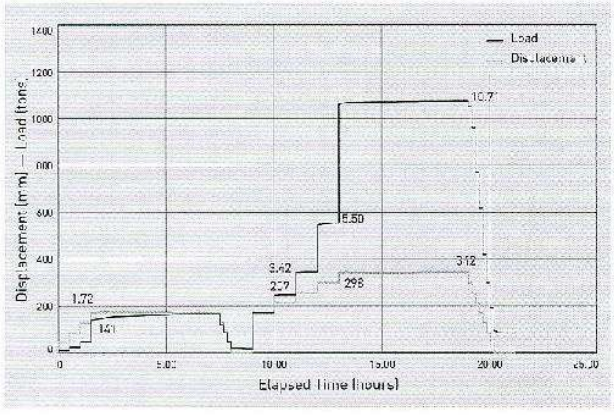
COMPRESSION — LOAD-SETTLEMENT GRAPH



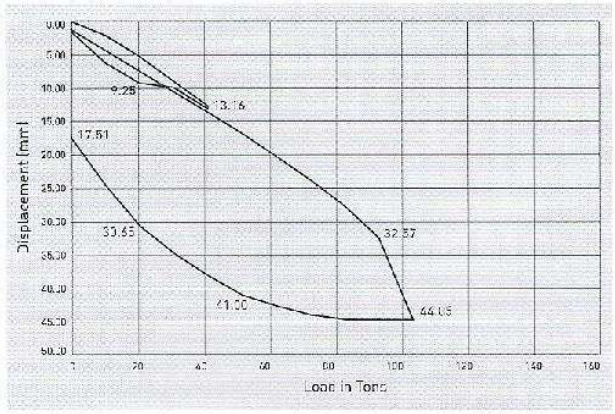
COMPRESSION — TIME-LOAD-SETTLEMENT GRAPH



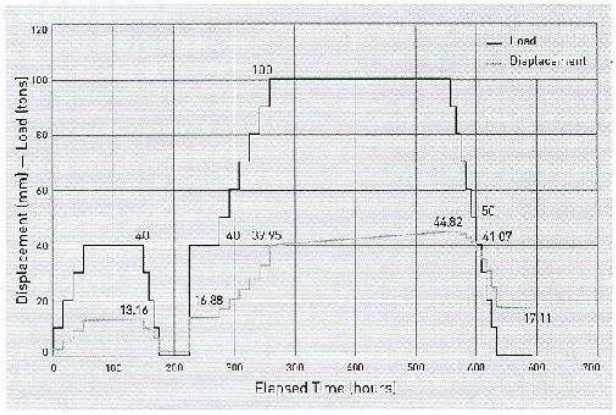
TENSION — LOAD-DISPLACEMENT GRAPH



TENSION — TIME-LOAD-DISPLACEMENT GRAPH



LATERAL — LOAD-DISPLACEMENT GRAPH



LATERAL — TIME-LOAD-DISPLACEMENT GRAPH

QUALITY SYSTEM

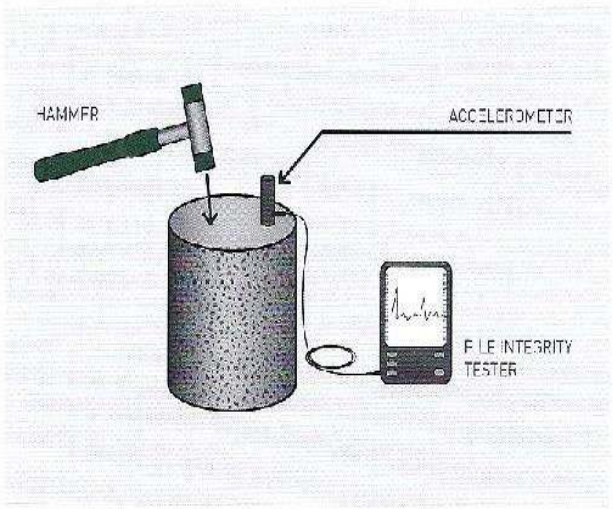
PILE TESTING

PILE INTEGRITY TESTING

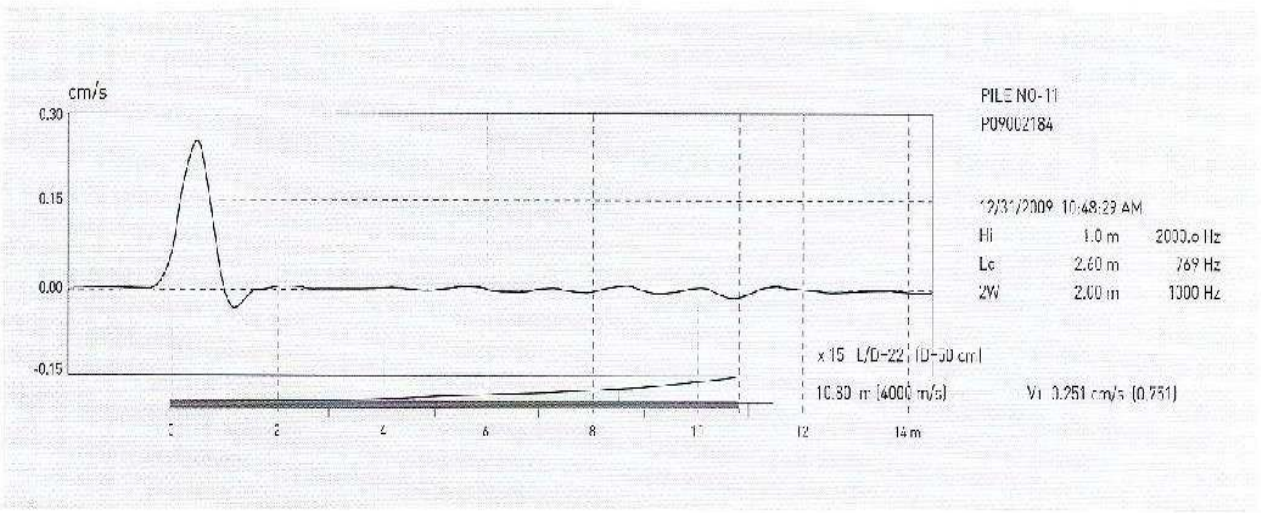
PILES ECHO TEST

The Piles Echo Test, also known as Pile Integrity Test, Sonic Echo Test and Low Strain Impact Integrity Test, is a rapid, inexpensive, non-destructive method to check for pile defects such as voids, cracks, necking, inclusions, etc. It determines the pile integrity, dimensions, continuity and pile material consistency by measuring and analyzing the velocity response of the pile induced by the impact of a hand held hammer applied axially and perpendicular to the pile head surface. The stress wave induced by the hammer strike travels down the pile shaft and reflected waves from significant changes in pile shaft acoustic impedance are registered by a transducer held against the pile head.

Measured signals are amplified, digitized and stored by the test unit. The data from the test unit is used by computer software to generate velocity-time graph as shown on the next page. Trained technicians interpret such graphs to determine if the pile has any serious defects, allowing quick evaluation and enhancing the reliability of the foundation.



PULSE ECHO TEST SETUP



INTEGRITY TEST VELOCITY-TIME GRAPH

QUALITY SYSTEM

PILE TESTING

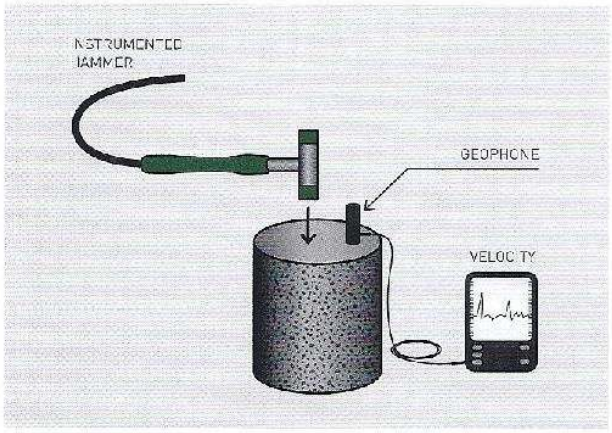
TRANSIENT DYNAMIC RESPONSE

Transient Dynamic Response [TOR] method is a low strain dynamic test which provides a rapid and accurate way of assessing the continuity and integrity of concrete pile foundations.

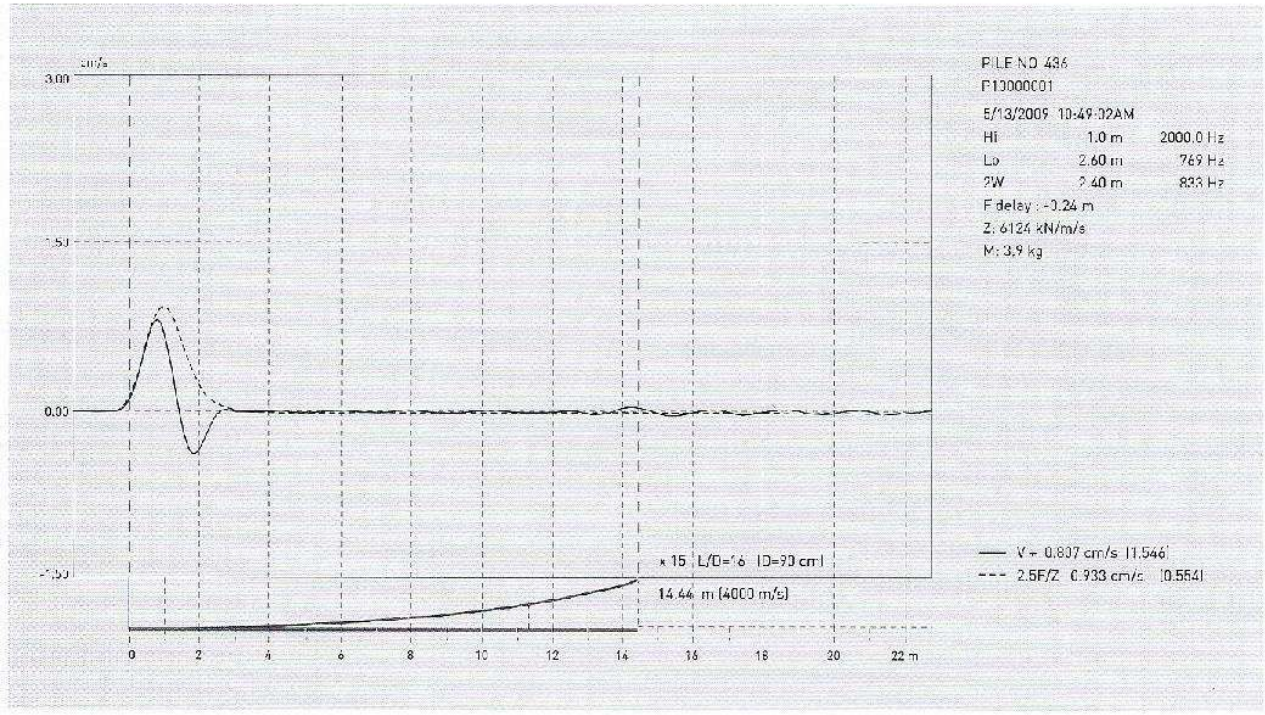
The test is conducted by striking the pile top axially with an instrumented [force response] hammer to induce a longitudinal wave that travels down the shaft. When the wave reaches the base of the pile or encounters an acoustic anomaly, it is reflected back up to the top. A transducer affixed on the hammer and a geophone sensor on the pile top respectively measure the force of the blow and the velocity of the response signal. These signals are digitized and stored on the test unit.

The collected data is conditioned, analyzed and processed via computer software to generate the graphs shown one the next page. Trained personnel examine and interpret these graphs to deduce the following information about the tested pile:

- Pile length, or depth to anomalies
- Pile head stiffness
- Pile shaft mobility - which is dependent on pile section and concrete properties
- Pile toe level
- Shaft restraints
- Over break
- Cracks
- Reductions in section
- Zones of poor quality concrete



TDR TEST SETUP



TDR MOBILITY-FREQUENCY GRAPH

QUALITY SYSTEM

PILE TESTING

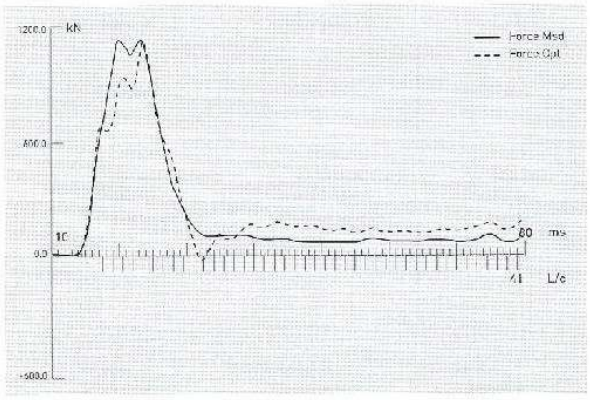
HIGH STRAIN DYNAMIC TEST

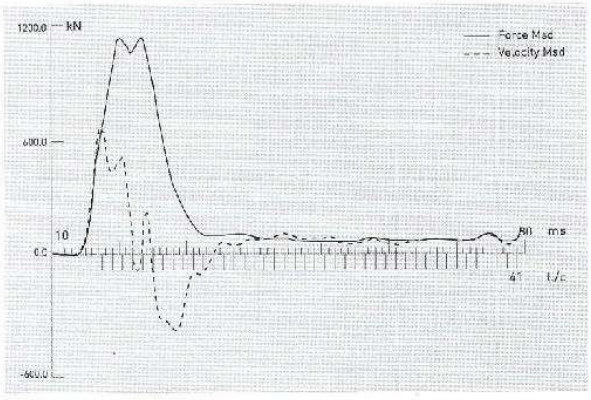
The basic purpose of this test is to evaluate pile static capacity, its structural integrity as well as hammer performance, pile stresses and soil characteristics, such as soil damping coefficients. On-site evaluation of the test results by a trained and experienced professional would determine if the pile is to be accepted or rejected.

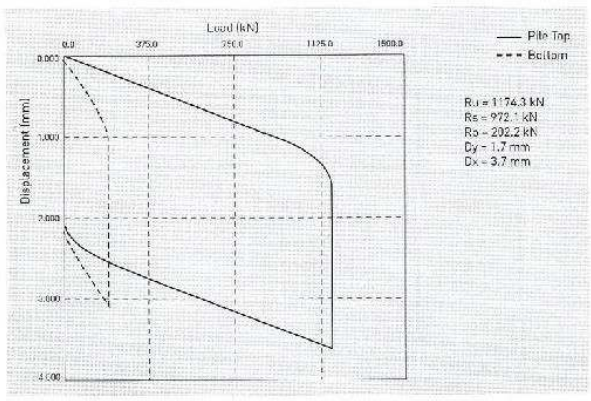
The test is conducted by impacting the pile top with a drop hammer from a predetermined height. The impact produces a compressive wave that travels down the shaft of the foundation. Strain transducers and accelerometers are attached to diagonally opposite sides of the pile cap which respectively measure the strain and acceleration induced into the pile. Strain measurements are converted to force and acceleration records to velocities by a Pile Driving Analyzer®. Force and velocity measurements facilitate estimating soil resistance and its distribution.

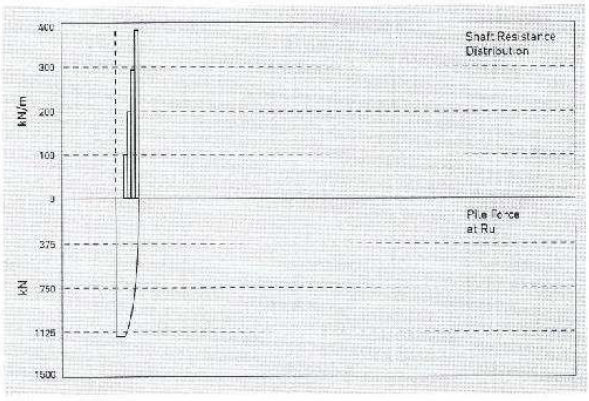
The collected test data is analyzed and processed by computer software such as CAPWAP® [Case Pile Wave Analysis Program] to estimate total bearing capacity of a pile or shaft, as well as resistance distribution along the shaft and at the toe, producing the graphs shown opposite.

HIGH STRAIN DYNAMIC TEST OUTPUT









QUALITY SYSTEM

PILE TESTING

CALIPER LOGGING

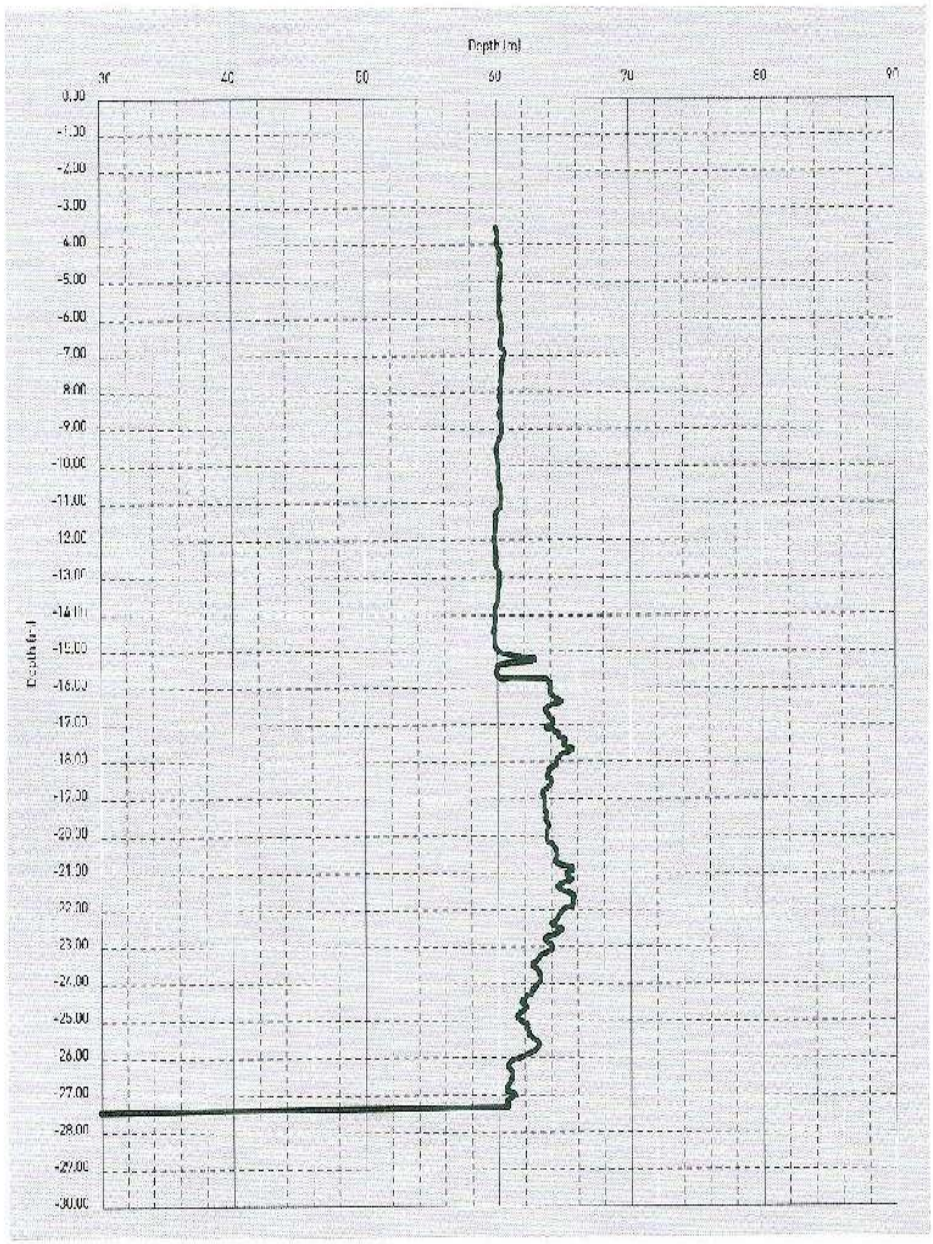
Caliper logging of boreholes is commonly conducted to measure variations in borehole diameter over the length of the excavation. Information of borehole diameter, shape and roughness can be used to calculate borehole volume.

The Caliper Tool used for this test consists of 3 or 4 independent spring-loaded caliper arms that continually adjust to the size of the borehole as they are pulled to the surface. These arms are opened and closed using a small motor incorporated in the tool.

The tool is lowered into, and lifted from the shaft at a controlled rate using a winch unit. The unit includes a depth encoder, which indicates the depth of the probe and a cable tension reading, which can be used to determine when the probe has reached the bottom of the borehole. The depth and diameter are read by a surface data logger unit interfaced with a PC which promptly displays the data to be adjusted and recorded. Computer software performs the analysis and processes the data resulting in a graph of diameter as a function of depth as shown opposite.

Such graphs provide indications on the presence of cave-ins, collapse or shale swelling and other geological characteristics in the borehole.

CALIPER LOGGING
OUTPUT GRAPH



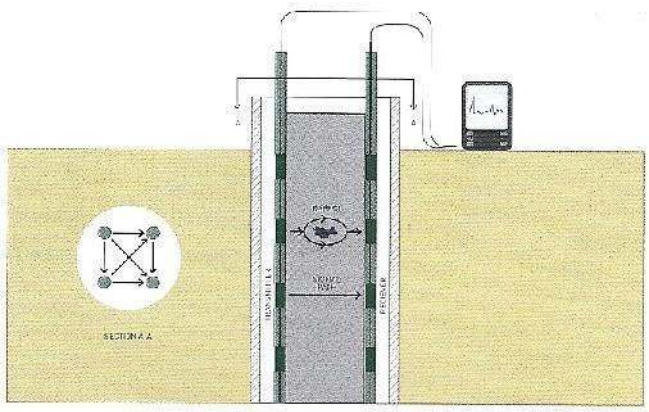
QUALITY SYSTEM

PILE TESTING

CROSS-HOLE SONIC LOGGING

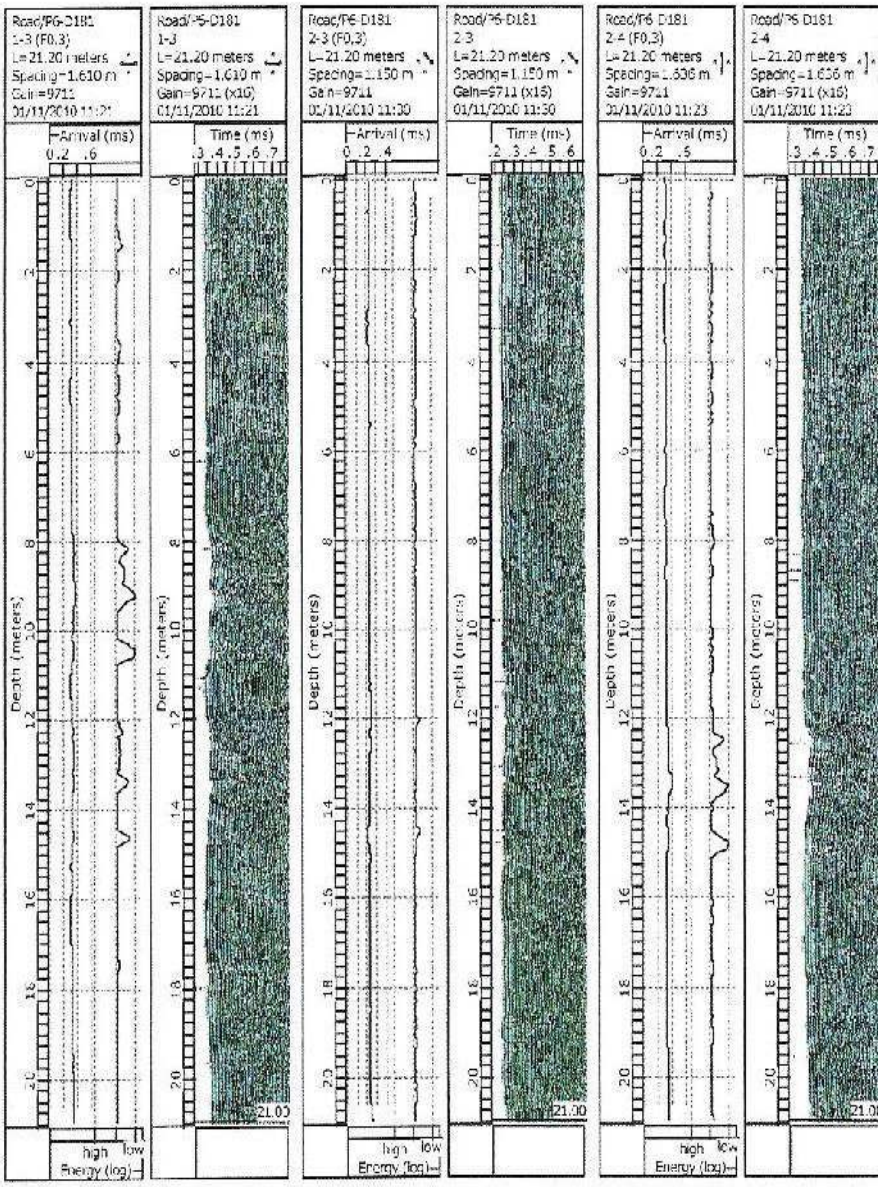
Cross-Hole Sonic Logging (CSL] allows for the detection of concrete defects such as poor quality concrete, soil inclusions, voids, honeycombing and slurry inclusions. This method is applicable to piles of any dimensions and can be used on diaphragm wall or any similar concrete structures. It gives indications of the concrete quality down the entire pile shaft; it does not however provide information about the concrete outside the reinforcement cage and does not clearly identify the type of detected defect.

CSL is achieved by the use of sonic transmitter and receiver probes which are lowered down the pile shaft through pre-installed access tubes. An ultrasonic pulse generator sends pulses to the transmitter probe where they are converted into ultrasonic waves that are received by the receiver probe. The propagation time of the ultrasonic signals between the tubes is measured and stored while the meter-wheel provides the corresponding depth. Variations in signal arrival time and strength indicate areas that may require further investigation.



CSL TEST SETUP

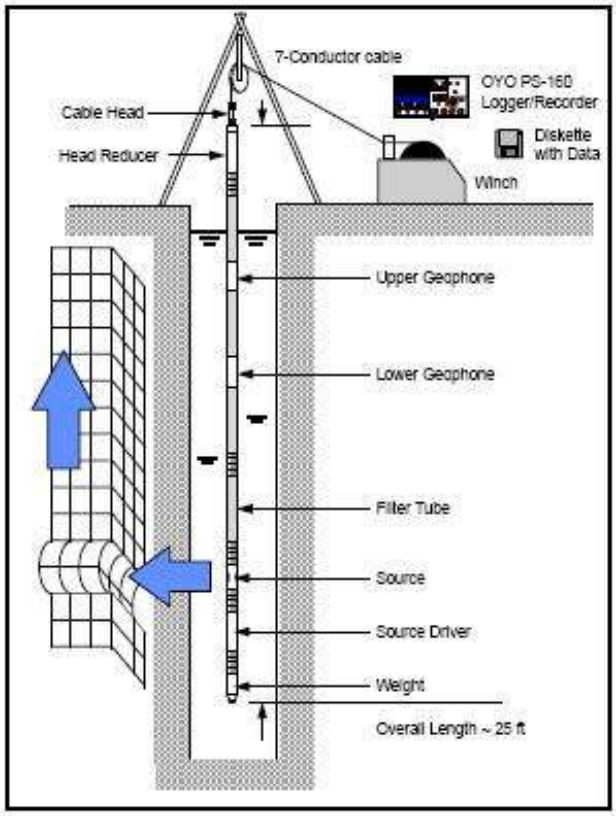
CSL OUTPUT


Road/P6-D181
1-3 (F0,3)
L=21.20 meters
Spacing=1.610 m
Gain=9711
01/11/2010 11:21
Arrival (ms)
Time (ms)
Depth (meters)
high
low
Energy (log)
21.00

"The Sonic Pile Testing is covered in ASTM Sonic standard D5882

In the Sonic test, the top of the pile is tapped with a lightweight plastic hammer and the reflected waves are recorded by a suitable computerized equipment. From the resulting signal, or reflect gram, one can determine both length and continuity of the pile.

In its most basic form, the sonic test measures the time between the hammer trigger, and the reflected wave, to indicate the pile's length. this is very similar to the famous Newton's cradle "executive toy".



HEALTH, SAFETY, AND ENVIRONMENT

CONSTRUCTION
PILING
COMPANY

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HEALTH, SAFETY AND ENVIRONMENT

At construction piling company we are dedicated to providing a safe and healthy environment for employees and customers, protecting the public, and preserving assets and property. Our commitment to safety permeates the company top to bottom. We truly believe that:

- NO JOB ORTASK IS MORE IMPORTANT THAN EMPLOYEE HEALTH AND SAFETY.
- IF A JOB CANNOT BE DONE SAFELY IT SHALL NOT BE DONE.
- OUR FUTURE IS ONLY BUILT THROUGH OUR PEOPLE. WE AIM TO PROTECTTHEM.

An effective HSE Program is carried out throughout our organization, which in turn assists management and non-supervisory employees in controlling hazards and risks. This minimizes if not eliminates employee and customer injuries and the damage or destruction of property.

This program is designed to encourage all employees to promote the safety of their fellow employees and of customers. To accomplish our safety and health goals, all company employees, and those of our subcontractors, are responsible and accountable for implementing company HSE policy and ensuring that it is followed.

PROJECT HSE PROCEDURE

Our ultimate goal is to maintain a 'zero' safety record: Zero incidents, accidents, near misses and mishaps of any types. Along with careful job planning. Increasing safety awareness, continuous system improvement and a fully supportive management we aim to achieve the zero record by:

- Complying with all applicable local, international HSE regulations and those established by the client
- Using qualified safety personnel
- Making regular job site inspections
- Enforcing the use of safety equipment
- Following HSE procedures and rules
- Providing on-going safety training
- Enforcing HSE rules and using appropriate discipline

All piling works have inherent Health, Safety and Environmental [HSE] hazards. The size of the equipment used and the nature of the work itself impose very high risk activities that could result in severe consequences. Hence it is imperative that all efforts be focused on workplace safety, proper HSE plan be implemented and appropriate safe work procedures followed.

The company's approach will mainly be based on the identification and control of risks and the elimination of potential hazards in a planned and controlled manner. The on-site implementation of HSE policies and procedures will be monitored and reviewed on a regular planned basis to ensure the company's aims and objectives are being carried out. The following general procedure is implemented on projects:

- Perform a comprehensive HSE Hazard Identification I Risk Assessment and establish relative control measures. Include all findings in tabular format in the relevant Method Statement. Re-evaluate these risks during each stage of the project and re-in state control measures.
- Prepare a project specific Method Statement which covers in detail how to properly and safely perform each task and activity.
- Prepare a project specific Health, Safety and Environment Plan.
- Brief all construction personnel on the project HSE Plan and Method Statement [s] and raise their awareness of the presence of high risk hazards. Encourage all to report any unsafe practices, unnoticed or unidentified hazards or any prospective vulnerability.
- Encourage teamwork and experienced employees to mentor new hires.
- Encourage and strengthen a safety oriented culture.
- Conduct appropriate induction training for all involved personnel and appoint safety and security officers to the project site.
- Emphasize the importance of using appropriate Personal Protective Equipment [PPE].
- Ensure that site safety precautions are taken and hazard control measures implemented prior to commencement of activities in accordance with company procedures.

EQUIPMENT

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At Construction Piling Company, we believe that in our demanding Line of business, one simply cannot do the job without the proper tools, equipment and machinery. What's more, our aspiration has never been just to do the job; but to do it in a safe, cost-effective, timely manner that always meets or exceeds our client's expectations. Hence, we spare no effort or resources to accumulate one of the most impressive fleets of modern machinery and support equipment in the region. These machines are operated and maintained by a well-trained group of operators and maintenance teams that get the most out of them whilst keeping them very reliable in the field.

Today, we are proud to own this full range of machinery and support equipment, which gives us great advantage over our competitors and facilitates our sound performance. With ample quantities in addition to excellent quality, we have always been able to utilize standby or backup equipment when and if needed to meet schedules.

Clearly realizing how vital this machinery is for our continued success, we never hesitate to acquire new equipment and are constantly on the Lookout for emerging technologies. This is a vital part of our vision for the future.

One of the best reasons for our continued progress and success is our inventory:

- Crawler cranes 50 Ton capacity
- Mobile cranes 25-50 Ton capacity
- Bobcat all-wheel, skid-steer and track loaders
- Trailers, tankers, forklifts and pickup trucks
- Dewatering pumps, generators and air compressors
- SR40 Rig, shoring and anchoring machines
- Excavators and shovels
- Vibratory hammers
- All necessary test equipment, tools and accessories

We use only top-of-line products from manufacturers such as Soilmec, Sany, Hitachi, Samsung, CAT, Sumitomo and Kobelco.

SELECTED CLIENTS

Selected Clients

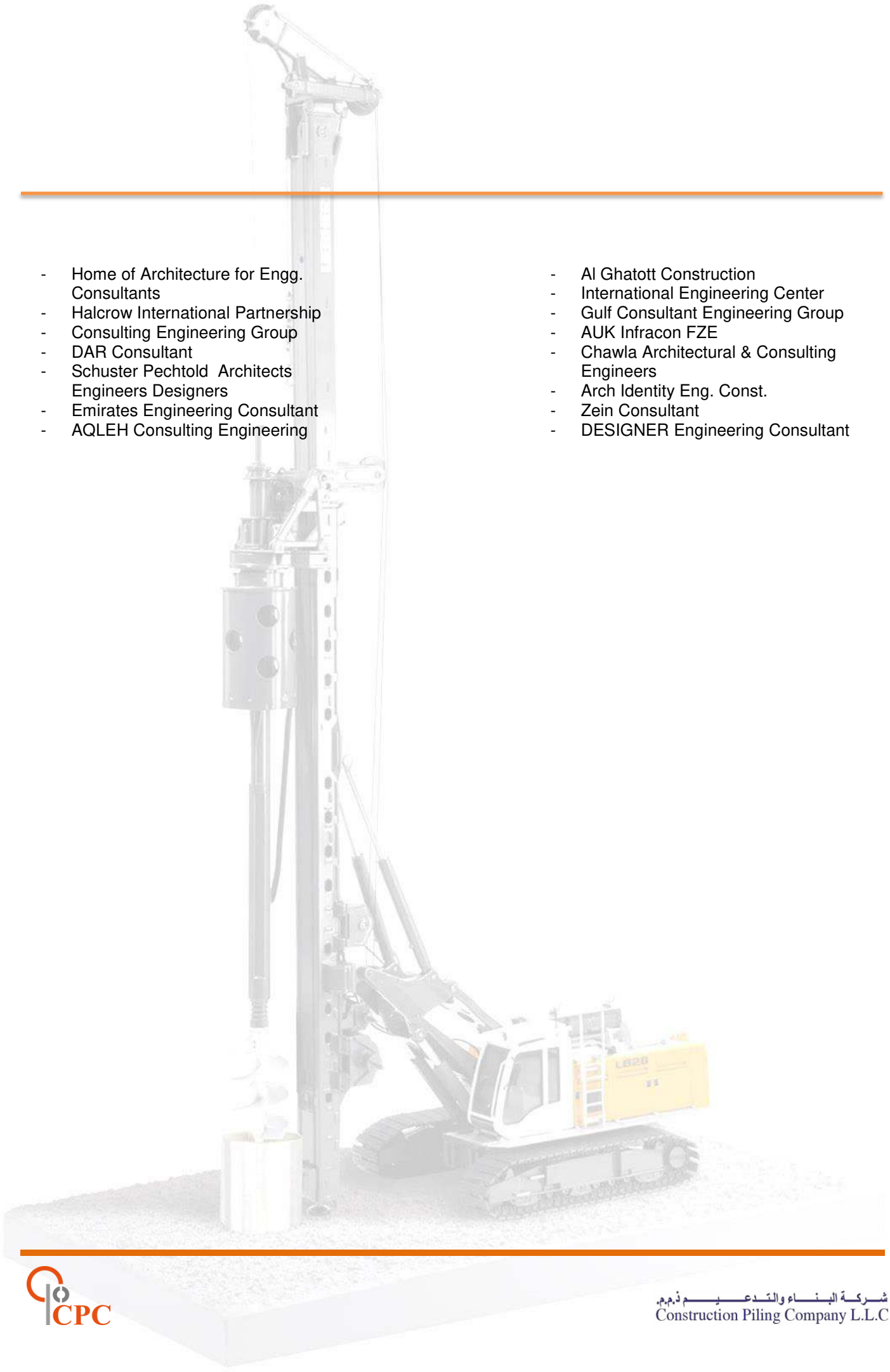
Our outstanding performance and customer focused approach through the years has gained us a much-valued list of clients. As we continue with our excellent quality of service this list keeps growing.

We interact with our clients as strategic partners and leverage our expertise and experience to provide them with innovative, cost-effective, responsive solutions that help them accomplish their project goals.

We sincerely value each and every one of our clients, but unfortunately they cannot all be listed here.

- Emirates Islamic Bank
- RAK Properties
- Halcrow
- Dubai Engineering Consult. & Al Qadir Engineering Consult.
- Sun Engineering & Contracting
- Shankland Cox.
- RAK Investment Authority (RAKIA)
- M/s Commercial Bank of/ Dubai
- China Harbor
- Abdulla Al Khial Contracting Company
- Shk. Mohamed Bin Kayed Alqassemi
- Khalifah Dahaen Abdullah
- FAAB
- Mr. Mohammad Ruqait Al Ali
- Welfare Association
- ADMA/OPCO
- RAK Governments, Public Work and Services Department
- Association of Retired Military
- SKH Sultan Bin Saqr Alqasimi
- Ministry of Public Works
- AWQAF – RAK
- First Gulf Bank
- Air Liquide Middle East Manufacturing RAK Maritime Fez. CO.
- Fujairah Cement Industries, Dibba / UAE
- Al Hamra Real Estate
- Al Marjan Island
- DIC Development
- H.H. Sheikha Fatma El Qassimy
- Sheikha Mohammed Al Zaabi
- City Engineering & Contracting LLC
- Becon Constructions
- Al Hamad Contracting Company
- Trans emirates Contracting LLC
- Azuri Constructions
- Al Ali Construction & Development
- Emirates General Contracting
- Dredging International Co.
- Al Hikma Building Contracting
- Structcon General Contracting
- Two Construct Contracting Company
- Qibaa General Contracting
- Orion Contracting LLC
- Al Safa Building Contracting
- Arabian International Company
- Al Sayegh Contracting LLC
- Dubuild Contracting LLC
- Al Benaya Foundation
- Al Nuaimi Group LLC Foundation Division
- Concord Building Construction
- Mazaya Consultant Office
- Adnan Saffarini Engineering Consultants
- ARENCO Engineering Consultant

- Home of Architecture for Engg. Consultants
- Halcrow International Partnership
- Consulting Engineering Group
- DAR Consultant
- Schuster Pechtold Architects Engineers Designers
- Emirates Engineering Consultant
- AQLEH Consulting Engineering
- Al Ghatott Construction
- International Engineering Center
- Gulf Consultant Engineering Group
- AUK Infracon FZE
- Chawla Architectural & Consulting Engineers
- Arch Identity Eng. Const.
- Zein Consultant
- DESIGNER Engineering Consultant



QUALITY, HEALTH, SAFETY AND ENVIRONMENT POLICY

CPC
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QUALITY, HEALTH, SAFETY AND ENVIRONMENT POLICY

At Construction Piling Company we take pride in declaring our commitment to satisfying our customers by providing high quality piling and foundation services as well as providing and maintaining the best working environment for our working staff. In order to achieve this, Construction Piling Company commits to:

- Achieve service quality excellence combined with customer satisfaction,
- Develop sound information and planning systems to eliminate problems before they arise as well as to look for continuous improvement in both processes and products,
- Enhance the skills of our people through training, personnel motivation, fostering a professional work ethic,
- Provide a healthy and safe working environment which will protect the safety, health and well-being or our staff and the public,
- Comply with the applicable environment and occupational health and safety, legal and other requirements to which we subscribe,
- System and OHSAS 18001: 2007 Occupational Health & Safety Management System and continually improve their effectiveness,
- Protect our environment by effectively utilizing our resources and reducing/preventing the pollution that may be associated with our activities,
- Establish, implement and continually measure the achievement of our approved quality, environmental and safety objectives and targets as well as our stated policy,
- Communicate this policy to all concerned parties.

SELECTED PROJECTS

SELECTED PROJECTS

JULFAR TOWERS – RAK
(B + G + 43 Typical Floors)

AL BOOM TOWER
(G + M + 9 + 32 Typical Floors + H.C.)

Tower- PRELIMINARY_SHRJ.
(G + M + 7 + 28 Typical Floors)

YASMIN TOWER – RAK

(G+5P+20F+Service+Swimming Pool)

Tower of Commercial – RAK.

(G+3P+20 T)

EMIRATES ISLAMIC BANK

(G + 7P + HC + 37 Typical Floors)

EXPANSION & REDEVELOPMENT-MANAR MALL

MINA EL ARAB Island – RAK

RADISSON BLU HOTEL - (G + M + 13 Floors)

Double Tree Hotel by Hilton Marjan Island

Scan Al Hamra Medical &Amenity Center

Air Liquide Manufacturing RAK Maritime

Commercial Bank of Dubai - Sharjah

Tewin Tower 2B+G+M+20 - RAK

Project : G+15 Residential & Commercial Bldg.
Main Contractor : Delta Building Contracting
Location : Plot No. 17 Block B at Al Sheria-1 Fujairah, UAE
Client : Sheikh Salem Bin Sultan Bin Saqr Al Qasmi
Consultant : Al Kalbawi Eng. Consultants
Architect : Arkiplan Consulting Architects & Engineers

Project : (G+Parking+15 Typical Floors) Commercial/Residential Bldg.
Main Contractor : Al Basem Building Contracting
Location : Plot No. 17 Block-A Al Owaid Fujairah, UAE
Client : Mr. Faisal Hareb Essa Abdul Kareem Al Zabahi
Consultant : Al Sherouq Engineering Consultant

Project Name : G+2P+13 Floors Commercial/Residential Bldg.
Contractor : Al Basem Building Contracting
Project Location : Plot No. 15 Block B Al Faseel Fujairah, UAE
Client : Mr. Hareb Bin Essa Abdul Karim Al Zabahi
Consultant : International Design Consultant

Project Name : Proposed (G+3P+15 Typical Floors) Building
Contractor : Remal Alsahra Building Contracting
Location : Plot No. 376 (105 Mulk) – Al-Nad / Al-Qassimiyah Sharjah, UAE
Client : Mr. Sultan Mohammed Khalifa Hamad Al-Yahyani
Consultant : Al Bait Engineering Consultants

STRUCTCON CONSTRUCTION
COVE ROTANA ST., RAK.
Client : Ministry of Public Works

Project : Improvement and Upgrading of Intersection of Etihad Road (E11) Umm Al Quwain Road (E55) Phase-2 (Main Interchange)
Main Contractor : Combined Group Contracting Emirates LLC
Client : Ministry of Public Works
Consultant : Idroesse Infrastructure

Project : Construction and Execution of Emirates Road Construction for the Areas Suhaila & Shamel
Main Contractor : Top Link Contracting & General Transport LLC
Client : Ministry of Public Works
Consultant : Core Engineering Consultancy

Project Name : Anantara Eco Resort
Main Contractor : Al Nuaimi Group LLC
Location : Mina Al Arab Ras Al Khaimah, UAE
Client : RAK Properties
Consultant : BAYATY Architects

CPC

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