



Company Profile

www.seth.pt



August 1, 2025



Corporate Headquarters



SETH - Sociedade de Empreitadas e Trabalhos Hidráulicos, SA
Avenida Tomás Ribeiro, No. 145
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Portugal



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Maintenance Facilities and Main Warehouse



Rua da Ponte, No. 2
2950-422 PALMELA
Portugal

Main Warehouse
Sandblasting and Paint Shop
Carpentry Shop
Mechanic and Welding Shop
General Archives



Portuguese License Construction No. 5

SETH in brief

Founded 1933

Seth – Sociedade de Empreitadas e Trabalhos Hidráulicos, S.A., was founded in 1933 by Danish company Højgaard & Schultz a/s (current MT Højgaard Holding), which decided to establish itself in Portugal after the construction of the Port of Setúbal.

Over its 92 years of history, Seth has successfully completed numerous building and infrastructure construction projects in Portugal and several African countries.

Seth has developed a wide range of projects and continues to operate in Portugal (including the Azores and Madeira), Angola, Algeria, Bermuda, Cape Verde, Gibraltar, Guinea, Guinea-Bissau, Iceland and Mozambique.





Jack-up platform "Valeira"
Marine pile driving



Core-Loc® - 32 Ton
Praia da Vitória Military Harbor



Electricity III, Inhambane
Mozambique



Marine works
Water intake, Valorsul



Coferdam (sheet piling)
HDD Works for Sines-Setúbal Pipeline

SETH's Specialties

Marine Works

- Ports
- Marinas
- Shore Protection Structures

Transmission and Distribution Lines

Civil Works

- Building and Industrial Construction
- Concrete and Special Formwork
- Design-Build
- WWTP, WTP
- Marine Outfall
- Gas, Oil and Fuel Pipelines
- Irrigation / River Engineering

Pile Foundation

- Pile
- Sheet Pile



CERTIFICATE



Management system as per
EN ISO 9001:2015, EN ISO 14001:2015

In accordance with TÜV AUSTRIA procedures, it is hereby certified that



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Hidráulicos, S.A
Main Office
Avenida Tomás Ribeiro, N° 145
2790-467 Queijas
Portugal

Palmela Central yard
Rua da Ponte 2
Orvidais
2950-422 Setúbal
Portugal

applies a management system in line with the above standard for the
following scope

Coordination and execution of public civil construction works, namely for building
works, coastal protection, ports, hydraulics, gas pipelines, concrete and metal
structures and pile driving.

Certificate Registration No. 20100243019445
20104243019446

Valid until: 2027-08-31

Initial certification: 2018-05-17

Certification Body
at TÜV AUSTRIA GMBH

Vienna, 2024-07-02

This certification was conducted in accordance with TÜV AUSTRIA auditing and certification
procedures and is subject to regular surveillance audits.

TÜV AUSTRIA GMBH Deutschstraße 10 A-1230 Wien www.tuv.at



Online Verification



www.tuv.at/qrcheck

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CERTIFICATE



Management system as per ISO 45001:2018

In accordance with TÜV AUSTRIA procedures, it is hereby certified that



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Coordination and execution of public civil construction works, namely for building
works, coastal protection, ports, hydraulics, gas pipelines, concrete and metal
structures and pile driving.

Certificate Registration No. 20116243019447

Valid until: 2027-09-10
Initial certification: 2021-02-08

Certification Body
at TÜV AUSTRIA GMBH

Vienna, 2024-07-02

This certification was conducted in accordance with TÜV AUSTRIA auditing and certification
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TÜV AUSTRIA GMBH Deutschstraße 10 A-1230 Wien www.tuv.at



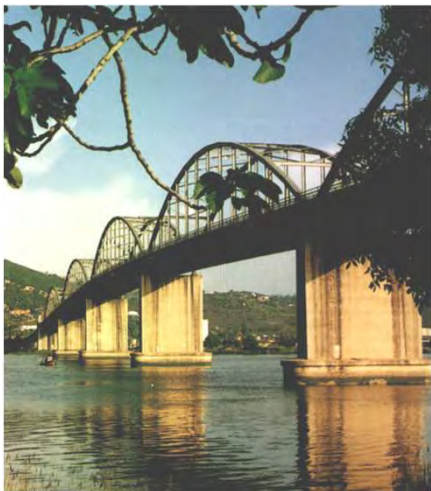
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32 T Core-Loc®
Praia da Vitória Harbour Breakwater
Largest in the world



Sines-Setúbal Gas Pipeline
HDD Works at Sado River Crossing
Pull-Back Operations



Marechal Carmona Bridge
Vila Franca de Xira, Portugal
Built by SETH in 1951

**Reabilitação da Muralha, Remoção, Fornecimento e Cravação de Estacas
Estação Fluvial da Trafaria – Freguesia de Trafaria, Concelho de Almada****Wall Rehabilitation, Removal, Supply and Driving of Piles
Trafaria River Station – Parish of Trafaria, Municipality of Almada (Portugal)****Descrição dos trabalhos**

A Seth concluiu a requalificação da Estação Fluvial da Trafaria, designadamente, a empreitada de concepção/construção para a reabilitação da muralha, remoção, fornecimento e cravação de estacas na referida estação fluvial.

Esta obra foi adjudicada pela TTSL – Transtejo Soflusa, na qual a intervenção da SETH teve duas frentes distintas, a saber:

- INSTALAÇÃO DE 4 NOVAS ESTACAS (diâmetro 1220 mm) PARA GUIAMENTO DO PONTÃO RIO COINA (remoção de sete estacas existentes danificadas, e instalação de 4 novas estacas diâmetro, 1220mm x 22mm, com 22 ml de comprimento);

- EXECUÇÃO DA REABILITAÇÃO DA ESTRUTURA DA MURALHA, com execução de prisma de enrocamento aderente à atual muralha, constituído por um núcleo de TOT protegido por um manto de enrocamento num total de 9900 Ton.

A atual infraestrutura constitui uma efetiva melhoria das condições do serviço público na ligação fluvial Trafaria – Porto Brandão – Belém, a qual permitiu retomar o seu percurso original e o serviço de transporte de veículos.

Description

Seth completed the requalification of the Trafaria River Station, namely, the design-build contract for the rehabilitation of the wall, removal, supply and driving of piles at the aforementioned river station.

This work was awarded by TTSL – Transtejo Soflusa, in which SETH's intervention had two distinct fronts, namely:

- INSTALLATION OF 4 NEW PILES (diameter 1220 mm) FOR GUIDING THE RIVER COINA PONTOON (removal of seven damaged existing piles, and installation of 4 new piles diameter, 1220mm x 22mm, 22 ml long);

- EXECUTION OF THE REHABILITATION OF THE WALL STRUCTURE, with the execution of a rockfill prism adherent to the current wall, consisting of a TOT core protected by a layer of rockfill in a total of 9900 Ton.

The current infrastructure constitutes an effective improvement in public service conditions on the Trafaria – Porto Brandão – Belém river connection, which resumed its original route and vehicle transport service.

**Resumo da Obra****Work Summary**

Cliente	TTSL – Transtejo Soflusa, SA	Client
Tipo de contrato	Lump Sum	Contract type
Data de construção	2024	Construction period
Custo	EUR 1.298.372,06	Cost

Reconversão do Cais 4, Terminal Gases Liquefeitos Criogénicos

Terminal Multipurpose de Sines – Sines, Setúbal

Reconversion of Pier 4, Cryogenic Liquefied Gas Terminal

Sines Multipurpose Terminal – Sines, Setúbal (Portugal)

Descrição dos trabalhos

A APS – Administração dos Portos de Sines e do Algarve, S.A., adjudicou à Seth a empreitada de Reconversão do Cais 4 do Terminal Multipurpose de Sines (Cais 4 TMS), de modo a estarem criadas as condições necessárias para vir a operar gases liquefeitos criogénicos.

As principais intervenções a realizar incluem a:

- Relocalização do posto de acostagem em 150 m para SW;
- Construção 3 novos duques d'alba de acostagem e de amarração de navios;
- Construção de 4 maciços em terra, de amarração dos cabos dos navios;
- Construção de plataforma de 40x20 metros (Duque d'Alba) para instalação de braços de carga e/ou mangueiras dos navios tanque e para instalação de mangueiras para movimentação dos produtos criogénicos, incluindo uma ponte de apoio da esteira de tubagens de ligação a esta plataforma.

Com esta empreitada, a área de intervenção do cais passará de 1,83ha para 2,09 e, a cota de fundo permanecerá a mesma (-15 ZH).

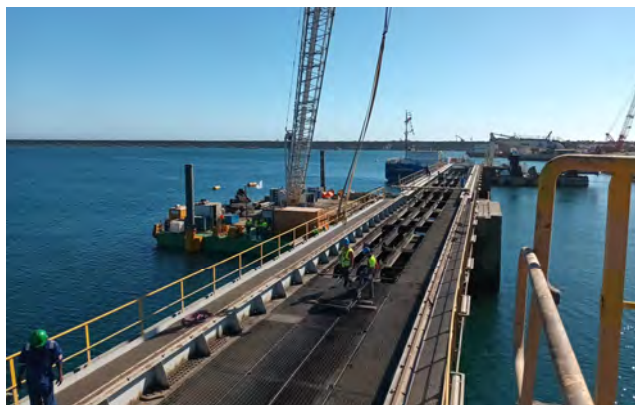
Description

APS – Administração dos Portos de Sines e do Algarve, S.A., awarded to Seth the contract for the conversion of Pier 4 of the Sines Multipurpose Terminal (Pier 4 TMS), in order to create the necessary conditions to operate cryogenic liquefied gases.

The main interventions to be carried out include:

- Relocation of the docking station by 150 m to the SW;
- Construction of 3 new Dolphins Mooring for docking and mooring ships;
- Construction of 4 Berthing Dolphins on land, for mooring ship cables;
- Construction of a 40x20 meter platform (Dolphins Mooring) for the installation of loading arms and/or hoses for tankers and for the installation of hoses for the movement of cryogenic products, including a bridge to support the pipeline mat connecting to this platform.

With this project, the pier's intervention area will increase from 1.83ha to 2.09ha and the bottom level will remain the same (-15 ZH).



Resumo da Obra

Work Summary

Cliente	APS, SA (Administração do Porto de Sines e do Algarve)	Client
Tipo de contrato	Lump Sum	Contract type
Data de construção	2023-2024	Construction period
Custo	EUR 11.831.295,34	Cost



Dragagens Malongo (Chevron)
Malongo (Cabinda), Angola
Works of dredging in the basin of CREVRON Port
Malongo (Cabinda), Angola
Descrição dos trabalhos

A empreitada, executada em Consórcio, consistiu na dragagem de 170.000,00 m³ na área de acostagem das docas 1 e 2 do Porto da Chevron em Malongo, Cabinda.

A cota de dragagem definida foi de -6.5m (LAT).

A dragagem foi executada com recurso a uma Cutter Suction Dredger (CSD 450), que descarregava o material numa bacia de retenção temporária, cuja função era a de decantar a mistura dragada garantindo a retenção da areia, para ser transportada e descarregada em local próprio.

De modo a garantir a celeridade das tarefas de remoção do material, uma das frentes de trabalho foi dedicada à extração de areia com recurso a maquinaria de movimentação de terras. Numa fase mais avançada, surgiu ainda uma nova frente constituída por uma DOP Pump e grua de rastros, para colmatar a área a dragar junto às paredes das docas.

Os trabalhos adjudicados englobaram também a colocação em depósito em terra de todo o material dragado, usando para o efeito uma área “a seco” de aproximadamente 8.000,00 m² localizada a 3 Km do cais.

Números mais significativos / Main work volumes:

Dragagens / Dredging: 170.000,00 m³

Meios especiais utilizados / Equipment used:

Draga de sucção “Cutter Suction Dredger (CSD 450)

Work Description

The contract, executed in Consortium, consisted of dredging 170,000.00 m³ in the berthing area of docks 1 and 2 of Porto da Chevron in Malongo, Cabinda. The defined dredging quota was -6.5m (LAT). Dredging was carried out using a Cutter Suction Dredger (CSD 450), which discharged the material into a temporary retention basin, whose function was to decant the dredged mixture, ensuring the retention of the sand, to be transported and unloaded at a specific location. In order to ensure the speed of material removal tasks, one of the work fronts was dedicated to extracting sand using earthmoving machinery. At a more advanced stage, a new front appeared, consisting of a DOP Pump and a crawler crane, to fill in the area to be dredged next to the dock walls. The works awarded also included the placement of all the dredged material on land, using a “dry” area of approximately 8,000.00 m² located 3 km from the pier for this purpose.



Zona das dragagens durante os trabalhos sendo visível a draga de sucção.
 Zone of dredging during the works, being visible the suction dredger CSD 450.



Frente de trabalhos com recurso a maquinaria de movimentação de terras.
 Extracting sand using earthmoving machinery.

Resumo da Obra
Work Summary

Cliente	Cabinda Gulf Oil Company Limited (CABGOC)	Client
Tipo de contrato	Preço global	Contract type
	Lump sum	
Data de construção	2022-2023	Construction period
Custo	4.604.440,28 EUR	Cost

Beneficiação e Ampliação do Cais Comercial de Ponta Delgada Ilha de S. Miguel, Açores

Extension and improvement of Commercial Quay at Ponta Delgada Island of S. Miguel, Azores, Portugal

Description of Works

Reprofilation of the Quay -10 (ZH), Repaving the Port Embankment and Improvement of the Technical Networks integrated therein and Dredging of the harbour basin of Ponta Delgada, Island of São Miguel, Azores.

Scope of Works

• Maritime Works:

- Advancement of the pier to the north, parallel to the existing, caisson structural solution;
- Dredging for setting up the pier and obtaining service levels , -10.00 and -12.00ZH;
- General dredging of the maneuvering area of the port basin;
- Execution of Ro-Ro ramp.

• Infrastructures:

- Elevation of the pier front from the current elevation between +2.80 and +3.00ZH to +3.50ZH elevation;
- Total repaving and painting of the road access road and stowage park;
- Full replacement of the potable water supply network for ships and repair of water tanks;
- Total replacement of the fire network powered by a portable high-flow pump;
- Complete replacement of all electrical networks, including supply of a new Transformer Station and supply and installation of new lighting columns for the quay and embankment;
- Full replacement of all communication networks;
- Execution of new gutters adapted to the new quay and embankment dimensions with renovation of all existing networks.

• Buildings:

- Construction of the New Port Operations and Exploration Building;
- Construction of the New Weighing Control including the supply of 2 weighbridges;
- Construction of the New Entrance;
- Construction of the New PT Building.



Main quantities:

- 17 caissons with 2500 tons / unit w/ dimension 28 m x 11.5 m x 14m
- Dredging:
 - Incoherent material – 100,000.00m³;
 - Coherent material – 41,000.00m³;
- Supply and application of concrete – 25000.00m³;
- Supply and application of 3200 tons of steel reinforcement;
- Application of 120,000.00m² of formwork;
- Supply and application of 65,200.00m³ of rockfill;
- Construction of 2,250.00m² of buildings.

Resumo da Obra

Work Summary

Dono-da-Obra
Tipo de contrato
Data de construção
Custo

Portos dos Açores, SA
Lump Sum
2020-2023
EUR 42.650.000,00 (Final Cost including price escalation)

Client
Contract type
Construction period
Cost

Reabilitação e Reforço da Ponte-Cais da Tanquisado Mitrena - Setúbal

Rehabilitation and Improvement of Quay at Tanquisado Mitrena – Setúbal (Portugal)

Descrição dos trabalhos

A Seth assumiu a execução da empreitada de Reabilitação e Reforço da Ponte-Cais do Terminal Marítimo da Tanquisado /Eco-Oil, implantada no leito do Rio Sado, na Mitrena, em Setúbal, pelo valor de 4.551.432,55€ (estabilização da ponte-cais 610.342,04€, e reabilitação da ponte-cais 3.941.090,51€), sendo o prazo de execução de 300 dias.

Este terminal está concessionado à Tanquisado - Terminais Marítimos, SA e à Eco Oil - Tratamento de Águas Contaminadas, SA, e destina-se à movimentação de granéis líquidos (combustíveis), dispondo de uma estação de limpeza e degasificação de navios. Está dotado de:

- Uma ponte cais e duques d'Alba;
- Um posto de acostagem a poente (Tanquisado) para navios tanque que transportem combustíveis, permite a atracação de navios até 200 metros de comprimento e calado até 9,5 metros.
- Um posto de acostagem a nascente (Eco-Oil) para navios que se destinam à estação de limpeza e degasificação de navios, permite a atracação de navios VLCC com calado até 7,5 metros.

Description

Seth took on the execution of the contract for the Rehabilitation and Reinforcement of the jetty at the Tanquisado/Eco-Oil Maritime Terminal, located in the Sado River bed, at Mitrena, Setúbal, for the amount of €4,551,432.55 (i.e. the stabilization of the Quay-bridge - €610,342.04, and the rehabilitation of the Quay-bridge - €3,941,090.51), with a deadline of 300 days.

This terminal is under concession to Tanquisado - Terminais Marítimos, SA and Eco Oil - Tratamento de Águas Contaminadas, SA, and is intended for handling bulk liquids (fuels), and has a ship cleaning and degassing station. It is equipped with:

- A quay and berthing dolphins;
- A west berth (Tanquisado) for tankers carrying fuel, allowing the berthing of ships up to 200 meters long and with a draught of up to 9.5 meters.
- An east berth (Eco-Oil) for ships destined for the ship cleaning and degassing station, allows the berthing of VLCC ships with drafts up to 7.5 meters.



Resumo da Obra

Work Summary

Cliente
Tipo de contrato
Data de construção
Custo

Tanquisado – Terminais Marítimos, SA
Lump Sum
2021-2023
EUR 4.551.432,55

Client
Contract type
Construction period
Cost

Ampliação e modernização do Porto Inglês, na Ilha do Maio

Ilha do Maio, Cabo Verde

Extension and improvement of English Quay

Island of Maio, Cape Verde

Description of Works

Seth, in consortium with two companies, one Portuguese and the other Cape Verdean, was responsible for carrying out the modernization and expansion works of Porto Inglês, in Maio Island, for a total value of € 17.8 million.

The contract under the responsibility of the Ministry of Infrastructure, Territorial Planning and Housing of the Republic of Cape Verde, was financed by the African Development Bank in 82.13% and by the Republic of Cape Verde in 17.87 %.

The works lasted 35 months (12 months suspended pandemic period) and included the execution of the following works:

1 – Rehabilitation and repair of the existing quay which is 340m long and 14m wide:

- a) General repair of the structure (existing pile caps, transversal and longitudinal beams and slabs);
- b) Replacement of mooring fittings (fenders and mooring bollards);

2 – Construction of a “Roll-on/Roll-off” quay 120m long and 40m wide, founded on 112 reinforced concrete piles Ø970 mm and equipped with two ramps;

3 – Construction of a detached breakwater 145m long, with depths located between -7.00 and -12.00 ZH. The breakwater heads were reinforced with 656 concrete blocks of “Accropode TM II” type, with an average weight of 16 tons;

4 – Rehabilitation and extension of the port embankment, doubling its initial area of 7000 m²;

5 – Reconstruction and reinforcement of the Logistic Platform’s embankment protection, consisting of a rockfill prism 260m long;

6 – Upgrading of the 900m access road leading to the port.



Resumo da Obra

Work Summary

Dono-da-Obra

**Ministério das Infra-Estruturas,
do Ordenamento do Território e da Habitação
da República de Cabo Verde**

Client

Tipo de contrato

Lump Sum

Contract type

Data de construção

2019-2022

Construction period

Custo

EUR 20.805.758,63 (Final Cost including price escalation)

Cost

Construção de um Cais Acostável de Navios no Porto de Aveiro

Porto de Aveiro, Aveiro

Jetty Berth at Aveiro Port
Aveiro Port, Portugal

Works Description

The Administration of the Port of Aveiro (APA) awarded to Seth the contract for the construction of a new berth for ships for around seven million euros in Gafanha da Nazaré, Ílhavo (Portugal).

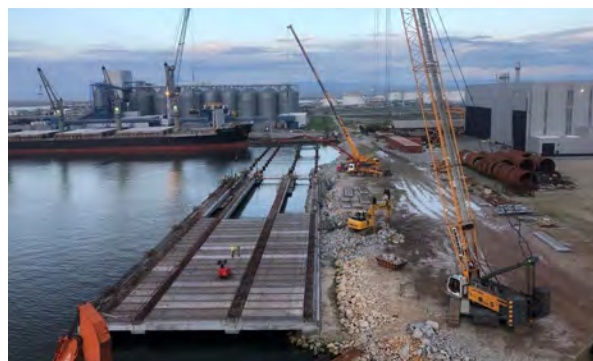
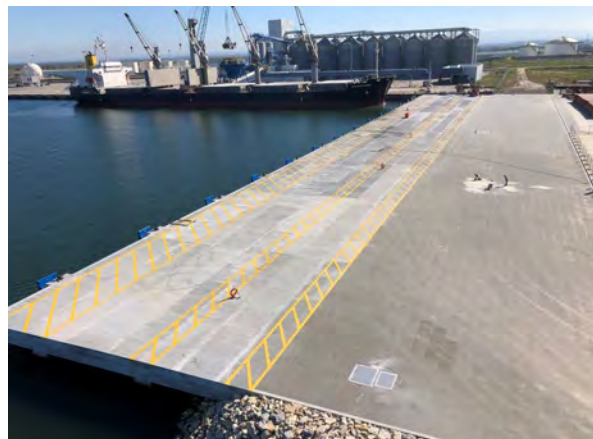
This berth was designed to support the productivity of companies that install production units in the Port of Aveiro, and was assumed to be strategic to allow the appropriate transport operation for the dimensions and weight of the elements in question, reducing logistical costs that would be associated with the transfer between the manufacturing site and the shipping point.

The works of this contract, with a duration of 340 days, consisted of the execution of a berth within the Port of Aveiro, to be used by a company producing large-scale structures for the construction of offshore wind towers.

Due to the high loads, the executed pier was the first to consider overloads of this dimension and to be dimensioned for this purpose.

In terms of quantities of materials and works, the aforementioned contract comprised:

- Execution of 120 driven metal piles of Ø1016 mm and 18 mm thick for the foundations of the deck.
- 200 ml x 25 ml reinforced concrete tray, including all dock accessories, namely, 14 fenders and 14 bollards. The water network was also installed on the pier.
- Construction of pavement with base and sub-base, for the execution of a concrete pavement slab and pave layer with a thickness of 10 cm.
- Within the scope of the contract, 2 dolphins mooring were also built in metal piles and two concrete blocks for bollards.



Resumo da Obra

Work Summary

Cliente
 Tipo de contrato
 Data de construção
 Custo

Administração do Porto de Aveiro
Lump Sum
2020 – 2021
EUR 6.848.532,32

Client
Contract type
Construction period
Cost

Duques d'Alba e Recuperação da Ponte-Cais
Porto da CLC, República da Guiné-Bissau
Jetty Berth and Dolphins
CLC Port, Republic of Guinea-Bissau
Description of Works

EPC Contract for construction of two mooring dolphins, 2 berthing dolphins and a new platform (for manifolds) on existing jetty at Bandin Oil Terminal, in Guinea-Bissau. This project also includes the demolition of the existing structures (to be replaced) and the installation of temporary berthing and mooring structures to allow the use of the Terminal during the construction phase.

The new (permanent) structures are composed by:

- Dolphins mooring – 4 driven steel piles of 1220mm // 21.6mm, connected by a rigid prefabricated metal frame in which a double quick release hook (QRH) of 60 ton will be installed;
- Berthing dolphins - 9 driven steel piles of 1220mm // 21.6mm, connected by a rigid prefabricated metal frame in which a double quick release hook (QRH) of 60 ton and a fender system (composed by two conical fenders and a steel panel 10m high by 3m wide) will be installed;
- New platform: 4 driven steel piles 1220mm // 21.6mm, connected by a prefabricated steel structure in which the prefabricated slabs will be installed.

At the end of September 2019, the installation of the temporary berthing and mooring structures (ETA of the first vessel on 6 October) and the piling works on the upstream mooring dolphin were complete. The piling works performed during September were subjected to the performance of dynamic load tests to determine the load capacity of the piles.


Resumo da Obra
Work Summary

Cliente
 Tipo de contrato
 Data de construção
 Custo

CLC GALP, Guiné-Bissau
Lump Sum
2019 – 2020
EUR 7.546.886,26

Client
Contract type
Construction period
Cost

Construção do Novo Quebra-Mar e Cais do Porto de Cabinda

Cabinda (República Popular de Angola)

New Breakwater and Quay of Cabinda Port

Cabinda, Republic of Angola

Description of works

In 2017, Seth started the consortium work on the sub-contract for the construction of the new dockable breakwater at the Port of Cabinda in Angola. This work is part of a port and passenger port infrastructures project, awarded by the Maritime and Port Institute of Angola to the company China Gezhouba Group Company, Ltd ..

The contract includes the construction of a breakwater of approximately 660m in length (divided between an access road with 295m long and 12.5m wide) and a liable area of 365m long by 39.8m wide and one ramp RO-RO.

As infrastructures to support the quay, a concierge building, a saltwater catchment and pumping building, a water reservoir, and a VTS tower were built.

The structural solution used involves the creation of a vibro-compacted landfill, using sands from dredging, contained by two combined wall curtains (HZ800 + AZ18-800 planks) with variable lengths between 8m and 24.5m, each other. The superstructure consists of crown beams and deflector wall in reinforced concrete.

Due to the length of the profiles / piles and to the geotechnical profile of the terrain, the water-jetting technique was successfully used and used to aid the drilling with the vibrating hammer.

Given the specificity of the site and the work to be done, Seth used its own machinery (sea and land) to carry out all the drilling, namely:

- Vibrating hammer ICE 55NF and ICE 815;
- Impact Hammer IHC S-90 and PVE 9NL;
- Crane Liebherr LR1160 and Kobelco CKE1100;
- Self-elevating platform;
- Self-propelled modular barge.
- DOP 2320 pump



Resumo da Obra

Work Summary

Dono-da-Obra	Porto de Cabinda
Tipo de contrato	Lump Sum
Data de construção	2018-2022
Custo	USD 42.700.000,00

<i>Client</i>
<i>Contract type</i>
<i>Construction period</i>
<i>Cost</i>

Instalação de Cabo Submarino para ligação de Waveroller Peniche, Portugal

Subsea Cable Installation to connect a Waveroller Peniche, Portugal

Scope of Work

The scope had included the subsea cable installation works that interconnects an underwater power generation unit to a system control cabin located about 150 m from the shoreline, to convert the sea waves energy to electricity. This system is called "Waveroller" and was installed next to Praia da Almagreira, Ferrel parish, Peniche municipality, at an average depth of 15 m and approximately 850 m from the coast.

Main Quantities:

Cable Reel Weight: 13 Tons
 Subsea Cable Installed: 1000 meters
 Earthmoving: 1600m³
 Number of Buoys used: 130 units
 No. of Cable Rollers used: 34 units

This work did not include the connection and installation work of the generator and its shovel (these works were performed directly by the Owner).



Resumo da Obra Work Summary

Cliente
 Tipo de contrato
 Data de construção
 Custo

AW - Energy OY
Lump Sum
2019
EUR 54.918,89

Client
Contract type
Construction period
Cost

Cais de Exportação de Bauxite
Port Taresa (Kamsar), República da Guiné

Bauxite Export Jetty
Port Taresa (Kamsar), Republic of Guinea

Work Description

Compagnie de Bauxite et d'Alumine de Dian-Dian, SA (COBAD, SA) has awarded to Seth the construction works of the 116 meters-long Bauxite Export Jetty for barges with capacity up to 6,000 DWT at Port Taresa (Kamsar) at Republic of Guinea.

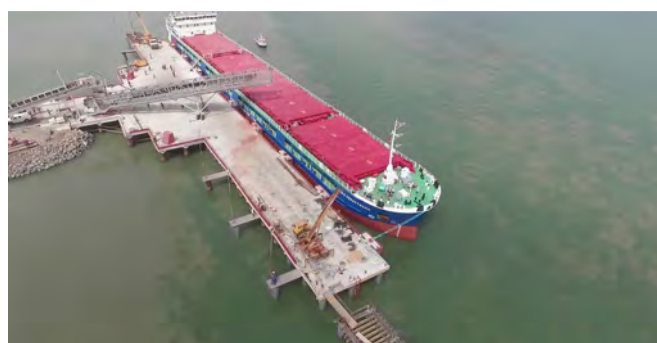
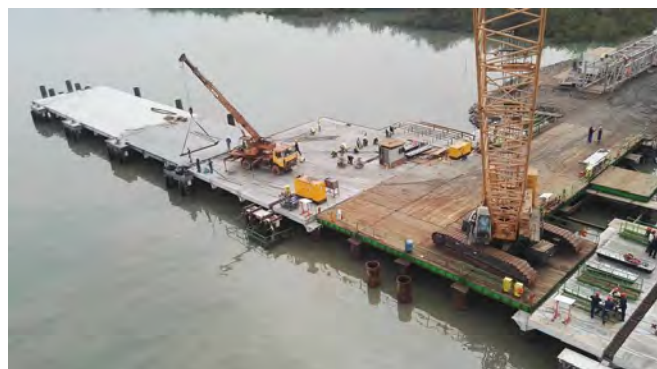
The Contract Price is in the amount of 6 million euros (all materials provided by COBAD) and had a scheduled duration of 10 months.

The Scope of Seth's works under this contract include:

Execution of Jetty foundations:

- The 73no. concrete socketed piles (Ø980mm//33mm with 22.00 meters);
- The 53no. driven piles (Ø970mm//29.5mm with 17.50 meters);
- Installation of the steel beams and welding of those beams to the piles;
- Installation of prefabricated concrete slabs.

The completion of the concrete slab, the installation of the fender system, bollards, cathodic protection system or the other works associated with the extension of the causeway are not included in Seth's scope of (those works being carried out directly by COBAD).



Resumo da Obra

Work Summary

Cliente	COBAD, SA (Compagnie de Bauxite et d'Alumine de Dian-Dian)	Client
Tipo de contrato	Lump Sum	Contract type
Data de construção	2017-2018	Construction period
Custo	EUR 6.999.789,10	Cost

Terminal de Contentores de Kamsar, Fase III
Porto de Kamsar, República da Guiné
Kamsar Container Terminal, Phase III - Port of Kamsar
Republic of Guinea
Work Description

Three years after having completed the second phase of the Kamsar Container Terminal, Seth has returned to the Republic of Guinea (Conakry) to start a new contract.

This job began in July 2015 and involved the third phase of enlargement of the Container Quay that Global Alumina Corporation, SA, awarded to Seth for a sum of 12,401,909.85 euros.

The contract (during 12 months) was comprised by various maritime and port construction works, including the extension and enlargement of the existing quay with a berthing length of 170.00 m and a breadth of 17.50 m, duly equipped. Was applied a reinforced concrete solution in situ (beams and compression slab) involving the use of prefabricated concrete slabs acting as shuttering.

This superstructure was supported on 103 tubular piles (914 mm diameter each) driven into the natural ground, with an average length of 51 m, the upper part (7.2 m) concreted.

Taking into account the specifics of the site, all the work was carried out directly by the company, namely:

1. Concrete production;
2. Prefabrication of the elements (some pre-stressed);
3. Preparation of the pile tubes;
4. Driving the tubular piles
5. Casting the piles and support beams in situ;
6. Placement of pre-slabs;
7. Concreting of the deck (compression layer) and installation of all accessories.


Resumo da Obra
Work Summary

Cliente	GAC	<i>Client</i>
	Guinea Alumina Corporation	
Tipo de contrato	Lump Sum	<i>Contract type</i>
Data de construção	2015-2016	<i>Construction period</i>
Custo	EUR 12.401.909,85	<i>Cost</i>

Cais de Pesca Profissional
Montijo
Fishing Harbour
Montijo (Portugal)
Trabalhos efectuados

A SCUPA – Sociedade Cooperativa União Piscatória Aldegalense, CRL adjudicou à Seth a empreitada da construção de um cais de pesca profissional por forma a promover a criação e consolidação, no Montijo, das condições físicas necessárias ao desenvolvimento da actividade piscatória.

Numa iniciativa financiada pelo 2.º Concurso ao Eixo 4 do PROMAR, promovido pelo Grupo de Acção Costeira Além Tejo, o projecto executado visou a criação de:

- Um espaço de acostagem de 12 a 13 embarcações em simultâneo (com arqueação máxima de 8,35 Ton;
- Uma rampa de varadouro para acesso das embarcações e manutenção/reparação das mesmas;
- Uma plataforma de cais dimensionada para permitir a colocação de embarcações em local plano e seco;
- Uma área destinada à integração de instalações de apoio individuais para guardar aprestos de pesca.

Em simultâneo, a SCUPA pretendeu a requalificação ambiental e paisagística local, a reabilitação do espaço envolvente da antiga Salina e Viveiro de Peixe e a preservação do antigo moinho de marés e das ruínas existentes no local.

Esta empreitada foi inaugurada em 23 de Janeiro de 2016.

Work description

Seth has concluded a professional fishing quay owned by Cooperative Society Union in Montijo.

The works included:

- A berthing space 12 to 13 vessels simultaneously (with a maximum tonnage of 8.35 Ton;
- A beaching ramp for access of vessels and its maintenance / repair;
- A scaled pier platform to allow the placement of boats in a dry local;
- An area for the individual support facilities for storing fishing gear.


Resumo da Obra
Work Summary

Cliente	SCUPA – Sociedade Cooperativa União Piscatória Aldegalense, CRL.
Tipo de contracto	Valor Global / Lump-sum
Construtores	Seth, SA
Data de construção	2015-2016
Custo	€ 548.523,00

Client
Contract type
Contractor
Construction period
Cost

**Alargamento do terrapleno e construção de uma nova via de acesso
na zona Nordeste do Porto Grande de S.Vicente**
Cidade de Mindelo, Ilha de S. Vicente, Cabo Verde

***Enlargement of the open-air storage yard and construction of a new access road
in the northeast region of the great port of São Vicente***
City of Mindelo, Island of São Vicente, Cape Verde

Work Description

This project undertaken by Seth (in consortium) in Mindelo, São Vicente Island (Cape Verde), provides the city with two major, significant improvements: increase of the area of the port and alterations to its road accesses, and a significant increase of the dry area of the Laginha beach.

The better to understand the benefit of this job, it should be explained that the climate in São Vicente allows the beach to be used year round.

The enlargement of the open-air storage yard covers an area of about 24,000m², built entirely on an area that was previously sea.

This enlargement was made possible by the construction of a prism embankment 580m in length using rip-rap. Having been built to a height of 1.80m above the average sea level, the embankment was externally lined with stones weighing between 500 and 1,500 kg and lined on the inside with geotextile with a mass of 300g/m².

The area contained by the embankment was reclaimed by sand pumped in by a trailing hopper suction dredger trough a 600 mm pipeline.

About 90,000m³ were dredged and pumped ashore until the correct level was reached, allowing crusher-run aggregate/ C 8/10 concrete to be laid.

As far as Laginha is concerned, it was a beach about 300m long by 20m wide on average at the start of the job, its entire width sloping down to the sea.

Upon completion of the work the beach is now as follows: a level area 400m long by 70m wide, which then slopes gently till reaching sea level.

This beach is now bounded to the south by the embankment and to the north by a stone groine 130 m long.

The increase of the beach to its final dimensions involved the use of 170,000m³ of sand that was dredged and pumped ashore.



Laginha Beach after completion of sand filling



General view of the port area with embankment construction in progress

Resumo da Obra

Work Summary

Cliente	Ministério das Infraestruturas, Transportes e Telecomunicações de Cabo Verde	<i>Client</i>
Tipo de contracto	Valor Global / Lump-sum	<i>Contract type</i>
Construtores	Seth, SA (in Consortium)	<i>Contractor</i>
Data de construção	2013-2014	<i>Construction period</i>
Custo	€ 14.309.000,00	<i>Cost</i>

Ampliação do Molhe Norte
Gibraltar
North Mole Extension
Gibraltar
Work Description

The contract of the "North Mole Extension" is the extension of Quay/Breakwater located in the northwestern part of the peninsula of Gibraltar.

The extension of the existing Quay, 270 m, consists in the installation of 9 concrete caissons based on rockfill foundation and aims to increase the area of land available with the propose of building a new "Power Station" in this area.

This structure will be finished at elevation +4.00 m OD and the foundation to -8.00 m OD. From level -10.50 m OD to level -8.00 m OD runs a foundation formed by selected rockfill.

The 9 reinforced concrete caissons, approximately 2.300 ton/caisson, will be prefabricated inside the Port of Gibraltar using a slipform system.

The construction of each caisson starts on the Floating Dock "Ignatios" and ends with the caisson in floatation.

After conclusion, caissons will be towed to the North Mole where they will be sunk on the rockfill foundation previously executed using floating equipments, namely a dredger with backhoe and a pontoon.

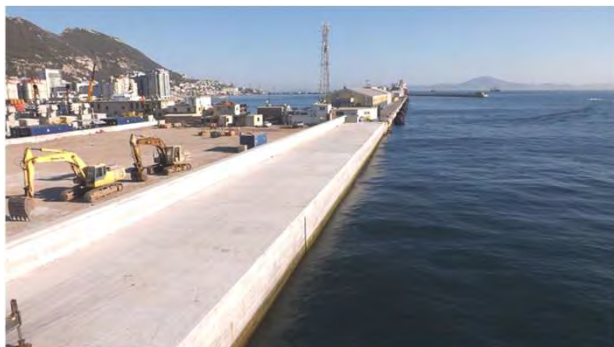
The works will end with the execution of a top slab of *in-situ*.

Below description of the main quantities of this project:

- Caissons: 9 units;
- Concrete: 9.000 m³;
- Steel rebars: 850 ton;
- Sliding formwork area: 34.650 m²;
- Dredging: 20.250 m³;
- Rockfill: 15.000 m³.

Major equipment involved:

- Floating Dock "Ignatios" 4.000 ton of capacity;
- Sliding formwork system;
- Tower crane 6 tons capacity, 50 m distance;
- Dredge w / backhoe;
- 2 Tugs;
- 1 Floating Pontoon (50 m x 15 m) w/ 1 crawler crane 100 ton;
- 1 Rough Terrain Crane, 70 ton capacity.


Resumo da Obra
Work Summary

Cliente	Government of Gibraltar (by Casais, SA)
Tipo de contracto	Valor Global / Lump-sum
Construtores	Seth, SA (em consórcio)
Data de construção	2014-2015
Custo	€ 11.750.000,00

<i>Client</i>
<i>Contract type</i>
<i>Contractor</i>
<i>Construction period</i>
<i>Cost</i>

**Construção da Expansão do Porto de Porto Novo – 1.^a Fase
Ilha de Santo Antão, Cabo Verde*****Porto Novo Harbour – 1st. Phase
Santo Antão Island, Cape Verde*****Work description**

Seth executed (in consortium) the following structures: quay block wall 40 m long with service depth of -3.0 m (ZH); multipurpose block wall quay 115 m long with a service depth of -6.0 m (ZH), equipped with a RO-RO ramp; extension of a second multipurpose block wall quay by 45 m totalling 135 m of length and a service depth of -7.0 m (ZH), also equipped with a RO-RO ramp, for cargo and passengers use.

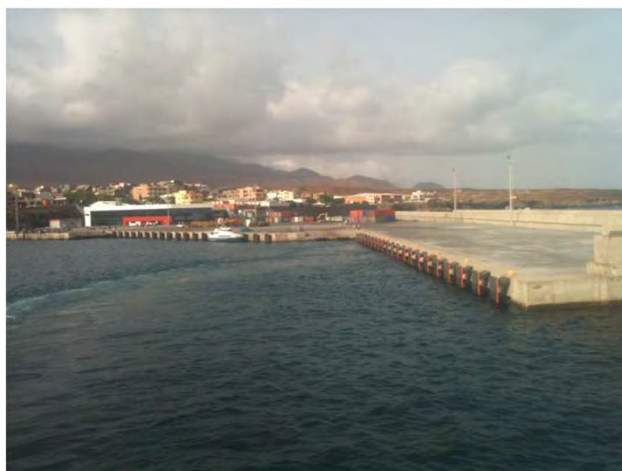
A storage area with 1,7 HA of area was also executed for cargo and container storage purposes. This storage area is protected by 500 m long breakwater and sea wall.

A boat slip was also executed to assist the fishing activity.

The project also included the construction of ground facilities, including a maritime passenger terminal of 2,000 m².



Zone of berths after completion of the work



General view of the port area after project conclusion

Main quantities

Dredging and blasting rock: 11,000 m³

Concrete blocks, caissons: 7,200 m³

Concrete in curtain wall: 10,000 m³

Rockfill, quarry-run: 320,000 m³

Rockfill underwater: 66,000 m³

Work Summary

Client	Ministério das Infraestruturas, Transportes e Telecomunicações de Cabo Verde
Contract type	<i>Lump-sum</i>
Contractor	Seth, SA (lead company, in consortium)
Construction period	2010-2012
Cost	€ 26.319.577,00

Ampliação e Reabilitação do Cais da ENACOL

Mindelo, Cabo Verde

Improvement and Rehabilitation of the Quay of ENACOL

Mindelo, Cape Verde

Trabalhos efectuados

A SETH executou (em consórcio) a obra de ampliação e melhoramento do molhe cais da ENACOL (empresa petrolífera de Cabo Verde) na cidade de Mindelo, Ilha de S.Vicente.

Ao abrigo do contrato foram executados os seguintes trabalhos:

- Construção de um terraplino para circulação de viaturas e camiões cisterna, a construir sobre a zona molhada existente e com uma área de cerca de 1600 m²;
- Ampliação do molhe-cais existente com 4/5 m de largura, para 10/12 m, totalizando o aumento desta zona, uma área de cerca de 1100 m².
- Construção de um cais acostável com 40 m de comprimento, em substituição do existente (que apenas tinha 10m).
- Melhoramento do molhe cais na face oposta à ampliação atrás referida, recorrendo à construção e aplicação de aduelas em betão armado, vindo estas, a esconder a face existente, constituída por alvenaria de pedra argamassada.
- Construção de uma caleira enterrada para alojamento de tubagens de combustível (que estavam fixadas em suportes e poleias metálicas acima do piso de circulação pedonal do molhe cais existente).
- Construção de uma laje de pavimento geral sobre toda a toda a área existente e ampliada.

Work description

As part of a consortium, Seth has concluded the work of expansion and improvement of a pier to ENACOL (Oil Company of Cape Verde) in Mindelo, Sao Vicente Island.

The contract included the following works:

- Construction of a platform for movement of vehicles and other mobile equipment, by reclamation of an area of about 1600m²;
- Enlargement of the existing quay to 10/12 m wide, with a total increase of this area with 1100 m².
- Construction of a quay with 40m length, replacing the existing one.
- Improvement of the existing pier jetty on the opposite face to the expansion,
- Construction of a covered duct for fuel lines.
- Pavement of the new areas with a reinforced concrete slab.



Resumo da Obra

Work Summary

Cliente	ENACOL	<i>Client</i>
	Empresa Nacional de Combustíveis, SA	
Tipo de contracto	Valor Global / Lump-sum	<i>Contract type</i>
Construtores	Seth, SA (em consórcio)	<i>Contractor</i>
Data de construção	2014	<i>Construction period</i>
Custo	€ 1.600.000,00	<i>Cost</i>



Reabilitação do Cais 22 no Terminal dos Granéis Líquidos Porto de Aveiro

Rehabilitation of Pier 22 in the Liquid Bulk Terminal at the Port of Aveiro Porto de Aveiro, Portugal

Description of work

A 40 m long section of the quay collapsed as a result of erosion of the sandy bottom causing a loss of bearing capacity of the existing piling. The work performed was the replacement of the collapsed section.

Work performed

- Demolition and removal of superstructure and piles in the affected zone in reinforced concrete.
- Installation of reinforced concrete piles in steel pipe casings
- Installation of prefabricated reinforced-concrete pile caps and beams
- Installation of prefabricated slabs;
- Concreting top slab curbs.

In addition to the above referenced activities the sandy bottom was protected against further erosion with rockfill 80 to 100 Kg and the installation of two new fenders on the pier.

Main Quantities

Piling: 12 piles (diameter 600 x 8mm w/ 20 ml long, driven 10 ml into the bottom of the estuary)

Reinforcement: 34,288 Kg

Prefabricated concrete: 64m³

In situ concrete on deck slab and pile caps: 57m³

Precast beams: 20 units

Precast slabs: 22 units

Armor stone: 800 ton

Fenders: 2 units



Antes dos trabalhos de reabilitação
Before rehabilitation works



Depois de concluídos os trabalhos de reabilitação
After conclusion of the rehabilitation works

Resumo da Obra

Work Summary

Cliente	SGPAMAG Sociedade de Granéis do Parque de Aveiro, Movimentação e Armazenagem de Granéis, S.A	<i>Client</i>
Tipo de contrato	Preço global Lump sum	<i>Contract type</i>
Data de construção	2013-2014	<i>Construction period</i>
Custo	426.000,00 EUR	<i>Cost</i>

Reabilitação da Ponte-Cais do Parque da Tanquisado Mitrena, Setúbal

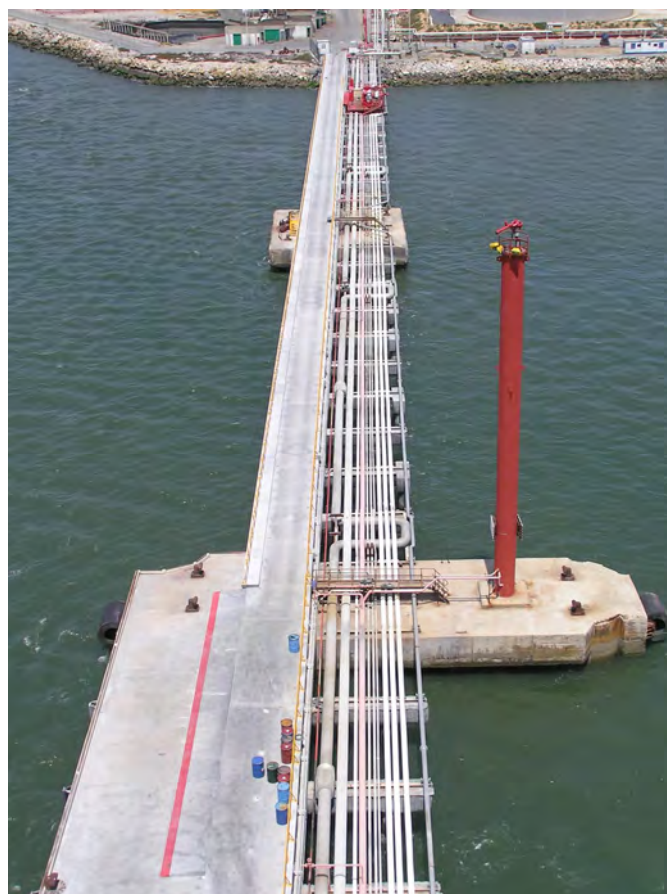
Rehabilitation of the existing Jetty Mitrena, Setúbal (Portugal)

Descrição dos trabalhos

O objectivo da empreitada resumiu-se à reabilitação da ponte-cais existente e ao reforço da referida ponte-cais do Parque da Mitrena com a execução de 34 novas estacas no tabuleiro de acesso.

Description of the Works

The purpose of the contract was the rehabilitation of the existing jetty and the reinforcement of the Mitrena Park jetty with the construction of 34 new piles in the access tray.



Resumo da Obra

Work Summary

Cliente	Tanquisado - Terminais Marítimos, SA	<i>Client</i>
Tipo de contrato	Preço global Lump sum	<i>Contract type</i>
Data de construção	2003-2004	<i>Construction period</i>
Custo	1.161.175,00 EUR	<i>Cost</i>

Dragagens nos Estaleiros Navais de Porto Amboim Porto Amboim, Angola

Dredging works in the basin of PAENAL shipyard Porto Amboim, Angola

Descrição dos Trabalhos

Dragagem de 650.000 m³ de areia da bacia do cais com draga de sucção "GEFION R" da Rhode Nielsen.

Remoção de 1.300 m de pipelines e diversas estruturas (maciços de betão, âncoras, cabos de aço, destroços diversos) enterradas no leito da bacia com embarcação tipo Multicat auxiliado por bomba de dragagem de areia "DOP" e equipa de mergulhadores.

Números mais significativos:

650.000,00 m³ de dragagens

Meios especiais utilizados:

Draga de arrasto e sucção "GEFION R" da R&N

Bomba de dragagem de areia DOP

Embarcação multicat "JIFWORKER" da Jifmar



Dredging with DOP pump

The scope of work included

Dredging of one basin with a Rhode Nielsen (R&N) trailing hopper suction dredger (650,000.00 m³).

Removal of sundry equipment buried in the sea bed (pipelines, concrete blocks, anchors, steel cables).

This work was made with a vessel type Multicat aided by a dredge pump "DOP" and a diving team.

Most significant figures:

650,000.00 m³ of dredging

Special Means:

Trailing hopper suction dredge "Gefion R"

Dredge pump type DOP

Vessel type Multicat



Draga de arrasto e sucção na bacia do cais dos estaleiros navais de Porto Amboim
Trailing hopper suction dredger in the dock of PAENAL shipyard of Porto Amboim

Resumo da Obra

Work Summary

Cliente	PAENAL	<i>Client</i>
Tipo de contrato	Porto Amboim Estaleiros Navais, Lda Preço global Lump sum	<i>Contract type</i>
Data de construção	2013	<i>Construction period</i>
Custo	9.228.265,19 USD	<i>Cost</i>

Defensas no Molhe da Doca dos Pescadores

Doca dos Pescadores, Setúbal

Fender System – Doca dos Pescadores

Setúbal, Portugal

Descrição dos trabalhos

Cais 1: Fornecimento e montagem, incluindo a mobilização de todos os equipamentos e meios necessários, de **12 defensas** cilíndricas em borracha com 400 mm de diâmetro exterior e 200 mm de diâmetro interior, com comprimentos de 3500 mm.

Cais 2: Fornecimento e montagem, incluindo a mobilização de todos os equipamentos e meios necessários, de **38 defensas** cilíndricas em borracha com 400 mm de diâmetro exterior e 200 mm de diâmetro interior, com comprimentos de 3500 mm.

Meios especiais utilizados:

Grua automóvel Liebherr LTM 1100, colocada no local da obra por um navio, devido a esta ser inacessível por terra.

Work Description

Quay #1: Supply and assembly, including the mobilization of all necessary equipment and means, of **12 cylindrical rubber fenders** with 400 mm outside diameter and 200 mm internal diameter, with lengths of 3500 mm.

Quay #2: Supply and assembly, including the mobilization of all necessary equipment and means, of **38 cylindrical rubber fenders** with 400 mm outside diameter and 200 mm internal diameter, with lengths of 3500 mm.

Equipment used:

- 1 wheel crane (Liebherr LTM 1100) (hailed to site work by boat).



Resumo da Obra

Work Summary

Cliente	APSS – Administração dos Portos de Setúbal e Sesimbra, SA	<i>Client</i>
Tipo de contrato	Preço global Lump sum	<i>Contract type</i>
Data de construção	2017-2018	<i>Construction period</i>
Custo	EUR 187.500,00	<i>Cost</i>

Defensas Nova Cimangola
Luanda, Angola
Rebuilding of Fender System – Nova Cimangola Export Jetty
Luanda, Angola
Descrição dos trabalhos

O âmbito dos trabalhos incluiu:

- Cravação de 36 estacas com 813 mm de diâmetro
- Betonagem das estacas até ao nível do fundo do mar
- Execução de 4 maciços em betão e instalação das defensas.

Números mais significativos:

1300 m³ de betão

8 defensas elásticas Fentek SCN 1400

Meios especiais utilizados:

Grua automóvel Liebherr LTM 1100, colocada no local da obra por um navio, devido a esta ser inacessível por terra.

Work Description

Work included:

- Installation of 36 piles with 813 mm of diameter
- Concrete piles at bottom of sea level.
- Installation of 4 concrete foundations and fender system.

Work volume:

- 1300 m³ of concrete
- 8 elastic fenders (Fentek SCN 1400).

Equipment used:

- 1 wheel crane (Liebherr LTM 1100) (hauled to site work by boat)


Resumo da Obra
Work Summary

Cliente	NovaCimangola	Client
Tipo de contrato	Preço global	Contract type
	Lump sum	
Data de construção	2003-2004	Construction period
Custo	USD 2.200.000,00	Cost
Projectista	Eng. Luís Colen	Designer

Projecto de Cassinga - Terminal Mineralífero
Moçâmedes, Angola**Cassinga Project - Ore Terminal**
Moçâmedes, Angola

Construção de um molhe acostável em betão pré-esforçado com 600 m de comprimento. Capacidade de acostagem de navios até 300 000 tdw.

Fundação do molhe sobre estacas metálicas cravadas de 43 m de comprimento.

Construction of a 600 m long berthing pier (pre-stressed concrete deck) for ships until 300 000 tdw.

Foundations: driven steel piles (length: 43 m).



Diversos aspectos dos trabalhos
Several views of the works

Resumo da Obra
Work Summary

Cliente	Companhia Mineira do Lobito	<i>Client</i>
Tipo de contrato	Concepção-Construção Design-Build	<i>Contract type</i>
Data de construção	1968 - 1972	<i>Construction period</i>
Estacas cravadas	43 m comp./lenght	<i>Driven piles</i>
Cais de acostagem	600 m	<i>Berthing pier</i>
Navios servidos	300 000 tdw	<i>Ships served</i>

Construção dos Degraus Ribeirinhos
MAAT – Belém, Lisboa

Construction of River Side Steps
MAAT – Belém, Lisbon (Portugal)

Trabalhos Efectuados

A empreitada teve como objectivo a execução de uma nova estrutura marginal na frente ribeirinha do novo Museu de Arte, Arquitectura e Tecnologia da Fundação EDP. Para o efeito, foram executadas um conjunto de intervenções que passaram pela remoção do revestimento de pedra aparelhada existente no talude, a demolição de uma ponte-cais existente e a execução da nova estrutura em degraus pré-fabricados de betão.

Principais quantidades:

88 elementos pré-fabricados instalados em cerca de 150 ml sendo os elementos mais pesados de 19 ton.;
1600 m³ de escavação e dragagem;
Colocação de 360 m³ de betão em talude inclinado;
Demolição de 200 toneladas de betão armado;
Remoção de 1300 m² de pedra aparelhada.

Meios utilizados

Grua de rastros de 110 ton (Kobelco CKE 1100)
Escavadora giratória de 24 toneladas, com braço de 17 m (Case CX 240)
Balde de dragagem
Bóia de sinalização marítima dos trabalhos

Description of Works

The aim of the project was the implementation of a new marginal structure on the riverside front of the new Museum of Art, Architecture and Technology (MAAT) of the EDP Foundation.

Main quantities:

- 88 prefabricated elements installed in about 150 ml with the heaviest elements being 19 ton;
- 1600 m³ of excavation and dredging;
- Placement of 360 m³ of concrete in inclined slope;
- Demolition of 200 tons of reinforced concrete;
- Removal of 1300 m² of equipped stone.

Means used

- 110 ton Track Crane (Kobelco CKE 1100)
- 24 ton Rotary Excavator w/ arm 17 m long (Case CX 240)
- Dredging bucket
- Maritime buoy of works



Resumo da Obra

Work Summary

Cliente	Alves Ribeiro, SA	Client
Tipo de contrato	Valor Global / Lump Sum	Contract type
Data de construção	2016	Construction period
Custo	EUR 485.000,00	Cost

Avanço de Margem e Nova Avenida Ribeira das Naus Cais do Sodré – Terreiro do Paço, Lisboa

Widening the River Bank and New Ribeira das Naus Avenue Cais do Sodré – Terreiro do Paço, Lisbon

Work description

Seth carried out the first stage of the job involving the refurbishment of the Avenida Ribeira das Naus area in Lisbon, thus contributing to the recovery of the history of this place, while also allowing a more contemporary use through the creation of gardens, a reflecting pool and a ramp providing access to the river, in addition to the opening to the public of a part of the Navy's central facilities.

This contract for the redevelopment of the public space and infrastructure involving the Widening of the Bank and the new Ribeira das Naus Avenue included the extension the river bank, an adjustment of the traffic lanes, an access ramp to the river, the pontoon near the Agencies Building and recuperation of the docks and pontoons that had long been buried.

In this first stage the investment amounted to around 4 million euros, a percentage of which was provided by the Community Support Framework and the rest by the local authority itself.

Main quantities

Piles – 78 units

(length 22 m / 1.20 m diameter)

Rebar cages - 700,000 kg

Concrete – 7,000 m³

Dredging/ Excavation – 20,000 m³

Prefabricated slabs (on the Agencies pontoon) - 45 units. (rebar cages 22,000 kg / concrete 180 m³)

Dolerite basalt paving cubes – 8,000 m²

Trees planted – 48



Resumo da Obra

Work Summary

Cliente
Tipo de contrato
Data de construção
Custo

Câmara Municipal de Lisboa
Série de preços
Fev 2012 – Mar 2013
EUR 3.750.000,00

Client
Contract type
Construction period
Cost

Terminal de Exportação de Clínquer e Cimento

Luanda, Angola

Clinker and Cement Export Terminal

Luanda, Angola

Descrição dos trabalhos

Construção de um molhe acostável em betão armado com 1000 m de comprimento e molhe-testa com 120 m, sobre estacas de 30 m.

Cais de carga, 4 silos de 5000 ton para cimento e clínquer, instalações de ensacagem de cimento, transportadores de correia e diversas estruturas metálicas.

Work description

Construction of a 1000 m long access pier (reinforced concrete deck) and berthing pier founded over 30 m long piles.

Berthing/loading pier (120 m), 4 cement and klinker silos (5000 ton), cement bagging facility, conveyor belts and miscellaneous steel structures.



Vista de terra do cais de acostagem
Berthing pier viewed from land



Vista dos silos de cimento e clínquer e transportadores de correia.
2º plano: os cais de acesso e acostagem.
*Cement and klinker silos and conveyor belt.
Background: the acess and berthing piers.*

Resumo da Obra

Work Summary

Cliente	CIMANGOLA U.E.M.	<i>Client</i>
Fiscalização	Dar Al-Handasa	<i>Inspection agency</i>
	Consultants (Beirute)	
Tipo de contrato	Concepção-Construção	<i>Contract type</i>
	Design-Build	
Data de construção	1982 - 1984	<i>Construction period</i>
Estacas cravadas	30 m comp./lenght	<i>Driven piles</i>
Cais (acesso/acostagem)	1000 + 120 m	<i>Access + berthing pier</i>

Terminal de Contentores de Kamsar e Terminal de Descarga de Barcaças

Porto de Kamsar, República da Guiné

Kamsar Container Terminal and Barge Unloading Facility - Port of Kamsar

Republic of Guinea

Works description

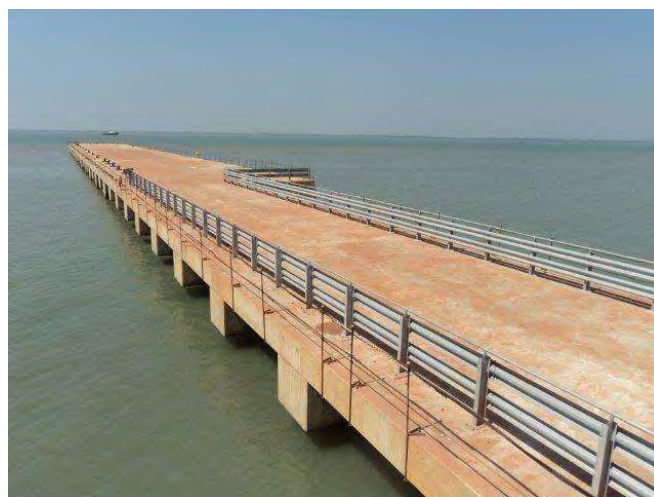
Seth has completed the design/construction of the Container Terminal at the port of Kamsar in the Republic of Guinea. The contract awarded for the sum of 18 million euro with a duration of 18 months.

The construction of the quay is part of the project for the construction of an alumina refinery at Sangarédi, located in the interior of this West African country, the employer being the multinational enterprise Guinea Alumina Corporation.

The Republic of Guinea has one of the worlds biggest reserves of bauxite (the raw material for the manufacture of aluminium), and the refinery will have a production capacity of 3.3 million tonnes per annum (Mtpa) manufactured from 9.4 Mtpa of bauxite extracted from the site.

The quay comprises a berthing facility for cargo vessels and barges bringing the building materials required for the construction of the alumina export terminal infrastructures at Kamsar and for the refinery at Sangarédi. It is a precast reinforced concrete structure supported on circular steel piles of a diameter of 914 mm.

The quay is 230m metres long and can berth ships of up to 10,000 tons dwt. Its construction is essential to the project as there is no other quay in the region able to receive equipment of the dimension and weight of the equipment to be installed at the refinery.



Resumo da Obra

Work Summary

Cliente	GAC	<i>Client</i>
	Guinea Alumina Corporation	
Tipo de contrato	Lump Sum	<i>Contract type</i>
Data de construção	2011-2012	<i>Construction period</i>
Custo	EUR 18.000.000,00	<i>Cost</i>

Reabilitação do Cais Francês no Porto de Kamsar
República da Guiné

Rehabilitation of the French Quay - Port of Kamsar
Republic of Guinea

Work Carried Out

Seth, has concluded a job awarded by Compagnie des Bauxites de Guinée.

The job was located at the mining town of Kamsar, about 300 km north of the capital, Conakry.

The work was designed to rehabilitate the existing French Quay, a port structure dating from the 1950s, which was in bad condition.

During the rehabilitation work, the quay was operation at all times and continued to receive the two ships scheduled each month. These are the ships that supply Kamsar with the materials required for the mining operation and for the subsistence of the population.

The job consisted of driving a main curtain of sheet-piling, driving an anchoring curtain of sheet-piling, and horizontal drilling under the existing quay to introduce the anchorage tie-rods linking both curtains. Subsequently, a reinforced-concrete crown beam and pavement slabs were built. The work was concluded with the installation of a new fender system and erection of sundry quay furniture.

Description of the Work

- Rehabilitation of a quay in operation;
- Driving two sheet-pile curtains, main and anchorage;
- Horizontal driving of steel pipes for subsequent installation of tie-rods;
- Installation of anchorage tie-rods;
- Excavation and landfill;
- Construction of the reinforced-concrete crown beam;
- Construction of reinforced-concrete pavement slabs;
- Installation of a new fender system;
- Installation of new quay furniture.



Resumo da Obra

Work Summary

Cliente	CBG	Client
	Compagnie des Bauxites de Guinée	
Tipo de contrato	Lump Sum	Contract type
Data de construção	2006-2007	Construction period
Custo	USD 3.000.000,00	Cost
Projectistas	Haskoning UK, Ltd.	Engineering

Trabalhos de reforço do molhe exterior do Porto de Oran Argélia

Reinforcement of Intermediate Section of the Pier of the Port of Oran Oran, Algeria

Descrição dos Trabalhos

Esta foi a primeira obra em que a Seth participou na Argélia, cujos trabalhos feitos em consórcio compreenderam o reforço do troço intermédio do molhe do Porto de Oran, numa extensão de 1287 m.

Foi construída uma banquetta em TOT até à cota -20.00 (ZH) sobre a qual se construiu uma outra de secção trapezoidal em enrocamento de 3 a 6 toneladas até à cota -12.50 (ZH).

Procedeu-se ainda à regularização do talude exterior do molhe com enrocamento de 1 a 3 toneladas, sobre a qual se colocaram os Antifers de 40 toneladas cada.

Sobre o paredão existente, a todo o comprimento, foi construído um muro em betão simples com aproximadamente 1 m x 1 m, que ficou a limitar a camada de Antifers.

Quantidade dos trabalhos

Enrocamento TOT – 254.074 ton

Enrocamento de 1 a 3 ton – 173 092 ton

Enrocamento de 3 a 6 ton – 216 355 ton

Betão em blocos Antifer de 40 ton – 91 928 m³

Fabrico e colocação

de blocos Antifer de 40 ton – 5 505 unidades

Betão em muro-cortina – 2 844 m³

Aço no muro cais – 22 000 Kg



Description of works

Reinforcement of the intermediate section of the pier of the Port of Oran, in an extension of 1287m, with foundation stones placed in sub layers and toe footing, and cubic blocks like Antifer on the protection layer.

Main features and quantities

Foundation stones TOT - 254,073 tons

Foundation stones from 1 to 3 ton - 173 092 ton

Foundation stones 3 to 6 tons - 216 355 ton

Concrete in Antifer blocks of 40 ton - 91 928 m³

Concrete in pier wall - 2 844 m³ / Steel in pier wall - 22 ton

Resumo da Obra

Work Summary

Cliente	Direction des Travaux Publics de la Wilaya d'Oran Argélia / Algérie	Client
Tipo de contrato	Preço global / Lump sum	Contract type
Data de construção	2007-2010 (27 mois)	Construction period
Custo	EUR 35.176.600,00	Cost
Observações	Job in Consortium	Notes

Reconstrução de um cais na Base Naval de Mers-El-Kébir
Mers-El-Kébir, Argélia***Reconstruction of a Pier at Naval Base of Mers-El-Kébir***
Mers-El-Kébir, Algeria**Descrição dos trabalhos**

- Reparação do caminho de rolamento das gruas, com a construção de vigas de fundação e o fornecimento e aplicação de carris, numa extensão de 520 ml.
- Reabilitação do cais Sul, com a construção da viga de coroamento sobre o cais de blocos existente, numa extensão de 375 m.
- Reabilitação do cais Norte, com a execução de 21 estacas de molde metálico perdido, de 813 mm de diâmetro, na frente do cais.
- Execução de novo cais com infra-estrutura composta por 54 blocos de betão e superestrutura de betão *in-situ*.

Principais quantidades:Escavações: 1.000 m³ / Betões: 3.590 m³

Aço: 325 t

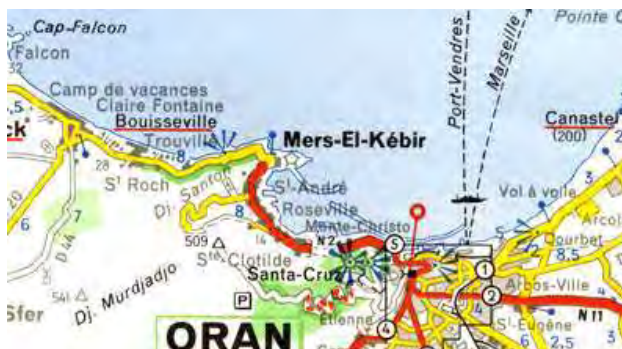
Fornecimento e aplicação de carril: 874 ml

Cabeços de amarração: 43 un

Defensas: 43 un / Enrocamentos: 2.000 t.

**Description of works**

- Repair of the track, with the construction of the foundation beams and the provision and application of rails, a distance of 520 ml.
- Rehabilitation of the South Jetty, with the construction of the capping beam on existing blocks quay with a length of 375 m.
- Rehabilitation of the North Pier, the execution of 21 entries lost metal mold 813 mm in diameter, in front of the pier.
- The implementation of the new infrastructure with dock included 54 concrete blocks and concrete superstructure *in situ*.

**Main features and quantities:**Excavated 1000 m³ / Concrete: 3590 m³ / Steel: 325 t

Supply and installation of rail: 874 ml / Terminals: 43 units

Fenders: 43 units / Rockfill: 2,000 t.

Resumo da Obra***Work Summary***

Cliente	Ministère de la Défense National de la République Algérienne Démocratique et Populaire	
Tipo de contrato	Preço global / Lump sum	<i>Contract Type</i>
Data de construção	2009	<i>Construction period</i>
Custo	EUR 6.405.061,00	<i>Cost</i>
Observações	Job in Consortium	<i>Notes</i>

Plataforma de aterro e taludes de protecção em Koudiet Eddraouch Annaba, Argélia

Platform landfill and protective embankments at Koudiet Eddraouch Annaba, Algeria

Descrição dos Trabalhos

Dique com 350 m de extensão, para protecção da plataforma marítima destinada à construção da estação de bombagem do circuito de refrigeração da central de ciclo combinado.

O dique é composto por núcleo de enrocamento TOT, sub-mantos de enrocamento seleccionado e manto de protecção de enrocamento de 5 a 7 t.

Quantidades de Trabalho

Dragagem: 8.850 m³

Núcleo de enrocamento seleccionado: 13.775 m³

Tela geotêxtil: 8.024 m²

Filtro de enrocamento 3-5 kg: 1.881 m³

Filtro de enrocamento 500-700 kg: 11.252 m³

Manto de enrocamento 5-7 ton: 20.742 m³



Description of works

This contract in Annaba (Algerian East coast) near the border with Tunisia, was the implementation of a platform next to the sea, for the installation of the pumping station water sea to the combined cycle.

The work itself consists of an execution platform approximately 400 m x 200 m, protected by dikes artificial concrete blocks 8 tons each.

Also included are the establishment of five tubes each 4 meters in diameter, in the root zone emissaries slopes.

Main features and quantities

Dredging: 8850 m³

Selected core rockfill: 13,775 m³

Geotextile fabric: 8,024 m²

Filter rockfill 3-5 Kg: 1,881 m³

Filter rockfill 500-700 Kg: 11,252 m³

Cloak rockfill 5-7 ton: 20,742 m³

Resumo da Obra

Work Summary

Cliente	Iberdrola	Client
Tipo de contrato	Preço global / Lump sum	Contract type
Data de construção	2009	Construction period
Custo	EUR 6.500.000,00	Cost
Observações	Job in Consortium	Notes

Reabilitação do Molhe Leste do Porto Petrolífero de Béjaia Béjaia, Argélia

Rehabilitation of East Breakwater of the Oil Port of Béjaia Béjaia, Algeria

Descrição dos Trabalhos

Reabilitação do molhe leste do porto petrolífero de Bejaia com submantos de enrocamento seleccionado e mantos de protecção de cubos tipo Antifer de 13 e 24 toneladas.

Quantidade dos trabalhos

Enrocamentos seleccionados: 59.387 m³

Betão em blocos: 20.434 m³

Description of works

Rehabilitation of east breakwater of the oil port of Béjaia with sub-mantles of selected rockfill and protective mantles of cube type *Antifer* of 13 and 24 tons.

Construction of a pier on piles board at elevation -12.00 m of berth length of 78m and two 20m side walls. For connecting the pier to the existing jetty was built in TOT with about 35m wide with asphalt concrete pavement.



Main features and quantities:

Selected rock fillings: 59,387 m³

Concrete blocks: 20,434 m³

Resumo da Obra

Work Summary

Cliente	Ministère des Travaux Publics de l'République Algérienne	Client
Tipo de contrato	Preço global / Lump sum	Contract type
Data de construção	2006-2008 (23 mois)	Construction period
Custo	EUR 7.320.000,00	Cost
Observações	Job in Consortium	Notes

Construção de um Cais no Porto Petrolífero de Béjaia Béjaia, Argélia

Construction of a Quay in the Oil Port of Béjaia Béjaia, Algeria

Descrição dos Trabalhos

Construção de cais em estacas prancha, com cota de serviço (-12,00 m)ZH e frente acostável de 78 m de comprimento. O cais é rematado lateralmente por duas estruturas de contenção de 20m de extensão e ligado ao molhe existente por terrapleno com cerca de 35m de largura, em TVC, com camada de desgaste de betão betuminoso. A bacia é dragada à cota -12,00m.

Quantidade dos trabalhos

Dragagem: 450.000 m³
 Estacas-prancha AZ 50: 950 t
 Betão: 1.490 m³ / Aço: 170 t
 Betão betuminoso: 480 t
 Enrocamento 50-200kg: 350 t
 Enrocamento 200-1000kg: 600 t
 Brita 0/40: 1.700 t / TVC 0-200kg: 65.000 t
 Cabeços de amarração de 100t: 12un / Defensas: 4 un

Description of works

Construction of a quay on sheet piles, with a quota of service (-12.00 m) ZH and forward berth of 78 m in length. The pier is topped by two lateral containment structures of 20 m in length and attached to the existing breakwater embankment by approximately 35 m wide, in TVC with wear layer of bituminous concrete. The basin is dredging at elevation -12.00 m.

Main features and quantities

Dredging: 450.000 m³
 Sheet-piles AZ 50: 950 ton
 Concrete: 1.490 m³ / Acier: 170 ton
 Bituminous concrete: 480 ton
 Rockfill 50-200 kg: 350 ton
 Rockfill 200-1000 kg: 600 ton
 Broken stone 0/40: 1.700 ton
 TVC 0-200 kg: 65.000 ton
 Bollards type 100 ton: 12 units / Fenders: 4 units



Resumo da Obra

Work Summary

Cliente	SOGEPOR	<i>Client</i>
	Entreprise Portuaire de Béjaia, EPE	
Tipo de contrato	Preço global / Lump sum	<i>Contract type</i>
Data de construção	2008-2009 (11 mois)	<i>Construction period</i>
Custo	EUR 11.146.000,00	<i>Cost</i>
Observações	Job in Consortium	<i>Notes</i>

Aterro e Ensecadeira Circular para Tomada de Água de uma Central de Ciclo Combinado

Terga, Argélia

Circular cofferdam embankment and outlet for water of a Combined Cycle

Terga, Algeria

Descrição dos Trabalhos

Execução de aterro e de uma ensecadeira de forma circular com 70 m de diâmetro, composta por estacas prancha AZ50 com 25 m de comprimento, reforçadas com vigas em anel de betão armado, como trabalho provisório de contenção para a construção de uma tomada de água.

Obra de defesa frontal aderente, com núcleo de enrocamento TVC 50-500 kg e enrocamento de protecção seleccionado com gamas de 0,5-1 ton, 0,5-2 ton, 1-3 ton e 3-5 ton.

Quantidade dos trabalhos

Escavação e dragagens: 44.680 m³

Enrocamentos: 54.760 m³

Estacas prancha AZ50: 1.430 ton



Description of works

Execution of landfill and a circular cofferdam shape with a diameter of 70 m, consisting of AZ50 with cuttings board 25 m long, reinforced with beams ring of reinforced concrete containment as temporary work for the construction of an outlet of water.

Work defensive front stick with core rockfill TVC 50-500 kg and riprap protection with selected ranges of 0.5-1 ton, 0.5 to 2 ton, 3.1 ton and 5.3 ton.



Main features and quantities

Excavation and dredging: 44.680 m³

Rockfill: 54.760 m³

Sheet piles AZ50: 1.430 ton

Resumo da Obra

Work Summary

Cliente	ORASCOM	Client
Tipo de contrato	Prix Forfaitaire	Contract type
Data de construção	2009-2010 (15 mois)	Construction period
Custo	EUR 14.450.000,00	Cost
Observações	Job in Consortium	Notes

GNL - 3Z Project – Construção do Cais de Serviço

Porto de Arzew, Argélia

GNL – 3Z Project – Service Quays Construction

Arzew Port, Algeria

Trabalhos Efectuados

Os trabalhos de construção dos cais de serviço do projecto GNL–3Z, em Arzew, Argélia, foram executados por um consórcio de que a Seth fez parte.

Esta obra consistiu na construção de 2 cais constituídos por colunas de aduelas de betão armado, encabeçadas por uma viga de coroamento, também em betão armado.

Estes dois novos cais acostáveis, com fundos de serviços à cota -9.50 m (Z.H.), têm 85 m e 35 m de comprimento, respectivamente e serão usados pelas embarcações de dragagem, rebocadores e outras embarcações de apoio no desenvolvimento dos trabalhos do projecto GNL–3Z no Porto de Arzew.

Principais quantidades

Aduelas em betão armado – 160 un
 Betão armado em aduelas – 1.200 m³
 Betão armado em superestrutura - 450 m³
 Dragagens - aprox 9 628 m³
 Enrocamentos diversos – 5.000 m³

Work description

Construction work on the docks of service-3Z LNG project in Arzew, Algeria.

This work involved the construction of two quays consisting of staves columns of reinforced concrete, headed by a capping beam, also in reinforced concrete. These two new docks, with funds services at elevation - 9.50 m (ZH), have 85 l 35 m long, respectively, and will be used for dredging vessels, tugboats and other vessels to support the development of work-LNG project 3Z at the Port of Arzew.

Main features and quantities

Staves - 160 units
 Reinforced concrete staves - 1,200 m³
 Reinforced concrete superstructure - 450 m³
 Dredging - + - 9628 m³
 Armourstone - 5,000 m³



Resumo da Obra

Work Summary

Cliente	Snamprogetti Chyoda s.a.s. di SAIPEM S.p.A.	Client
Tipo de contrato	Valor Global	Contract type
Data de construção	2009	Construction period
Custo	EUR 2.600.000,00	Cost

Porto de Recreio de Oeiras
Oeiras

Oeiras Pleasure Harbour
Oeiras, Portugal

Trabalhos efectuados

Obra estruturante para o concelho de Oeiras, não só requalifica a orla ribeirinha como se assume um espaço de lazer, de desporto e de apoio às actividades náuticas, com uma área envolvente com cerca de 250 lugares de estacionamento automóvel, um lote de lojas e um restaurante, instalações para a PSP e para o SEF, sanitários públicos e um posto de abastecimento de combustíveis para barcos.

A marina inserida no Porto de Recreio de Oeiras disponibiliza assim 275 lugares para embarcações de 6 a 25 m de comprimento.

Work description

Oeiras Pleasure Harbour located about 15 Km's west of Lisbon, is one of the most modern pleasure harbours of the "Sunny coast of Portugal" between Estoril coast and Sintra.

Scope included dredging, a breakwater and berths for 275 boats of various sizes, refurbishing of the surrounding area, including the installation of urban equipment (lighting fixtures, benches and planters) and shops, restaurant, police station, and parking to 250 automobiles.

Principais volumes de trabalho
Main work volumes

Betão / Concrete, 4 000 m³
 Estrutura metálica / Steel Structure, 165 000 Kg
 Estacas em betão Ø300mm / Foundation piling, 48 units
 Estacas metálicas Ø580 mm / Steel piles, 49 units
 Passadiços flutuantes / Steel gangways w/ wood, 1400 m²
 Pavimentos / Concrete pav. vessel parking area, 4269 m²
 Rev. betuminoso / Bituminous concrete pavement, 2142 m²


Resumo da Obra
Work Summary

Cliente	Câmara Municipal de Oeiras	<i>Client</i>
Tipo de contracto	Concepção / Construção Design-build	<i>Contract type</i>
Construtores	Seth, SA (em consórcio)	<i>Construction consortium</i>
Data de construção	2004-2005	<i>Construction period</i>
Custo	€ 7.000.000,00	<i>Cost</i>

Terminal Multiusos de Leixões
Porto de Leixões
Leixões Multipurpose Terminal
Port of Leixões (Portugal)
Work description

The contract for the Construction of the New Multipurpose Terminal at the port of Leixões was awarded by the APDL (Douro and Leixões Ports Authority) to the consortium of which Seth is a member, with a duration of 22 months and included the following jobs:

- Dredging two basins, one with a service depth of -8.50m (CD) and another of -5.00 m (CD);
- Construction of an Advance Structure of the South Mole Quay;
- Construction of a Fixed Roll-On/Roll-Off Platform;
- Construction of the New Block Wall Quays to depths of -8.50 m (CD) and -5.00 m (CD);
- Construction of two Rock-fill Bank Retaining Walls;
- Construction of a Slipway and an Open-air Storage Area at a level of +6.00 m (CD).
- Restructuring the area in various areas;
 - Repair of the vertical parameter of the present quay-wall of the South Mole;
 - Removal of sundry equipment;
 - Restructuring the technical networks;
 - Restructuring the stormwater run-off networks;
 - Repaving the port's existing open-air storage area.

Main Quantities

Dredging of soft materials to design level - **106,000 m³**
 Dredging of rock - **99,000 m³**
 Rock blasting - **73,000 m³**
 Earthmoving- **100,000 m³**
 Ungraded rock-fill- **95,500 m³**
 Graded rock-fill - **16,700 m³**
 Concrete: **40,000 m³**
 Paving: **37,000 m²**
 Rebars - **328 tones**
 NOREF type quay mass concrete blocks - **1,546 units**


Resumo da Obra
Work Summary

Client	APDL Administração dos Portos do Douro e Leixões
Type of contract	Lump Sum
Contractor:	Seth, SA (in consortium)
Construction period	2006-2009
Cost	EUR 13.000.000,00

Terminal de Cruzeiros de Lisboa – 1.ª fase
Santa Apolónia, Lisboa
Lisbon Cruise Liner Terminal - 1st Stage
Santa Apolónia, Lisboa
Work description

The first stage of the job involving the Rehabilitation and Reinforcement of the Quay between Santa Apolónia and Jardim do Tabaco, at a cost of €14 million, has been concluded by a consortium that includes Seth.

Construction of the Santa Apolónia liner terminal is divided into three stages. The first stage involves rehabilitation of the present quay between the Santa Apolónia liner terminal and the Navy Dock, as well as the construction of a new advanced structure, ensuring greater water depth to allow the berthing of present-day liners.

The river-front crown of the new berth now stands at a level of +5.70 m (chart datum), which means that continuity will be given to the present Santa Apolónia Quay with which it is now connected following the conclusion of the job.

The works also involved general dredging of the manoeuvring basin and berthing basin, improvement of the foundation soils involving the construction of aggregate columns, and the reconstruction of the rock-fill prisms and of the landfills behind the existing quay. Besides these, other works were carried out, such as reinforcement of the massif of the superstructure of the existing quay including soil-nailing and sealing fissures, as well as the construction of pile caps, placement of pre-beams, erection of pre-slabs and complementary concrete-pouring work.

The contract also includes construction of a new quay 200 metres long and a variable width of between 33 m and 45 meters, using reinforced concrete piles.

The technical infrastructure works and the fitting out of the quays include the water, electricity and storm-water networks, as well as connecting up with the existing water mains.

Main Quantities:

Piles – 204 units (1,000 mm internal diameter piles of an average depth of 36 m)

Rebar cages – 791,000 kg (piles) 101 000 Kg (pile caps) 223,000 kg (deck slab)

Concrete – 3400 m3 deck slab) and 6,600 m3 (for the piles)

Dredging - +/- 30,000 m3

Precast beams – 202 units (283,000 kg of rebar cages and 950 m3 of concrete)

Precast slabs – 660 units (230,000 kg of rebar cages and 1,300 m3 of concrete)


Resumo da Obra
Work Summary

Cliente	APL	Client
	Administração do Porto de Lisboa	
Tipo de contrato	Valor Global	Contract type
Data de construção	2007-2009	Construction period
Custo	EUR 14.000.000,00	Cost

Terminal de Cruzeiros de Lisboa – 2.^a fase
Santa Apolónia, Lisboa
Lisbon Cruise Liner Terminal – 2nd Stage
Santa Apolónia, Lisboa
Work description

The 2nd stage of the job involving the Rehabilitation and Reinforcement of the Quay between Santa Apolónia and Jardim do Tabaco, at a cost of € 38 million, has been concluded by a consortium that includes Seth.

This stage concluded the rehabilitation of the present quay between the Santa Apolónia liner terminal and the Navy Dock, as well as the construction of a new advanced structure, ensuring greater water depth to allow the berthing of present-day liners.

The river-front crown of the new berth now stands at a level of +5.70 m (chart datum), which means that continuity will be given to the present Santa Apolónia Quay with which it is now connected following the conclusion of the job.

The works also involved general dredging of the manoeuvring basin and berthing basin, improvement of the foundation soils behind the existing quay. Besides these, other works were carried out, such as reinforcement of the massif of the superstructure of the existing quay including soil-nailing and sealing fissures, as well as the construction of pile caps, placement of pre-beams, erection of pre-slabs and complementary concrete-pouring work.

The contract also includes construction of a new quay 475 metres long and a variable width of between 20 m and 55 meters, using reinforced concrete piles.

The technical infrastructure works and the fitting out of the quays include the water, electricity and storm-water networks, as well as connecting up with the existing water mains.

Main Quantities:

Piles – 435 units (1,000 mm internal diameter piles of an average depth of 38 m)

Rebar cages – 1,673,766 kg (piles)
238,937 Kg (pile caps) 629,318 kg (deck slab)

Concrete – 7,705 m³ deck slab
and 13,062 m³ (for the piles)

Dredging - +/- 65,000 m³

Precast beams – 513 units (556,000 kg of rebar cages and 2,405 m³ of concrete)

Precast slabs – 1,327 units (438,000 kg of rebar cages and 2,587 m³ of concrete)


Resumo da Obra
Work Summary

Cliente	APL	<i>Client</i>
	Administração do Porto de Lisboa	
Tipo de contrato	Valor Global	<i>Contract type</i>
Data de construção	2009-2011	<i>Construction period</i>
Custo	EUR 38.200.000,00	<i>Cost</i>

Grande Reparação do Molhe Principal do Porto de Porto Santo
Porto Santo (Arquipélago da Madeira)

Major Repair of the Main Breakwater of the Port of Porto Santo
Porto Santo Island (Madeira, Portugal)

Work description

This contract was awarded to Seth (in consortium) to carry out the work involved in the Major Repair of the Main Breakwater of the Port of Porto Santo, over a period of two years.

The job involved two distinct parts, marine work and onshore work.

The aim of the onshore work was to improve the quality, safety and working of the container park and of the entire commercial area, involving several roadways along the eastern part of the Quay

The marine work accounted for 90% of the contract and comprised reprofiling the external protection of the breakwater, (East section) consisting of rockfill of up to 0.15 tonnes and 10-tonne tetrapods, over a distance of 260 m, as well as the reconstruction of the external protection of the breakwater, (South section) consisting of 2-3 tonne rockfill and 30-tonne antifers, over a distance of 460 m.

The placement of the 4,000 30-tonne antifers involved the use of a heavy-lift crane (Manitowock 4100 erected on a "ringer"), sent for the purpose from Mainland Portugal, having the following main characteristics:

- Safe working load: placement of 3 tonnes at 50 metres
- Total weight of the crane, counterweights and jib: 400 tonnes
- Jib with a section of 3 x 2 metres, 61 m long
- Crane travel: on rails

Fundamentally, the repair consisted of removing the breakwater's protection mantle comprising 10-tonne tetrapods laid with slope of 34° and their replacement by 30-tonne antifers, laid with an inclination of about 26°. The alteration made to the inclination means that the protection of the breakwater extends into the sea by a further 12 to 15 metres, ensuring a greater area for the waves to break.

Main Quantities:

30-tonne antifers: 4,000 units

10-tonne tetrapods (new): 350 units

10-tonne tetrapods (existing, dismantled and reapplied): 5,000 units

C35/45 concrete: 52,000 m³

Rockfill 2/3 ton: 85,000 ton

Dredging sand: 25,000 m³



Resumo da Obra

Work Summary

Cliente

APRAM - Administração do Portos da Região Autónoma da Madeira, S.A.

Tipo de contrato

Valor Global

Data de construção

2007-2009

Custo

EUR 19.000.000,00

Contract type

Construction period

Cost

Terminal de Granéis Sólidos do Porto de Aveiro
Gafanha da Nazaré, Aveiro
Bulk Terminal, Aveiro Harbour
Gafanha da Nazaré, Aveiro
Descrição dos trabalhos

Este é o primeiro cais de acostagem em Portugal, construído em cortinas de estacas-prancha ancoradas. A parede que suporta o cais do Terminal de Granéis Sólidos de Aveiro foi construída numa combinação de estacas-prancha tipo Arcelor HZ 975 B –14 / AZ18. Os elementos-chave desta estrutura são perfis “HZ” com 25.9 m de comprimento, em aço da classe S 430 GP. Os elementos intermédios da cortina são estacas-prancha AZ18 com 20.9 m de altura, em aço da classe S 355 GP.

O âmbito dos trabalhos incluiu

- Construção de 750 metros de cais industrial;
- Construção de um terrapleno com 22 000m² de superfície e um caminho de rolamento, fundado em 642 estacas, cada uma com 1000 mm de diâmetro.
- 4 500 toneladas de estacas-prancha.


Work Description

This is the first Portuguese quay-wall employing the combined wall system with sheet-piles and HZ beams. The quay wall of the bulk terminal consists of a HZ 975 B-14/AZ18 combined wall system from Arcelor anchored with tie-rods to a secondary sheet pile wall. The key elements are HZ beams with a length of 25.9 m in steel grade S 430 GP. The intermediate sheet pile elements are 20.9 m long AZ 18 sheet piles in steel grade S 355 GP.

Work included

- Construction of a 750 m long quay;
- Construction of a quay area of 22 000 m² and a gantry rail supported by 642 concrete piles (Ø 1000 mm).
- 4 500 ton of sheet-piles.


Resumo da Obra
Work Summary

Cliente	APA – Administração do Porto de Aveiro, SA	<i>Client</i>
Tipo de contrato	Série de Preços	<i>Contract type</i>
	Unit Prices	
Data de construção	2001-2004	<i>Construction period</i>
Custo	EUR 21.038.183,00	<i>Cost</i>
Observações	Obra feita em Consórcio	<i>Notes</i>
	Job in Consortium	

Porto de Fua Mulaku
República das Maldivas
Fua Mulaku Harbour
Republic of Maldives
Trabalhos efectuados

Construção de um porto de pesca com uma área total de 15 000 m², incluindo 500 m de parede quebra-mar, 700 m de estacas-prancha e dragagem de aproximadamente 80 000 m³ de fundos de coral de elevada dureza.

A cravação das estacas-prancha e a execução dos trabalhos de dragagem exigiu o desmonte a fogo dos terrenos subjacentes através de 85 toneladas de explosivos.

As paredes quebra-mar foram construídas com pedra de granito importada (cerca de 50 000 toneladas).

Work description

Construction of a fishing harbour covering an area of 15 000 m² including 500 m of breakwaters, 700 m sheet piling and dredging of approx 80 000 m³ hard coral. To perform the piling and dredging works, 85 000 kg of explosives were detonated by surface blasting. All in all imported granite stone for the breakwaters, approx. 50 000 tons.



Topo: aspecto, após a conclusão
 Top: view, after completion

Imagens inferiores: durante a construção
 Lower images: work in progress

Resumo da Obra
Work Summary

Cliente	Ministry of Construction and Public Works	<i>Client</i>
Construtores	Højgaard & Schultz a/s SETH, Lda.	<i>Construction consortium</i>
Data de construção	2000-2002	<i>Construction period</i>
Custo	€ 9,7 million	<i>Cost</i>

Reparação de Emergência do Quebra-Mar – Fase 1
Puerto Militar – Praia da Vitória, Açores

Breakwater Emergency Repair – Stage 1
POL Pier – Praia da Vitória, Azores

Trabalhos realizados

Cota do coroamento: (+7:00 ZH)
Cota do pé do talude: (- 8:00 ZH)
Fabrico e colocação de antiferes
de 20 tons: 415 unid.
Fabrico e colocação de CORE-LOC®
de 33 tons: 380 unid.
Enrocamento de 2 a 9 tons: 5.500 tons

NOTA:

Os maiores CORE-LOCS® do mundo
à data desta obra.

Maquinaria utilizada

1 Grua de rastos de 350 tons
1 Grua de rastos de 250 tons
1 escavadora giratória de 60 tons
3 trailers de 40 tons

Work description

Crest height: +7.00 Datum
Bottom depth: – 8.00 Datum
Pre-fabrication and placement of 20-ton antifer
armour blocks: 415 ea
Pre-fabrication and placement of
32-ton CORE-LOC® armour blocks:
380 ea
Armour rock (2 - 9 ton): 5500 tons

NOTE:

The world's largest CORE-LOCS® at the
time of this work.
Armour rock (2 - 9 ton): 5500 tons

Equipment used

1 Crawler crane, 350 tons
1 Crawler crane, 250 tons
1 Hydraulic excavator, 60 tons
3 trailers, 40 tons



Topo: aspecto da zona dos trabalhos
Top: site, general view

Imagens inferiores: CORE-LOC e antifers
Lower images: CORE-LOC unit and antifers



Resumo da Obra
Work Summary

Cliente	Brown & Root Services Corp. (US Navy)	Client
Consórcio com	Ediçor/Somague	In consortium with
Projectista	Transystems Corporation	Engineering
Data de construção	2002 - 2003	Construction period
Custo	€ 12,6 million (Phase I)	Cost

Reparação de Emergência do Quebra-Mar, Fase 2
Puerto Militar – Praia da Vitória, Açores
Breakwater Emergency Repair, Stage 2
POL Pier – Praia da Vitória, Azores
Trabalhos realizados

Cota do coroamento: (+7:00 ZH)
 Cota do pé do talude: (- 10:00 ZH)
 Fabrico e colocação de CORE-LOC®
 de 33 tons: 670 unid
 Enrocamento de 2,5 a 20 tons:
 175.500 tons

NOTA: Os maiores CORE-LOCS®
 do mundo à data desta obra.

Maquinaria utilizada

1 Grua de rastros de 350 tons
 1 Grua de rastros de 250 tons
 1 escavadora giratória de 60 tons
 3 trailers de 40 tons
 1 pá carregadora Komatsu WA600 (60T)


Work description

Crest height: +7.00 Datum
 Bottom depth: – 10.00 Datum
 Pre-fabrication and placement of
 33-ton CORE-LOC® armour blocks: 670 ea
 Armour rock (2,5-20 ton): 175.500 tons

NOTE: The world's largest CORE-LOCS®
 at the time of this work.


Equipment used

1 Crawler crane, 350 tons
 1 Crawler crane, 250 tons
 1 Hydraulic excavator, 60 tons
 3 trailers, 40 tons
 1 Komatsu WA600 (60T)



Topo: aspecto da zona da obra
 Top: site, general view

Resumo da Obra
Work Summary

Cliente	Brown & Root Services Corp. (US Navy)	<i>Client</i>
Projectista	Transystems Corporation	<i>Engineering</i>
Data de construção	2004 - 2006	<i>Construction period</i>
Custo	€ 24,6 million (Phase 2)	<i>Cost</i>

Reparação de Emergência do Quebra-Mar – Fase 3

Porto Militar – Praia da Vitória, Açores

Emergency Repair of the Breakwater – Stage 3

Military Port, POL Pier – Praia da Vitória, Azores

Work Description

The third and final stage of the reconstruction of the North Breakwater of Praia da Vitória Bay, a contract that the US Navy had awarded to **Seth**, on November 1, 2007, was concluded in March 26, 2009.

The job in question, budgeted at about € 8.5 million, took 15 months (3 months ahead of the date scheduled by the customer) and it involved the following tasks and quantities:

- Conclusion of the protection crown (30 metres wide) around the head, involving application of 19,300 tonnes of rock-fill of between 8 and 22 tonnes;
- Reprofilling the body of the breakwater over a distance of 540 m and application of 66,300 tonnes of rock-fill of between 2,5 and 8 tonnes used in the construction of the protection mantle along the inner side of the breakwater;
- Pre-fabrication of 392 C60/75 concrete Core-locs reinforced with 50mm synthetic-fibre;
- Placement of 516 new 33-tonne Core-locs;
- Shifting and replacing 100 existing Core-locs;
- Shifting and replacing 120 Antifers each of 20 tonnes;
- Concreting the superstructure of the head and placement of the Port of Praia da Vitória approach light having a visual range of 10 nautical miles.

NOTE: *The world's largest CORE-LOCS® at the time of this work.*

Equipment used

- 1 Crawler crane, 350 tons
- 1 Crawler crane, 250 tons
- 1 Hydraulic excavator, 60 tons
- 3 trailers, 40 tons
- 1 Wheel Loader Komatsu WA600 (60 ton)



Resumo da Obra

Work Summary

Cliente	US Navy	<i>Client</i>
	United States Navy	
Projectista	Baird & Associates (USA)	<i>Engineering</i>
Data de construção	2007 - 2009	<i>Construction period</i>
Custo	€ 8,5 million (Phase 3)	<i>Cost</i>

Porto de Abrigo da Costa Norte no Porto Moniz
Porto Moniz, Madeira
Porto Moniz Harbour
Porto Moniz, Madeira
Trabalhos efectuados

- Construção de cais acostável
- Caixotões fundados à cota – 8,00m ZH
- Viaduto em betão armado para acesso ao porto.

Volumes de trabalho

Fabrico e colocação de 2100 antifers com 50 toneladas cada

- 5 caixotões com 25m x 15m x 13m cada
- 200.000 m³ de enrocamentos

Work description

- Construction of berthing quay
- Caissons laid at -8,0 m below datum level
- Concrete access viaduct

Work volume

Pre-fabrication and placement of 50 ton antifer armour blocks: 2100ea

- Pre-fabrication and placement of 5 concrete caissons (25m x 15m x 13m each one)
- Stone volume: 200.00m³


Resumo da Obra
Work Summary

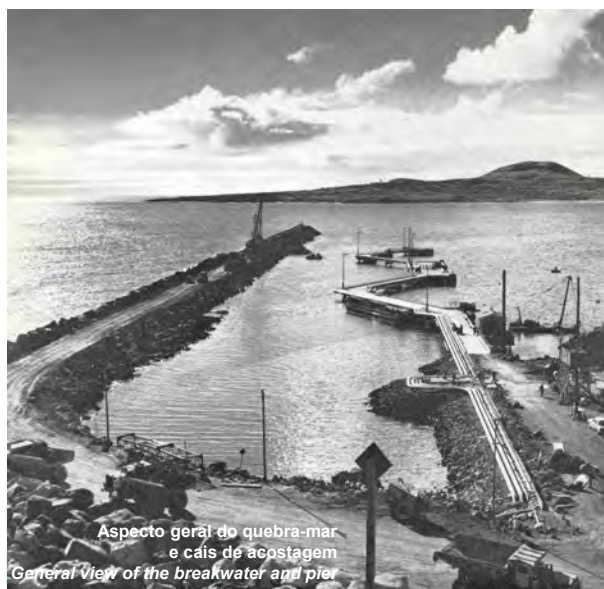
Cliente	APRAM (Madeira)	Client
Fiscalização	APRAM	Inspection agency
Tipo de contrato	Série de Preços	Contract type
	Unit Price	
Data de construção	2002-2003	Construction period
Custo	EUR 18.352.751	Cost
Projectista	WW – Consultores de Hidráulica	Architect/Engineer
Observações	Consórcio com Etermar e Somague	Notes

U.S. Navy - Cais de Combustíveis e Lubrificantes
Ilha da Terceira, Arquipélago dos Açores
U.S. Navy - POL Pier
Terceira Island, Azores

The construction of the dock of fuels and lubricants of Praia da Vitória, to support the activities of the US Armed Forces stationed at Lajes, Azores, involved the implementation of the following infrastructure:

- Concrete wharf with 260 m in length (including 1 Duke d'Alba), with foundations on steel piles 40 m long. Depth at the top of the pier: 14 m, usable by ships with a draft up to 12 m.
- Breakwater protection trapezoidal cross section with 650 m length, involving 500,000 m³ rockfill.
- Construction of a multi-product pipeline to refined petroleum products 2500 m long.

More recently, in 1982, SETH also performed several works by enhancing the breakwater and in 1989 installed a new cathodic protection system imposed current.

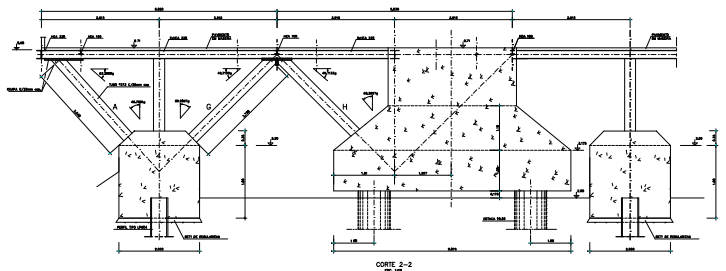

Resumo da Obra
Work Summary

Cliente	U.S. Navy	<i>Client</i>
Fiscalização	Naval Facilities Engineering Command	<i>Inspection agency</i>
Tipo de contrato	Construção	<i>Contract type</i>
	Construction Only	
Data de construção	1962-1963	<i>Construction period</i>
Volume de betão	75 000 m³	<i>Total concrete volume</i>
Estacas cravadas	40 m comp./length	<i>Driven piles</i>
Quebra-mar	650 m / 500 000 m³	<i>Breakwater</i>
Cais de acostagem	260 m	<i>Pier</i>
Calado útil	12 m	<i>Draught</i>

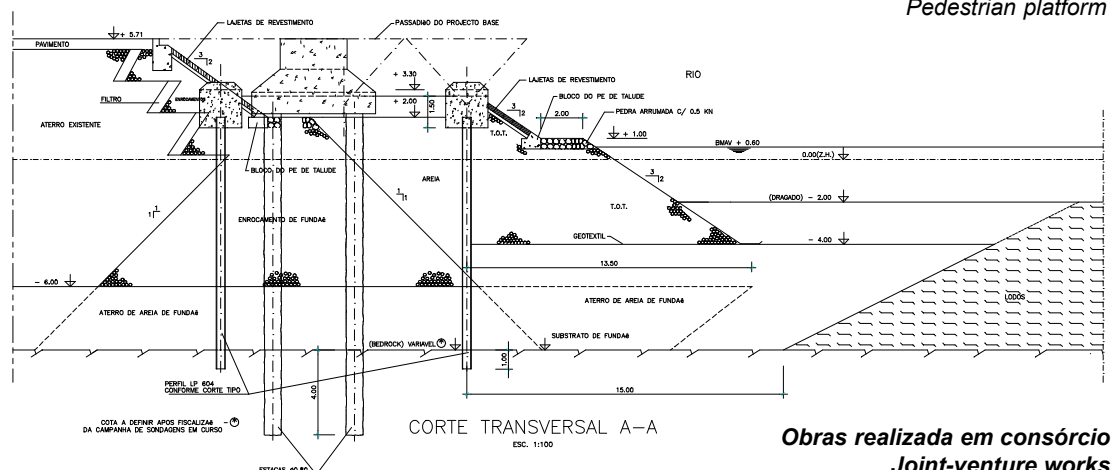
EXPO'98 - Dique de Fecho e Eclusa
Zona Oriental da cidade de Lisboa
EXPO'98 - Closure Dyke and Lock
East side of Lisbon (Portugal)

Description of works

- Sheet-piles - 1000 ton
- Construction of a cofferdam for canal dock
- Construction of steel structures and installation of mechanical equipment - 200 ton
- Dredging - 1 000 000 m³ (including transport and discharge on the sea)
- Enrocamento - 150 000 m³



Plataforma pedonal
Pedestrian platform



Obras realizada em consórcio
Joint-venture works

Resumo da Obra
Work Summary

Cliente
Tipo de contrato

Parque EXPO, SA
Chave-na-Mão
Turn-Key

Client
Contract type

Data de construção
Custo

1998
PTE 3.200.000.000

Construction period
Cost

Portinho de Pesca da Arrifana
Obras de Conservação e Valorização
Arrifana Fishing Harbor
Maintenance and Upgrading Works
Trabalhos efectuados

Dragagem da bacia interior
 Prolongamento e alteamento do quebra-mar
 Melhoramento da estabilidade das arribas
 Construção de muros de suporte da envolvente da bacia
 Reparação da rampa varadoura

Volume de betão: 2500 m³

Volume de enrocamento: 6000 m³

Work description

Dredging of the inner basin
Length and height increase of the breakwater
Stability improvement of the surrounding cliffs
Construction of retaining walls
around the inner basin
Repairs to the boats ramp

Concrete volume: 2500 m³

Aarmor stone volume: 6000 m³



Topo: aspecto, após a conclusão
 Top: view, after completion

Imagem inferior:
 durante a construção
 Lower image:
 work in progress

Resumo da Obra
Work Summary

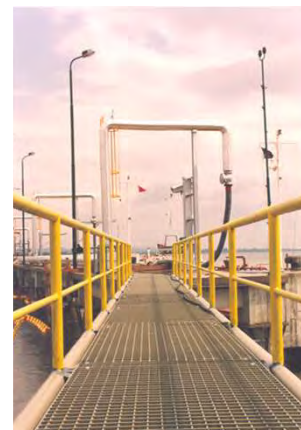
Cliente	Instituto de Conservação da Natureza	Client
Projectista	Consulmar	Designer / Engineer
Inspecção	Instituto Marítimo e Portuário	Inspection Agency
Tipo de contrato	Série de Preços	Contract type
	Unit Prices	
Data de construção	1999/2000	Construction period
Custo	€ 545.000	Cost

Ampliação do Cais de Descarga de Combustível Central Termoelétrica do Carregado

Fuel Pier Extension *Carregado Power Plant*

Description of Works

- Demolition of the existing dolphins.
- Driving of Ø 500 and Ø 700 tubular steel piles.
- Prefabrication of structural elements of reinforced concrete.
- Construction and assembly of the steel structures (walkways connecting to the dolphins and fender attachment belts).
- Supply and assembly of fenders.
- Study, supply and assembly of the spill prevention system, comprising:
 - floating barriers;
 - racking motor pump;
 - flexible tanks;
 - disc recovery.



Estacas, encabeçamentos e passadiços metálicos (em cima)
Cais acostável durante a fase da sua construção (em baixo)
Piles and capping structures and steel structures (top view)
Berthing Quay during construction phase (bottom view)

Resumo da Obra

Work Summary

Cliente	EDP	<i>Client</i>
	Electricidade de Portugal, SA	
Projecto	Proman / SETH	<i>Engineering design</i>
Projecto do sistema		<i>Oil spill prevention</i>
de prevenção de derrames	Slickbar, Inc.	<i>design</i>
Fiscalização	EDP	<i>Inspection agency</i>
Tipo de contrato	Chave-na-Mão	<i>Contract type</i>
	Turn-Key	
Data de construção	1993	<i>Construction period</i>
Custo	PTE: 290.000.000	<i>Cost</i>
Estacas tubulares	Ø 500 / Ø 700	<i>Tubular piles</i>

Projecto Fénix - Ampliação do Cais 3
Lisnave Internacional, SA
Phoenix Project - Pier 3 Extension
Lisnave Internacional, SA
Description of Works

The extension of Pier No. 3 of the Lisnave Setúbal Shipyards was carried out in 2 phases: 53 x 18 m (1st Phase) and 15 x 14 m (2nd Phase).

The new quay was supported by ground-shaped piles in the following quantities and dimensions:

36 piles with Ø 1000 mm
 69 piles of Ø 800 mm

The dredging carried out was intended to improve navigation in the maneuvering basin and to lay the foundations of the quay structure.

The work also included the protection of buildings with rockfill prisms, several fluid gutters, the construction of a Dolphin and several works for the recovery of Pier #1.

Dolphin was founded on a 15 x 8 m shoe and integrated into a 14 x 7 m top slab.

The volume of core filling sands totaled 900 m³.



Aspecto dos trabalhos de ampliação do Cais 3
 General view of the Pier 3 Extension works

Resumo da Obra
Work Summary

Cliente	Lisnave Int'l, SA	<i>Client</i>
Projecto	Imoconsult	<i>Engineering design</i>
Fiscalização	Proman	<i>Inspection agency</i>
Tipo de contrato	Chave-na-Mão Turn-Key	<i>Contract type</i>
Data de construção	1995 - 1996	<i>Construction period</i>
Custo	PTE: 526.000.000	<i>Cost</i>
Volume de dragagens	120 000 m3	<i>Total dredging volume</i>
Volume de betão	6200 m3	<i>Total concrete volume</i>
Estacas moldadas	36 + 69 (1000 mm - 800 mm)	<i>Bored cast-in-place piles</i>
Prismas de enrocamento	18 000 m3 (3-5 ton)	<i>Armour stone</i>
Duque d'alba	14 x 7 x 10 m	<i>Dolphin</i>

Construção de Rampa e Cais de Apoio
Clube Náutico de Tavira
Construction of Ramp and Ancillary Quay
Tavira Nautical Club
Trabalhos efectuados

Construção de rampa varadouro
e cais de apoio

Estacas cravadas: Ø 508 mm, 22 unidades

Work description

Construction of a boats ramp
and ancillary quay

Driven steel piles: Ø 508 mm, 22 ea.



Topo: aspecto, após a conclusão
Top: view, after completion

Imagem inferior: durante a construção
Lower image: work in progress

Resumo da Obra
Work Summary

Cliente	Câmara Municipal de Tavira	Client
Inspecção	Câmara Municipal de Tavira	Inspection Agency
Tipo de contrato	Série de Preços	Contract type
	Unit Prices	
Data de construção	1999	Construction period
Custo	€ 361.000	Cost

Execução de Tomada de Água

Central de Ciclo Combinado de Lares (Figueira da Foz)

Water Intake and Discharge Pipping

Combined Cycle Central Power (Lares - Figueira da Foz, Portugal)

Work Description

Seth , S.A. executed in consortium the contract for the execution of the Water Intake and Discharge Pipping for the EDP Combined Cycle Central Power, at Lares (Figueira da Foz) .

The work consisted in implementing the aforementioned water outlet at the Mondego River and the work realized basically water intake and pumping wells, in reinforced concrete structures, executed by the method of molded walls and the micro tunnelling execution water intake and discharge pipping.

During the contract it was also need to implement some cofferdams in "Larsen" sheet piles.

Around the water intake box was performed a slab in "Reno mattresses", over a rock fill foundation with about 1.0 m thick, for protection of this slab were performed "wing" walls in gabions .



Main jobs:

- Micro tunnelling
- Horizontal drilling
- Shapped walls
- Cofferdams
- Dredging
- Gabions and mattresses underwater
- Submerged concrete



Resumo da Obra

Work Summary

Cliente	EDP – Energias de Portugal, SA	<i>Client</i>
Tipo de contrato	Valor Global	<i>Contract type</i>
	Lump Sum	
Data de construção	2008-2009	<i>Construction period</i>
Custo	EUR 2.990.000,00	<i>Cost</i>

Construção do Reforço de Potência de Salamonde II
Bacia do Cávado-Rabagão (Vieira do Minho), Portugal

Improvement Salamonde Dam
Bacia do Cávado-Rabagão (Vieira do Minho), Portugal

Work Description

Execution of all construction works of the new Hydroelectric Power Salamonde II which is intended to strengthen power installed in hydroelectric Salamonde, situated in Vieira do Minho, Braga district.

Scope of work

Independent and underground hydraulic circuit with 2.2 km total length, composed of the following elements:

- Water intake in the Albufeira Salamonde;
- Section of underground adduction;
- Section of restitution between the Central and the connection to the balancing chimney;
- Balancing chimney;
- Tunnel Return;
- Restitution in Albufeira Caniçada;
- Downstream channel dug in the bed of the River Cávado;
- Underground Central;
- Building support and substation;
- Access tunnels and attack;
- Heap and diversion of Rio Mau;
- Cofferdams Water Outlet, restitution and complementary flood spillway;
- Complementary Flood spillway with supply and assembly of equipment.

Main quantities:

Earth moving: 765 000 m³

Concrete: 130,000 m³

Steel: 9,100,000 kg

Construction of cofferdams

- Water intake in the Albufeira Salamonde
- Complementary Flood spillway, Albufeira Salamonde
- Restitution in Albufeira Caniçada



Resumo da Obra
Work Summary

Cliente	EDP – Gestão da Produção de Energia, SA	<i>Client</i>
Tipo de contracto	Valor Global / Lump-sum	<i>Contract type</i>
Construtores	Seth, SA (em consórcio)	<i>Contractor</i>
Data de construção	2011-2015	<i>Construction period</i>
Custo	€ 125.000.000,00	<i>Cost</i>

Açude Insuflável de Coruche
Rio Sorraia, Coruche
Inflatable Weir at Coruche
Sorraia River, Coruche (Portugal)
Description of works

Seth completed the work of the Inflatable Weir (river Sorraia) in Coruche.

The work of Dam Coruche, launched by the Municipality of Coruche, is part of the Recovery Plan Marginal Sorraia River allowing residents to enjoy a new social facilities, unique features.

The water mirror thus created upstream of the dam enhances the practice of fishing contests and events, recreational motorboats, and other footpaths.

The dam consists of a main body, reinforced concrete, crossing the entire river, and a metal catwalk, a pedestrian extension of 62 meters, which allows the passage from one to the other side.

The indirect foundations of the complex consist of a set of 62 reinforced concrete piles, cast on the ground, with 800 mm diameter and 16 m deep.

The inflatable weir is still complex consists of:

- A house of Control
- A house of Command
- An observation room for fish
- A fish ladder.

Main quantities of work

Concrete: 3.970 m³

Rubble concrete: 45 m³

Shuttering: 974 m²

Steel: 272.000 Kg

Accesses: 800 m³

Excavation: 2.300 m³

Inflatable sluice gates:

Span 1: c/ 30 meters

Span 2: c/ 30 meters

Diameter: 2,5 meters

Material: semi-synthetic rubber reinforced with polyester mesh

Architect and Engineer: Hidroprojecto


Resumo da Obra
Work Summary

Cliente	Câmara Municipal de Coruche
Tipo de contrato	Turn-key
Data de construção	2011-2012
Custo	EUR 2.291.885,00

<i>Client</i>
<i>Contract type</i>
<i>Construction period</i>
<i>Cost</i>

Açude Insuflável de Abrantes
Abrantes
Inflatable Weir at Abrantes
Abrantes, Portugal

As part of a consortium **Seth** concluded the River Tagus Inflatable Weir job at Abrantes. The job, awarded by the Abrantes City Council, was finalised in 670 working days and it included the design of the project and the construction of what is, to date, the Iberian Peninsula's biggest weir of its type.

One of the goals of this job was to create a reflecting pool upstream of the weir at a predetermined level, allowing the reservoir created between the city of Abrantes and Rossio ao Sul do Tejo to be used for leisure and entertainment purposes.

Fundamentally, the weir comprises a reinforced concrete body with a portico-shaped cross section about 15 metres wide and 200 metres long, with a variable depth of about 6 metres. The superstructure comprises 4 piers 5.5 metres tall that form four spans that can be blocked by means of cylindrical rubber bodies, the first having a perimeter of 1.20 m and the others 3.2 m. The 5th span comprises a reinforced concrete sluice.

Of the complementary organs, attention is drawn to the reinforced fish house (a zigzag labyrinth) located on the left bank surrounding the respective abutment, and to the control room where the equipment required to operate the weir is located (insufflators, valves, electrical installation, automation, emergency generators, plc-automated control, etc.).

The access roads to the weir are also part of the project.

Main quantities of work

Concrete: 25 000 m³

Rubble concrete: 5 000 m³

Shuttering: 9 500 m²

Steel: 1 500 tonnes

Accesses: 8 800 m²

Excavation: 16 000 m³

Excavation in rock: 8 500 m³

Inflatable sluice gates:

Span 1 (weight 2.1 tonnes – thickness 10.8 mm)

Spans 2, 3 & 4 (weight 3 x 4.7 tonnes
– thickness – 13.5 mm)


Resumo da Obra
Work Summary

Cliente
Projectista
Tipo de contrato
Data de construção
Custo

Câmara Municipal de Abrantes
CENOR – Projectos de Engenharia, Lda
Concepção/Construção
2004-2007 (670 days)
EUR 9.450.290,00

Client
Architect & Engineer
Contract type
Construction period
Cost

Rehabilitation of the dams at Arrabalde and Salgadas

Page 1 of 2

Inflatable Weir at Arrabalde

This dam is located approximately 14.3 kilometers to the river Lis, a section located to the west of the city of Leiria next "field of the fair." This hydraulic structure is fundamental part of the irrigation system of the fields of the Valley of Lis. It is through this that creates the reservoir water level necessary to enable the abstraction of water for irrigation.

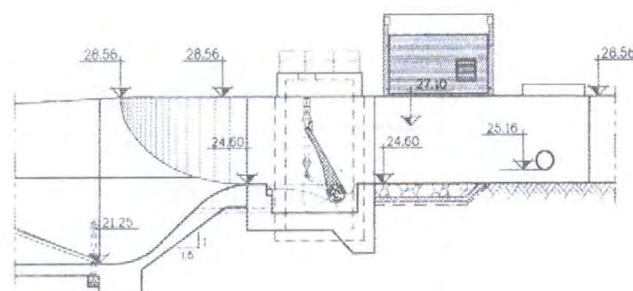
The rehabilitation of the dam Arrabalde's main goal was to allow the automatic triggering of the two gates, inserted in the body of the dam, and water intakes in order to allow, in accordance with the needs of water and streams and tributaries downstream requested, optimization of their operation.

From the structural point of view, the solution rehabilitation forced the demolition of the old central area of the dam wall and sill, for placement of new gates. This intervention took place, on both sides, with the curtains crimping sheet pile walls in masonry of the dam, to ensure the stability of the work and the surrounding land during the demolition of existing walls and the sill.

The implementation of the new dam, comprised the construction of two side meetings, a central pillar and from two wells, one on each bank, which host the servo motors driving the floodgates. The work also included the automation of the two water intakes for irrigation.



Inflatable at Arrabalde: view downstream of the two spans, cofferdam and house to electrical controls



Inflatable weir at Arrabalde: river to flow only in the lower tubes, during the execution of work

Type of gates	Hinged
Width of the closed spans	7,75m
Height of the closed spans	2,50m
Number of gates	2
Threshold elevation	24,60m
NPA elevation	27,10m
Platform elevation	28,56m
Maximum load	2,5 m.c.a.
Gate operation	At full load
Cofferdam operation	In balanced waters

Resumo da Obra Work Summary

Client	IHERA - Instituto de Hidráulica, Engenharia Rural e Ambiente
Project	HIDROPROJECTO – Engenharia e Gestão, SA
Tipo de contrato	Turnkey
Data de construção	November 2000 to April 2001
Cost	1.920.371,91 Euros

Rehabilitation of the dams at Arrabalde and Salgadas

Page 2 of 2

Inflatable Weir at Salgadas

The dam of Salgadas is located approximately 30 kilometers to the river Lis, near Monte Real, a section of the bed and settled contributes more as a fundamental part of the irrigation system of the fields of the Vale do Lis.

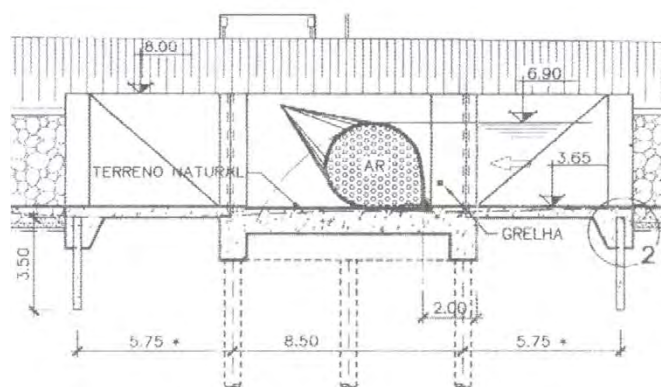
The rehabilitation of the dam's main goal was to replace the existing structure that was obsolete (about 50 years), creating a plan to allow sufficient water supply to the needs of water and flow downstream requested by making water in the left margin.

The work consisted of an "inflatable dam" which broadly comprises a threshold based on eight concrete piles with 60 cm diameter and depth between 18 and 24 meters, in which a chamber is recessed synthetic rubber reinforced.

The rehabilitation also included the automation of irrigation water outlet.



Inflatable Weir at Salgadas em plena carga (pormenor do insuflável)



Açude das Salgadas: vista de jusante da margem direita
(açude a descarregar com o insuflável a esvaziar)

Type of gate	Inflatable
Width of the sealed opening	7,00m
Height of the sealed opening	3,25m
Side Wall inclination	1 (V) : 1 (H)
Number of gates	1
Threshold elevation	3,65m
NPA elevation	6,90m
Platform elevation	8,00m

Resumo da Obra *Work Summary*

Cliente
Projectista
Tipo de contrato
Data de construção
Custo

IHERA - Instituto de Hidráulica, Engenharia Rural e Ambiente
HIDROPROJECTO – Engenharia e Gestão, SA
Chave-na-Mão
Novembro de 2000 a Abril de 2001
1.920.371,91 euros (PTE 385.000.000) os dois açudes

STIP Lot D 110 kV, Dondo - Munhava
Provincia de Sofala, Moçambique
STIP Lot D 110 kV, Dondo - Munhava
Sofala, Mozambique
Descrição dos Trabalhos

Desmantelamento da Linha de Transporte a 110kV existente entre as localidades de Dondo e Munhava, na Província de Sofala e construção de uma nova linha de transporte aérea a 110 kV (RESILIENTE) constituída por fundações em micro estacas e betão armado, torres metálicas treliçadas, isoladores em vidro, circuito duplo/condutor simples de ACSR e OPGW. Substituição de condutor na CL71. Aterro com material granular para acesso a zonas inundadas.

Principais Quantidades

Torres – 79 un.
 Condutor – 156 km
 OPGW – 52 km
 Micro estacas perfuradas – 484 un./5.812 m

Description of Works

Dismantling of the existing 110kV Transmission Line between the localities of Dondo and Munhava, in Sofala Province, and construction of a new (RESILIENT) 110kV overhead transmission line consisting of micro-pile and reinforced concrete foundations, lattice steel towers, glass insulators, double circuit/single ACSR conductor, and OPGW. Replacement of the conductor on CL71. Embankment with granular material for access to flooded areas.

Main Quantities

Towers – 79 units
 Conductor – 156 km
 OPGW – 52 km
 Bored micro piles – 484 units/5,812 m


Resumo da Obra
Work Summary

Cliente
 Tipo de contrato
 Data de construção
 Montante

EDM – Electricidade de Moçambique
Série de Preços/Re.measurable
2022-2025
EUR 8 447 128,67 €

Client
Contract type
Construction period
Contract Amount

PCIREP – Linha de 66 (110) kV Lamego - Guaraguara
Provincia de Sofala, Moçambique

PCIREP – 66 (110) kV Line Lamego - Guaraguara
Sofala, Mozambique

Descrição dos Trabalhos

Post Cyclone Idai and Kenneth Emergency Recovery and Resilience Programme for Mozambique (PCIREP) – Transmission Lines.

Desmantelamento da Linha de Transporte a 66kV existente entre as localidades de Lamego e Guaraguara, na Província de Sofala e construção de uma nova linha de transporte aérea a 110 kV constituída por fundações em micro estacas e betão armado, torres metálicas treliçadas, isoladores em vidro, circuito simples/condutor simples de ACSR e OPGW.

Principais Quantidades

Torres – 200 un.

Condutor – 210 km

OPGW – 70 km

Micro estacas perfuradas – 996 un./6131 m

Description of Works

Post Cyclone Idai and Kenneth Emergency Recovery and Resilience Programme for Mozambique (PCIREP) – Transmission Lines. Dismantling of the existing 66kV Transmission Line between the localities of Lamego and Guaraguara in Sofala Province, and construction of a new 110kV overhead transmission line consisting of micro-pile and reinforced concrete foundations, lattice steel towers, glass insulators, single circuit/single ACSR conductor, and OPGW.

Main Quantities

Towers – 200 units

Conductor – 210 km

OPGW – 70 km

Bored micro piles – 484 units/5,812 m



Resumo da Obra

Work Summary

Cliente
Tipo de contrato
Data de construção
Montante

EDM – Electricidade de Moçambique
Série de Preços/Re-mesurable
2022-2024
EUR 5.591.669,00

Client
Contract type
Construction period
Contract Amount

Linha C31 (SE Nampula 220 - SE Nampula Central)
Substituição de Condutor e instalação de OPGW
Província de Nampula, Moçambique**C31 Nampula Transmission Line**
Conductor replacement and OPGW instalation
Nampula, Mozambique**Descrição dos Trabalhos**

Linha C31 (SE Nampula 220 - SE Nampula Central)
Trabalhos de substituição de condutor ACSR Dove por ACCC Lisbon em 16 torres, sendo 10 torres de amarração e 6 torres de suspensão e instalação de cabo OPGW.

Características dos Trabalhos

Comprimento da Linha: 5.0 km
Tensão Nominal: 110.0 kV
Tensão Máxima: 123.0 kV
Frequência: 50 Hz
Condutor por fase: 1 x Lisbon
Smáx: 199 MVA
Disposição de fases: Triangular
Isoladores aplicados: Composite
Cabo/OPGW: OPGW 48 fibras

Description of Works

Line C31 (SE Nampula 220 – SE Nampula Central) Works involving the replacement of ACSR Dove conductor with ACCC Lisbon on 16 towers, including 10 tension towers and 6 suspension towers, and the installation of OPGW cable.

Main Features

Line Length: 5.0 km
Nominal Voltage: 110.0 kV
Maximum Voltage: 123.0 kV
Frequency: 50 Hz
Conductor per phase: 1 x Lisbon
Smáx: 199 MVA
Phase Layout: Triangular
Insulators: Composite
OPGW: OPGW 48 fibers

**Resumo da Obra****Work Summary**

Cliente
Tipo de contrato
Data de construção
Montante

EDM – Electricidade de Moçambique
Valor Global/Lumpsum
2023
EUR 298.271,03 (19.149.000,00 MZN)

Client
Contract type
Construction period
Amount

Reabilitação de Redes de Distribuição - Perip Lot 4
Maputo – Moçambique
Rehabilitation of Distribution Networks - Perip Lot 4
Maputo - Mozambique
Descrição dos Trabalhos

Projeto de Melhoria da Eficiência e Fiabilidade Energética (PERIP) – Lote 4: Reabilitação das Redes de Distribuição de Maputo e Matola (Redes de Média e Baixa Tensão).
 Obra financiada pelo Banco Mundial.

Principais Quantidades

- 1250 postes de madeira para linhas a Média Tensão;
- 1300 postes de betão para linhas a Média Tensão;
- 550 km de condutor para a execução de 190 km aproximados de linhas a Média Tensão;
- 105 km de ADSS (fibra óptica);
- 100 transformadores MT/BT;
- 5000 postes de madeira para linhas a Baixa Tensão;
- Ligação de 6.000 novos consumidores;
- Duas torres metálicas treliçadas com 25 m de altura, para travessia de rio.


Description of Works

Power Efficiency and Reliability Improvement Project (PERIP) – Lot 4: Rehabilitation of Distribution Networks at Maputo and Matola (Medium and Low Voltage Systems).
 Work financed by World Bank.

Main Quantities

- 1250 wooden posts for Medium Voltage lines;
- 1300 concrete posts for Medium Voltage lines;
- 550 km of conductor for the execution of approximately 190 km of Medium Voltage lines;
- 105 km of ADSS (optical fiber);
- 100 MT/LV transformers;
- 5000 wooden posts for Low Voltage lines;
- Connection of 6,000 new consumers.
- Two 25 m high metal lattice towers for crossing the river.


Resumo da Obra
Work Summary

Cliente	EDM – Electricidade de Moçambique	<i>Client</i>
Tipo de contrato	Série de Preços	<i>Contract type</i>
	Unit Price	
Data de construção	2020 – job in progress	<i>Construction period</i>
Custo	USD 11.177.344,86	<i>Cost</i>

Reforço da Rede Eléctrica Nacional (Danida Business Finance)
Maputo, Gaza, Inhambane, Zambézia e Nampula – Moçambique

Reinforcement and Extension of the National Power Transmission Grid
Maputo, Gaza, Inhambane, Zambézia, Nampula - Mozambique

Descrição dos Trabalhos

Uma nova empreitada para trabalhos de transmissão e distribuição de electricidade em Moçambique foi adjudicada ao consórcio de que a Seth faz parte. Este contrato chave-na-mão envolve a construção de 140 km de linha de energia de 275 kV entre Ressano Garcia e Macia, 100 km de linha de energia de 110 kV entre Lindela e Massinga, a intervenção / construção de 10 (dez) subestações nas províncias de Maputo, Inhambane, Zambézia e Nampula, nomeadamente Ressano Garcia, Ndzimbene (Macia), Lindela, Massinga, Maxixe, Alto Molocue, Nampula Central, Chimuara, Quelimane e Maputo 275 (Beluluane).

O valor do contrato é de cerca de 121 milhões de euros e é financiado pela agência de cooperação dinamarquesa DANIDA, sendo o cliente a empresa pública EDM - Electricidade de Moçambique, EP.

Nestas trabalhos, o parceiro tecnológico para subestações é a ABB AB (Asea Brown Boveri) e o período de implementação é de 78 meses.

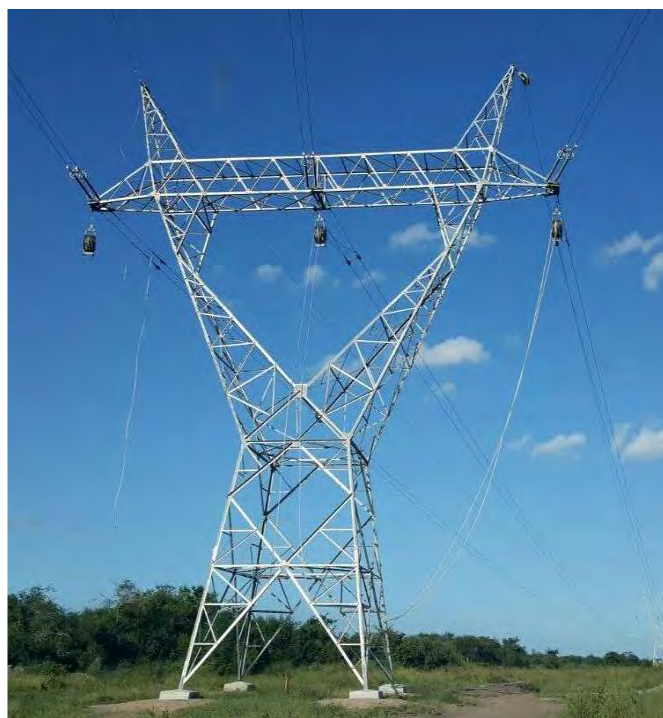
Description of Works

SETH is executing (in consortium) another electricity transmission and distribution contract in Mozambique.

The turnkey contract involves the construction of 140 km of 275 kV power line between Ressano Garcia and Macia, 100 km of 110 kV power line between Lindela and Massinga, the intervention / construction of 10 (ten) substations in the provinces of Maputo, Inhambane, Zambezia and Nampula, namely Ressano Garcia, Ndzimbene (Macia), Lindela, Massinga, Maxixe, Alto Molocue, Central Nampula, Chimuara, Quelimane and Maputo 275 (Beluluane).

The contract value is around EUR 121 million and is funded by the Danish cooperation agency DANIDA, the client being EDM - Electricidade de Moçambique, EP.

In this contract, the technology partner for substations is ABB AB (Asea Brown Boveri) and, the implementation period is 78 months.



Resumo da Obra

Work Summary

Cliente	EDM – Electricidade de Moçambique, E.P.	<i>Client</i>
Tipo de contrato	Valor Global Lump Sum	<i>Contract type</i>
Data de construção	2013-2020	<i>Construction period</i>
Custo	EUR 121.000.000,00	<i>Cost</i>

EDAP (Programa de Desenvolvimento e Acesso à Energia Eléctrica)
Maputo, Tete, Nampula e Manica – Moçambique
EDAP (Energy Development Access Program)
Maputo, Tete, Nampula and Manica - Mozambique
Description of Works

EDM - Electricidade de Moçambique, EP has awarded SETH 5 (five) lots of the Energy Development Access Program (EDAP) project.

The projects concerned consist of the construction of about 200 km of medium voltage lines at 33 kV, 1000 km of low voltage lines, including the installation of 335 (three hundred and thirty five) distribution transformers and the connection to about 66,000 (sixty-six thousand) consumers.

The overall amount of the 5 contracts amounted to 38,850,000.00 (US dollars).

Each contract is independently executed and has a duration of eighteen (18) months, covering the provinces of Maputo, Tete, Nampula and Manica, being financed by the World Bank, OFID (The OPEC Fund for International Development), the European Investment Bank, and by the French Agency for Development.


Resumo da Obra
Work Summary

Cliente	EDM – Electricidade de Moçambique	<i>Client</i>
Tipo de contrato	Série de Preços Re-measurable	<i>Contract type</i>
Data de construção	2014-2020	<i>Construction period</i>
Custo	USD 38.850.000,00	<i>Cost</i>

Linha 33 kV Nhamapaza (lotes 1 e 2)
Nhamapaza e Canxixe – Moçambique
New 33 kV Line to feed Nhamapaza
Nhamapaza and Canxixe (Sofala Province) - Mozambique
Descrição dos Trabalhos

Realização de aproximadamente 85 km de linha aérea de média tensão a 33 kV, fornecimento e montagem de 11 postos de transformação e execução de redes de baixa tensão e iluminação pública.

O principal objectivo dos trabalhos foi a alimentação eléctrica dos Postos Administrativos de Canxixe e Nhamapaza, a partir de Maríngue, na província de Sofala.

Os aglomerados populacionais existentes ao longo da linha foram também igualmente ligadas à rede de energia.


Description of Works

Construction of approximately 85 km of medium voltage 33 kV overhead line, supply and assembly of 11 transformer stations and execution of low voltage networks and public lighting.

The main objective of the work was the power supply of the Canxixe and Nhamapaza Administrative Posts, from Maríngue, in the province of Sofala.

The existing clusters along the line have also been linked to the power grid.

Resumo da Obra
Work Summary

Cliente	EDM – Electricidade de Moçambique	<i>Client</i>
Tipo de contrato	Série de Preços Re-Measurable	<i>Contract type</i>
Data de construção	2018-2019	<i>Construction period</i>
Custo	USD 1,900,000.00	<i>Cost</i>

Linha a 33 kV entre Chemba e Tambara
Províncias de Manica e Sofala – Moçambique**33 kV Line between Chemba and Tambara**
Manica and Sofala Provinces - Mozambique**Descrição dos Trabalhos**

Trabalhos de instalação de aproximadamente 100 km de linha aérea de média tensão a 33 kV numa zona de vegetação muito densa. Os trabalhos faziam parte do projecto Electricidade IV.

Description of Works

Installation work of approximately 100 km of 33 kV medium voltage overhead line in a very dense vegetation area. The works were part of the Electricity IV project.

**Resumo da Obra**
Work Summary

Cliente	Efacec/EDM – Electricidade de Moçambique	<i>Client</i>
Tipo de contrato	Série de Preços Re-Measurable	<i>Contract type</i>
Data de construção	2018-2019	<i>Construction period</i>
Custo	EUR 250,000.00	<i>Cost</i>

Remodelação de uma linha de transmissão de energia a 66 kV
Boane, Infulene, Matola Gare – Moçambique**Refurbishment of a 66 kV Transmission Line**
Boane, Infulene, Matola Gare - Mozambique**Descrição dos Trabalhos**

Os trabalhos consistiram na concepção e construção de 45 Km de linha aérea a 66 kV entre as subestações de Boane, Infulene e Matola Gare, incluindo a desmontagem de alguns troços da linha existente e execução de desvios provisórios de modo a garantir a operacionalidade da linha a substituir durante o período da construção. A solução construtiva adoptada foi de postes em aço galvanizado com fundações em betão armado. Dos trabalhos fez ainda parte a passagem do condutor (duplo) e da fibra óptica (OPGW).

Description of Works

The work consisted of the design and construction of a 45 km 66 kV airline between the Boane, Infulene and Matola Gare substations, including the dismantling of some sections of the existing line and the execution of temporary deviations in order to ensure the operability of the existing line. replace during the construction period. The construction solution adopted was made of galvanized steel poles with reinforced concrete foundations. The work also included the passage of the conductor (double) and the optical fiber (OPGW).

**Resumo da Obra**
Work Summary

Cliente	EDM – Electricidade de Moçambique	<i>Client</i>
Tipo de contrato	Série de Preços	<i>Contract type</i>
	Re-Measurable	
Data de construção	2016-2018	<i>Construction period</i>
Custo	EUR 8.400.000,00	<i>Cost</i>

**Instalação de OPGW, ADSS e OPUC
na linha aérea a 220 kV entre Chicamba, Mavuzi e Chibata
Manica – Moçambique**

**OPGW, ADSS and OPUC installation
in a 220 kV OHL between Chicamba, Mavuzi and Chibata
Manica - Mozambique**

Descrição dos Trabalhos

Os trabalhos consistiram na concepção e execução dos trabalhos de colocação de aproximadamente de 100 Km de fibra óptica do tipo OPGW, ADSS e OPUC na linha a 220 kV entre as subestações de Chicamba, Mavuzi e Chibata, no âmbito do projecto de Reabilitação das Centrais Hidroeléctricas de Chicamba e Mavuzi, projecto desenvolvido para a Electricidade de Moçambique, E.P. financiado pelas entidades SIDA, AFD e KFW.

Description of Works

The work consisted of the conception and execution of the placement of approximately 100 km of OPGW, ADSS and OPUC type optical fiber in the 220 kV line between Chicamba, Mavuzi and Chibata substations, as part of the Hydroelectric Power Plants Rehabilitation project. Chicamba and Mavuzi, a project developed for the Electricity of Mozambique, EP funded by AIDS, AFD and KFW.


Resumo da Obra
Work Summary

Cliente	Cegelec (Groupe Vinci) / EDM, E.P.	Client
Tipo de contrato	Valor Global	Contract type
	Lump Sum	
Data de construção	2018	Construction period
Custo	EUR 900.000,00	Cost

Execução de redes enterradas a 22 kV no Chimoio e Beira Beira e Chimoio (Províncias de Sofala e Manica) – Moçambique

New underground 22 kV UG lines in Chimoio and Beira Beira and Chimoio (Sofala and Manica) - Mozambique

Descrição dos Trabalhos

Realização de aproximadamente 7 km de linha de média tensão enterrada a 22 kV, incluindo todos os trabalhos de construção civil e reposição de pavimentos, para a alimentação das novas agências, em construção, do Banco de Moçambique nas cidades da Beira e do Chimoio.

Description of Works

Construction of approximately 7 km of 22 kV buried medium voltage line, including all civil works and pavement replacement, to feed the new branches under construction of the Bank of Mozambique in the cities of Beira and Chimoio.



Resumo da Obra *Work Summary*

Cliente	EDM – Electricidade de Moçambique	<i>Client</i>
Tipo de contrato	Série de Preços Re-Measurable	<i>Contract type</i>
Data de construção	2018	<i>Construction period</i>
Custo	USD 900,000.00	<i>Cost</i>

Linha aérea de média tensão a 33 kV
Vunduzi, Gorongosa (Sofala) – Moçambique
New 33 kV Line to feed the Vunduzi Administrative Post
Vunduzi, Gorongosa (Sofala) - Mozambique
Descrição dos Trabalhos

Fornecimento e instalação de aproximadamente 40 km de linha aérea de média tensão a 33 kV, fornecimento e montagem de 8 postos de transformação de 160 kVA, execução de redes de baixa tensão e iluminação pública.

O principal objectivo dos trabalhos foi a alimentação eléctrica do Posto Administrativo de Vunduzi, localizado no limite da Serra da Gorongosa, uma região anteriormente afectada pelas hostilidades militares.

Os aglomerados populacionais existentes ao longo da linha foram também igualmente ligadas à rede de energia.

Description of Works

Supply and installation of approximately 40 km of 33 kV medium voltage overhead line, supply and assembly of 8 160 kVA transformer stations, execution of low voltage networks and public lighting.

The main purpose of the work was the power supply of the Vunduzi Administrative Post, located on the edge of the Gorongosa Mountain Range, a region previously affected by military hostilities.

The existing clusters along the line have also been linked to the power grid.


Resumo da Obra
Work Summary

Cliente	EDM – Electricidade de Moçambique	<i>Client</i>
Tipo de contrato	Série de Preços	<i>Contract type</i>
	Re-Measurable	
Data de construção	2017	<i>Construction period</i>
Custo	EUR 1.300.000,00	<i>Cost</i>

Recuperação de Linha de Transmissão de Energia
Mocuba (Província da Zambézia) – Moçambique
Restoration of 220 kV Transmission Line Section
Mocuba (Zambezia Province) - Mozambique
Description of Works

EDM - Electricity of Mozambique, EP has awarded Seth an emergency repair contract for a 220 kV high-voltage section of the line, which was devastated by the January 2015 floods in Mocuba, Zambezia province.

The work was completed in six months and consisted of the repair of a 220 kV section of the power transmission line, approximately 10 km long.

Works included line engineering, supply and assembly of all materials, including 12 towers with heights between 27 and 50 m, 60 km of conductor and 20 km of GSW.

Two (2) special reinforced concrete foundations, based on micropiles, were built on the banks of the Licungo River.


Resumo da Obra
Work Summary

Cliente	EDM – Electricidade de Moçambique	<i>Client</i>
Tipo de contrato	Série de Preços	<i>Contract type</i>
	Re-measurable	
Data de construção	2015	<i>Construction period</i>
Custo	EUR 3.415.377,00	<i>Cost</i>

Nacala Coal Harbour Substations
Nacala-a-Velha – Moçambique
Nacala Coal Harbour Substations
Nacala-a-Velha - Mozambique
Description of Works

“Nacala Coal Harbor Main (110/22/33 kV) and Secondary Substations” is the name of the contract that Siemens Pty Limited - Mozambique Branch has awarded to Seth.

The scope of the works included all the civil construction associated with the substations of the new coal export terminal of the Port of Nacala, in Nacala-a-Velha, namely the works of:

- Earth moving;
- Reinforced concrete in foundations;
- Cable channels;
- Oil and water drainage systems;
- Pavements and fences on access roads and in the yard.

Main quantities:

- 5,000 m3 of earthmoving
- 2,500 m3 of reinforced concrete
- 300 tons of steel in reinforcement
- 1,000 m2 of paving


Resumo da Obra
Work Summary

Cliente final	Corredor Logístico Integrado de Nacala (Vale)	<i>Client</i>
Tipo de contrato	Série de Preços Re-measurable	<i>Contract type</i>
Data de construção	2014	<i>Construction period</i>
Custo	EUR 1.565.000,00	<i>Cost</i>

Linha 33 kV Mabalane – Combomune
Província de Gaza – Moçambique**New 33 kV Mabalane – Combomune**
Gaza Province - Mozambique**Descrição dos Trabalhos**

Realização de aproximadamente 50 km de linha aérea de média tensão a 33 kV, em regime de urgência, numa zona de vegetação densa e durante uma época de chuvas.

A solução estrutural adoptada para esta empreitada foi de postes de madeira, com travessas metálicas, isoladores cerâmicos e condutor AAAC 150 mm².

Description of Works

Approximately 50 km of medium voltage 33 kV overhead line under emergency conditions in a dense vegetation area during a rainy season.

The structural solution adopted was wooden poles with metal sleepers, ceramic insulators and AAAC 150 mm² conductor.

**Resumo da Obra**
Work Summary

Cliente	EDM – Electricidade de Moçambique	<i>Client</i>
Tipo de contrato	Série de Preços Re-Measurable	<i>Contract type</i>
Data de construção	2013-2014	<i>Construction period</i>
Custo	USD 500,000.00	<i>Cost</i>

Grid Intensification Component - ERAP, Package III
Maputo – Moçambique
ERAP – Package III
Maputo - Mozambique
Work Description

Energy Reform and Access Program (ERAP), Package III is the name of the contract that EDM - Electricidade de Moçambique awarded to Seth through funding from the NDF (Nordic Development Fund).

This contract had a 21-month implementation period and involved the construction of around 295 kilometers of medium and low voltage power distribution lines in various neighborhoods around Maputo, as well as their final connection to approximately of thirty thousand end consumers.

Of course, the project included an initial survey of the neighborhoods, the implementation of the distribution project of the lines to be installed, as well as the supply and installation of all materials and equipment such as poles, lines, transformers and meters.

Three sections were part of the contract: Section 3, consisting of large farms south of Maputo, in Catuane, near the border with South Africa; Section 2 on the outskirts of Maputo; and Section 1, also in the outskirts of Maputo, where a large part of this contract was located and which represents the largest amount of the works awarded.

Main quantities:

- Connection of 30000 end consumers
- 114 transformers from 25 to 315 kVA
- 137 Kms of medium voltage lines
- 158 Kms of low voltage lines


Resumo da Obra
Work Summary

Cliente	EDM Electricidade de Moçambique	<i>Client</i>
Tipo de contrato	Série de Preços <i>Unit Price</i>	<i>Contract type</i>
Data de construção	2007-2009	<i>Construction period</i>
Custo	EUR 9.439.006,00	<i>Cost</i>
Observações	Job in Consortium	<i>Notes</i>

Electricity III / Package 1 and Package 2
Gaza, Inhambane, Nampula – Moçambique
Electricity III – Package 1 & 2
Gaza, Inhambane, Nampula - Mozambique
Description of Works

Electricity III - Package 1 and 2, Supply and Erection Medium and Low Electricity Networks in Mozambique is the name of the contract that EDM - Electricity of Mozambique has awarded to Seth, through financing guaranteed by the African Development Bank and the Fund for International Development.

This contract had an execution period of 18 months and involved the construction of about 700 kilometers of medium and low voltage power distribution lines in various neighborhoods in Inhambane and Nampula provinces, as well as their final connection until around 8 thousand final consumers.

Package 1 - Power supply to Gaza and Inhambane Provinces:

- Supply and assembly of about 228 km of airlines, 33 kV
- Supply and assembly of about 154 km of airlines, 0.4/0.23 kV
- Supply and assembly of about 67 air transformers, 33/0.4 kV
- Final link to about 4,500 consumers

Package 2: Power supply to Nampula Province including:

- Supply and assembly of about 247 km of airlines, 33 kV
- Supply and assembly of about 63 km of airlines, 0.4 / 0.23 kV
- Supply and assembly of about 22 air transformers, 33 / 0.4 kV
- Final link to about 3,400 consumers

Main quantities:

- Connection of 8000 end consumers
- 89 33 / 0.4 kV transformers
- 575 Kms of medium voltage lines
- 217 Kms of low voltage lines


Resumo da Obra
Work Summary

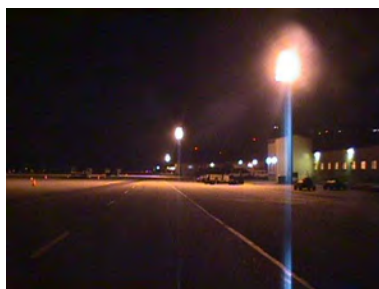
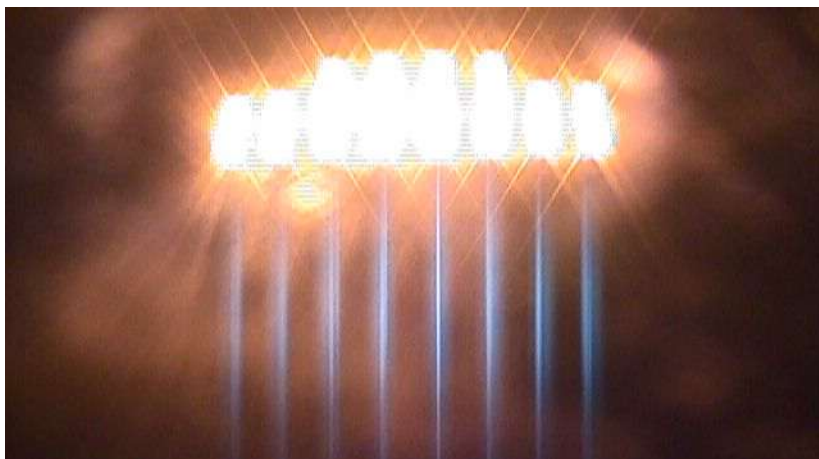
Cliente	EDM	<i>Client</i>
	Electricidade de Moçambique	
Tipo de contrato	Chave-na-mão	<i>Contract type</i>
	Turnkey	
Data de construção	2010-2012	<i>Construction period</i>
Custo	EUR 17.410.358,00	<i>Cost</i>
Observações	Job in Consortium	<i>Notes</i>

Iluminação de segurança
da placa de estacionamento de aeronaves
United States Navy, Base Aérea das Lajes - Açores**Apron Security Lighting**
United States Navy, Lajes Field, Azores - Portugal**Âmbito dos trabalhos**

- Abertura de valas e instalação de cablagem.
- Instalação de 26 postes (20 m) multi-projector (20).
- Cablagem MT (15 kV) enterrada para alimentação dos postes.
- Instalação de transformadores (26) na base de cada poste.
- Testes operacionais e commissionamento da instalação.

Scope of Work

- *Trenching and cabling installation.*
- *Installation of 26 multi-fixture (20) lighting posts (20 m).*
- *Buried MV cable (15 kV) for post feeding.*
- *Installation of step-down transformers at each post location*
- *Operational testing and commissioning of the installation.*



26 postes (multi-projector) para
iluminação da placa de
estacionamento de aeronaves
da Base Aérea das Lajes, Açores.
*26 multi-fixture lighting posts
for the security lighting of the
apron at Lajes Field, Azores.*

**Resumo da Obra**
Work Summary**Cliente**
Tipo de contrato**U.S. Navy**
Chave-na-Mão
Turn-Key
2000-2001
USD 1,44 million
Vansant & Gusler, Inc.**Client**
Contract typeData de construção
Custo
ProjectistaConstruction period
Cost
Architect & Engineer

Requalificação de Unidade Industrial da Sapec Química Parque Industrial e Logístico SAPEC Bay (Freguesia do Sado, concelho de Setúbal)

Improvement of Industrial Storage *Parque Industrial e Logístico SAPEC Bay / Setúbal - Portugal*

Work Description

SAPEC QUÍMICA awarded to Seth the requalification works of the industrial unit located in the Sapec bay Industrial and Logistic Park, specifically in the execution of the demolition works of the storage area of the existing building with approximately 1,901.37 m² of construction area and for its replacement, in the construction of a building with an area of 2,240.00 m² designated by a 70x32 spacecraft, also destined to the use of storage, in the construction of technical gallery under the new warehouse and supply of installation of crossings and set of tubes , support infrastructures and external pavements.



The contract also included the elaboration of the following projects of the specialties:

- Stability project;
- Project fire safety in buildings;
- Electricity and communications project;
- Project of pavements in concrete and bituminous, which also contemplates the exterior of the work area;
- Projects of water and domestic effluents;
- Project of requalification of the network and containment of treated rainwater and industrial waters and control of spills;
- Gas, thermal and acoustic projects.



Resumo da Obra

Work Summary

Cliente
Tipo de contrato
Data de construção
Custo

SAPEC QUÍMICA, SA
Valor Global / Lump Sum
2018-2019
EUR 1.368.299,98

Client
Contract type
Construction period
Cost



Armazém Industrial S2 e S3

Parque Industrial SAPEC Bay (Freguesia do Sado, concelho de Setúbal)

Industrial Storage
Parque Industrial SAPEC Bay / Setúbal - Portugal

Work Description

SAPEC AGRO awarded to Seth the construction of the new Warehouse S2/S3 inside the industrial park SAPEC BAY (Setubal), in order to ensure the increase in storage capacity of finished products are manufactured in SAPEC AGRO.

With a 4,100 m2 area of deployment this warehouse has been designed and implemented to work with four distinct storage areas ("cantons") and separated by firewalls, connected by a central corridor. The minimum right foot is 10 m in all storage spaces. Even within the covered warehouse area was performed a technical area offices with two floors with a total area of 250 m2.

The Warehouse S2/S3 was built in less than seven months, and included the following work:

- Demolition of existing single floor slab, 4,300 m2;
- General excavation for platform preparation, 6,000 m3;
- Existing retaining wall replacement, 70 ml;
- Implementation of direct foundations/in-situ shoes, 450 m3;
- Prefabrication and installation of concrete elements: pillars (70 pcs), prefabricated panels (4,000 m2) and beams (24 m long);
- Panel type "sandwich" mounting in rock wool on the roof and on the facade;
- Execution of armed storey slabs with surface hardener - 4,000 m2;
- Implementation of infrastructure electricity and telecommunications;
- Installation of 18 outflow points in the coverage.

Main quantities

- 10,000 m2 of reinforced concrete floor;
- 170 tons of metal structures;
- 1,000 m3 of concrete foundations and various structures.



Resumo da Obra

Work Summary

Cliente
 Tipo de contrato
 Data de construção
 Custo

SAPEC-AGRO, SA
Valor Global / Lump Sum
2015-2016
EUR 1.840.000,00

Client
Contract type
Construction period
Cost



Requalificação do Edifício T-715 para consolidação de eficiência

Base das Lajes, Ilha Terceira, Açores

Renovate Building T-715 for Civil Engineering (CE) Consolidation Efficiency

Lages Field, Terceira Island, Azores (Portugal)

Work Description

Existing building renovation in Lajes Field, Azores (Portugal), to accommodate United States Air Force (USAF) Civil Engineering Squadron (CES).

The work includes:

- Selective demolition including Asbestos and Lead based Paint abatement and disposal;
- Reconfiguration of programmatic spaces which consist mostly of offices, conference rooms, storage, bathrooms, and utilities shop space;
- New roof system installation (LSF structure and roof panels);
- Exterior wall repairs and painting;
- Finish upgrades including partitions, pavements, ceilings and doors;
- Elevator installation;
- HVAC system and Direct Digital Control installation;
- Interior water distribution installation and water main connection;
- Sewer system installation (interior and connections to main);
- Electrical System installation/conversion to European standards including:
 - Transformer;
 - Electrical Panels;
 - Cable Trays;
 - Cables
 - Accessories;
 - Luminaires;
 - Lightning Protection System;
 - Grounding;
 - Generator Set installation;
 - New Communication System (cable tray, cables, accessories and racks);
 - Fire alarm and Sprinkler system installation.



Resumo da Obra

Work Summary

Cliente	USAF – United States Air Force	<i>Client</i>
Tipo de contrato	Valor Global Lump Sum	<i>Contract type</i>
Data de construção	2021-2022 (job in progress)	<i>Construction period</i>
Custo	EUR 3.608.867,04	<i>Cost</i>
Observações	Work in Consortium	<i>Notes</i>

Requalificação e reconversão de Edifício para Manutenção de Viaturas

Base das Lajes, Açores

Convert T-611 to LRS Vehicle Maintenance **Lages Field, Terceira Island, Azores (Portugal)**

Trabalhos Efectuados

A **Seth, S.A.** Executou para a Força Aérea Americana os trabalhos de requalificação do edifício T-611 na Base Aérea das Lages, na Ilha Terceira (Açores).

A empreitada permitiu reverter o armazém existente para oficina de manutenção de viaturas e englobou os seguintes trabalhos:

- Demolição de paredes em alvenaria e em betão;
- Desmontagem da estrutura metálica da cobertura;
- Remodelação e adaptação das instalações especiais ao nível de arquitectura, estruturas, redes de águas e esgotos, AVAC, protecção contra incêndios, sistemas de alarmes e instalações eléctricas.

Job description

The 65th Contracting Flight (USAF) granted for Seth the work contract to Convert T-611 to LRS Vehicle Maintenance at Lages Field, Azores, Portugal.

Renovation of the existing T-611 building was promoted to convert the facility from a warehouse into a vehicle maintenance shop.

The scope of work includes:

- Selective demolition of significant portions of the existing warehouse building and constructing new cast-in-place concrete walls and steel roof structure.
- Alterations to site utilities, architectural, structural, plumbing, HVAC, fire protection, fire alarm, and electrical systems will be required as described in drawings and specifications.

Work also includes all incidental and related tasks necessary to provide a complete and usable facility for its intended purpose.



Resumo da Obra

Work Summary

Cliente	USAF – United States Air Force	Client
Tipo de contrato	Valor Global	Contract type
	Lump Sum	
Data de construção	2014-2016	Construction period
Custo	EUR 1.579.124,62	Cost

Estação de Enchimento de Garrafas de Gás

Galp Gás, SA – Refinaria de Sines
Sines – Portugal

Sines LPG Bottle Filing Plant
Sines Refinery of Galp, SA
Sines - Portugal

Work Description

Seth, SA, carried out all the civil construction work for the Gas Bottle Filling Plant undertaken at the Sines Refinery of Galp, SA, where its customer was Galp Gás, SA. Of the work undertaken, we would underscore the filling building, the office building (including electricity, water and drains networks), the porters buildings (including the electricity network), the fork-lift truck garage, the steel pipe-rack to support the pipework over the railway line, the compressed-air and pumping equipment foundations, the entire water and drains networks, as well as connecting up with the existing networks, the electrical and instrumentation networks, 10,000 m2 of concrete flooring for the full and empty bottle store, as well as full support to all the civil construction work in respect of the installation of the booster pumps using to supply the gas to the new facility.

Main quantities:

- 10,000 m2 reinforced concrete paving;
- 170 tonnes of steel structures;
- 1,000 m3 of concrete for foundations and sundry structures.



Resumo da Obra

Work Summary

Cliente	TECHNIP PORTUGAL, SA	Client
Tipo de contrato	Valor Global	Contract type
	Lump Sum	
Data de construção	2004	Construction period
Custo	EUR 2.000.000,00	Cost

Dyrup - Armazém de Produtos Acabados
Sacavém – Portugal
Dyrup - Warehouse for Finished Products
Sacavém - Portugal
Construção de um edifício em estrutura metálica.
Construction of a prefabricated metal building

Dimensões / Dimensions: 70 x 51 m

Vão livre / Free span: 51 m

Betão / Concrete: 4100 m³

Pavimentos exteriores

Exterior pavements: 4500 m²

Aterro / Earth fill: 17 500 m³

Laje do armazém dimensionada para

100 kN de carga concentrada

Warehouse ground slab sized for

100 kN concentrated live load


Principais características / Main features

Piso elevado para escritórios (70 x 10 m).

Mezzanine for office space (70 x 10 m).

10 cais de carga/descarga com

plataforma hidráulica e sistema eléctrico

10 loading/unloading docks with hydraulic platforms and electrical system

Isolamento térmico total

Full thermal insulation

Arranjos exteriores

Landscaping


Resumo da Obra
Work Summary

Cliente

Fiscalização

Tipo de contrato

Data de construção

Custo

Arquitectura

Projecto de estabilidade

Instalações especiais

Tintas Dyrup, SA

Proman

Preço Global

Lump Sum

1997 - 1998

PTE 446.400.000,00

Arquipedra

Planege

Planege

Client

Inspection Agency

Contract type

Construction period

Cost

Architect

Structural design

Mechanical/Electrical

Escola Secundária de Rainha Sta. Isabel
Escola Secundária de Severim de Faria
Estremoz / Évora

Rainha Sta. Isabel Secondary School
Severim de Faria Secondary School
Estremoz / Évora, Portugal

Job Description

Seth (in consortium with two other companies) has carried out rehabilitation work at the Rainha Sta. Isabel Secondary School (in Estremoz) and at the Severim de Faria Secondary School (in Évora).

These jobs, included in "Stage 2A of the Secondary Schools Modernisation Programme - Let 2AS3" in respect of the schools of Évora and Estremoz, were awarded to the consortium for the sum of 22,680,401.33 euros.

The works included remodelling, modernisation and (in some cases) enlargement of the schools, the idea being to rehabilitate and modernise the buildings and to re-establish their physical and functional efficacy, from a standpoint of creating conditions to provide modern education suited to the programme contents, the didactic contents and the new information and communication technologies.



Rainha Sta. Isabel Secondary School - ESTREMOZ

Rainha Sta. Isabel Secondary School

Location: Estremoz
 Planned capacity: 39 classes
 Architecture / Project Co-ordination: José Laranjeira
 Completion deadline: 15 months
 Cost: EUR 12,207,000.00

Severim de Faria Secondary School

Location: Évora
 Planned capacity: 36 classes
 Architecture / Project Co-ordination:
 FSSMGN Arquitectos, Lda (Fernando Sanches Salvador
 and Margarida Grácio Nunes)
 Completion deadline: 15 months
 Cost: EUR 10,980,000.00



Severim de Faria Secondary School - ÉVORA

Resumo da Obra

Work Summary

Cliente	Parque Escolar, EPE (Entidade Pública Empresarial)	<i>Client</i>
Tipo de contrato	Preço Global Lump Sum	<i>Contract type</i>
Data de construção	2009-2010	<i>Construction period</i>
Custo final	EUR 23.187.000,00	<i>Cost</i>
Observações	Job in consortium	<i>Notes</i>

Modernização da Escola Secundária Braamcamp Freire
Pontinha
Secondary School Modernisation Programme
at Pontinha
Portugal
Description of works

Seth (in consortium with two other companies) carried out the modernization work of Freire Bramcamp Secondary School, located at Rua Dr. Gama Barros, Pontinha, Amadora.

These works, integrated into the process of "modernization for phase 3A of the Schools Modernisation program with Secondary Education - Lot 3 L1 EI" were awarded to the consortium by the value of 12,476,478.86 euros.

The works comprised the refurbishment, modernization and expansion of that school, in order to rehabilitate and modernize the buildings, restoring the physical and functional effectiveness, with a view to creating conditions for the practice of a modern education, adapted to the syllabus, to teaching and new technologies of information and communication.



Partial view of the schoolyard



Overview of the school buildings

Resumo da Obra
Work Summary

Cliente	Parque Escolar, EPE (Entidade Pública Empresarial)	<i>Client</i>
Tipo de contrato	Preço Global Lump Sum	<i>Contract type</i>
Data de construção	2011-2012	<i>Construction period</i>
Custo final	EUR 12.476.478,00	<i>Cost</i>
Observações	Obra feita em consórcio	<i>Notes</i>

Escola Secundária Emídio Garcia
Bragança
Secondary School Modernisation Programme at Bragança
Bragança, Portugal
Description of works

Seth (in consortium with two other companies) carried out the modernization work Emídio Garcia Middle School, located at Rua Eng Adelino Amaro da Costa, the city of Bragança.

These works, integrated into the process of "modernization for phase 3A of the Schools Modernisation program with Secondary Education - Lot 3EN10" awarded to the consortium by the value of 12,950,871.18 euros.

The works comprised the refurbishment, modernization and expansion of these schools, in order to rehabilitate and modernize the buildings, restoring the physical and functional effectiveness, with a view to creating conditions for the practice of a modern education, adapted to the syllabus, to teaching and new technologies of information and communication.



General view of the schoolyard



General view of the schoolyard

Resumo da Obra
Work Summary

Cliente	Parque Escolar, EPE (Entidade Pública Empresarial)	<i>Client</i>
Tipo de contrato	Preço Global Lump Sum	<i>Contract type</i>
Data de construção	2011-2012	<i>Construction period</i>
Custo final	EUR 12.950.871,18	<i>Cost</i>
Observações	Obra feita em consórcio	<i>Notes</i>

Aldeamento Turístico de 5 estrelas
Reserva – Quinta do Lago (Algarve)
5 Star Touristic Luxury Apartments
Reserve – Quinta do Lago (Algarve), Portugal
Descrição dos trabalhos

A Seth executou, em consórcio, o aldeamento turístico de 5 estrelas, denominado de “Reserva” composto por vinte e seis (26) apartamentos turísticos, clube de residentes e respetivos arranjos exteriores, num total de 12.500m² de construção efetiva útil em um lote de terreno com 14.000m² de área, na Rua das Palmeiras, Quinta do Lago, município de Loulé.

O aldeamento turístico de 5 estrelas “Reserva” compreende moradias de luxo com jardim e *penthouses*, com estacionamento, piscinas e elevadores privativos.

O referido aldeamento turístico possui o seu próprio “Club House”, restaurante, bar, ginásio privado, parque infantil e campos de desporto.

Work Description

Seth executed (in Consortium) a five-star tourist resort, called "Reserve", consisting of twenty-six (26) tourist apartments, residents' club and respective exterior arrangements, in a total of 12,500m² of effective useful construction on a 14.000 square meters plot of land located in Quinta do Lago, municipality of Loulé (Algarve, Portugal).

The five star luxurious touristic resort is conveniently located, with easy access to all major freeways, comprises luxury villas with garden and penthouses, private parking, individual swimming pools and private elevators.

This tourist village has its own Residents' Club and respective gardens and external works, restaurant, bar, private gym, children's playground and sports fields.


Resumo da Obra
Work Summary

Cliente	Quinta Reserva – Empreendimentos
Tipo de contrato	Imobiliários e Turísticos, SA
	Preço Global
	Lump Sum
Data de construção	2017-2018
Custo final	EUR 23.500.000

Client
Contract type

Construction period
Cost

Novo edifício-sede da Seth
Queijas (Oeiras)

Corporate Headquarters
Queijas (Oeiras), Portugal

Work description

The main goal in the design of the new headquarters underwent achieve harmonize three fundamental aspects: aesthetics, functionality and energy efficiency.

The main dimensions of the building are the following:

Deployment area - 1334m²
 Construction area above ground - 1583m²
 Building area buried - 1289m²
 Sealed area - 1725m²
 Cércea maximum - 10.93 m

The building consists of 4 floors. The floor -2 intended to parking with 30 places, has 4 rooms and equipment storage pumping rainwater and sewage.

At floor -1 are given various types of usage: Living surveillance, parking for 20 cars, storage, gym, locker rooms, cafeteria, kitchen, boiler room, and the Medical Centre.

On the floors above ground and the offices are situated on the top floor are located the air handling equipment, air conditioning and building solar panels and photovoltaic.

The interior areas of the floors are:

Floor -2 - 1289m²
 Floor -1 - 1289m²
 Level 0 - 858m²
 1st Floor - 642m²

Think about a high efficiency over the life of the building, installed the following materials and equipment: automatic climate control and lighting inside the building; lights low power, installation of shade visors; glazing solar in south facades and exterior walls consist of two panels of masonry, air-box and "Wallmate", thus enabling to obtain low heat transfer coefficients.

In order to reduce the consumption of mains water, installed a system of rainwater harvesting, which after treatment are used in the discharges of toilets, taps of service garages (washing floors) and outside building, for watering the gardens.


Resumo da Obra
Work Summary

Cliente
 Tipo de contrato
 Data de construção
 Custo final

Seth, SA
Preço Global
Lump Sum
2008-2009
EUR 3.450.000

Client
Contract type
Construction period
Cost

Ampliação da Assembleia da República
2ª Fase - Acabamentos
Parliament Building Addition
2nd Phase - Finishes
Descrição dos trabalhos
Work description
Número indicativos / Main figures:

9 pisos / 9 levels

170 gabinetes e salas de reunião

170 offices and meeting rooms

Auditório e restaurante

Auditorium and restaurant

14000 m² de mármore

155,000 sq.ft of marble cladding

Instalação de AVAC / HVAC installation

6 elevadores / 6 elevators

Empreitada de Acabamentos Gerais

(piso -3 a piso 6)

General Finishing Work Contract

(level -3 until level 6)

Revestimento de fachadas a mármore de lioz

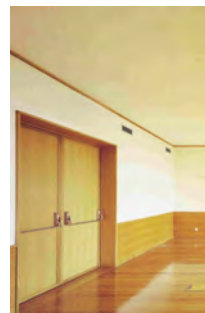
Marble cladding on the exterior walls

Interiores revestidos a mármore lioz
e madeira de carvalho

Interior wall finishes with marble cladding; solid oak door frames and doors

Janelas de vidro duplo
com caixilharia de latão

Double-glazing windows with solid brass frames



Obra realizada em consórcio
Joint-venture works

Resumo da Obra
Work Summary

Cliente	Assembleia da República Portuguese Parliament	<i>Client</i>
Fiscalização	Cinclus, SA	<i>Inspection agency</i>
Tipo de contrato	Preço Global Lump Sum	<i>Contract type</i>
Data de construção	1998 - 1999	<i>Construction period</i>
Custo	EUR 15.250.000,00	<i>Cost</i>
Arquitetura	Arq. Fernando Távora	<i>Architect</i>
Proj. de Instalações Especiais	Engº Rodrigues Gomes & Associados	<i>Mechanical & Electrical</i>

Construção de Reservatório de Água no Alto de Santa Catarina
Alto de Santa Catarina, Oeiras

Water tank with 7,5000 m3 capacity, in reinforced concrete
Alto de Santa Catarina, Oeiras (Portugal)

Description of Work

Construction of a new tank in reinforced concrete, consisting of two cells of 5,000 m³ each, next to the existing Final Reservoir of the Western Adductor.

It is a reservoir made up of two square-shaped cells with a unit capacity of 5000 m³ to store drinking water.

The main works in this endeavor are as follows:

- Earthmoving works with emphasis on rock excavation;
- Construction works in reinforced concrete;
- Supply and installation of carbon steel pipes and electromechanical equipment;
- Supply, assembly in cast iron piping (FFD) in ditch;
- Execution of rainwater drainage;
- Execution of connections to existing hydraulic circuits;
- Electrical, instrumentation and safety installations;
- Installation of a telemanagement system;
- Exterior arrangements.

The contract included the supply and assembly of all associated electromechanical equipment.

Main quantities

Excavation 4500 m³

Structural fill of the cell foundation, switching chamber and access road 10,000 m³

Landscaping of the enclosure perimeter 11,500 m³

Cyclopean concrete to reinforce the cell foundation and maneuvering chamber 2500 m³

Structural Concrete C35/45 XC4

and C40/50 XA2 1800 m³

Cleaning concrete for leveling foundations 200 m³

Concrete reinforcement 240,000 kg

Formwork 6000 m²

Interior waterproofing of the entire Reservoir
(2 cells) 5000 m²



Resumo da Obra

Work Summary

Cliente	SIMAS Oeiras e Amadora	Client
Tipo de contrato	Valor Global	Contract type
	Lump Sum	
Data de construção	2021-2023	Construction period
Custo	EUR 2.048.910,91	Cost

Construção de um Depósito de Água com 5.000 m³ de capacidade

Alto do Cotão, Cacém (Sintra)

Water tank with 5,000 m³ capacity, in reinforced concrete
Alto do Cotão, Cacém (Portugal)

Trabalhos Efectuados

Foi adjudicada à Seth a empreitada da construção da 3.^a célula de 5.000 m³ do reservatório do Alto do Cotão, na freguesia do Cacém, concelho de Sintra.

Com um prazo de execução de 7 meses (210 dias) os trabalhos envolveram a execução de sondagens, movimentação geral de terras, estruturas em betão armado, tubagens e acessórios.

A solução encontrada para o reservatório, foi a execução de um reservatório pré-fabricado com 55 m de comprimento por 17 m de largura, de modo a aproveitar a área disponível para o efeito.

A localização e o tipologia do terreno, obrigou ao saneamento das fundações e a execução de betão ciclópico para garantir a cota de soleira do depósito.

Foram executadas obras de drenagens diversas, arranjos exteriores e pavimentações.

Os trabalhos incluem ainda a ligação às condutas adutoras e de distribuição, bem como todos os acessórios e válvula da caixa de manobras.



Description of Works

Seth was awarded the contract for the construction of the 3rd cell of 5,000 m³ of the "Alto do Cotão" reservoir, in the parish of Cacém, municipality of Sintra.

With an execution period of 7 months (210 days), the works involved the execution of surveys, general earthworks, reinforced concrete structures, pipes and accessories.

The solution found for the reservoir was the construction of a prefabricated reservoir measuring 55 m long by 17 m wide, in order to take advantage of the available area for implementation.

The location and type of land required the sanitation of the foundations and the execution of cyclopean concrete to guarantee the threshold level of the deposit.

Various drainage works, exterior repairs and paving were carried out. The works also include the connection to the supply and distribution ducts, as well as all the accessories and valve of the control box.



Principais quantidades / Main Quantities:

Escavação / Excavation: 5.400 m³

Aterro / Landfill: 1.500m³

Betão estrutural C40/50 / Structural Concrete: 400 m³

Betão Ciclópico C16/20 / Cyclopic Concrete: 650 m³

Armadura de construção / Construction Armor: 50.000 Kg

Reservatório Pré-Fabricado / Pre-fabricated Reservoir: 5000 m³



Resumo da Obra

Work Summary

Cliente

**Marfer / Universidade Católica /
/ Montepio / Cacém Construções**

Client

Tipo de contrato

Valor Global/ Lump Sum

Contract type

Data de construção

2021-2022

Construction period

Custo

EUR 1.019.265,05

Cost

Nova Reserva do Barlavento – Depósitos de Água
Espargal (Freguesia de S. Sebastião, Município de Lagos), Portugal**New Barlavento Water Tank Reserve at Northwest Faro**
Espargal (S. Sebastião, Lagos), Portugal**Descrição dos Trabalhos**

Construção de um novo reservatório em betão armado, para água potável, composto por duas células de planta quadrada com capacidade unitária de 5.000m³ cada, junto ao Reservatório Final do Adutor Ocidental já existente.

Nesta empreitada, os principais trabalhos foram os seguintes:

- Movimentação de terras com destaque à escavação em rocha;
- Trabalhos de construção em betão armado;
- Fornecimento, instalação de tubagens em aço carbono e equipamento eletromecânico;
- Fornecimento/montagem de tubagem ferro fundido (FFD) em vala;
- Execução de drenagens pluviais;
- Execução de ligações a circuitos hidráulicos existentes;
- Instalações elétricas, de instrumentação e de segurança;
- Instalação de Sistema de Telegestão;
- Arranjos exteriores.

Foi incluído na empreitada o fornecimento e montagem de todo o equipamento eletromecânico associado.

Principais quantidades / Main Quantities

Escavação geral / General Excavation – 13.640 m³

Betão C30/37 / Concrete type C30/37 – 3.135,00 m³

Peso total das armaduras / Total weight of steel – 377 ton

Área total de cofragem / Total formwork area – 9.450 m²

Description of Work

Construction of a new water tank in reinforced concrete, consisting of two square-shaped cells with a unit capacity of 5,000 m³ each one, next to the existing Final Reservoir of the Western Adductor.

The main works in this endeavor are as follows:

- Earthmoving works with emphasis on rock excavation;
- Construction works in reinforced concrete;
- Supply and installation of carbon steel pipes and electromechanical equipment;
- Supply, assembly in cast iron piping (FFD) in ditch;
- Execution of rainwater drainage;
- Execution of connections to existing hydraulic circuits;
- Electrical, instrumentation and safety installations;
- Installation of a tele-management system;
- Exterior arrangements.

The contract included the supply and assembly of all associated electromechanical equipment.

**Resumo da Obra****Work Summary**

Cliente
Tipo de contrato
Data de construção
Custo

Águas do Algarve, SA
Valor Global
2020 – 2022
EUR 2.565.000,00

Customer
Type of Contract
Construction date
Cost

Dessulfurização da Central Termoelétrica de Sines
EDP – Refinaria de Sines, Portugal

Civil Works for Desulphurization Plant,
at the Thermoelectric Power Plant, Sines
EDP Sines – Portugal

Work Carried Out

The desulphurisation project for the Sines Thermoelectric Power Station consists of implementation of four limestone/gypsum wet flue gas desulphurisation (wet FGD) units, one for each of the respective electricity generators. The desulphurisation process basically consists of removal of the SO₂ from the combustion gases through reaction with an alkaline absorbent, obtaining gypsum as a sub-product.

The main components of the desulphurisation system are indicated hereunder, complete with the associated civils:

Combustion Gas System: construction of ventilator foundations and reinforced-concrete pipeline supports.

SO₂ Absorption System: foundations of the absorbers, pumping wells, sundry foundations for equipment.

Limestone Storage System: very large foundation for two steel limestone tanks, three foundations for ball mills, well to house the limestone unloading system and conveyor belt for transport to the tanks, all the surrounding building and foundations for various items of equipment.

Gypsum Storage System: construction of a reinforced-concrete silo, diameter Ø24 m, height 40 m, capacity 9,000 m³.

Desulphurisation Liquid Effluent Treatment System: construction of 2 decantation tanks, 10 square tanks, sludge building, electrical building and sundry retention basins.

Ancillary Energy Systems: building for an ancillary boiler and sundry basins. Electrical and Central Command Building: construction of a building with basement to house the electrical switchboards, laboratory, command and control room, etc.

Compressed Air Systems: construction to four buildings next to the generators to provide compressed air to the desulphurisation system. To support the sundry pipework a Pipe Rack was build from the 4 units to what is known as the common zone.

Ancillary work included sundry drainage, landscaping and paving.

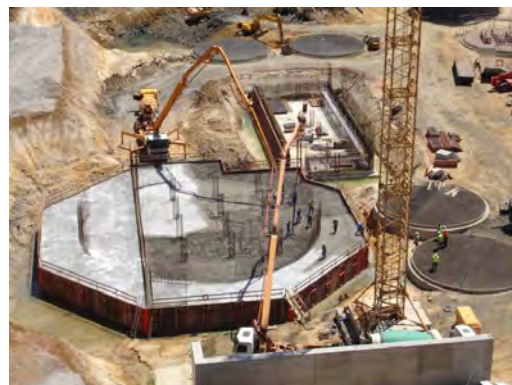
Major Quantities:

Excavation: 160,000 m³ / **Landfill:** 95,000 m³

Structural concrete C35/45: 25,000 m³

Lean concrete C12/15: 8,500 m³ / **Formwork:** 48.000m²

Construction rebar: 2,600,000 kg / **Sundry steel elements:** 400,000 kg



Resumo da Obra

Work Summary

Cliente	Consórcio Hitachi - Coba	<i>Client</i>
Tipo de contrato	Valor Global Lump Sum	<i>Contract type</i>
Data de construção	2005-2008	<i>Construction period</i>
Custo	EUR 14.000.000,00	<i>Cost</i>

Cortina de Estacas-prancha em PVC
Cais da Moita, Moita**Sheet-piling curtain**
Cais da Moita, Portugal**Trabalhos efectuados**

A SETH executou pela primeira vez uma cortina de estacas-prancha em PVC, com 4 m de comprimento, numa extensão de trinta (30) metros. As estacas-prancha em PVC são resistentes, duradouras e estanques, não necessitam de manutenção, são altamente resistentes à corrosão e ao impacto de fatores atmosféricos e biológicos, incluindo radiação UV e água do mar. Resistente a danos mecânicos, incluindo arranhões, rachaduras e abrasões, 100% reciclável com a vantagem de não alterar a qualidade da água ou terreno em contacto.

São ideais para a realização de trabalhos em rios ou no mar e em áreas ambientais protegidas, graças à sua flexibilidade e longa vida útil, sem necessidade de manutenção e com uma excelente performance estética e ambiental.

Work description

SETH first executed a 4 m long PVC plank pile curtain over a length of thirty (30) metres. PVC plank cuttings are resistant, durable and watertight, maintenance-free, highly resistant to corrosion and the impact of atmospheric and biological factors, including UV radiation and seawater. Resistant to mechanical damage, including scratches, cracks and abrasions, 100% recyclable with the advantage of not changing the quality of water or ground in contact.

They are ideal for carrying out work in rivers or at sea and in protected environmental areas, thanks to their flexibility and long service life, without maintenance and with excellent aesthetic and environmental performance.

**Resumo da Obra****Work Summary**

Cliente	UrbeHydraulic, Lda. (Alvará 68029)	Client
Tipo de contracto	Valor Global / Lump-sum	Contract type
Construtores	Seth, SA	Contractor
Data de construção	2022	Construction period
Custo	EUR 39.392,00	Cost

Parque Ribeirinho Moinhos da Póvoa e Ciclovía do Tejo
Frente Ribeirinha da Póvoa de Santa Iria (Vila Franca de Xira)***Moinhos da Póvoa River Park and Tagus Bicycle Path***
Póvoa de Santa Iria Water Front (Vila Franca de Xira, Portugal)**Descrição dos trabalhos**

No âmbito da obra denominada “Parque Ribeirinho Moinhos da Póvoa e Ciclovía do Tejo” a cargo de um empreiteiro geral, foram adjudicados à Seth os trabalhos de cravação de 39 estacas tubulares com 355 mm de diâmetro (com 12,5 mm de espessura) com um comprimento médio de 36 m que serviram de suporte ao passeio pedonal.

Description of the work

As part of the work called "Parque Ribeirinho Moinhos da Póvoa e Ciclovía do Tejo" by a general contractor, Seth was awarded the works of 39 tubular piles with 355 mm diameter (12.5 mm thick) with an average length of 36 m that served as support to the footbridge.

**Resumo da Obra*****Work Summary***

Cliente
Tipo de contrato
Data de construção
Custo

Luís Frazão, SA
Lump Sum
2018
EUR 285.000,00

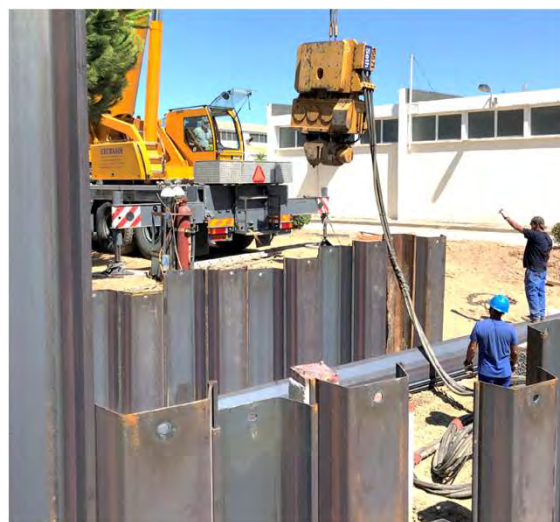
Client
Contract type
Construction period
Cost

Estacas Pré-fabricadas e Estacas-prancha
OGMA (Grupo Embraer), Alverca
Sheetpiling and Precast Piles
OGMA (Embraer Group), Alverca (Portugal)
Descrição

Foram executadas estacas pré-fabricadas e cravadas estacas-prancha para rede de drenagem nas OGMA (Grupo Embraer), em Alverca. As estacas pré-fabricadas são normalmente cravadas *in-situ*, estando disponíveis em secções de vários formatos, como circular, quadrada ou octogonal, podendo estas apresentar secções ocas para reduzir o seu peso próprio. Este tipo de estacas tem que ser dimensionado de modo que para além de ter que suportar as cargas futuras que lhe irão ser aplicadas, esteja igualmente dimensionada para suportar as cargas dinâmicas que lhe são aplicadas aquando da sua cravação.

Work Description

The piles are driven with modern, free-fall equipment, using a hammer of between 5 and 9 tons raised either by a simple cable system, or the most advanced high performance hydraulic drive methods. This equipment is completely autonomous (requiring no auxiliary components) and mounted on crawler-cranes for easy movement.


Resumo da Obra
Work Summary

Cliente
Tipo de contrato

Armando Cunha, SA
Preço global
Lump-sum

Client
Contract type

Data de construção
Custo

2019
EUR: 118.770,00

Construction period
Cost

Estacas Pré-fabricadas
Samora Correia
Pre-cast Piles
Samora Correia
Descrição

Estacas pré-fabricadas na EE de Samora Correia. As estacas pré-fabricadas são normalmente cravadas *in-situ*, estando disponíveis em secções de vários formatos, como circular, quadrada ou octogonal, podendo estas apresentar secções ocas para reduzir o seu peso próprio. Este tipo de estacas tem que ser dimensionado de modo que para além de ter que suportar as cargas futuras que lhe irão ser aplicadas, esteja igualmente dimensionada para suportar as cargas dinâmicas que lhe são aplicadas aquando da sua cravação.

Work Description

The piles are driven with modern, free-fall equipment, using a hammer of between 5 and 9 tons raised either by a simple cable system, or the most advanced high performance hydraulic drive methods. This equipment is completely autonomous (requiring no auxiliary components) and mounted on crawler-cranes for easy movement.


Resumo da Obra
Work Summary

Cliente	Manuel Joaquim Caldeira, Lda	Client
Tipo de contrato	Preço Global	Contract type
	Lump-sum	
Data de construção	2019	Construction period
Custo	EUR: 49.848,00	Cost

Microestacas Foz do Arelho
Foz do Arelho**Micro-Piles, Foz do Arelho**
Foz do Arelho, Portugal**Descrição dos trabalhos**

Fornecimento de microestacas em 3 moradias na Foz do Arelho (Caldas da Rainha).

A principal vantagem das microestacas é poderem ser executadas com equipamentos leves, de pequenas dimensões e versáteis, podendo ser utilizados onde os equipamentos convencionais de estacas não podem trabalhar.

Regra geral, esta técnica de fundações indirectas é utilizada para reparar ou reforçar fundações existentes, em espaços reduzidos ou com restrições de pé-direito.

Para a execução de microestacas a Seth utiliza equipamentos versáteis e de tamanho reduzido, designadamente, uma máquina Klemm 702 e uma máquina Klemm 803.

**Work Description**

Micropiles are generally used when there are difficult ground conditions, such as natural or man-made obstructions, sensitive ground with adjacent structures, limited access/low headroom and/or karstic geology. They are commonly used to replace deteriorating foundation systems, for the renovation of structures, to support structures affected by adjacent construction, for seismic retrofitting or in-situ reinforcement including embankment, slope and landslide stabilization.

Resumo da Obra**Work Summary**

Cliente	Construções Linto & Marques, Lda.	<i>Client</i>
Tipo de contrato	Valor Global Lum-sum	<i>Contract type</i>
Data de construção	2019	<i>Construction period</i>
Custo	EUR: 66.598,00	<i>Cost</i>

Microestacas para Tanques de Melaço
Lallemand, Cachofarra, Setúbal

Micro Piles, Lallemand
Lallemand Factory at Setúbal, Portugal

Descrição dos trabalhos

Fornecimento de microestacas para fundação de 2 tanques de melaço, cada um com 3.000,00 m³ de capacidade e 4.200,00 toneladas, na Fábrica Lallemand, no lugar de Cachofarra, Setúbal.

A Lallemand é uma empresa canadiana fundada no final do século XIX, especializada no desenvolvimento, produção e comercialização de leveduras e bactérias, e ocupa posições de liderança mundial como empresa especializada na investigação, desenvolvimento, produção e comercialização de leveduras e bactérias.

Regra geral, a técnica de fundações indirectas é utilizada para reparar ou reforçar fundações existentes, em espaços reduzidos ou com restrições de pé-direito.

Para a execução de microestacas a Seth utiliza equipamentos versáteis e de tamanho reduzido, nomeadamente, as máquinas Klemm 702 e Klemm 803.

Fornecimento:

21 microestacas com armadura N80 Ø114,3 x 9,0 mm.

**Work Description**

Micropiles are generally used when there are difficult ground conditions, such as natural or man-made obstructions, sensitive ground with adjacent structures, limited access/low headroom and/or karstic geology. They are commonly used to replace deteriorating foundation systems, for the renovation of structures, to support structures affected by adjacent construction, for seismic retrofitting or in-situ reinforcement including embankment, slope and landslide stabilization.

**Resumo da Obra****Work Summary**

Cliente
Tipo de contrato

Data de construção
Custo

Reflexos do Tejo
Série de Preços
Unit Price
2018
EUR 35.155,20

Client
Contract type

Construction period
Cost

Microestacas para Nova Adega da SCC
Sociedade Central de Cervejas, Vialonga

Micro Piles, SCC
SCC, Vialonga, Vila Franca de Xira (Portugal)

Descrição dos trabalhos

Fornecimento de microestacas para nova adega de cerveja filtrada (BBT) nas instalações fabris da Sociedade Central de Cervejas (SCC), sita no lugar e freguesia de Vialonga, concelho de Vila Franca de Xira.

Regra geral, esta técnica de fundações indirectas é utilizada para reparar ou reforçar fundações existentes, em espaços reduzidos ou com restrições de pé-direito.

Para a execução de microestacas a Seth utiliza equipamentos versáteis e de tamanho reduzido, nomeadamente, equipamentos de perfuração Klemm 702 e Klemm 803.



Quantidade fornecida:

72 microestacas c/ armadura N80 Ø114,3x10,0 mm

Work Description

Micropiles are generally used when there are difficult ground conditions, such as natural or man-made obstructions, sensitive ground with adjacent structures, limited access/low headroom and/or karstic geology. They are commonly used to replace deteriorating foundation systems, for the renovation of structures, to support structures affected by adjacent construction, for seismic retrofitting or in-situ reinforcement including embankment, slope and landslide stabilization.



Resumo da Obra

Work Summary

Cliente	Graviner Construções, SA	Client
Tipo de contrato	Série de Preços	Contract type
	Unit Price	
Data de construção	2018	Construction period
Custo	EUR 71 410,40	Cost

**Microestacas para Passagem Pedonal
do Museu dos Coches e Esplanada
Belém, Lisboa**

**Micro Piles, “Coches” Museum
Lisbon (Portugal)**

Descrição dos trabalhos

A SETH executou microestacas e perfis metálicos para muros de contenção na Ponte Pedonal do Museu dos Coches. Localizada em Belém, na cidade de Lisboa, esta ponte permite a travessia sobre a linha férrea (Linha de Cascais) tendo sido executado parte das microestacas dentro da área concessionada à linha. Esta empreitada também incluiu contenções tipo Berlim para escavação de maciços.

Quantidades executadas:

14 microestacas com armadura N80 Ø114,3 x 9,0 mm para Fundação Ponte Pedonal
 19 microestacas com armadura N80 Ø127,0 x 9,0 mm para fundação Esplanada
 14 perfis HEB120 para contenção tipo Berlim

Para a execução de microestacas a Seth utiliza equipamentos versáteis e de tamanho reduzido, nomeadamente, as máquinas Klemm 702 e Klemm 803.



Work Description

Micropiles are generally used when there are difficult ground conditions, such as natural or man-made obstructions, sensitive ground with adjacent structures, limited access/low headroom and/or karstic geology. They are commonly used to replace deteriorating foundation systems, for the renovation of structures, to support structures affected by adjacent construction, for seismic retrofitting or in-situ reinforcement including embankment, slope and landslide stabilization.



Resumo da Obra

Work Summary

Cliente	Consórcio: João Fernandes da Silva, S.A. + Construções Refoiense, Lda.	<i>Client</i>
Tipo de contrato	Série de Preços / Unit Price	<i>Contract type</i>
Data de construção	2017	<i>Construction period</i>
Custo	EUR: 60.697,50	<i>Cost</i>

Micro-estacas
Jardim 25 de Abril, Coruche**Sheetpiling and Precast Piles**
25 April Garden, Coruche (Portugal)**Descrição dos trabalhos**

Fornecimento de microestacas para Passadiço no Jardim 25 de Abril, em Coruche.

A principal vantagem das microestacas é poderem ser executadas com equipamentos leves, de pequenas dimensões e versáteis, podendo ser utilizados onde os equipamentos convencionais de estacas não podem trabalhar.

Regra geral, esta técnica de fundações indirectas é utilizada para reparar ou reforçar fundações existentes, em espaços reduzidos ou com restrições de pé-direito.

Para a execução de microestacas a Seth utiliza equipamentos versáteis e de tamanho reduzido, nomeadamente, as máquinas Klemm 702 e Klemm 803.

Work Description

Micropiles are generally used when there are difficult ground conditions, such as natural or man-made obstructions, sensitive ground with adjacent structures, limited access/low headroom and/or karstic geology. They are commonly used to replace deteriorating foundation systems, for the renovation of structures, to support structures affected by adjacent construction, for seismic retrofitting or in-situ reinforcement including embankment, slope and landslide stabilization.

**Resumo da Obra**
Work Summary

Cliente
Tipo de contrato

Somague, SA
Preço Global
Lump-sum

Client
Contract type

Data de construção
Custo

2019
EUR 289 484,80

Construction period
Cost

Fundações Indirectas em Microestacas
Edifício na Praça D. Luís, Lisboa

Precast Piles
Lisbon (Portugal)

Descrição dos trabalhos

A SETH executou microestacas num edifício a reabilitar na Praça D. Luís (Lisboa). Este trabalho foi executado com recurso à Klemm 702 que, por ter dimensões reduzidas possibilita a execução de trabalhos em locais com pé-direito condicionado.

Principais quantidades executadas:

- 4 microestacas com armadura N80
Ø60,3 x 5,5 mm para Suporte de Vão
- 18 microestacas com armadura N80
Ø139,7 x 12,50 mm para Pórticos
- 48 microestacas com armadura N80
Ø139,7 x 9,0 mm para Pórticos
e Contenção da Fachada
- 106 microestacas com armadura N80
Ø139,7 x 9,0 mm de Fundação
da parte nova a construir.

Work Description

Micro piles are generally used when there are difficult ground conditions, such as natural or man-made obstructions, sensitive ground with adjacent structures, limited access/low headroom and/or karstic geology. They are commonly used to replace deteriorating foundation systems, for the renovation of structures, to support structures affected by adjacent construction, for seismic retrofitting or in-situ reinforcement including embankment, slope and landslide stabilization.


Resumo da Obra
Work Summary

Cliente	Sacyr Somague, SA	Client
Tipo de contrato	Série de Preços	Contract type
	Unit Price	
Data de construção	2019-2020	Construction period
Custo	EUR: 324 809,20	Cost

Microestacas na Sub-estação EDP
Rua da Boavista, Lisboa

Micro-Piles, EDP Substation
Lisbon, Portugal

Descrição dos trabalhos

A Seth executou microestacas de fundação na Subestação da EDP, localizada na Rua da Boavista, na cidade de Lisboa.

O projecto converteu um edifício utilizado como garagem, numa subestação, mantendo-se parte da fachada existente.

Nesta empreitada, foram executadas:

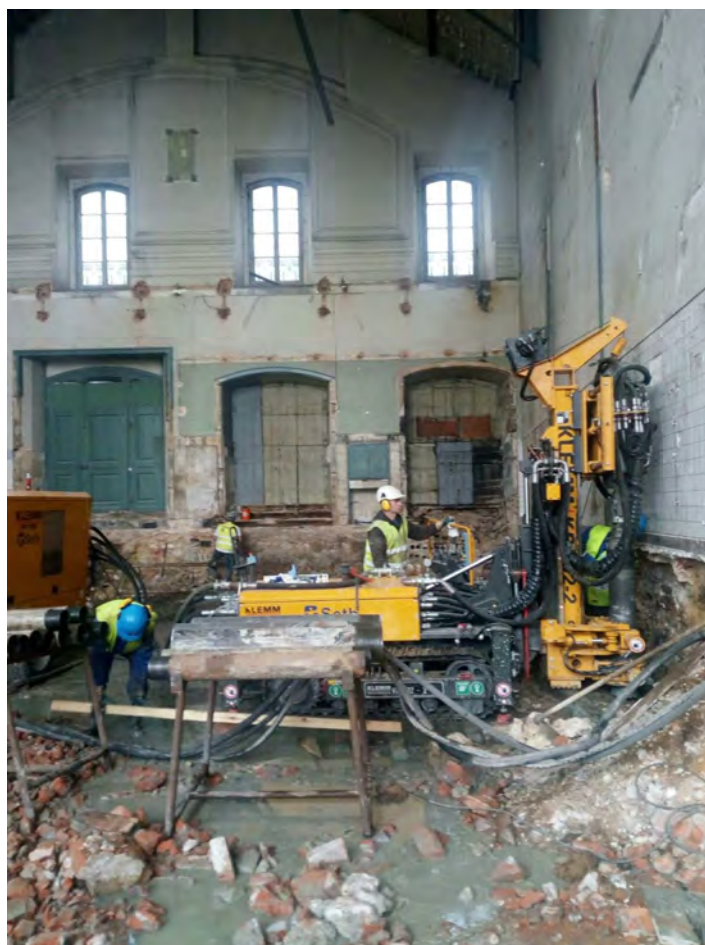
121 microestacas, armadura N80 Ø139,7x10,0mm.

Regra geral, esta técnica de fundações indirectas é utilizada para reparar ou reforçar fundações existentes, em espaços reduzidos ou com restrições de pé-direito.

Para a execução de microestacas a Seth utiliza equipamentos versáteis e de tamanho reduzido, nomeadamente, tipo Klemm 702 e Klemm 803.

Work Description

Micropiles are generally used when there are difficult ground conditions, such as natural or man-made obstructions, sensitive ground with adjacent structures, limited access/low headroom and/or karstic geology. They are commonly used to replace deteriorating foundation systems, for the renovation of structures, to support structures affected by adjacent construction, for seismic retrofitting or in-situ reinforcement including embankment, slope and landslide stabilization.



Resumo da Obra

Work Summary

Cliente	Graviner, SA	Client
Tipo de contrato	Série de Preços	Contract type
	Unit Price	
Data de construção	2017	Construction period
Custo	EUR: 118.138,40	Cost

Microestacas Soporcel
Fábrica da Soporcel, Figueira da Foz**Precast Piles**
Soporcel Factory, Figueira da Foz (Portugal)**Descrição dos trabalhos**

A SETH executou microestacas de fundação para tapete transportador (Belt Conveyor) na fábrica da Soporcel – Navigator, na Figueira da Foz.

Foram executadas 35 microestacas de 12 m cada com armadura N80 Ø127,0 x 9,0 mm para fundação de “Belt Conveyor” em locais com o pé direito condicionado.

Regra geral, esta técnica de fundações indirectas é utilizada para reparar ou reforçar fundações existentes, em espaços reduzidos ou com restrições de pé-direito.

Para a execução de microestacas a Seth utiliza equipamentos versáteis e de tamanho reduzido, nomeadamente, as máquinas Klemm 702 e Klemm 803.

**Work Description**

Micropiles are generally used when there are difficult ground conditions, such as natural or man-made obstructions, sensitive ground with adjacent structures, limited access/low headroom and/or karstic geology. They are commonly used to replace deteriorating foundation systems, for the renovation of structures, to support structures affected by adjacent construction, for seismic retrofitting or in-situ reinforcement including embankment, slope and landslide stabilization.

**Resumo da Obra****Work Summary**

Cliente
Tipo de contrato

Data de construção
Custo

Grupo AOC
Série de Preços
Unit Price
2019-2020
EUR: 35 530,00

Client
Contract type

Construction period
Cost

**Elevador Panorâmico da Boca do Vento
Almada*****Panoramic Elevator at Boca do Vento
Almada***

Design-Build of a panoramic elevator,
with exterior cabin.

Tower Height: 50 m

Foundations:

In bored cast-in-place piles

Quantity: 15

Length/diameter of piles: 15 m / 800 mm

Formwork Type: Climbing formwork

Steel Structures: 42 ton

Elevator:

Course: 42 m

Capacity: 1600 kg / 21 people

Stainless steel outdoor cabin



Aspecto da cofragem trepante
para a betonagem da torre.

*Climbing formwork used for the
tower pouring.*

**Resumo da Obra
*Work Summary***

Cliente	C.M. Almada	<i>Client</i>
Tipo de contrato	Concepção-Construção Design-Build	<i>Contract type</i>
Data de construção	1998 - 1999	<i>Construction period</i>
Custo	PTE 152.000.000	<i>Cost</i>
Concepção	Esc. José Aurélio	<i>Conceptual design</i>
Estabilidade	Engs. Alfredo e Luís Morgado	<i>Structural design</i>
Elevador	OTIS	<i>Elevator</i>

**Ponte Pedonal
Alcácer do Sal, Portugal*****Pedestrian Bridge
Alcácer do Sal, Portugal*****Ponte atirantada****Características dimensionais**

Comprimento: 121 m
Largura: 3,5 m
Vão máximo entre pilares: 27 m
Altura livre máxima: 6 m
Pilares: estacas metálicas
(Ø 708 e 508 mm)

Características construtivas

Aço em estacas metálicas: 110 t
Aço no tabuleiro e plataformas
dos encontros: 169 t
Betão armado: 62 m³
Madeira exótica no tabuleiro: 1300 m²

Cable-stayed bridge***Dimensional features***

*Length: 121 m
Deck width: 3,5 m
Maximum span between pylons: 27 m
Maximum height above water: 6 m
Pylons: driven tubular piles
(Ø 708 and 508 mm)*

Construction features

*Steel piles: 110 t
Steel deck and abutments: 169 t
Reinforced concrete: 62 m³
Exotic wood on deck: 1300 m²*



Topo: A ponte acabada.
Top: The finished bridge.

Resumo da Obra***Work Summary***

Cliente	C.M. Alcácer do Sal	<i>Client</i>
Tipo de contrato	Concepção-Construção Design-Build	<i>Contract type</i>
Data de construção	2001	<i>Construction period</i>
Custo	EUR 1.855.000,00	<i>Cost</i>
Projectista	Engº Luís Colen	<i>Architect & Engineer</i>

Desmantelamento das Instalações da Portucel Recicla Mourão (Alentejo)

Dismantling of Facilities Portucel Recycler Mourão, Portugal

Trabalhos executados

Desmantelamento e demolição da globalidade do património edificado que constituía a antiga unidade fabril da Portucel Recicla (pavimentos, fundações, estruturas de betão e metálicas, edifícios, tanques de armazenagem, depósitos, equipamentos, tubagens, diques, muretes e paredes, postes de iluminação e vedações).

Na zona a Sul da antiga fábrica foram retiradas as lamas, as terras misturadas com lamas e outros resíduos aí encontrados e foi terminada a respectiva modelação do terreno.

Na zona da fábrica e a norte desta, para além do património edificado, e na sequência da remoção dos resíduos aí existentes, foram removidas as terras do interface.

A zona afectada por esta empreitada situa-se entre as cotas 120 m e 136 m, apenas uma pequena área – zona de preparação de nós – se situa sensivelmente à cota 140 m, com cerca de 0,5 ha.

Work Description

Dismantling and demolition of the whole of the built heritage that was a former Portucel's manufacturing unit recycles (floors, foundations, structures of concrete and metal, buildings, storage tanks, deposits, equipment, pipelines, dams, curbs and walls, lighting poles and seals).

In the southern half of the former factory were removed as sludge, such as land mixed with sludge and other waste found there and was completed its modeling to ground.

In the area of plant and this north beyond the built heritage, and the sequence of removal of existing waste there, were removed as interface lands.

The area affected by this contract - such as quotas from 120 m to 136 m, only a small area – nodes preparation zone - are about on the height of 140 m, with aprox 0.5 ha.



Resumo da Obra

Work Summary

Cliente	EDIA – Empresa de Desenvolvimento e Infra-Estruturas do Alqueva, SA	<i>Client</i>
Tipo de contrato	Preço Global Lump Sum	<i>Contract type</i>
Data de construção	2001	<i>Construction period</i>
Custo	EUR 18.605.253,20	<i>Cost</i>

Reparação do Emissário Submarino da ETAR da Ribeira dos Moinhos Concelhos de Sines e de Santiago do Cacém

Marine Outfall – WWTP Ribeira dos Moinhos Sines – Santiago do Cacém, Portugal

Descrição dos trabalhos

A Águas de Santo André adjudicou à Seth a empreitada de Reparação do Emissário Submarino da ETAR de Ribeira dos Moinhos que abrange os concelhos de Sines e de Santiago do Cacém.

No âmbito desta empreitada foi feita a substituição integral do troço inicial que descarrega no mar as águas residuais tratadas, numa extensão de 120 metros.

Com uma extensão total de 2480 metros, o emissário submarino transporta os efluentes com origem na Zona Industrial e Logística de Sines e os efluentes urbanos provenientes dos concelhos de Sines e Santiago do Cacém, que, após tratamento na ETAR da Ribeira dos Moinhos, são lançados no mar através de uma série de difusores situados na sua extremidade, a uma profundidade de 40 metros.

A conduta é em PEAD DN900, num primeiro troço enterrada e com uma extensão aproximada de 60 metros.

A cerca de 60 metros a jusante da câmara de válvulas, foi executado um acesso ao emissário constituído por uma boca de visita com tampa flangeada DN 900 em aço inox.

Work description

The public company Águas de Santo André has awarded to Seth the contract for repair the Outfall of the mill Ribeira WWTP that covering the municipalities of Sines and Santiago do Cacém.

Under this contract, Seth has completed the replacement of the initial section which discharge into the sea the treated wastewater, on a distance of 120 meters.

With a total length of 2480 meters, the outfall transports wastewater originating in the Sines Industrial and Logistics Zone and urban effluents from the municipalities of Sines and Santiago do Cacém, that after treatment at WWTP, are launched the sea through a series of nozzles situated at its end to a depth of 40 meters.

The conduct is in HDPE DN900, with a first buried section and an approximate length of 60 meters.

About 60 meters downstream of the valve chamber, has run an access to the outfall consists of a manhole cover with flange DN 900 stainless steel.



Resumo da Obra

Work Summary

Cliente	Águas de Santo André (Grupo Águas de Portugal)	<i>Client</i>
Tipo de contrato	Valor Global / Lump-sum	<i>Contract type</i>
Data de construção	2015-2016	<i>Construction period</i>
Custo	EUR 359.840,00	<i>Cost</i>

**Central de Dessalinização de Beni Saf
Beni Saf, Argélia**
**Desalination Plant
Beni Saf, Algeria**
Works description

Driving of sheet piling cofferdam to perform release pipe 2.400mm and 1.800 mm, and implementation of outfall, including dredging, in 1,200 m long pipe of 2,400 mm and 800 m to 1800 mm pipe diameter. Running water intake tower and sinking the same.

Description of the work

Crimping and unbolt of curtain sheet piles: ± 1041 ml
Dredging sand: 33,589.16 m²
Underwater rock blasting and its dredging: 6316.05 m³
Excavations: 87541.38 m³
Release and sinking tubing Ø 2400mm, 1200m
Release and sinking tubing Ø 1800mm: 800
Running rings for pipes: 286 units
Implementation of knights to pipes: 86 units


**Resumo da Obra
Work Summary**

Cliente	Befesa, Cobra, Codesa, Sadyt	<i>Customer</i>
Tipo de contrato	Contract price	<i>Type of Contract</i>
Data de construção	2007	<i>Construction date</i>
Custo	EUR 9.733.604,23	<i>Cost</i>
Observações	Job in Consortium	<i>Notes</i>

**Emissário Submarino de Albufeira
Albufeira, Algarve**

**Marine Outfall
Albufeira (Algarve, Portugal)**

The contract for the "Design and Construction of the Reinforcement of the Disinfection Stage of the Vale de Faro Wastewater Treatment Plant, in Albufeira, and the Corresponding Treated Effluent Disposal at Sea Infrastructures" was awarded to the consortium that included **Seth**, in 2004, and it was completed within 210 days.

Trabalhos efectuados

- Instalação de um sistema de desinfecção ultra-violeta na ETAR de Vale de Faro;
- Execução de um emissário Terrestre PEAD Ø1000 mm entre a ETAR de Vale de Faro e a Câmara de Carga do Emissário Submarino;
- Execução e afundamento de um emissário submarino em PEAD Ø1000 mm com 1020m de comprimento e um difusor na extremidade com 160 m de comprimento, à cota -11 ZH;
- Os trabalhos foram realizados entre a cota -11 ZH e -13 ZH.
- Caudal descarregado: 4.232 m³ / h
- População servida: 130.000 habitantes

Main features

- Construction of one marine outfall pipe (HDPE Ø 1000 mm) w/ 1020 m long
- Construction of one earthy outfall pipe (HDPE Ø1000 mm) w/ 926 m long
- Work done at depths between -11 and -13 m datum level
- Unloading flow in WWTP: 4.232 m³ / h
- Population: 130.000 inhabitants



Lançamento da tubagem e vista durante a construção.
Pipe launching and Construction in progress.

**Resumo da Obra
Work Summary**

Cliente	Águas do Algarve	Client
Fiscalização	Águas do Algarve	Inspection agency
Tipo de contrato	Preço Global	Contract type
	Lump Sum	
Data de construção	2004-2005	Construction period
Custo	EUR 3.512.305,00	Cost
Projectista	WW – Consultores de Hidráulica	Architect/Engineer

Construção do Sistema de Intercepção Terreiro do Paço / Cais do Sodré

Lisboa

Construction of the Interception System at Terreiro do Paço – Cais do Sodré Lissabon, Portugal

Work Description

Pumping station Agencies

Construction of a pumping station wastewater near the European Maritime Safety Agency (EMSA) and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) at about 370 meters from the Palace Square.

The pumping of Agencies Station was equipped with 4 electric pump groups with unit flow rate up to 550 l / s. The deployment area covers an area of 290 m2, with a depth of construction of 12 m below the natural ground. The project was implemented at a distance of 5 meters to Tagus River.

Building support / Post processing

Construction of an annex for the installation of all electrical system command of the pumping station, namely: the transformer substation; emergency generator set; electric command and control.

Outfall

Construction of an outfall 150 m in length, installed in open trench in the Tagus River bed, high-density polyethylene pipe with DN 1100 mm.

Section of the Interceptor

Building 60 m interceptor gravity Ductile iron pipe DN 1200 mm.

This portion implanted to 7.00 m depth, is located just upstream of the pumping station allowing its entry wastewater.



Resumo da Obra

Work Summary

Cliente	Simtejo, SA Saneamento Integrado dos Municípios do Tejo e Trancão, SA	Customer
Tipo de contrato	Preço contratual	Type of Contract
Data de construção	2009-2010	Construction date
Custo	EUR 8.186.553,00	Cost
Observações	Job in Consortium	Notes

Remodelação e Ampliação da ETAR Faro Noroeste Loulé e Faro

Faro Northwest WWTP – Remodeling and Enlargement Loulé - Faro, Portugal

The new plant was designed for a treatment capacity of 44,530 inhabitants equivalent and for new quality goals for the final effluent, particularly with regard to microbiological parameters.

The area served covers part of the parishes of Almancil and São Clemente, of the municipality of Loulé and part of the parishes of Santa Bárbara de Nexe, Conceição and São Pedro, and the whole of the parish of Montenegro in the municipality of Faro.

Presentation of the Infrastructure

The recommended treatment scheme involves two lines and, in hydraulic and procedural terms, it was dimensioned for a design horizon year of 2033. It is based on a system of biological treatment using activated sludge, involving long aeration in two biological reactors configured as two oxidation ditches with surface aerators.

The solution adopted comprises a three-stage treatment scheme:

1 – Liquid Stage

- Intake system: equipped with rotating-drum screens to remove bigger solids /
- Grit/grease removal, to remove sand, oils and fats /
- Reception of sludge from septic tanks /
- Contact tanks and receivers (selectors) and biological reactors of the oxidation ditch type, where the biological treatment takes place /
- Secondary decanters to remove the biomass from the effluent, a part being recycled to the process /
- Microfiltration in rotating-drum micro-atmosers /
- Disinfection of the final effluent from the Plant by ultraviolet radiation /
- Additional disinfection of part of the effluent with a view to its use as service water within the area of the Wastewater Treatment Plant.

The receiving environment for the final effluent from the Faro Northwest Wastewater Treatment Plant is the Ramalhete Creek of the Formosa Ria.

2 – Solid Stage

- Conditioning with polyelectrolyte /
- Thickening (in a thickening drum and mechanical dehydration (in centrifuge) of the excess biological sludge /
- Elevation of the dehydrated sludge and its storage in silos.

3 –Odour Control

Extraction and treatment, at a chemical odour-control unity, of the foul air from the sludge entering and treatment stages.

This treatment design is considered the most advantageous in both economic and operational terms, taking into account the size of the plant and the regulations governing the discharge of residual waters from the Plant fixed by the Algarve Hydrographic Region Administration (ARH):

CBO5 - 25 mg/l;

COD - 125 mg/l;

TSS - 35 mg/l;

and Fecal Coliforms < 300 MPN/ 100 mL.



Resumo da Obra

Work Summary

Cliente
Tipo de contrato
Data de construção
Custo
Observações

Águas do Algarve, SA
Concepção-construção
2008-2010
EUR 9.700.000,00
Job in Consortium

Customer
Type of Contract
Construction date
Cost
Notes

Concepção-construção da ETAR da Lagoinha Palmela (Setúbal)

WWTP at Lagoinha (Design-build) Palmela (Setúbal), Portugal

Description of Work

The purpose of the Lagoinha wastewater treatment plant is to process the urban wasters of about 18,000 inhabitant-equivalents (i.e., about 60% of nominal capacity). It was dimensioned to respond to a population of 30,600 inhabitant-equivalents. The average flow to be treated in the project-horizon year is 7,650m³/day, with a peak flow of 670m³/hour. It comprises a treatment line that includes the following main stages.

Initial Pumping and Preliminary Treatment

The initial raw wastewater pumping station is designed for a water-column height of 11.4m. Following reception of the raw wastewater it is mechanically pre-treated in 2 compact-equipment lines in which the fine-sieving and sand-, oil- and fat-removal operations are combined in a single, completely-enclosed unit installed at the surface.

Secondary and tertiary treatment

The biological treatment involves prolonged aeration using Carrousel Biological Reactors. Comprising two symmetrical units, they have a capacity to handle 6,500m³ of effluent. They are 9.20m high and 6 metres are below ground level. The Secondary Decantation is undertaken in 2 identical circular tanks having a conical bottom slab equipped with bottom-scraper pontoons. Each tank is 22m in internal diameter, 3m high, 2 m being below ground level.

Effluent treatment

Part of the final effluent from the Treatment Plant is disinfected for the purpose of reuse as Service Water, both for washing and for irrigation of the green spaces.

Sludge treatment and storage

Mechanical dehydration of the digested sludge is undertaken in two centrifuges located in the operations building. The storage and treatment of the excess biological sludge is undertaken in two identical cylindrical reinforced-concrete tanks of a diameter of 10.5m and a height of 4.5m. The sludge thickening tank is equipped with a bottom scraper.

Deodorisation

Extraction and treatment of the foul air involves a BIOFILTER. The recommended Biofilter has an area of 80m² and a biomass filtering height of 1.5m.



Resumo da Obra

Work Summary

Cliente	Simarsul, SA
Tipo de contrato	Design-build
Data de construção	2006-2008
Custo	EUR 3.634.000,00
Observações	Job in Consortium

Customer
Type of Contract
Construction date
Cost
Notes

ETAR de Redondo e Montoito Alentejo (Portugal)

WWTP at Redondo and Montoito Alentejo (Portugal)

Trabalhos realizados

A ETAR do Redondo, e as respectivas infra-estruturas complementares, têm por finalidade tratar as águas residuais urbanas de cerca de 7000 habitantes-equivalentes. O caudal médio a tratar, no ano horizonte de projecto(2034), é de 1265 m³/dia, e o caudal de ponta horária de 145 m³/h.

É constituída por uma linha de tratamento que inclui as seguintes etapas principais :

Pré-tratamento

(gradagem grosseira, tamização, desarenação, medição e elevação dos caudais afluentes) ;

Tratamento secundário e terciário

(tratamento biológico, pelo processo de lamas em arejamento prolongado, e decantação secundária assistida para remoção de fósforo solúvel) ;

Tratamento de afinação do efluente

(microtamização do efluente clarificado e desinfecção por meio de radiação ultravioleta) ;

Tratamento de lamas

(espessamento gravítico de lamas biológicas em excesso e desidratação centrífuga).

Work Description

The Redondo Wastewater Treatment Plant and its ancillary infrastructures are designed to treat the urban wastewater of about 7000 inhabitant-equivalents. The average daily flow to be treated over the project horizon is 1265 m³/day, with a peak flow of 145 m³/hour.

It consists of a treatment line that includes the following main stages:

Pre-treatment

(course screening, fine screening, sand and grit removal, measurement and pumping the sewage to a higher level);

Secondary and Tertiary Treatment

(biological treatment using the prolonged sludge aeration process, and assisted secondary decantation to remove soluble phosphorus);

Final Processing of the Effluent

(micro-screening of the clarified effluent and disinfection by ultraviolet radiation);

Sludge Treatment

(gravity thickening of excess biological sludge and centrifuge dehydration).



Resumo da Obra

Work Summary

Cliente	Águas do Centro Alentejano, SA	Customer
Tipo de contrato	Chave-na-mão	Type of Contract
Data de construção	2005-2006	Construction date
Custo	EUR 5.255.480,00	Cost
Observações	Obra feita em Consórcio	Notes

ETAR Ribeira Brava

Sítio da Praia (Freguesia de Tabua, concelho da Ribeira Brava) Madeira

WWTP Ribeira Brava

Praia, Tabua (Ribeira Brava) Madeira Island

Trabalhos efectuados

A ETAR faz parte da empreitada de Destino Final de Águas Residuais do Concelho da Ribeira Brava, dimensionado para servir a actual população de aproximadamente 7000 pessoas e preparado para no ano de 2025 servir uma população estimada em 13200 habitantes.

Caudal médio diário de 3164 m³ / dia

Caudal de ponta horária de 260 m³ / hora.

Etapas de Tratamento:

Pré-tratamento – tamisação vertical; desarenação; equalização do efluente bruto; medição de caudal.

Tratamento secundário – reactores biológicos sequenciais (SBR).

Tratamento terciário – equalização do efluente decantado; filtração em filtros fechados em pressão; desinfecção por ultra-violeta (pressão); armazenamento do efluente tratado.

Tratamento de Lamas – espessamento gravítico; desidratação centrífuga; estabilização com cal viva.

Tratamento de odores – para reduzir os cheiros na área envolvente à ETAR, foi instalado equipamento para tratamento de odores através de um sistema de carvão activado.

Scope of work

Turn-key construction of a waste water treatment plant for the local government at Madeira Island, in Tabua (Ribeira Brava), to 13200 inhabitants served, with a treatment flow of 3164 m³ per day. Works included civil construction, procurement and installation of all specific, mechanical, electrical and control equipment and pre-engineered systems, as well as all commissioning tests.



Vista geral da ETAR
General view of WWTP



Resumo da Obra

Work Summary

Cliente	SRARN - Direcção Regional de Saneamento Básico	Client
Tipo de contrato	Chave-na-mão Turn-key	Contract type
Data de construção	2004-2005	Construction period
Custo	EUR 6,8 million	Cost
Projectista	Cenor / Consulgal	Architect & Engineer
Observações	Consórcio / Consortium	Notes

**Estação de Tratamento de Águas
EPAL – Vale da Pedra, Azambuja**

**Water Treatment Facility
EPAL, Vale da Pedra, Azambuja, Portugal**

Descrição dos Trabalhos

A empreitada teve por objecto a construção do edifício de tratamento de águas residuais de processo da ETA de Vale da Pedra, bem como todo o sistema de recolha e tratamento desses efluentes, incluindo a construção dos edifícios, órgãos, fornecimento e instalação dos equipamentos e concretização das ligações necessárias a assegurar a recolha e tratamento dos efluentes em causa (fundamentalmente, lamas de decantação e águas de lavagem dos filtros) bem como a reutilização de caudais recuperados na operação de espessamento através da respectiva condução à cabeça da linha de tratamento.

A execução desta empreitada veio permitir o tratamento de um volume de efluentes de processo resultante da capacidade de tratamento de água bruta, pela ETA, de 400.000 m³/dia (240.000 hab. eq.).

Esquema de tratamento utilizado: decantação, floculação e desidratação de lamas.



Vista do edifício de tratamento de águas residuais
View of WTP building

Scope of work

Design-build construction of a water treatment facility for the EPAL in Vale da Pedra (Azambuja). Works included all civil construction, procurement and installation of all specific, mechanical, electrical and control equipment and pre-engineered systems, as well as all commissioning tests. After construction the WTP has capacity to grant 400.000 m³/day of treatment flow.



Diversas vistas do equipamento instalado na central.
Several views of the equipment installed in the facility.

**Resumo da Obra
Work Summary**

Cliente	EPAL	Client
Tipo de contrato	Concepção/Construção Design-Build	Contract type
Data de construção	2002-2003	Construction period
Custo	EUR 3.185.715,00	Cost
Projectista	Hidrocontrato	Architect & Engineer
Capacidade	400 000 m³/dia (m³/day) 240 000 hab. eq.	Capacity

Estação de Tratamento de Águas U.S. Navy - Base Aérea das Lajes, Açores

Water Treatment Facility U.S. Navy - Lajes Field, Azores

Descrição dos trabalhos

Construção para a Marinha de Guerra dos E.U.A. de uma Central de Tratamento de Águas (osmose inversa) na base Aérea das Lajes, Açores.

Toda a instalação foi construída e equipada com base em projecto realizado nos E.U.A..

O projecto foi executado em regime chave-na-mão e incluiu a construção civil, procura e montagem de todo o equipamento específico, electro-mecânico, dispositivos de instrumentação e controlo remoto, assim como todos os testes de arranque. Após a construção, a empresa assegurou ainda a exploração e condução técnica da instalação.

Scope of work

Turn-key construction of a water treatment facility for the US Navy in Lajes Air Field (Terceira, Azores). Works included all civil construction, procurement and installation of all specific, mechanical, electrical and control equipment and pre-engineered systems, as well as all commissioning tests. After construction, under a separate contract, SETH has also been responsible for the operation of this facility.



Baterias de membranas
Membrane stacks



Diversas vistas
do equipamento
instalado na central.
*Several views of the
equipment installed
in the facility.*



Resumo da Obra *Work Summary*

Cliente	U.S. Navy	<i>Client</i>
Tipo de contrato	Chave-na-Mão Turn-Key	<i>Contract type</i>
Data de construção	2001	<i>Construction period</i>
Custo	USD 3,31 million	<i>Cost</i>
Projectista	Glenn & Sadler (EUA)	<i>Architect & Engineer</i>
Capacidade	750 000 gal/dia (gal/day)	<i>Capacity</i>

Estação de Tratamento de Águas Residuais
Grupo PORTUCEL SOPORCEL (antiga Fábrica de Papel INAPA), Setúbal
Wastewater Treatment Plant
PORTUCEL SOPORCEL Group (old INAPA Pulp and Paper Mill), Setúbal

Construção de uma Estação de Tratamento de Esgotos Industriais (ETARI)
Construction of an Industrial WWTP for the INAPA Paper Mill Plant

Características principais

Main features

População servida (equivalência) **180 000 hab**
 Caudal tratado **800 m³/h**
 Grau de tratamento **Secondary**
 Sistema de tratamento **Biological reaction**

Population
Treatment flow
Treatment level
Treatment system



2 Tanques de reacção biológica (50x 25x8 m) / *Biological reaction tanks (50x 25x8 m)*

1 Tanque de equalização (50x10x8 m) / *Equalizer tank (50x10x8 m)*

1 Caleira Parshall (caudal de saída) / *Parshall flume (outlet flow)*

1 Tanque espessador com ponte raspadora (Ø12 m, 5,5 m H) / *Thickener tank with scraping bridge (Ø12 m, 5,5 m H)*

Excavação **39 000 m³**
 Aterro **6900 m³**
 Betão **3300 m³**
 Cofragem **16 400 m²**
 Armadura e obras metálicas **243 ton.**

Excavation
Backfilling
Concrete
Formwork
Rebar and steel works



Resumo da Obra

Work Summary

Cliente	Papéis INAPA, SA	<i>Client</i>
Tipo de contrato	Chave-na-Mão Turn-Key	<i>Contract type</i>
Data de construção	1999-2000	<i>Construction period</i>
Custo	EUR 3.831.243,32	<i>Cost</i>
Projectista	Hidrocontrato, SA	<i>Architect & Engineer</i>
Observações	Consórcio c/ Hidrocontrato	<i>Notes</i>

Estação de Tratamento de Águas Residuais SISTEMA II - Colares, Sintra

Wastewater Treatment Plant SYSTEM II - Colares, Sintra

Construção de uma Estação de Tratamento de Esgotos (ETAR)
Construction of an WWTP for the Municipality of Sintra (Colares)

Características principais

Main features

Habitantes servidos	35 000	<i>Inhabitants served</i>
Caudal tratado	7900 m ³ /h	<i>Treatment flow</i>
Grau de tratamento	Secondary	<i>Treatment level</i>
Sistema de tratamento	Activated sludge	<i>Treatment system</i>

2 Decantadores primários / *Primary decanters*
2 Tanque de arejamento / *Aeration tanks*
2 Decantadores secundários / *Secondary decanters*
2 Digestores / *Digesters*
1 Desidratação de lamas / *Sludge drying plant*
3 Estações elevatórias / *Pumping stations*

Excavação	45 000 m ³	<i>Excavation</i>
Aterro	33 400 m ³	<i>Backfilling</i>
Betão	2200 m ³	<i>Concrete</i>
Cofragem	12 000 m ²	<i>Formwork</i>
Armadura e obras metálicas	125 ton.	<i>Rebar and steel works</i>



Resumo da Obra

Work Summary

Cliente	Câmara Municipal Sintra	<i>Client</i>
Tipo de contrato	Chave-na-Mão <i>Turn-Key</i>	<i>Contract type</i>
Data de construção	1996 - 1997	<i>Construction period</i>
Custo	€ 1,7 million	<i>Cost</i>
Projectista	CESL, SA	<i>Architect & Engineer</i>

**Estação de Tratamento de Águas Residuais
U.S. Navy - Base Aérea das Lajes, Açores**

**Wastewater Treatment Plant
U.S. Navy - Lajes Field, Azores**

Construção para a Marinha de Guerra dos E.U.A. de uma Estação de Tratamento de Águas Residuais na base Aérea das Lajes, Açores. Toda a instalação foi construída e equipada com base em projecto realizado nos E.U.A.. O projecto foi executado em regime chave-na-mão e incluiu a construção civil, procura e montagem de todo o equipamento electro-mecânico, dispositivos de instrumentação e controlo remoto, assim como todos os testes de arranque. O contrato integrou ainda a construção e equipamento total do laboratório de análises físico-químicas dos fluidos tratados e dos efluentes gerados pelo tratamento. Ainda parte do projecto, salienta-se a construção de uma rede de tubagens de transporte das águas residuais (com cerca de 6 km de extensão), tubagens de intercepção, câmaras de visita e 3 estações de bombagem.



Vista geral da ETAR. Em segundo plano, os tanques de clarificação
General view of the WWTP. Background: the clarifier tanks



Vista geral do edifício de comando e laboratório
General view of the control and laboratory building

Construction of a WWTP for the US Navy at Lajes Field, Azores (Portugal). Design was made by a US engineering firm. Construction was done on a turn-key basis and included all works: civil works, procurement and expediting of all electrical, mechanical and control equipment, as well as all commissioning and start up operational tests. Also included in the contract was the construction and furnishing of the laboratory building. Scope also included the construction of a piping network about 6 km long, manholes and 3 pumping stations.

**Resumo da Obra
Work Summary**

Cliente	U.S. Navy	<i>Client</i>
Tipo de contrato	Chave-na-Mão Turn-Key	<i>Contract type</i>
Data de construção	1995 - 1997	<i>Construction period</i>
Custo	USD 4,8 milhões	<i>Cost</i>
Projectista	Allen & Hoshall (EUA)	<i>Architect & Engineer</i>

Gasoduto de Transporte de Gás Natural Sines - Setúbal Sines – Setúbal

Sines – Setúbal Natural Gas Pipeline Sines - Setúbal

Trabalhos Efectuados

O Gasoduto de Transporte de Gás Natural entre Sines e Setúbal efectua a ligação entre o futuro terminal de GNL em Sines e a Rede Nacional de Transporte de Gás Natural.

Os trabalhos efectuados incluíram a construção de um Gasoduto de Gás Natural com 87 km de extensão, entre Sines e Setúbal, incluindo a maior travessia da Europa por perfuração dirigida, a do Estuário do Rio Sado (4500 m).

Foi utilizada tubagem com as seguintes características: tubo de aço API 5L Cl. Gr. X-70 (diâmetro 800 mm), espessura de 17,50 mm, com revestimento exterior a polietileno, pressão máxima de serviço de 84 bar e caudal máximo de 675 000 Nm³/h.

Work Description

Natural Gas Pipeline (87 km) between Sines and Setúbal including the longest Horizontal Direction Drilling (HDD) in Europe, 4500 m across the Sado River Estuary.

Pipework: steel pipe, API 5L CL. Gr. X-70 (Ø 800 mm) with polyethylene exterior coating.

HDD installation of 800 mm / 17,5 mm pipeline at the following crossings: Santo Andre, Salinas do Sado, Sado Estuary (4 HDD), Várzea do Sado, and Rio do Sado (8 HDD altogether).



Resumo da Obra

Work Summary

Cliente	TRANSGÁS Sociedade Portuguesa de Gás Natural, SA	Client
Tipo de contrato	Série de Preços Unit Price	Contract type
Data de construção	2003	Construction period
Custo	EUR 21.667.182,00	Cost
Projectistas	Eng. Luís Colen + Seth, SA	Engineering
Observações	Consórcio com CME e GHIZZONI	Notes

Terminal Marítimo da CLCM
Companhia Logística de Combustíveis da Madeira
Canical – Madeira

Complete Conventional Buoy Mooring (CBM) system
for the CLCM Canical Marine Terminal
Canical - Madeira

Trabalhos Efectuados

A **Seth, SA** concluiu a empreitada que lhe foi adjudicada pela CLCM – Companhia Logística de Combustíveis da Madeira para a concepção e instalação de um sistema de abastecimento de combustíveis para armazenamento no Terminal Logístico de Combustíveis instalado no arquipélago. Caracterizou a empreitada, um quadro de 4 bóias com ganchos de desengate rápido, ligados a um troço de três tubagens submarinas (cada uma com 450 m de comprimento) que terminam num sistema de PLEM (Pipeline End Manifold) colocado à cota –23.00 (Z.H.). A estes PLEMs estão ligadas mangueiras flexíveis que fazem a ligação aos navios abastecedores. A coordenação de toda a empreitada foi assegurada pela **Seth, SA** e a tecnologia ali empregue foi subempreitada à companhia holandesa Bluewater Energy Services B.V..

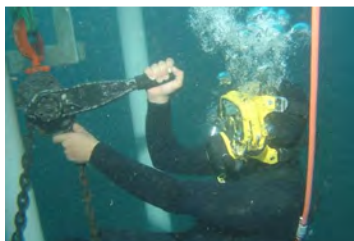
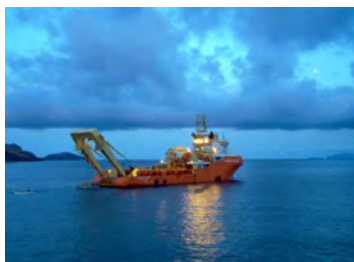
Work Description

Seth has completed a contract for the design and supply of a complete Conventional Buoy Mooring (CBM) system for the CLCM.

The CLCM terminal is a Joint Venture including GALP Energia (Petrogal) providing the main import facility for LPG, black and white products (gasoline, diesel, fuel oil and kerosene) for the energy and power consumption for the island.

Scope of supply consists of four CBM buoys, complete with mooring system and quick release hooks, three combined pipeline end manifolds (PLEMs) and hoses, and the complete control and instrumentation via umbilical towards the shore terminal control room.

Seth used as technological partner the Dutch company Bluewater Energy Services B.V..



Resumo da Obra

Work Summary

Cliente	CLCM Companhia Logística de Combustíveis da Madeira, Lda.	Client
Tipo de contrato	Chave-na-mão Turn-Key	Contract type
Data de construção	2003-2004	Construction period
Custo	EUR 6.500.000,00	Cost
Projectistas	Bluewater Energy Services, B.V. (Holanda)	Engineering

**Terminal Multifuncional dos Socorridos
Câmara de Lobos – Madeira**
**Socorridos Multipurpose Terminal
Câmara de Lobos – Madeira Island (Portugal)**
Work Description

Seth, SA, carried out the remodelling of the Socorridos Multipurpose Terminal on the island of Madeira, in front of the Socorridos Stream at Câmara de Lobos.

This job involved the construction of a marine terminal to supply fuel to the Vitória Power Station on the island of Madeira.

This infrastructure, which supplies fuel from tankers moored about 560 m from the shore, comprises three buoys used to moor the ship, about 75 m of Ø10" fuel hose and 560 m of Ø12" steel pipeline.

The following work was carried out in accordance with the initial contract. Removal of 4 buoys and respective chains and accessories, concrete blocks and anchors.

The steel buoys weigh about 5 tonnes each and have a diameter of 4 m at the water line and a total height of 4 m.

(These four sets of buoys were removed from the sea in front of the Formosa breach, where the Shell discharging facility used to be).

Laying just three of these sets (buoys + accessories + plus blocks and anchors) in front of the Cimentos Madeira Marine Terminal near the mouth of the Socorridos Stream.

Construction of a 560 m sea-line of Ø12", 12 mm wall, steel pipes welded together. The pipe ends at a PLEM (Pipe-Line End Manifold) built of reinforced concrete. On shore, the pipe is connected to another pipeline (*the construction of which was not a part of our contract*) that delivers the fuel to the storage tanks.

The PLEM includes steel piping and a set of seven Ø10" hoses totalling about 75 m. A shut-off valve was installed between the two pipelines.

A Breakaway Coupling valve was fitted between the 1st and 2nd hoses.

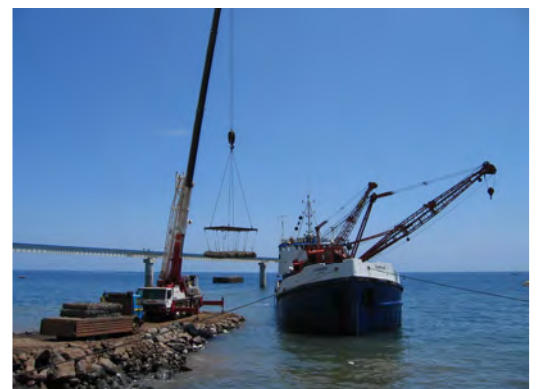
The steel piping of the sea-line is protected with Reno mattresses (wire-mesh baskets 4.0 x 2.0 x 0.3 m filled with 5-10 cm crushed stone).

As an addendum to the initial contract, **Seth** was awarded the overhaul of the 4 buoys (shot-blasting, sundry repairs, painting and fitting of lanterns fed by solar panels).

The 4th buoy is located at the Vitória Power Station and will act as a spare buoy.

A Sea Mark Plan was prepared by the Portuguese Hydrographic Institute.

The Employer in this contract was EDM – Electricidade da Madeira, which acted in close co-operation with CLCM – Central Logística de Combustíveis da Madeira.


Resumo da Obra
Work Summary

Cliente	EDM - Electricidade da Madeira	<i>Client</i>
Tipo de contrato	Chave-na-mão Turn-Key	<i>Contract type</i>
Data de construção	2006	<i>Construction period</i>
Custo	EUR 1.800.000,00	<i>Cost</i>
Projectistas	Seth, SA	<i>Engineering</i>

Remodelação do Sistema de Abastecimento e Armazenamento de Combustível Militar Porto Santo, Madeira

Jet Fuel Pipeline from Off-base Depot and Additional On-Base Storage Porto Santo Island, Madeira

This work involved remodelling the Military Fuel Supply and Storage System at the Porto Santo Island Aerodrome.

The contract included work in several areas: civil construction, foundations and structures, mechanical works, electricity, roadways, waters and drains.

Work carried out

- Distribution manifold building
- Two underground steel tanks (500 m³ each), covered with reinforced concrete
- Waste Tank and Fuel Tank, complete with ladders and walkways providing access to respective covers
- Two fuel pits at the Fuelling Bay and another two at the Apron
- Construction of earth retaining embankments and walls
- 3200 metres of 6" diameter carbon steel connecting pipeline
- Related DWV, landscape and electrical works



Projecto NATO 99/7PL40601

Resumo da Obra *Work Summary*

Cliente	Ministério da Defesa Nacional Portuguese Ministry of Defense	<i>Client</i>
Tipo de contrato	Chave-na-Mão Turn-Key	<i>Contract type</i>
Data de construção	2003-2004	<i>Construction period</i>
Custo	EUR 4.982.652,00	<i>Cost</i>
Projectista	Triar	<i>Architect & Engineer</i>
Observações	Consórcio com Crismetal	<i>Notes</i>

Ampliação da Central Eléctrica de Belo Jardim Terceira, Açores

Belo Jardim Power Plant Addition Terceira Island, Azores

With a view to increasing the electric power available on Terceira Island in the Azores, EDA - Electricidade dos Açores, signed a contract with BWSC - Burmeister & Wain Scandinavian Contractor a/s, for the design and construction of the enlargement of the Belo Jardim Power Station.

This enlargement included the erection of two 4-stroke diesel generator sets with a combined mechanical power of 12.6 MW and 6.1 MW of useful electric power.

All the civil construction works (power station building, workshops, office buildings and ancillary structures), fuel tanks, gas exhaust chimney, accesses and exterior works and landscaping were awarded to **Seth**.

The civil construction works also include construction of the engine foundation pads – each involving 120 m³ of concrete.



Vista aérea da central termoelétrica de Bejo Jardim
À esquerda o edifício da nova ampliação.
Em primeiro plano, o novo parque de combustíveis.

Aerial View of the Belo Jardim Power Station.
Background, left: the new addition.



Intervenção SETH / *SETH's work share*

Edifício da Central / <i>Station building:</i>	1350 m ²
Ponte rolante / <i>Overhead crane:</i>	35 ton
Chaminé de escape / <i>Exhaust stack height:</i>	30 m
Parque de tancagem / <i>Tank farm:</i>	8 tanks / 890 m ³ total

Resumo da Obra *Work Summary*

Cliente	B.W.S.C. a/s - EDA	<i>Client</i>
Tipo de contrato	Chave-na-Mão Turn-Key	<i>Contract type</i>
Data de construção	1995 - 1997	<i>Construction period</i>
Custo	PTE 700.000.000 USD 3,700,000	<i>Cost</i>
Projectista	B.W.S.C.	<i>Architect & Engineer</i>

Central Geotérmica da Ribeira Grande
S. Miguel, Açores
Ribeira Grande Geothermal Plant
S. Miguel Island, Azores

The geological characteristics of the Azores (located in one of the world's regions of greatest seismic activity) have allowed the construction of a power station in which the working fluid is the steam produced within the earth's crust, captured at a depth of 600 metres.

The Ribeira Grande geothermal power station is one of the few in the world. Since its construction it has constituted the benchmark for this type of facility.

The project was developed in two stages, leading to a total electric power production of 14 MW (13 MW in the grid), accounting for some 20% of the total electricity consumption of the island of São Miguel.

The 1st stage (6 MW) was completed in 1993 and the 2nd stage (8 MW) in 1999.



Vista geral da central geotérmica da Ribeira Grande
 Em primeiro plano, a bateria de condensadores

*General view of the Ribeira Grande Geothermal Plant
 Foreground: the condenser yard*

Intervenção SETH / *SETH's work share*

Edifício de Comando / *Control building*
 Fundações da tubagem / *Pipework foundations*
 Suportes de tubagens / *Pipe bridges*
 Edifício da bomba S.I. / *Fire pump building*
 Edifício do gerador / *Emergency generator building*

Resumo da Obra
Work Summary

Cliente	Ormat Atlantic / EDA	<i>Client</i>
Tipo de contrato	Chave-na-Mão Turn-Key	<i>Contract type</i>
Data de construção	1992 - 1993 (1ª Fase) 1998 (2ª Fase)	<i>Construction period</i>
Custo	PTE 160.000.000 (1ª F) PTE 140.000.000 (2ª F)	<i>Cost</i>
Projectista	Ormat Atlantic, Inc.	<i>Architect & Engineer</i>

Quartel de Bombeiros
Base Aérea das Lajes – Ilha Terceira, Açores

Fire/Crash Rescue Station
United States Navy – Lajes Field, Terceira Island, Azores

Trabalhos efectuados

O Quartel de Bombeiros, foi uma obra adjudicada pela Marinha dos Estados Unidos em Maio de 2006 através de um contracto tipo “chave-na-mão”, e concluída em Junho de 2008.

A empreitada consistiu essencialmente na construção de um edifício de 2.300 m² constituído por um corpo de 2 pisos em betão armado e uma zona de garagens em estrutura metálica, com paredes exteriores em betão armado, sendo o interior em paredes de gesso cartonado. O edifício é composto por áreas técnicas (sala de comando, sala de comunicações, sala eléctrica, sala de mecânica, sala de gerador), quartos, refeitórios, cozinha, balneários, lavandaria, e escritórios.

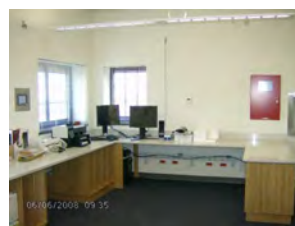
Para além das “tradicionais” especialidades como águas, esgotos, electricidade e comunicações, também fez parte da empreitada o fornecimento e instalação de um elevador, de todo o sistema de ar condicionado, detecção de incêndios, monitorização de todos os alarmes da base, sistema áudio e visual de alerta de incêndios, sistema de extracção de gases de escape dos camiões dos bombeiros.

Description of Work

The Fire Crash Rescue Station was awarded in May, 2006 by the U.S. Navy and it was completed on June, 2008.

The project consists of one 2.300 sm building composed by a two story reinforced concrete building and a 10 fire trucks bay area built in structural steel, with reinforced concrete exterior walls and gypsum wall board interior walls. As part of the building we have the control room, communications room, electrical room, mechanical room, generator room, resting rooms, dining room, kitchen, lockers, laundry and offices.

Beside the “normal” specialties as water, drain, electrical e communications, was included in our scope of work the supply and installation of a hydraulic elevator, all the systems as: air conditioning, fire alarm, monitoring of all base alarms, mass notification system, fire/crash rescue vehicle exhaust removal system.


Resumo da Obra
Work Summary

Cliente	United States Navy	Client
Tipo de contrato	Chave-na-mão	Contract type
	Turn-Key	
Data de construção	2006 - 2008	Construction period
Custo	EUR 7.490.000,00	Cost
Projectista	Benham (Saint Louis, Missouri, USA)	Design
Fiscalização	United States Navy	

Ginásio – Fase II

Base Aérea das Lajes – Ilha Terceira, Açores

Fitness Center – Phase II

United States Navy – Lajes Field, Terceira Island, Azores

Trabalhos efectuados

O Ginásio, Fase II foi uma obra adjudicada pela Marinha dos Estados Unidos em Dezembro de 2004 e concluída em Setembro de 2006.

A Empreitada consistiu essencialmente na construção de um edifício de 2 pisos em estrutura de metálica de aproximadamente 910 m² com paredes exteriores em betão armado, sendo o interior em paredes de gesso cartonado. O edifício é composto por áreas técnicas (sala de comunicações, sala eléctrica, sala de mecânica), escritórios, sala de aeróbica, ginásio e balneários.

Para além das “tradicionais” especialidades como águas, esgotos, electricidade e comunicações, também fez parte da empreitada o fornecimento e instalação de um elevador, de todo o sistema de ar condicionado, som, CCTV e detecção de incêndios.

Description of Work

The Fitness Center, Phase II was awarded in December, 2004 by the U.S. Navy.

The project was the construction of a two floor building with approximately 9.800 SF structural steel, reinforced concrete exterior walls and gypsum wall board interior wall. As part of the building we have the communication room, electrical room, mechanical room, offices, aerobics room, open gym and lockers room.

Beside the “normal” specialties as water, drain, electrical e communications, was included in our scope of work the supply and installation of a hydraulic elevator, all the systems as: air conditioning, music, commercial intrusion detection system and fire alarm system.



Aspecto do exterior do edifício
Outside view of the Fitness Center



Aspecto do interior do ginásio
Inside view of the gymnasium

Resumo da Obra

Work Summary

Cliente	United States Navy	<i>Client</i>
Tipo de contrato	Chave-na-mão	<i>Contract type</i>
	Turn-Key	
Data de construção	2004 - 2006	<i>Construction period</i>
Custo	EUR 4.592.500,00	<i>Cost</i>
Projectista	Clark Nexsen, USA	<i>Design</i>
Fiscalização	United States Navy	

Clínica Dentária
Base Aérea das Lajes – Ilha Terceira, Açores

Dental Clinic
United States Navy – Lajes Field, Terceira Island, Azores

Trabalhos efectuados

A clínica dentária foi uma obra adjudicada pela Marinha dos Estados Unidos em Setembro de 2003 e concluída em Maio de 2005. O contrato foi tipo “chave na mão” pelo valor aproximado \$3,123,00.00 USD.

A clínica dentária consiste essencialmente de um edifício em estrutura metálica com paredes exteriores em blocos de betão, sendo o interior em paredes de gesso cartonado. Pode-se dividir o edifício em 5 grandes áreas: pública, administrativa e arquivos, serviços, consultórios e área técnica.

Fez também parte da empreitada o fornecimento e instalação de todo o sistema de ar condicionado, ar comprimido, vacuum, oxigénio, esterilizador, som e detecção de incêndios, bem como todo o mobiliário dos consultórios, laboratório e sala de raio X.

Description of Work

The dental clinic was awarded in September, 2003 by the U.S. Navy. The contract amount was approximately \$3,123,000.00 USD and it was completed on May, 2005.

The dental clinic is a structural steel building with concrete masonry exterior wall and gypsum wall board interior wall. The facility can be divided in five main areas: public, administration and records, services, doctor rooms and equipment rooms.

It was scope of work the supply and installation of all the systems as: air conditioning, dental air, oral evacuation, oxygen, sterilizer, music and fire alarm system as well as all the cabinets for the doctor rooms, lab and X-ray room.



Aspecto do exterior do edifício
Outside view of the Dental Clinic



Aspecto do interior da clínica
Inside view of the Dental Clinic



Resumo da Obra
Work Summary

Cliente	United States Navy	Client
Tipo de contrato	Chave-na-mão	Contract type
	Turn-Key	
Data de construção	2003 - 2005	Construction period
Custo	USD 3,123,000.00	Cost
Projectista	RLF, Florida, USA	Design
Fiscalização	United States Navy	

Substituição de Moradias Unifamiliares, Fases I, II e III US Navy - Base Aérea das Lajes, Açores

Replace Military Family Housing, Phases I, II and III US Navy - Lajes Field, Azores

Descrição do projecto *Project description*

- Construção de 154 moradias unifamiliares
Construction of 154 family housing units
- Remoção de amianto e demolição de 28 moradias
Asbestos abatement and demolition of 28 existing housing units
- Redes de águas e esgotos
DWV networks
- Instalação eléctrica
Electrical installation
- Arruamentos e arranjos exteriores
Sidewalks, driveways and landscaping



Diversos aspectos da construção.
Various images of the new neighborhood.



Resumo da Obra *Work Summary*

Cliente	U.S. Air Force /U.S. Navy	<i>Client</i>
Tipo de contrato	Chave-na-Mão Turn-Key	<i>Contract type</i>
Data de construção	2001-2005	<i>Construction period</i>
Custo	USD 43 million	<i>Cost</i>
Projectista	Baker and Associates	<i>Architect & Engineer</i>

Controlo de Corrosão em Tanques POL
US Navy - Base Aérea das Lajes, Açores
POL Tank Corrosion Control
US Navy - Lajes Field, Azores
Trabalhos efectuados
Description of Work

- Reparação de superfícies
Surface repairs
- Decapagem e grenalhagem de superfícies
Sand and shot blasting
- Limpeza e reparação dos interiores
Inside cleaning and repair
- Substituição de suportes de tubagem
Replacement of pipe supports
- Fabricação e montagem de estruturas metálicas
Fabrication and erection of steel structures
- Repintura geral
Overall repainting



Vista aérea do Parque de Tancagem Sul na Base Aérea das Lajes.
 Em 2º plano, a cidade da Praia da Vitória, com o Porto Militar (esquerda) e o Porto Comercial (em cima, ao centro)
The South Tank Farm at Lajes Field, Azores.
In the background, the city of Praia da Vitória, the Military Harbor (left) and the Commercial Harbor (top center).


Resumo da Obra
Work Summary

Cliente	U.S. Navy	<i>Client</i>
Tipo de contrato	Chave-na-Mão Turn-Key	<i>Contract type</i>
Data de construção	1999 - 2000	<i>Construction period</i>
Custo	USD 2,96 milhões	<i>Cost</i>
Projectista	Austin Brockenbrough & Ass.	<i>Architect & Engineer</i>

Substituição da Estação de Bombagem e Tanques de Combustível

US Navy - Base Aérea das Lajes, Açores

Replace Pumphouse and Tanks

US Navy - Lajes Field, Azores

Trabalhos efectuados

Description of Work

- Construção de 2 tanques de combustível para aeronaves com 160 m³ cada e respectivas bacias de retenção
Construction and erection of 2 jet fuel tanks with 160 cu.m each and associated containment dikes
- Construção da estação de bombagem e comando
Construction of the pumphouse and control building
- Fornecimento e montagem dos seguintes equipamentos:
Supply and installation of the following equipment:

5 bombas (1368 m³/h cada)
5 fueling pumps (38 liters/s)

Instalação de carga de camiões
Truck loading island

6 hidrantes de rampa
6 ramp hydrants

Tubagem de aço inoxidável e aço carbono e respectivas válvulas de passagem e controlo
SS and CS piping and associated valves and control valves

Sistema de controlo por autómato programável
PLC control system

Sistema de protecção catódica
Cathodic protection system



Resumo da Obra

Work Summary

Cliente	U.S. Navy	<i>Client</i>
Tipo de contrato	Chave-na-Mão	<i>Contract type</i>
	Turn-Key	
Data de construção	2001 - 2002	<i>Construction period</i>
Custo	USD 6,54 milhões	<i>Cost</i>
Projectista	Robert International	<i>Architect & Engineer</i>

Barragem do Pego do Altar
Rio Santa Catarina, Setúbal

Pego do Altar Dam
Santa Catarina River, Setúbal

Descrição dos trabalhos

Barragem de enrocamento, com o paramento de montante revestido com cortina de chapas de aço inoxidável e juntas elásticas. Uma solução inovadora, mas que tem demonstrado um excelente desempenho.

Description of Work

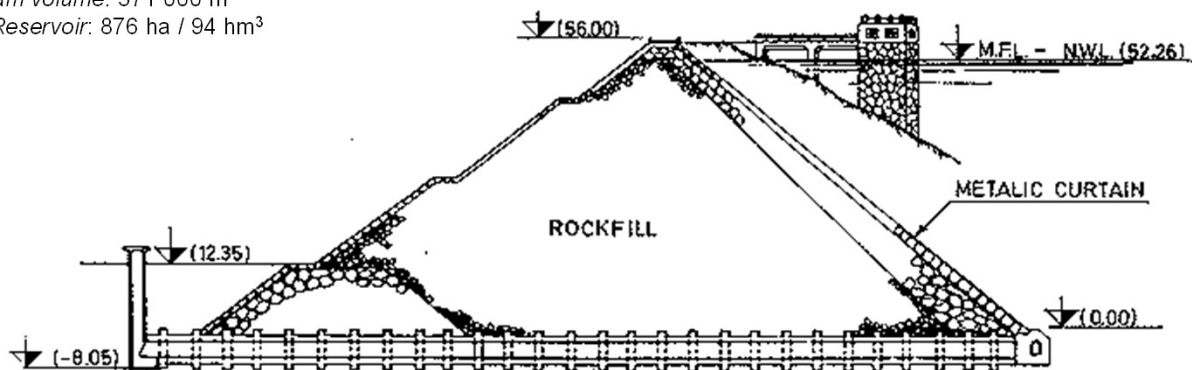
Rockfill dam with an upstream watertight face made of welded stainless steel plates with elastic joints. This technical solution is quite uncommon but has shown an excellent behaviour along the years.

The stored water is used for irrigation of the downstream hydroagricultural development and in hydroelectric production.



Obra incluída na selecção
"100 Obras de Engenharia
Civil no século XX"
da Ordem dos Engenheiros.

Altura / Height: 63 m
Desenvolvimento do coroamento / Crest length: 192 m
Descarregador / Spillway: Controlado / Controlled
Volume / Dam volume: 371 000 m³
Albufeira / Reservoir: 876 ha / 94 hm³



Secção Transversal / Cross Section

Resumo das Obras
Works Summary

Cliente	Associação Regantes do Vale do Sado	Client
Projectista	JAOHA	Engineering
Data de construção	1949	Construction period

Barragem do Vale do Gaio
Rio Xarrama, Alcácer do Sal

Vale do Gaio Dam
Xarrama River, Alcácer do Sal

Descrição dos trabalhos

Barragem de terra, com cortina interior em material betuminoso entre o maciço terroso e o maciço de enrocamento.

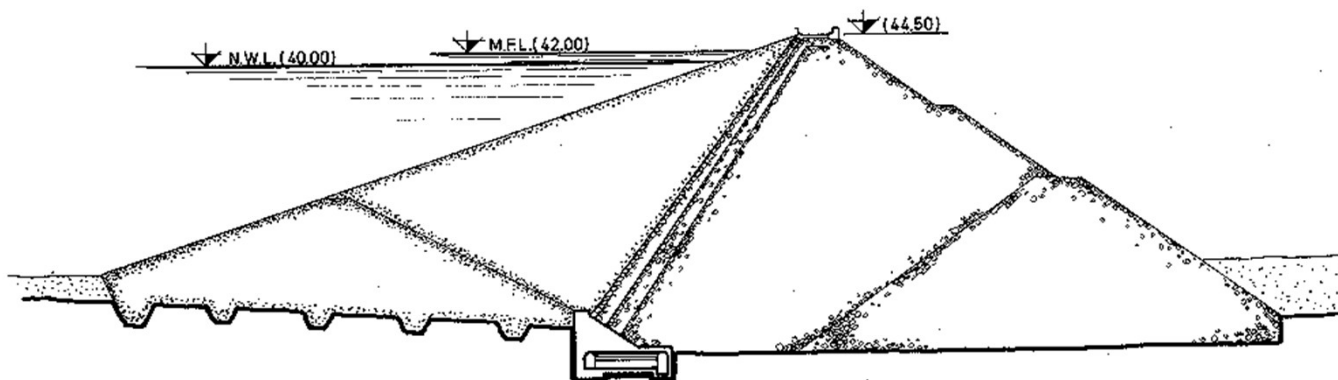
Descriptor of Work

Dam with an earthfill part, on the upstream side, and a rockfill part on the downstream shoulder. An asphalt sealing curtain was built between them.



Altura / Height: 51 m
 Desenvolvimento do coroamento / Crest length: 368 m
 Descarregador / Spillway: Controlado / Controlled
 Volume / Dam volume: 636 000 m³
 Albufeira / Reservoir: 550 ha / 63 hm³

Obra incluída na selecção
 “100 Obras de Engenharia
 Civil no século XX”
 da Ordem dos Engenheiros.



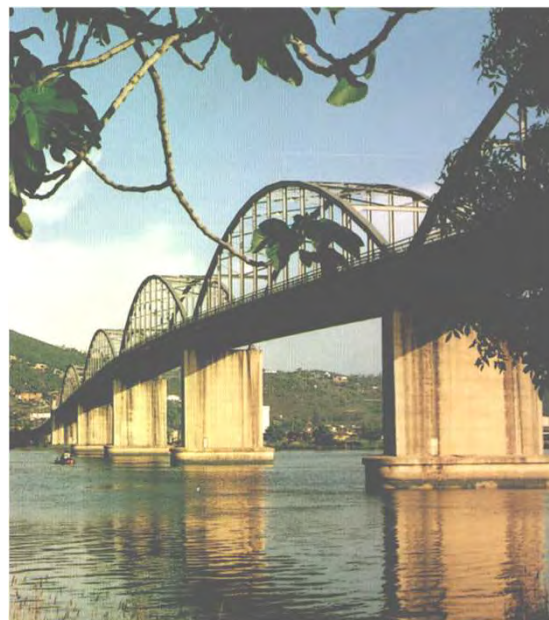
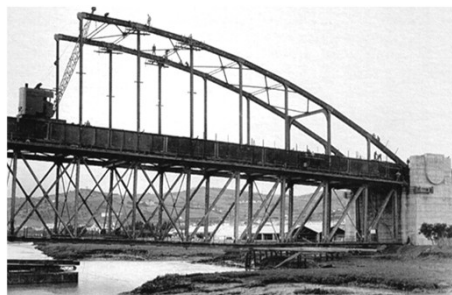
Secção Transversal / Cross Section

Resumo das Obras
Works Summary

Cliente	Associação Regantes do Vale do Sado	Client
Projectista	Engº Augusto Poppe	Engineering
Data de construção	1949	Construction period

Ponte Marechal Carmona
Rio Tejo, Vila Franca de Xira
Marechal Carmona Bridge
Tagus River, Vila Franca de Xira

Ponte metálica com 5 tramos metálicos apoiados em pilares de betão armado. Os tramos metálicos são constituídos por vigas *Lang*, com o banzo inferior recto e o banzo superior em arco parabólico. A infraestrutura é composta por 37 pilares, dos quais 4 se situam no leito do rio e 2 são pilares de transição da estrutura metálica para a de betão. As fundações foram construídas em estacas de betão cravadas com 60 e 50 cm de diâmetro e 25 m de comprimento.



5-span steel deck bridge, supported by reinforced concrete pylons. The steel deck is formed by Lang beams, with straight lower flanges and a parabolic arch in the upper flange. The foundations are composed by 37 pylons, 4 of which are located in the river and 2 as transition elements between the steel and concrete sections of the bridge.


Características geométricas
Geometric data

Comprimento total, incluindo encontros / *Total length, Including abutments*: 1224 m

Comprimento do tabuleiro metálico / *Steel deck*: 524 m

Vãos / *Spans*: 5 x 104 m

Largura do tabuleiro entre guardas / *Deck width between railings*: 12 m

Resumo da Obra
Works Summary

Cliente	JAE / Dir. Serviço de Pontes	<i>Client</i>
Tipo de contrato	Concepção-construção	<i>Contract type</i>
Fiscalização	JAE / DSP	<i>Inspection agency</i>
Construtores	SETH, Lda.	<i>Construction consortium</i>
	Dorman, Long & Co. Ltd	
Data de construção	1948-1951	<i>Construction period</i>
Custo	PTE 42.000.000	<i>Cost</i>

Ponte da Vala Nova
Benavente**Vala Nova Bridge**
Benavente**Primeira ponte construída
em Portugal com betão
pré-esforçado**

No seguimento da construção da Ponte Marechal Carmona e respondendo aos anseios das populações de Benavente e Salvaterra de Magos, decidiu a Direcção do Serviço de Pontes da Junta Autónoma das Estradas contruir uma nova ponte sobre a Vala Nova.



O projecto foi confiado à SETH, tendo o projectista, Eng.º Francisco António Manuel Pedroso Bélard Lebre de Vasconcelos Mello, optado pela construção do tabuleiro com pré-esforço, uma solução então já utilizada em alguns elementos de estruturas, mas totalmente inédita em pontes de quaisquer dimensões. Para tal, deslocou-se o projectista à casa Freyssinet, em Paris, com vista à aquisição dos necessários conhecimentos para a aplicação do sistema. As fundações foram constituídas por estacas de betão cravadas com 60 cm de diâmetro e uma profundidade aproximada de 25 m.

First pre-stressed concrete bridge built in Portugal

Concrete bridge with a pre-stressed concrete deck. Designed and built by SETH, whose designing engineer, Mr. Francisco António Manuel Pedroso Bélard Lebre de Vasconcelos Mello, decided to build the deck with pre-stressed concrete. In the 50s, the pre-stressing of concrete elements was already being used in Portugal for other concrete elements, but never on bridges of any size. The pylons are supported by driven concrete piles with a diameter of 60 cm and an approximate length of 25 m. The pre-stressing was done by the Freyssinet method.

Características geométricas**Geometric data**

Comprimento total / *Total length*: 108 m
Vãos / *Spans*: 3 x 33,8 (aprox.)
Largura entre guardas / *Width between railings*: 11,4 m

Resumo da Obra**Works Summary**

Cliente	JAE / Dir. Serviço de Pontes	<i>Client</i>
Tipo de contrato	Concepção-construção	<i>Contract type</i>
Fiscalização	JAE / DSP	<i>Inspection agency</i>
Pré-esforço	Método Freyssinet	<i>Pre-stressing method</i>
Data de construção	1953-1954	<i>Construction period</i>
Custo	PTE 8.000.000	<i>Cost</i>

