ANRACO

Engineering Excellence, Sustainable Solutions

Head Office: London, United Kingdom

Training Division: Al-Anbar Company, Amman, Jordan

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Telephone: +44 797 7777 804, +44 776 775 1524



Company Overview

ANRACO, established in 1997, is a leading general contracting firm headquartered in London, United Kingdom, with a training division in Amman, Jordan. Specialising in civil engineering, water and wastewater treatment, environmental services, waste-to-energy solutions, electrical and mechanical engineering, green hydrogen projects, hospital construction, cement plants, and largescale railway and infrastructure developments, ANRACO has earned a distinguished reputation for delivering complex projects across the United Kingdom, Jordan, Oman, Sudan, Egypt, and Iraq. With a workforce exceeding 500 professionals, including engineers, technicians, and skilled labourers, ANRACO possesses an extensive inventory of construction equipment, safety tools, and advanced technologies, enabling it to meet the demands of diverse sectors such as healthcare, municipalities, military, industry, and sustainable energy.

- Year Established: 1997
- Head Office: London, United Kingdom
- Training Division: Al-Anbar Company, Amman, Jordan
- Core Values: Quality, Safety, Sustainability, Innovation, Reliability
- Workforce: Over 500 professionals, including 120 core staff in varied roles
- **Equipment**: Extensive range of construction machinery, safety equipment, and specialised tools for waste management, water treatment, hydrogen projects, medical facilities, and railways
- **Certifications**: Recognised by the U.S. Army, Italian Navy, French Navy, Royal Navy, and numerous public and private sector clients for quality and commitment

Core Competencies and Expertise

1. Civil Engineering and Construction

ANRACO boasts extensive expertise in civil engineering and construction, delivering projects ranging from public infrastructure to specialised military, medical, and railway facilities. Its capabilities include:

• Building Construction and Refurbishment:

- Construction and rehabilitation of schools, hospitals, commercial buildings, and residential structures.
- Refurbishment of existing facilities to meet modern standards.

• Infrastructure Development:

- Construction of bridges, reinforced concrete steel structures, and road pavements.
- Development of high-voltage power stations.
- Specialised Structures: Erection of pre-fabricated K-span steel structures for military purposes, including barracks, dormitories, equipment maintenance workshops, border checkpoints, aircraft and helicopter hangars, covered aircraft shelters, and sports facilities.
- Medical Projects:
 Oesign and construction of advanced hospitals, incorporating hybrid operating theatres, GMP laboratories, radiotherapy centres, and diagnostic units (PET/CT, SPECT).
 - Equipping facilities with high-tech medical equipment such as cyclotrons, imaging devices, and radiotherapy systems.

• Civil Real Estate:

 Development of sophisticated office buildings, residential complexes, and hotels adhering to LEED standards.

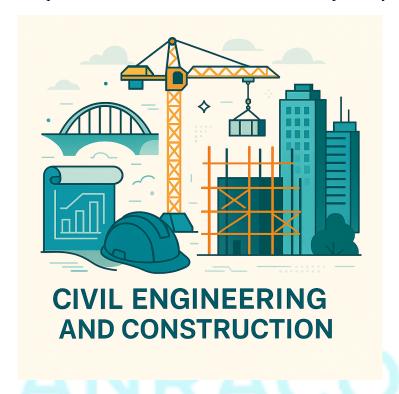
• Railway Infrastructure:

- Design and construction of electrified railways up to 2,136 km, supporting highspeed passenger trains (350 km/h) and heavy freight trains (140 km/h, up to 9,000 tonnes).
- Utilisation of UNDERBOLD® technology for subgrade stabilisation and 100-metre heat-resistant steel rails.
- Establishment of automated shunting stations and freight/passenger terminals.

- **Project Execution**: ° Comprehensive project management, encompassing professional and technical services, labour, on-site supervision, quality control inspections, and provision of equipment, materials, tools, safety gear, and consumables.
 - Support for start-up and commissioning of completed projects.

Collaborations:

• Joint ventures with firms such as NOVA E.T.C., Al-Sahel, Al-Tahadi, and potential partnerships with entities like Transumed and Investicijos Statybos Plėtrai (ISP).



2. Water and Wastewater Treatment

ANRACO is a regional leader in the design, construction, operation, and maintenance of water and wastewater treatment facilities, focusing on large-scale infrastructure. Its expertise includes:

- **Design and Construction**: Water treatment plants, wastewater treatment plants, pumping stations, and associated utility networks.
 - Installation of underground water and sewage systems.

Rehabilitation:

- Upgrading existing treatment plants to enhance capacity, efficiency, and environmental compliance.
- Operation and Maintenance: Long-term management, including electrical and mechanical maintenance, training, and material supply.

• Achievements:

• Since 2001, ANRACO has excelled in delivering water and wastewater treatment plants, networks, and pumping stations.



3. Environmental Management and Waste Processing

ANRACO provides advanced environmental solutions, including hazardous waste management and waste-to-energy technologies. Its capabilities include:

- Hazardous and Toxic Waste Management:
 - ° Safe handling, processing, and disposal of hazardous and clinical waste.
 - Compliance with international environmental standards.
- Waste-to-Energy:
 - Utilisation of Slow Oxidation (SMOX) technology to convert waste into Solid Recovered Fuel (SRF).
 - Processing 200,000 tonnes of waste annually, reducing volume by over 80% (e.g., 1 m³ to 0.2 m³).
 - Converting up to 85% of SRF energy content into thermal energy for electricity generation, with 15% used for exhaust gas cleaning.
- **SMOX Technical Details**: Flameless combustion process at low temperature (550°C), producing combustible gases while avoiding smoke and pollutants.

Upward-flow oxidation cells heat SRF using hydrogen-powered burners, with gas oxidation at 1,000°C.

 Components include oxidation cells, gas burners, DeNOx systems, heat recovery boilers, activated carbon reactors, and bag filters.

Bottom Ash:

• Produces inert ash with <1% carbon content, suitable for construction applications.

Applications:

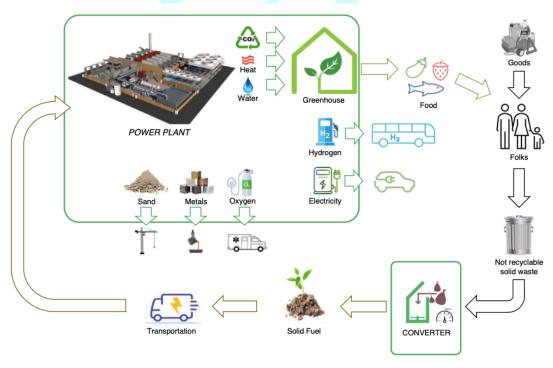
 Installations in medical (since 2008), municipal (since 2000), military (Italian Navy 2012, French Navy 2015, Royal Navy 2018), and luxury yacht sectors (15 installations).

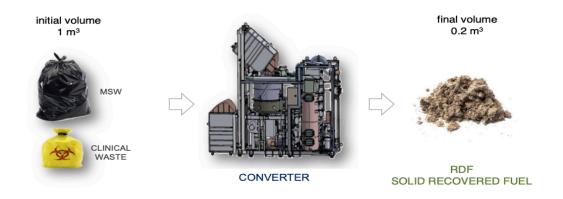
• Safety Measures:

- Monitoring of gases (H2S, C12, O2, CO) using specialised devices.
- Provision of personal protective equipment (PPE) for handling hazardous materials like chlorine.











Volumetric reduction > 80%



Σ SMOX 500°C no flame - no smoke no pollutants



SYNTHETIC GAS BURNER

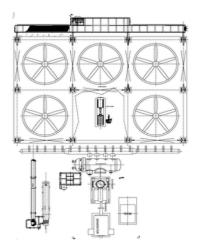
GAS OXIDATION 1000°C residence time > 2 seconds







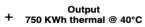




Input 1 MWh thermal @ 320°C



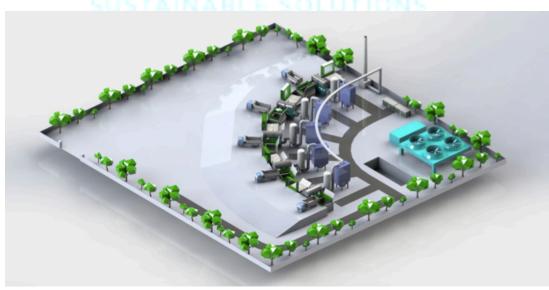
Output 250 kWh electric











4. Electrical and Mechanical Engineering

ANRACO offers comprehensive electrical and mechanical services for industrial and infrastructure applications. Its expertise includes:

• Design and Installation:

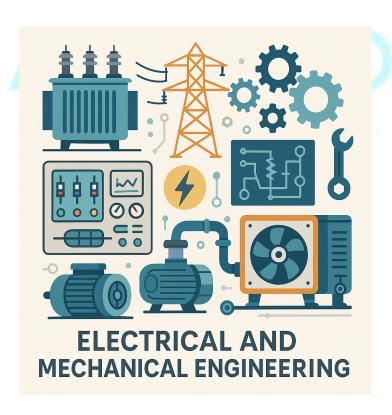
- Electromagnetic devices (transformers, inductors) (1996–2002).
- Power factor correction units (1992–1996).
- Air washing systems for tobacco warehouses (2000–2002).
- Electrostatic precipitators for cement plants (1996–2003).
- Cooling networks and pipe welding (1996–2000).

• Production Lines:

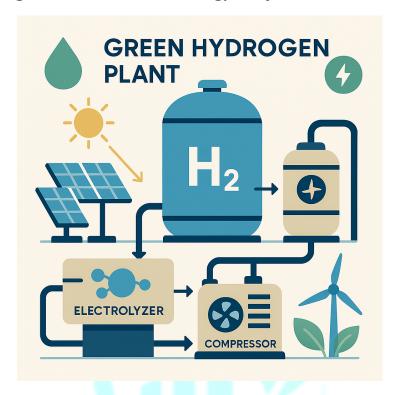
• Installation of liquid battery (1996–1998) and tin oxide (1996–2000) production lines.

Rehabilitation:

- Power transformers up to 250 MVA (1991–1993).
- Substations for industrial plants (1998–2003).
- Boilers (2000–2003).



5. Green Hydrogen and Renewable Energy Projects



ANRACO excels in green hydrogen and solar energy projects, supporting the energy transition. Its capabilities include:

• Hydrogen:

- Construction of hydrogen hubs (5–100 MW) using renewable energy sources.
- Installation of PEM electrolysers, compressors, storage tanks, and filling stations.

Solar Energy:

- Solar power plants with 3 GW capacity (6.6 GW total) over 26.4 million m².
- Quantum dot silicon photovoltaic cells, hydrogen/oxygen storage via steam decomposition, and tripolar HVDC lines at 1,280 kV.

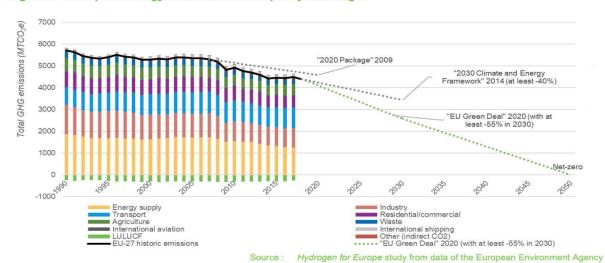
• Applications:

- Hydrogen integration into natural gas networks (25 TWh by 2030).
- Powering railways, industrial heating, feedstock, power generation, and transport (trucks, buses, ships, aviation).

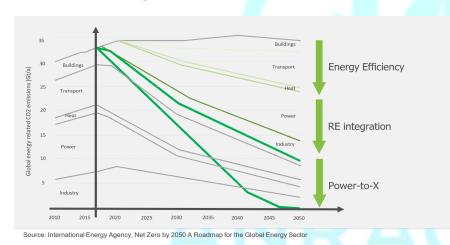
• Achievements:

• Supporting European decarbonisation goals (net-zero by 2050).

Figure 6. European energy transition and the policy challenges

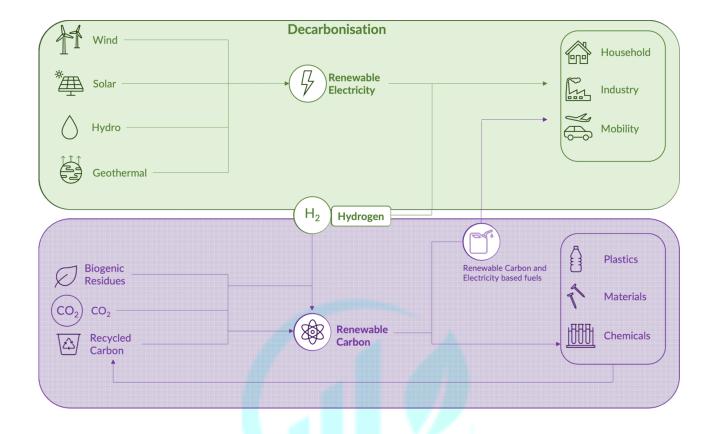


Global climate goals



- Paris Agreement requires large scale integration of renewables and increased energy efficiency
- Yet still a gap of more than 10 Gt CO2 per year remains
- Sector coupling, including hydrogen technology is necessary, to achieve net zero

ENGINEERING EXCELLENCE, SUSTAINABLE SOLUTIONS



6. Cement Plants and Industrial Infrastructure

ANRACO's expertise in industrial infrastructure includes:

- Design and Production:
 - Cement production lines (6,000 t/day clinker, 2.05 million t/year cement).
 - Advanced technologies (double-rotor crushers, fourth-generation coolers).
- Investment:
 - Managing investments up to USD 342.54 million, with a 20.68% internal rate of return.
- Environment and Safety:
 - Compliance with Iraqi environmental standards.

7. Railways and Major Infrastructure

ANRACO has significant experience in large-scale railway projects. Its capabilities include:

• Design and Construction:

• Electrified railways up to 2,136 km, with passenger speeds of 350 km/h and freight at 140 km/h (9,000 tonnes).

100-metre heat-resistant steel rails and UNDERBOLD® subgrade stabilisation.

• Automated freight and passenger terminals.

• Power Supply:

• 3 GW solar plants, HVDC lines at 1,280 kV.

Rolling Stock:

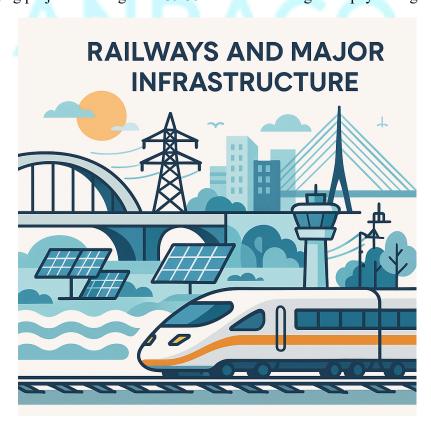
- Electric locomotives (2ES10 Granite, EP20 Olympus), cement, oil, and vehicle wagons.
- Nano-ceramic sleepers for durability.

Automation:

• Computerised control systems, fibre-optic communications (4G LTE+, potential 5G).

• Financing:

• Managing projects costing CHF 39.33 billion with long-term payment guarantees.



8. Material Supply and Logistics

• Global Sourcing:

^o Electrical materials, HVAC systems, laboratory equipment, and IT hardware.

• Warehouse Management:

• Four container warehouses with ventilation and computerised inventory systems.

9. Training and Development

• On-Site Training:

• Construction, waste management, engineering, and safety protocols.

• Training Facilities:

• Al-Anbar Company, Amman, Jordan.

10. Safety and Health Management

• Personal Protective Equipment:

• Helmets, goggles, harnesses, gloves, safety boots.

• Gas Monitoring:

o Devices for H2S, C12, O2, CO detection.

• Health Units:

o On-site units with emergency vehicles.

Key Projects and Achievements

Project	Scope	Cost	Achievements
	Civil, mechanical, and electrical rehabilitation, operation, maintenance, start-up, and commissioning.	USD 5.793 million	Enhanced plant efficiency, provided training, and supplied materials.
Seven Nissan Water Treatment Plant Expansion (East Tigris, Iraq)	Supervision of a 55 million gallon/day plant construction.	Not specified	Completed to specifications.

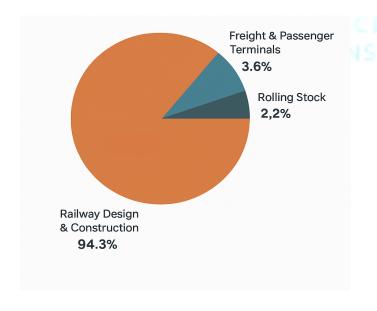
Fallujah Water Treatment Plant (Iraq)	Ongoing supervision and construction of a water treatment plant.	Not specified	Managed a complex, long-term project.
H3 Military Warehouses (Anbar, Iraq)	Construction of K-span structures for barracks, workshops, and other military facilities.	Not specified	Demonstrated versatility in military infrastructure.
JSS Maverick Concrete Maintenance Platform (Ghazaliya, Baghdad, 2008)	Construction of a concrete maintenance platform meeting U.S. Army specifications.	Not specified	High-quality execution, certified by Captain Terrence I. Higgins.
Waste-to-Energy Initiatives	Deployment of SMOX plants for processing clinical and municipal waste into SRF.	Not specified	Processed 200,000 t/year, reduced volume by 80%.
Green Hydrogen Projects	Development of hydrogen hubs with capacities of 5–100 MW using renewable energy.	Not specified	Supported decarbonisation goals.
SHAHI ZHIAN Cement Plant (Erbil, Iraq)	Construction of a 6,000 t/day clinker production line, producing 2.05 million t/year cement.	USD 342.54 million	Achieved a 20.68% internal rate of return.
FNKZ Moscow Hospital (2008–2011)	Design and construction of a 70,000 m ² paediatric haematology, oncology, and immunology centre.	EUR 240 million (~USD 268.8 million)	Equipped with hybrid operating theatres, GMP labs, and advanced diagnostic units.
Oman Railway (Hypothetical Application)	Development of a 2,136 km electrified railway with 3 GW solar power plants.	CHF 39.33 billion (~USD 40.51 billion)	Managed a CHF 39.33 billion project with longterm financing.
Al-Bashir Medical City (Sudan, Hypothetical Application)	Contribution to medical facilities, water treatment, waste management, and electrical/mechanical systems.	USD 1.4 Billion	Expertise aligned with project requirements.

[Figure 1: Total Costs of Key ANRACO Projects (USD, Logarithmic Scale)]

Placeholder for Bar Chart: Displays total costs for Al-Rustamiya (USD 5.793M), SHAHI ZHIAN (USD 342.54M), FNKZ Moscow (USD 268.8M), and Oman Railway (USD 40.51B) on a logarithmic scale.



[Figure 2: Cost Breakdown for Oman Railway Project (CHF 39.33 billion)]
Placeholder for Pie Chart: Shows cost distribution for Oman Railway: Railway Design & Construction (94.3%), Freight & Passenger Terminals (3.6%), Rolling Stock (2.2%).



Workforce and Resources

- **Team Composition**: 120 core staff, scalable to 500, including inspectors, document controllers, safety officers, maintenance engineers, technicians, and skilled/unskilled labourers.
- Working Hours: 960 hours/day (8-hour shifts).
- **Training**: Continuous professional development through Al-Anbar Company, Amman, Jordan.
- **Equipment**: Comprehensive inventory of construction machinery, safety equipment, and specialised tools for waste management, water treatment, hydrogen projects, medical facilities, and railways.

Certifications and Accolades

- U.S. Army: Certified for JSS Maverick project (2008).
- Military Navies: Recognised by Italian Navy (2012), French Navy (2015), and Royal Navy (2018).
- Technologies: SMOX and green hydrogen projects acknowledged for sustainability.
- **Public and Private Sectors**: Endorsed for quality across healthcare, municipal, and industrial projects.

Why Choose ANRACO?

- **Experience**: Over 25 years delivering complex, high-value projects.
- **Versatility**: Expertise spanning civil engineering, environmental management, renewable energy, healthcare, and railway infrastructure.
- Sustainability: Pioneering clean energy and waste-to-energy solutions.
- Global Standards: Adherence to international regulations and best practices.
- **Strategic Partnerships**: Collaborations with Bechtel, NOVA E.T.C., Al-Sahel, and potential partners like Transumed and ISP.

Contact Information

• Head Office: London, United Kingdom

• Training Division: Al-Anbar Company, Amman, Jordan

• Email: uk1800@outlook.com

• Telephone: +44 797 7777 804, +44 776 775 1524





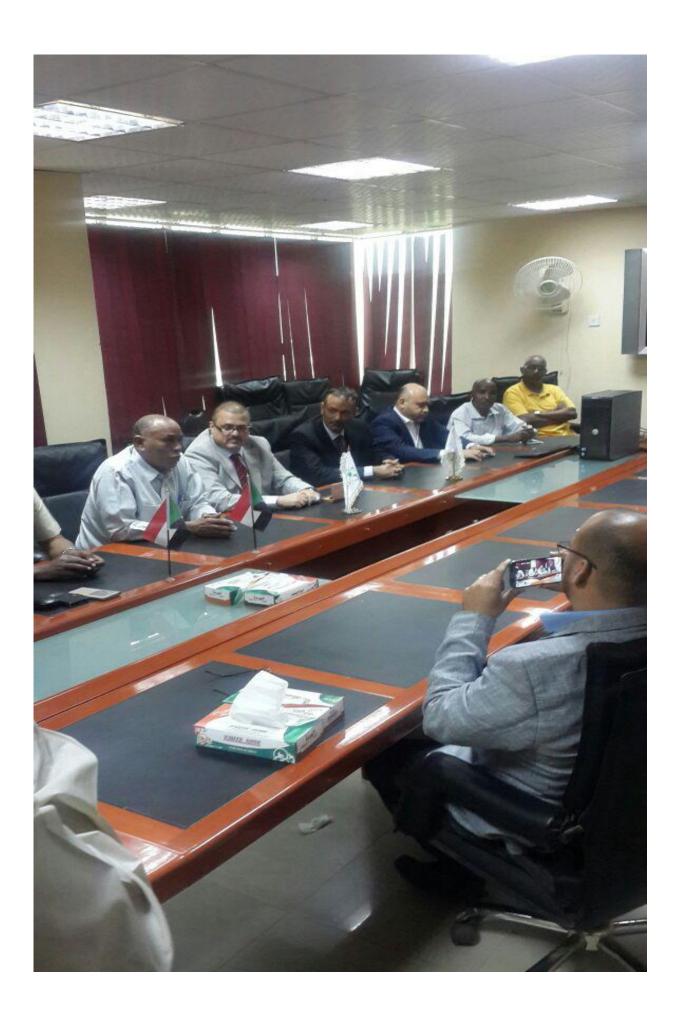












a-Rehabilitation of Rustimayah north station (H.T & L.T) for waste water treatment department Extension#3 phase I and phase II with Bechtel company (USAID,S Iraq Infrastructure Reconstruction Program) as subcontract.

SUBCONTRACT No.: 24910-60B-SSU-MWBO-046

Total amount: (3,098,288.74 USD)

Employees #:(145 Person)

Duration: 8thFeb.2004 - 21stNov.2005 b-Operation, Maintenance (Elect. &

Mech.), Training & Supplying (Elect. & Mech.) material (WSIS Program) at Rustimayah North and Rustimayah South WWTP, with Bechtel company (USAID, S Iraq Infrastructure Reconstruction Program) as subcontract.

SUBCONTRACT No.: 24964-623-TSU-W000-031 Total amount:

(2,640,000.00 USD)

Employees #:(500 Person)

Duration: 24 Oct. 2005-31 April 2006.

c- Operation, Maintenance (Elect. & Mech.) & Program Training & Supplying (Elect. & Mech.) material at Rustimayah North and Rustimayah South WWTP (WSSP Program) with PCO (Joint Contracting Command – Iraq / Afghanistan APO AE 09316) as a contract.

Contract No.: <u>W91GYI-06-C-0026</u> Total amount: (832,256.56 USD)

Employees #:(300 Person)

Duration: 1st May 2006 - to 31 Jun.2006

d- Operation, Maintenance (Elect.& Mech.), Training & Supplying (Elect. & Mech.) material at Rustimayah North and Rustimayah South WWTP (WSSP Program) with PCO (Joint Contracting Command – Iraq / Afghanistan APO AE 09316) as contract.

Contract No.: <u>W91GYI-06-C-0014</u> Total amount: (348,592.06 USD)

Employees #:(300 Person)

Duration: 1st July 2006 - to 31 July.2006

e- Operation , Maintenance (Elect. & Mech.) , Training

&supplying (Elect. & Mech.) material at Rustimayah North and Rustimayah South WWTP at North Central

Region (WSSP Program) with PCO (Joint Contracting Command - Iraq / Afghanistan APO AE 09316), ANRA Co. & Nova ETC as a joint venture under contract.

Contract No.: <u>W91GYI-06-D-0006</u>

Total amount: (5,793,880.00 USD)

Employees #:(250 Person)

Duration: 1st Aug. 2006 - to 31 July.2007







DEPARTMENT OF THE ARMY JOINT CONTRACTING COMMAND-IRAQ/AFGHANISTAN APO AE 09316



10 August 2006

SUBJECT: Access and Cooperation Request for Phase 2 O&M Facility Support Contractor – Nova Engineers, Contractors and Trading Company under Contract No. W91GY1-06-D-0006 – PHASE 2 O&M FACILITY SUPPORT SERVICES OF WATER TREATMENT AND WASTE WATER TREATMENT PLANTS

Facility Access Request

TO WHOM IT MAY CONCERN

Dear Sir:

Nova Engineers Company and Anra Company "local Iraqi firms" have been engaged by our agency to conduct O&M Facility Support Services at selected water and wastewater facilities throughout Iraq.

It would be most appreciated if you would allow them access to your facility on a regular basis during the period of work and to provide them assistance, from time to time, as may be needed. Nova's current contract period will end on 9 March 2007.

A list of Nova's employee names will be submitted separately, upon request, and Nova employees will have company identification cards or badges with them.

If you have any questions regarding this request, please contact the contracting officer at 1-703-544-1483

Thank you for your continued cooperation on this very important project.

Warmest Regards,

Kenneth Nix Contracting Officer

cc: SPCOC Water

Nova, Anra Engineers



DEPARTMENT OF THE ARMY

CHARLIE COMPANY, 1st SQUADRON, 75th CAVALRY REGIMENT 2ND BRIGADE COMBAT TEAM, 101ST AIRBORNE DIVISION (AIR ASSAULT)

CAMP LIBERTY, IRAQ

APO AE 09344-3485

REPLY TO ATTENTION OF

AFZB-KB-C

08 January 2008

MEMORANDUM FOR RECORD

SUBJECT: Completion of Concrete Maintenance Pad at JSS Maverick

- 1. This memorandum is to certify that the concrete maintenance pad constructed at JSS Maverick in Ghazaliya, Baghdad, has been completed by Ghassak Sabah M. Jamil. The pad was completed to all specifications and there are no outstanding issues to be resolved. Payment should be rendered to the contractor as all work is complete.
- 2. The point of contact for this memorandum is the Company Executive Officer 1LT Brendon Terry at 0790-194-3027 or brendon.terry@mnd-b.army.mil.

TERRENCE I. HIGGINS

CPT, IN

COMMANDING



1 May, 2006

Subject:

USAID Iraq Infrastructure Reconstruction Program Work Confirmation Notice

To Whom It May Concern:

This notice is to confirm that ANRA Company completed its Technical Services Subcontract scope associated with the Bechtel International Systems, Inc. Subcontract No. 24964-623-TSU-W000-031 to Provide Operations, Maintenance, Training, and other services to Water and Waste Water Treatment Plants as part of the USAID Iraq Infrastructure Reconstruction Program - Phase II.

The work was completed over the period of 24 October 2005 to 30 April 2006.

Sincerely, Bechtel International Systems, Inc.

Stephen Pulsford Project Manager

Cc: Subcontract File



Bechtel International Systems, Inc. 8180 Greensboro Drive Suite 900 McLean, VA 22102

08 July 2004

Subject:

USAID'S Iraq Infrastructure Reconstruction Program

Prime Contract EEE-C-00-03-00018-00

Subcontract

Rustimiyah 3 Sewage Treatment Plant

Letter of Introduction

To Whom It May Concern:

Bechtel National, Inc and its affiliate Bechtel International Systems, Inc. (hereinafter "Bechtel") Is a prime contractor to the United States Agency for International Development (USAID), under contract numbers EEE-C-00-00018 and SPU-C-00-04-00001-00, for the Iraq Infrastructure Reconstruction Program.

Ayad Nassar Raja Al-Ani Co. (ANRA) has been subcontracted by Bechtel to provide electrical services to aid in the rehabilitation of Rustimiyah 3 Sewage Treatment Plant in the greater Baghdad area in support of USAID's Iraq Reconstruction Program.

We ask that you provide whatever assistance you can to help ensure this important work for the USAID Humanitarian Mission in Iraq can be carried out.

Please contact the undersigned in Amman at +962 6 510-0800, x-216 if further information is needed.

Very truly yours,

Bechtel International Systems, Inc.

Helen Baker

Subcontracts C/P Specialist

Bechtel International Systems, Inc.



DEPARTMENT OF THE ARMY JOINT CONTRACTING COMMAND-IRAQ/AFGHANISTAN APO AE 09316



To Whom It May Concern.

This letter introduces to one of our critical contractors. The ANRA Company and Mr. Ayad Nasar Rajab for your reference. ANRA & Mr. Rajab are involved with the Iraqi Infrastructure Reconstruction Project under contract to JCCI/A.

Mr. Ayad and his company ANRA are mission-essential subcontractors assisting with the reconstruction effort.

If at anytime you would like to contact me in regards to this letter or this company. Please contact me at the numbers I have listed below.

Thank you for your cooperation and support in this regards.

With Respect

Chief, Public Works & Water.

JCCI/A

PCO/ANNEX

Baghdad/ Green Zone Iraqna 07901 90 7715

Landline (US number) 703-544-1491



DEPARTMENT OF THE ARMY JOINT CONTRACTING COMMAND-IRAQ/AFGHANISTAN APO AE 09316



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