



F&R
WORLDWIDE

ENVIRONMENTAL · GEOTECHNICAL · CONSTRUCTION SUPPORT

Information and Qualifications

January 10th, 2010

F&R Worldwide





About F&R Worldwide

- One of the fastest growing **environmental and geotechnical engineering** firms in Eastern Europe
- Partnership between US parent company Froehling & Robertson (Established in 1881) and SGDA Europe BV
- Offices in Romania, Austria and the US
- State of the art company that focuses on long-term partnerships



F&R Worldwide Overview

- Multinational team of planners, engineers, scientists, geologists, chemists and regulatory specialists linked to over 500 experts worldwide
- Expertise in EU and Romanian environmental regulatory issues
- Euro-code trained experts that provide professional engineering and geotechnical services to achieve superior cost-effective design solutions
- Team members have an average of 20 years experience in remediation, abandonment and waste management
- Successfully completed numerous petrochemical, industrial and infrastructure projects in Romania

Accreditations

- **Ministry of Environment**
- **National Agency of Mineral Resources to perform supervision of petroleum operations**
- **Ministry of Labor, Family and Social Protection to provide H&S services**
- **EN ISO 9001:2008, EN ISO 14001:2005, AND BS OHSAS 18001:2007**





Areas of Expertise

- Environmental
- Geotechnical
- Construction Support

Environmental Services

- Environmental Impact Assessments (EIA)
- Strategic Environmental Assessments (SEA)
- Environmental Balance Studies and IPPC documentation
- Permitting Services
- Risk Assessments
- Environmental Due Diligence
- Regulatory Compliance Audits
- Environmental Management Plan (EMP) for site works
- Remediation services (Investigations and Design)
- Waste management and hazardous materials management
- Environmental Consultancy related to Romanian and European Legislation
- Water Management documentation for permitting (Agreement and Permit)
- Individual Technical Studies (Air, Noise, Water Quality, Soil Quality, etc.)
- Feasibility Studies
- Preparation of applications for EU funded projects



Geotechnical Services

- Geotechnical Exploration
- Foundation Recommendations
- Ground Improvement Techniques
- Drilling Services
- Slope Stability Evaluations
- Pavement Design
- Hydrogeology Studies
- Geotechnical Construction Services
- Soil Testing and Compaction
- Monitoring Well and Piezometer Installation

Geotechnical Equipment

- Geotechnical truck mounted drill rigs, type CME 55 and CME 75, with rotary hollow stem augers and casing of several sizes capable of drilling up to 50m + depths
- Automatic SPT hammer with 60 cm split spoon sampler
- Undisturbed sampling equipment with continuous static pushing collecting system
- Wire line system for continuous coring
- Static and heavy dynamic cone penetrometers
- Monitoring well installation and development equipment
- In-situ testing equipment



Construction Support Services

- Project Management and Administration
- Contractor Pre-Qualification
- Bidding and Pre-Construction
- Submittals and Documentation Tracking
- Verification of Construction Quality Works
- Euro-Code Trained & Experienced Supervisors
- Construction Materials Testing
- Construction Site Supervision
- Progress Inspections
- Construction Health and Safety
- HSE Oversight and Supervision
- HSE Training for Management & Contractors
- Job Safety Analysis (JSA)
- Hazard Identification
- Risk Assessment
- Contractor Compliance
- Contractor Pre-Qualification

Markets

- **Industry**
 - Oil and Gas, Petrochemical, Manufacturing, Food and Beverage, Pharmaceutical and Energy
- **Infrastructure**
 - Roads/Highways, Bridges, Schools, Government Institutions, Water and Wastewater facilities, Energy facilities and landfills
- **Property Development**
 - Commercial, Residential, and Industrial Real Estate
- **Agriculture**
 - Agribusiness, Poultry, Dairy, Swine and Cattle

Representative projects: S.C. Petrom SA

Multiple Environmental Balance Studies – Different Regions, Romania

- F&R Worldwide demonstrated its ability to provide a high-volume of quality reports in a relatively short period of time.
 - F&R Worldwide's responsibilities included: multiple environmental assessments on storage depots, tanks farms, oil processing facilities, injection stations, compressor stations, oil recovery plants, extraction facilities, gas stations and oil terminals.
 - During BM II, sampling was carried out by both F&R Worldwide's Environmental and Drilling teams; following Lab tests, results were interpreted according to Romanian and European legislation.
 - All assessment activities were governed by the Romanian Ministry of Environment regulations and procedures
 - F&R Worldwide also established and maintained a quality control program specific to each project during its implementation.
- **Scope:** Environmental
 - **Facility Type:** Petroleum



Representative projects: AICI-SP

US Embassy Compound – Bucharest, Romania

- F&R Worldwide was the independent geotechnical engineering testing agency to perform field quality-control testing on earthwork and foundation subgrade inspections to verify that these activities met construction documents and specifications. Specific field tests included subgrade inspections by Dynamic Cone Penetration (DCP), compaction testing on new structural fill, and laboratory materials testing.
- F&R Worldwide was also selected as the independent geotechnical engineering testing agency to provide quality assurance services for the aggregate pier soil improvement elements to support the more heavily loaded foundations. Specific duties included monitoring the modulus test for verification of design parameters, monitoring the daily installation of the aggregate pier elements, and performance of DCP tests.
- **Scope:** Geotechnical Engineering
- **Facility Type:** Embassy



Representative projects: **The National Railway Company**

Ecological Risk Assessments – Bucharest and Arad, Romania

- F&R Worldwide performed the Risk Assessment Studies for Railways facilities in Bucharest and Arad.
- Site analyses were focused mainly on soil and groundwater quality.
- Modelling of the pollutants spatial distribution was performed based on the test results.
- All activities were governed by the Romanian Ministry of Environment regulations and procedures
- All activities were subject to the established quality control program specific to these projects

- **Scope:** Environmental
- **Facility Type:** Railway



Representative projects: S.C. Petrom SA

Feasibility Studies for soil/groundwater decontamination – Different Regions, Romania

- Feasibility (Technical/Economical) Studies for evaluation of local pollution levels and identification the most suitable method for decontamination soil/groundwater in 8 former PECO Depots
- Activities included:
 - topographical survey, site investigations and lab tests for a series of soil and water samples, collected from the areas with the greatest exposure to pollution;
 - reporting tests results to legal provisions;
 - monitoring wells execution and pump tests, with results interpretation in order to set up the local hydro geological parameters;
 - pollution plume modeling, using Modflow software, to forecast future presumptive extension/spreading of pollution;
 - remediation method selection, using as the input data all the specific results from each study.
 - financial estimation for applying the selected method.
- **Scope:** Environmental
- **Facility Type:** Petroleum



Representative projects: Bovis Lend Lease

Geotechnical Investigation for a Residential Complex – Brasov, Romania

- F&R Worldwide was selected to conduct a geotechnical investigation for a high-rise residential complex. The project included field work, lab testing on the recovered rock cores and geotechnical engineering analysis in order to provide design parameters and recommendations for five tower buildings of 24 and 18 stories.
- The field work included geotechnical borings with continuous rock coring and sampling. Our experienced drill crew and field engineer provided invaluable insight to the recognized karst dissolution features.
- Using the results obtained from the field works laboratory testing, engineering analyses and experience, we were able to provide the client with optimized foundation design recommendations and parameters for cost-effective solutions.
- **Scope:** Geotechnical Services
- **Facility Type:** Residential Development



Representative projects: S.C. Petrom SA

Health & Safety Supervision for Wellhead Rehabilitation – various locations

- F&R Worldwide is providing health & safety supervision and training for the rehabilitation and modernization of more than 5,000 well heads all over Romania.
- F&R Worldwide personnel is evaluating the health and safety levels of area work crews. Based on our evaluation work training is developed and delivered at the well head work sites.
- The goal of the work is to increase the workers' knowledge of site health and safety risks and train the site workers to mitigate those risks.

- **Scope:** Health & Safety Supervision and Training
- **Facility Type:** Petroleum



Representative projects: Schnabel Engineering

US Embassy Compound – Pristina, Kosovo

- F&R Worldwide provided supervision of the preliminary geotechnical investigation for the new US Embassy in Pristina, Kosovo.
- The investigation included several soil borings with in-situ testing, installation of groundwater monitoring wells, and collection of soil and water samples for environmental and geotechnical analysis.

- **Scope:** Geotechnical Engineering
- **Facility Type:** Embassy



Partial Client List (Romania)

- Petrom-OMV
- Rompetrol
- MOL
- Epstein
- URS
- Louis Berger
- Grampet
- INTEREX
- Bovis Lend Lease
- Moritz Group
- GP Holdings
- Echo Investment
- AICI-SP
- Schnabel
- COWI
- Terra Romania
- Tuborg
- Newland Estates
- Mobilux
- WSP
- OCSC
- National Railway Company
- GeoHidroTopo
- Romproed
- Can-Pack
- SGS
- Eptisa
- MBS
- Axor
- Alchemy Development
- Arcadia Engineering



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