CREATING SOLUTIONS TOGETHER
SPECIALISED SUBSIDIARIES

THE VSL ORGANISATION

OVER 50 YEARS OF EXPERIENCE
VSL, a company with Swiss origins, is a leader in the construction of concrete bridges and special structures. Well-proven systems and sound in-house engineering are the basis of the Group’s reputation for innovative conceptual designs and reliable, efficient engineering solutions. VSL has been contributing since 1956 to some of the most prestigious and complex concrete structures in the world. It has applied the principles of post-tensioning to bridges (including cable-stayed structures), buildings, LNG tanks, nuclear containments, industrial plants, tunnels, offshore concrete structures.

WORLDWIDE NETWORK
VSL operates through 60 locations as a worldwide network. The Group provides technical consultancy and support, with a full range of works from project planning through to complete final design, construction engineering and the execution of works on site.

STRONG COMMITMENT TO RESEARCH AND DEVELOPMENT
Recent applications of Research & Development have included enhanced systems for greater durability of saddles and anchorages and to meet nuclear requirements for anchorages.

VSL ACADEMY – A UNIQUE TRAINING FACILITY FOR VSL’S SPECIALISED TECHNIQUES
Ensuring the highest levels of competence is a key focus. VSL applies the principles of continuous learning and training, together with the sharing of best practices throughout the network. Foremen, supervisors and site engineers benefit from centralised training at the VSL Academy where they are taught best practice in all aspects of post-tensioning, heavy lifting, stay cable and dampers, as well as VSoL® systems.

RELIABLE PARTNER
VSL provides skilled, trained staff and construction specialists; an ability to benchmark and take advantage of new methods, new equipment and new materials; and specialist equipment designed to be as modular as possible for reuse in different configurations. VSL is also committed to offering innovative contracting approaches including alliances on major projects, which enable VSL and the contractor to focus on what is “best for the project”.

FACTS & FIGURES
VSL, A LEADER IN ITS MARKETS
3,900 EMPLOYEES IN 2012
60 LOCATIONS WORLDWIDE
2 TECHNICAL CENTRES (SWITZERLAND, SINGAPORE)
32 REGISTERED PATENTS IN USE
2.8 MILLION € BUDGET FOR R&D IN 2012

SPECIALISED SUBSIDIARIES
OUR VALUES

RESPECT FOR PEOPLE
- Ensure safety at all levels
- Listen, care and take action
- Empower, trust and reward individuals and teams
- Focus on training, continuous learning, and knowledge sharing

PERFORMANCE
- Perform to our client’s satisfaction
- Control and manage risk
- Generate positive results

RELIABILITY AND TRANSPARENCY
- Act in an accountable, trustworthy and thorough way
- “Walk the talk” – put our words into practice
- Share information openly

CREATIVITY
- Create value for clients through innovative solutions
- Think differently, give new ideas a chance and reward success
- Build on people’s new ideas and support them

COMPANY CULTURE
- Always act within the law, adhering to corporate guidelines and ethical standards
- Ensure that VSL is a company to be proud of
- Care for and contribute to the overall interests of VSL

CHANGING THE WAY WE DO BUSINESS

FOR VSL, SUSTAINABLE DEVELOPMENT MEANS STRIKING A BALANCE IN ITS DEVELOPMENT MODEL BETWEEN THE ECONOMIC PROFITABILITY OF ITS BUSINESSES AND THEIR SOCIAL AND ENVIRONMENTAL IMPACT

Environment and sustainable construction
1. Innovating for sustainable construction
2. Eco-designing high performance projects
3. Ensuring environment-friendly workplaces
4. Building, operating and maintaining to deliver controlled performance

Customers and partners for a sustainable project
5. Establishing a trusting relationship with customers
6. Committing to ethics and compliance with regard to our customers and partners
7. Sharing our goals for sustainable performance with our partners

Local commitment and community aid
8. Contributing to local development
9. Getting involved with local communities and civil society

Respect and development of employees
10. Guaranteeing the health and safety of employees
11. Ensuring equal opportunities and enhancing skills
12. Fostering cohesion and well-being in the workplace
**YOUR PARTNER FOR**

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**GROUND ENGINEERING**

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**Ground anchors**

Ground anchors are used to mobilise dead loads deep in the ground to stabilise structures against forces induced by wind or suspension cables, as for maintaining excavations against ground instability.

**VSL offers** the supply and installation of:
- Bolts
- Strand and bar anchors, stressed or unstressed
- Bars for micropiles

Projects include:
- Sunshine Motorway Duplication, Australia, 2008
- Almudena Church, Spain, 2008
- Bank of China, Hong Kong, 1987

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**VSoL® walls**

The combination of backfill, soil reinforcement (steel or polymeric) and facing panels to build cost effective and aesthetic retaining walls.

**VSL offers**:
- Design
- Supply
- Installation of the entire structure

Projects include:
- Muscat Expressway, Oman, 2010
- Ipswich Logan Motorway, Australia, 2008
- A7 Highway Guimarães, Portugal, 2005
- Castle Peak Road, Hong Kong, 2005

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**D-walls & Piles**

Underground walls and deep foundations up to 120m in depth for civil engineering and building projects including metro stations, tunnels, bridges and buildings.

**VSL offers**:
- The full range of services from design consulting to execution of the works using VSL's own equipment pool

Projects include:
- CR3, Hong Kong, 2011
- Gautrain, South Africa, 2008
- Metro Cairo, Egypt, 2008
- ICC Tower, Hong Kong, 2005

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**Ground improvement**

A combination of techniques to improve ground properties for both temporary and permanent works to enable construction of underground or elevated structures.

**VSL offers** dynamic compaction, vibro-flotation, grouting, jet-grouting, soil freezing...

Projects include:
- Stone columns for sports facility, Doha, 2011
- Marine stone columns, Doha, 2011
- Vibro-compaction Penny’s Bay Reclamation, Disneyland, Hong Kong, 2004
- Ground freezing, KCRC East Rail Extension, Hong Kong, 2004

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**Ground investigation**

A combination of techniques to investigate and assess the ground properties (chemical, mechanical...) prior to starting construction works.

**VSL offers**:
- investigation plan, straight and directional
- coring and sample collection, sample analysis and testing interpretation
Bridges

Bridge construction services, from design assistance before tender to execution of the entire project.

**VSL offers:**
- Design, supply and installation of post-tensioning
- Design, supply and installation of stay cables
- Design, fabrication and commissioning of specialised formwork and erection equipment for bridge construction, using techniques including span by span, balanced cantilever (precast or in situ), incremental launching, precast beam methods, full-span precasting and heavy lifting
- Management and operation of the above for the full construction of bridges

Projects include:
- Baluarte Bridge, Mexico, 2012
- Gautrain, South Africa, 2009
- LRT, Dubai, 2009
- Second Gateway Bridge, Australia, 2009

Buildings

Building construction services, from design assistance before tender to execution of the works.

**VSL offers:**
- Design of structures with integrated use of post-tensioning to provide greater span lengths with reduced structural floor depth, resulting in larger column free areas
- Design and implementation of alternative precast solutions to industrialise the production process and speed up the project schedule
- Methods, temporary works definition and design, engineering construction including stage by stage analysis, geometric control

Projects include:
- Arena de la ciudad de México, 2011
- MC Tower, Vietnam, 2011
- Dubai Mall, UAE, 2008
- Venetian Macao, China, 2007

Slab on grade

Design, supply and construction of large joint-free reinforced post-tensioned concrete slabs with axial compression forces in the concrete to counteract tensile stresses, which would otherwise cause cracks.

**VSL offers:**
- Full slab design
- Earthworks
- Supply and installation of post-tensioning
- Concrete works
- Surface finishing

Projects include:
- Hangar FBO, Czech Republic, 2008
- Walmart, Mexico, 2007
- Austrack, Australia, 2004
- Nestlé Distribution Plant, Chile, 2003

Offshore structures

Design and construction of offshore concrete structures relating to the oil, gas, petrochemical and renewable energy business sectors.

**VSL offers:**
- Innovative construction methodology and planning
- Temporary works design
- Project management
- Project execution

Projects include:
- Adriatic LNG Terminal, Spain, 2009
- Tjuvholmen, Norway, 2008
- N’Kossa Barge, France, 1996
**AND RELATED SERVICES**

**Construction of nuclear containments to withstand internal high pressure in the event of loss of cooling accident.**

**VSL offers:**
- Design
- Supply and installation of post-tensioning
- Heavy lifting for dome erection
- All civil works
- Special infrastructure protections

Projects include:
- LAES2 nuclear power plant, Russia, ongoing
- Shin Kori, South Korea, ongoing
- Flamanville 3, France (GPN), 2011

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**LNG & LPG containments**

Construction of the concrete shell including specialised cryogenic post-tensioning to ensure gas leak tightness throughout the service life of the tank.

**VSL offers:**
- Design
- Supply and installation of post-tensioning
- Supply and operation of specialised formwork
- All civil works

Projects include:
- SLNG Terminal, Singapore, 2011
- Arzew tanks, Algeria, 2011
- Dragon LNG Terminal, United Kingdom, 2008
- Fujian LNG Tank Terminal, China, 2007

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**Formwork & Equipment**

Fixed or moveable specialised formwork to build large or special structures such as high-rise building cores, in-situ balanced cantilever bridges and precast segments or beams.

**VSL offers:**
- Design
- Fabrication
- Installation and operation of formwork and equipment

Projects include:
- DHEE, Bangalore, India, 2011
- Gateway Bridge Upgrade approach piers, Brisbane, Australia, 2009
- City of Dreams building cores, Macao, 2008
- Stonecutters Bridge approach piers, Hong Kong, 2007

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**Heavy lifting**

Using automatically-controlled hydraulic jacks and strands for lifting, lowering, tilting or sliding of very heavy loads including bridges, roofs, antennas, pinnacles, boilers and other equipment or structures.

**VSL offers:**
- Methods, design and engineering
- Supply and operation of equipment
- Management of operations

Projects include:
- Tanger Port, Morocco, 2011
- Moses Mahbida Stadium roof, South Africa, 2009
- Burj Khalifa pinnacle, UAE, 2008/09
- Roof trusses, Convention & Exhibition Centre, Hong Kong, 2008
REPAIR, STRENGTHENING & PRESERVATION

Structural diagnostics & Monitoring

Structural diagnostics and monitoring of concrete structures.

**VSL offers:**
- Inspection and assessment/diagnosis of structural deterioration
- Assessment of the causes, risks and consequences involved
- Use of state-of-the-art equipment and inspection techniques to detect defects before any significant damage can occur

Projects include:
- LAES Nuclear power plant, Russia, 2011
- Singapore Refining Company, Singapore, 2008
- Petronas Twin Towers, Malaysia 2007
- Thainox Stainless Public Company, Thailand, 2005

Repair & Strengthening

Repair and strengthening of structures because of load capacity upgrades, changes of use, slab openings, construction defects or damage caused by deterioration.

**VSL offers:**
- Innovative methods
- Cost-efficient solutions

Projects include:
- Trancão Viaduct, Portugal, 2009
- Dubai Mall, UAE, 2009
- Visp Hospital, Switzerland, 2009
- Plaza Senayan, Indonesia, 2007
- Leaning Tower of Pisa, Italy, 1993

Infrastructure preservation

Monitoring of structures.

**VSL offers:**
- Instrumentation
- Continuous inspection/observation to control behaviour and anticipate potential defects during operation
- Planning of preventive actions and maintenance operations

Projects include:
- ASE factory load test and monitoring, Singapore, 2008
- RD 145 upgrade bridge monitoring, Singapore, 2008
- Pacific Container & Godown load test and monitoring, Tuas Ave, Singapore, 2005

Infrastructure protection

Physical security assessments, design and construction of resilient solutions for critical infrastructure at risk from extreme events.

**VSL offers:**
- Mitigation design and security products expertise
- Vulnerability assessments and blast engineering analysis
- Design and security products expertise
- Turnkey implementation of protection solutions

Projects include:
- Perimeter Wall Blast Upgrade, Pakistan, 2011
- Perimeter Security, Bangladesh, 2010
- Overhead Protection and Large Blast Shielding Wall, Iraq, 2009

Systems & Technologies

- Post-tensioning strand systems
- Bars & post-tensioning bar systems
- Stay cable systems
- Damping systems (stays & buildings)
- Ductal® ultra-high performance concrete
- Bearings & Joints
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