

### SLURRY CONSULT

## SLURRY CONSULT *(for Engineers and Attorneys)*

*We are in the business of providing professional services to assist Owners, Design Engineers and Contractors, before, during and possibly after the project is complete. Attorneys may have an interest to hear what we think, preferably at the dispute resolution panel level. Considering the combination of experience and independence, our advice is unbiased and has no common ground with our various commercial interests. Facts and The Plain Truth are the only Things.*

Our expertise resides in projects using geofluids in heavy construction and underground geotechnical fields. If your search engine brought you here and your interest is in the coal slurry pipeline transport business, try another door! But if you are in the pipeline construction business, look on, you may find some good ideas out of this site.

Our experience resides with construction projects where the wet method of excavation is used:

#### **Vertical Holes:**

- Quality undisturbed soil sampling
- All wells
- Grout holes
- Drilled Shafts
- Tunnel access shafts

#### **Angle holes:**

- Soil anchors
- Directional drilling

#### **Horizontal holes:**

- Horizontal recovery drains
- Microtunneling
- Slurry shield tunneling machines

#### **Trenches:**

- Slurry trenches
- Diaphragm walls
- Self-hardening slurry cutoff walls
- Pervious trenches for extraction, injection or venting

If you are contemplating a project involving work in the wet and you either would like to know more about it or you are already in the thick of it with problems cropping up and you looking for help on a design or specification on a practical issue, we are your outside resource. If you are going into a dispute and you wish to assess your position, try us as a sounding board. Call us toll free at (866) 704



Photo courtesy of ENR 9/27/90

9502 to discuss how we may help you. Any call lasting less than 20 mn is free!  
Or e-mail us at [info@liquidearthsupport.com](mailto:info@liquidearthsupport.com)

It still may be surprising to some that a 9 foot diameter hole in saturated soil can be taken down to over 200 feet with no other support than an appropriate drilling fluid. At least most of the times, but underground work is always full of surprises. A sound technical formation on the part of field supervisory personnel is essential to the success of excavations under slurry support; as the working fluid is evolving constantly as the excavation progresses, a good understanding of the physical and chemical



processes at work is essential. Quality control and feedback of field observations are integral tools for the man directly in charge of the excavation. Here as everywhere, the Observation Method is a valuable discipline for good work. As in many other areas however, education and training may be lacking in the real world, and allowances have to be made accordingly.

[Your Slurry Consultant Personal History >> Read More](#)

[Back to top.](#)

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## EXPERIENCE

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### GILBERT R. TALLARD

- Geotechnical Engineering
  - Deep Foundations
  - Soil and Rock Anchorages
  - Slurry Trench Cutoffs
  - BioPolymer Drains
  - Diaphragm Walls
  - Self-Hardening Slurries
  - Grouting/Freezing
  - Microtunneling
  - Construction Management
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### EDUCATION: 1948-1966

Graduate Civil Engineer: Ecole Polytechnique Federale de Lausanne (Switzerland).

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### PROFESSIONAL HISTORY:

Solétanche Group,  
France (1967-1971),  
Algeria (1971-1972),  
Mexico (1972-1974),  
USA (1974-1979).

Project engineer to General Manager of US subsidiary (Solétanche and Rodio, Inc.)

ICOS Corporation of America (1979-1982),  
New York: Vice President in charge of Far East and Latin America.

Moretrench American Corp., Rockaway, N.J. Manager Geotechnical Division (1985).

Gilbert Tallard, Pelham, N.Y. Geotechnical Construction Consultant (1983-date).

EnviroTrench Company, President(1987) Construction Management, Expertise.Merged with Liquid Earth Support, Inc., President (1992) Marketing and Manufacturing of proprietary geotechnical fluid products.

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### REPRESENTATIVE EXPERIENCE:

Mr. Tallard has over 34 years of experience in the design and construction of foundations and special underground construction including deep load-bearing elements, slurry walls, soil and rock anchors, slurry trench barriers, drilling and grouting, ground freezing, shotcreting and ground water control. He has held responsible positions with two of the best known underground specialty contractors in the World, Solétanche and ICOS. Through these associations, he has gained a unique expertise in the field of earth retention systems and seepage control in applications for dam construction and repair, dewatering and hazardous waste plume containment.

Among representative projects with direct involvement are:

1967: Tunnel boring with pressure air shield Robbins machine and pre-cast concrete lining for the Paris Metro.

1970: Various foundation projects in France involving diaphragm walls, soil anchors, grouting, freezing, caisson load tests and electro-consolidation.

1971: Zardezas Dam, Algeria; installation of 350 feet long, 1,000 Kips permanent rock anchors through old and new concrete structure. 8 inch diamond coring. Left abutment grout curtain. Engineer responsible for all technical matters.

1972: Rock and soil grout treatments for 50 miles long Emisor Central 30 feet diam. storm water gravity discharge tunnel in Mexico City. Managing various alluvium and bedrock grout curtains projects under embankment dams in different states.

1973: Slurry walls and rock anchors for the Olympic Stadium site in Montreal, Canada. Rock consolidation grouting for Velodrome foundations.

1974: Heavy foundations construction and 1,200 t. load test on load-bearing slurrywall elements using deep soil anchorages as reaction at the Sicartsa new steel mill complex of Lazaro Cardenas, Mexico.

1975 to 1979: As general manager of Soletanche's US subsidiary, responsible for all technical and financial activities of the firm, with projects involving slurry walls, slurry trenches and chemical grouting, notably the Addicks Dam repair, Tilden Tailings Dam cement bentonite cutoff wall and the Visalia South Com. Edison pole yard cement-bentonite cutoff wall. In charge of bidding on a variety of foundation projects from grout curtain drilling and grouting to pre-cast slurry walls.

1979: As ICOS overseas VP, responsible for marketing, estimating and operations for the Far East and with South America, mostly in connection to seepage control works on hydro-electrical projects and structural diaphragm walls.  
1981: project manager for the design and construction of a plastic concrete cutoff wall through over 200 feet of coarse alluvium and grout curtain in rock for the Colbun Dam, Chile.

1983 to 1987: Private Consultant: design, estimating and construction management of various cutoff barriers for waste and hazardous waste containment projects. International consultant for large dam deep cutoff walls.

1987: President: EnviroTrench Company. Geotechnical construction management, technical assistance to engineers and contractors, forensic engineering; legal expertise. Developer of biopolymer slurry leachate extraction drain technology. R & D and patenting of IMPERMIX.

1992: President: Liquid Earth Support, Inc. Supplier of patented, proprietary and customized mineral and polymer geotechnical fluid products.

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## AFFILIATIONS

ASCE/Grouting Committee  
USCOLD/Foundation Committee  
Society of American Military Engineers  
Canadian Geotechnical Society  
DFI/slurry wall committee  
ASTM D 18/Soil and Rock Committee

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## **LANGUAGES**

English  
French  
German  
Spanish

[Back to top.](#)

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### CLIENTS/ASSIGNMENTS/INVENTIONS/PAPERS (from 1983 on)

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#### **ICOS Corp.:**

Preparation of changed soil condition claim. Testimony before arbitration tribunal. Colbun project, Chile (ref. A. Ressi). Project evaluation and site visit of Piedra del Aguila project, Argentina.

#### **George Hyman Construction Co.:**

Bid for design and estimate for slurry walls and anchorages at the Smithsonian underground Museum, Washington D.C. Improving in house drilling and grouting technology for ground anchorages for tiedowns and tiebacks. Bid estimate for structural slurry walls for WMATA Mount Vernon Square Station. Bid estimate for structural slurry walls for real estate project in Boston (ref. Al Hobelman).

#### **Continental Drilling:**

Design and construction management of slurry trench cutoff for cofferdam at the Little Seneca Lake Dam project, Boyds, MD. Bid design and estimate of dike repair slurry trench incorporating a HDPE membrane at the Mohicanville Dam, OH. Bid estimate for design and construction of slurry trench barrier and grout curtain for leaking sewage pond in Othello, WA. (Leo Broderick).

#### **Griffin Dewatering:**

Bid estimate for slurry trench barrier around Collier landfill, Pontiac MI. Bid estimate for slurry trench barrier around Lipari Superfund landfill site, Pitman, N.J. Bid design and estimate structural slurry wall for Marina Dam and Bridge project, San Antonio, TX. Bid design and estimate brine storage ponds, DOE Strategic Oil Storage Program (Tony Barbella).

#### **Techint/Icos de Mexico:**

Bid estimate for extensive grouting and drainage seepage control project at the CFE Caracol Dam, Mexico (Guido Terzi).

#### **ENDESA Santiago:**

Elaborate alternative solutions and contractual formats for sealing the 50 m<sup>3</sup>/sec. seepage of Laja Lake, Chile (Guillermo Noguera).

#### **Harza Engineers:**

Conceptual design for the deep cutoff wall through blocks at Pehuenche Dam, Chile (Nathan Hopton).

#### **INGETEC Bogota:**

Conceptual design of main dam cutoff walls and dewatering cutoff for power house excavation, review of specifications and scheduling, prequalification of contractors for the Canafisto Dam, Medellin, Columbia (Carlos Ospina).

#### **Woodward Clyde Consultants:**

On site review of contractor's procedures and performance analysis of post-tensioned anchorages at Tablachaca slide stabilization project, Peru (Jean Y. Perez).

**C.R.S. Group:**

Evaluation of the practicality of a slurry wall alternate for Singapore Metro station project (Robin Mason).

**C.S.D.Los Angeles:**

Conceptual design and specification review for various solid waste containment project. Cement-bentonite self-hardening slurry design to meet  $K < 10^{-7}$  cm/sec. criterion. On site quality assurance during construction, Calabassas landfill (Richard Lalka).

**Conestoga Rovers:**

Preliminary study for the design of a grout curtain in rock as a containment barrier at the Hyde Park Landfill Superfund site, Niagara Falls N.Y. Memorandum on Lugeon rock permeability test. Feasibility and cost estimate of a ground water barrier at the La Bounty landfill Superfund site in Iowa (Ron Schwark).

**Tecnosuelo SA:**

Technical assistance for mix design and plant requirement for cement bentonite cutoff wall and grout curtain for cofferdam construction at the Comedero Dam, Sinaloa, Mexico (Antonio Blanco).

**Moretrench American:**

Numerous industrial sludge fixation formulation studies and testing with construction estimates. Technical supervision of bentonite slurry trench containment barriers: coal pile leachate Orange-Rockland Power Co., N.Y., VOCs at the Sydney mine site in Tampa, FL. Estimates for ground freezing for PCB contaminated soil excavation. Project Manager for soil attapulgite sea water slurry trench containment barrier for chlorinated compounds at Dow Chemicals, Freeport (TX), (John Donohoe).

**Woodward-Clyde Consultants:**

Conceptualization and cost estimating for on site standby chemical grout plant for the Azwan High Dam grout curtain maintenance, Egypt (Lloyd Cluff).

**ENDE Cochabamba:**

Conceptual design for deep cutoff wall in alluvium for the Icla dam project, Cochabamba, Bolivia.

**International Engineering Co.:**

Mission to Argentina for assessing the feasibility and practicality of jet grouting between double diaphragm walls constituting the diversion channel wall and the restitution channel wall. Conceptualization of alternate structural solutions, estimating and scheduling of same, Piedra del Aguila Hydro-Electric project, Neuquen, Argentina (E. Kollgaard).

**Geoge Hyman Construction Co.:**

Design of grouting equipment, formulation of plastic mortar grout and supervision of corrective compaction grouting program for protecting WMATA steel liner plated tunnel following adjacent building mat foundation construction, Washington D.C.

**Becho Inc.:**

Plastic concrete design for slurry wall cutoff as part of rehabilitation of Montana Power's Milltown dam. Technical assistance for slurry wall construction and permanent ground anchors installation.

**US Army COE:**

Expert witness for the Philadelphia District in defense from contractor's claim on Superfund Lipari landfill, N.J. cutoff wall project.

**George Hyman Construction Co.:**

Construction management of precast concrete diaphragm walls, regroutable ground anchors and chemical grouting at various real estate development projects in Washington, D.C.

**Compania Brasileira Proyectos y Obras:**

Prebid evaluation of the deep cutoff in block alluvium at the Pehuenche Hydro project (Chile) . Cutoff type selection for cofferdams built on river alluvium for other project in Argentina.

**GeoEngineering, Inc.:**

Conceptual design for ground water and definition of cement bentonite cutoff wall for Bartow, IL sanitary landfill enclosure. Design criteria, constructability and QA/QC programs (Bill McTigue).

**SEI/Daniel JV:**

Review of subcontractor's problems in performing a cement-bentonite cutoff wall at Muray Hydro, Littlerock, AR: identifications of the problems, estimate of real value of the work and recommendations on alternate better qualified subcontractors (R.Kinde/Daniel; Dick Franke/SEI).

**Conestoga Rovers:**

Grout formulation and testing program for barrier around rock DNAPL contaminated Superfund site in Niagara Falls, N.Y. (Ron Schwark).

**Island Copper Mine:**

One of three members of a design review board overseeing the pushback of the westward slope of the world's deepest open pit mine in Port Hardy, Vancouver Island. Emphasis on a deep cutoff wall through a sea shore mine dump ( BHP Utah. Dick Robertson).

**Griffin Remedial Services:**

Technical assistance for the construction of deep leachate collection drains by the biodegradable slurry trenching method in numerous New Jersey confidential Superfund sites (Tony Barbella).

**Bechtel:**

Review of contract specifications and contractor's practices for the Wells Dam embankment repair, WA, with a deep low strength plastic concrete slurry wall (Peter Yen, John Lowe III).

**US Army COE:**

Expert witness defending a drilling and grouting claim for the Cerrillos Dam grout curtain in Puerto Rico (Jacksonville District).

**City of Altoona:**

Expert witness defending against rock anchor claim by general contractor who self performed the work with a waste water treatment construction project.

**George Hyman Construction Co.:**

Construction management for slurry wall underground parking garage project in Crystal City, Arlington, VA: first full scale US slurry wall project using pure GS TP polymer as bentonite slurry substitute (Al Hobelman).

**Minnesota D.O.T.:**

Expert witness defending rock anchor claim by general contractor building highway related retaining wall construction project in Duluth, MN (Bill Sierks).

**George Hyman Construction Co.:**

Construction management for slurry wall and ground anchorages project using GS TP as biodegradable polymer slurry for the World Bank renovation project in Washington, D.C. (Al Hobelman).

**WMATA Washington:**

Expert witness defending against general contractor's changed soil condition claim on a Metro station slurry wall project in Washington D.C. (Jenny Engineering).



**Bureau of Reclamation:**

Consultancy and technical assistance for in-house slurry trench cutoff construction at the Caballo Dam site, Truth or Consequences, NM (Bruce Sparett).

**Griffin Remedial Services:**

Technical assistance for design and construction of cement- bentonite self-hardening slurry barrier and GS TP biopolymer drain leachate collection system for the Syncon Resins Site, Kearny, N.J. (A.Barbella)

**Hyman Smoot JV:**

Construction management for the slurry wall construction contract at the 8 acres International Cultural & Trade Center project at the Federal Triangle site in Washington D.C.; 224,000 SF slurry wall project working with GS TP biodegradable polymer (Al. Hobelman).

**ENDISPUTE:**

Expert for Monterrey Construction in dispute with Franki re. Murray- Hydro.

**AGRA Soil & Envir.:**

Consultancy on various cutoff wall projects in northern Saskatchewan. conceptual designs, specification review, construction site inspection.

**Haug & Associates:**

Technical assistance in the construction of deep leachate collection trench test section at mining site in Saskatchewan.

**Hyman Foundation:**

Shot Tower Station, Baltimore, West Entrance shaft shoring under groundwater with soldier beam and lagging installed in an IMPERMIX™ self-hardening slurry, a technical innovation (Al Sylvester).

**Remedial Construction:**

Design and technical assistance for bio-polymer extraction trenches for Rohm & Haas site and Phibro sites along Houston Ship Channel Deer Park, TX (Steve Birdwell).

**Philip Services Inc.:**

Technical assistance and quality assurance for IMPERMIX cutoff wall construction, General Cables site, Pawtucket R.I. (Robb Davis).

**Remedial Construction:**

Attapulite slurry trench instability evaluation, Dow Chemicals, Freeport TX. (Steve Birdwell)

**Oakridge Associated Laboratories:**

Conceptualization of a circular slurry wall design for underground neutrino measurement tank outside particle accelerator. (Steve Chae, Lockheed, Martin Energy Services)

**New England Foundations:**

Central Artery Projects and New England area: provide slurry technology for drilled shaft construction and stability problem solutions. (John Roma)

**Bencor Corporation:**

Technical assistance for solving slurry wall trenching stability issues at the C15A2 North End section of the Central Artery Project. (Ugo Piccagli).

**Modern Continental:**

Technical assistance for lubrication of microtunneling projects, controlled grouting annuli and long distance annulus backfill. (Steve Herrington)

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## **INVENTIONS:**

Biodegradable slurry trench: UNDERGROUND LEACHATE BARRIER and method of constructing same: US patent No.4,543,016.

IMPERMIX™: self-hardening slurry/grout compound with higher chemical resistance and lower permeability (10-8cm/sec.) than cement-bentonite. US patent No. 4, 726, 713.

SLOWGROUT: very slow setting self-hardening slurry providing both lubrication during jacking and permanent annular grout in Microtunneling.

NEW METHOD FOR CONSTRUCTING TRENCHES (Pseudo solid polymer slurry) US patent No. 5, 611, 643.

METHOD FOR STRENGTHENING AND IMPROVING CLAYS. US Pat.No. 5,814,147.

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## **LECTURER:**

University of Wisconsin, Milwaukee, continuing education seminars

Colorado School of Mine: microtunneling lubrication course

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## **PUBLICATIONS:**

Dewatering and Grouting (1976), UMTA-MA-06-0025-76-8

Chemical Grouts for Soils (1977), FHWA-RD 77-50

Slurry Trenches and Hazardous Waste (1984) C .E . Magazine ASCE

Acuavoir/Enhanced Aquifers, The Military Engineer, March 1984

Concrete Pumps in slurry wall construction. ACI magazine 9/89

New Trenching method using synthetic polymers. 1990 ASTM STP 1129

Bio Walls. ASCE continuing Education , New York, April 92

Hazwaste Barriers, Update for the 90's, CGS 45th. Conf. 10/1992

Soil Conditioning and Lubrication in Microtunneling. CSM Oct. 1994

From cement-bentonite to IMPERMIX. D.O.E. barriers seminar 8/95, Denver.

Low conductivity self-hardening slurry for permanent enclosures, FSU 97.

Beyond cement-bentonite: Impermix self-hardening slurry, USCOLD 97.

[Back to top.](#)