PRESSURE GROUTING

The injection of near-water-viscosity liquids into a cohesionless soil to react chemically and create an impervious solid mass, comparable to sandstone.

For:
- Solidifying sandy soil
- Controlling erosion of sand cliffs
- Stabilizing slopes and excavations
- Stabilizing foundations and tunnel headings
- Reducing the liquefaction potential of sandy soils
- Controlling or shutting off groundwater seepage
- Sealing interlocks of sheet piling

Our Clients
Our clients include owners of commercial and industrial facilities, engineering consultants, contractors, and public agencies. Among them are the following:

Aeroflot General Corporation
Aetna Insurance Company
Alaska Pipeline Service Co.
American Airlines
Ameron Concrete & Steel Pipes
S.J. Amoroso Construction
Arizona Highway Department
Atlantic Richfield Hanford Co.
Ball, Ball and Brosamer, Inc.
Berkeley Unified School District
Bethlehem Steel Corporation
Blackhawk Corporation
Browning-Ferris Industries
Calif. State Automobile Assn.
Calif. Water Service Co.
CalTrans
Carnation Milk Company
Chevron U.S.A., Inc.
City of Pasadena
Contra Costa Water District
Dan Caputo Company
Del Monte Corporation
Devcon Construction, Inc.
Dillingham Construction Co.
Dinwiddie Construction Co.
Disneyland
Dow Chemical Company
East Bay Municipal Utilities Dist.
E.I. DuPont de Nemours & Co.
Essex Realty
Foremost Foods
Freeport-McMoRan resource Plurals
General Electric Co.
General Motors Co.
Granite Construction Co.
Hewlett Packard Co.
The Home Depot
IBM Corporation
Intel Corporation
Irvine Land Management Co.
Jacobs Construction
Kaiser Aluminum and Chemical Co.
Kaiser Hospitals
Kaufman & Broad
Kiewit Pacific Company
Lawrence Livermore Laboratories
Liberty High School
Sebastopol School District
Lockheed Missiles & Space Co.
Long Beach Unified School Dist.
L.A. Dept Water & Power
MCM Construction Co.
Modern Continental
Morison-Knudsen Co.
Neveda Highway Dept.
Nordic Industries
Novato Hospital
Oceanairing International, Inc
Homer J. Olson Co.
Oregon Highway Dept.
Pacific Cement & Aggregates
Pacific Gas and Electric Co.
Perini Building Company
Phillips Petroleum Co.
PK Contractors, Inc.
Plant Construction
Port of Los Angeles
Port of San Francisco
Public Service Co. of Colorado
Pulte Homes
Ragus Foods, Inc.
Ranger Pipelines
Riverside Cement Co.
Rudolf & Bletten, Inc.
San Francisco Intl Airport
Santa Cruz Metropolitan Transit
Shell Oil Company
Shimmick Construction Co., Inc.
Standard Pacific Homes
Swinerton & Walberg
Tico Construction
Trans World Airlines
USNS Posco
U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Navy
Alameda N.A.S.
Mare Island
 Moffett Field
Pearl Harbor
Port Hueneme
U.S. Steel Corporation
Underground Construction Co.
United Airlines
Unocal
Vadans Corp.
Vallejo Sanitation District
Wasco County, Nevada
West Coast Contractors, Inc.
Williams+Burrows, Inc.

Engineering Consultants
- AGS, Inc.
- Berlogar Geotechnical Consultants
- Browell & Carrier, Inc.
- Brown and Caldwell
- CH2M Hill
- Converse Consultants
- Dames and Moore
- Diaz Youman & Associates
- H.J. Degenkolb & Assoc.
- DeLeuw, Cather & Co.
- Earth Mechanics Inc.
- GeoLabs, Inc.
- Harding-Lawson & Assoc.
- Haro, Kasunich & Associates
- Harza
- Jacobs Engineering
- Kaiser Engineers
- Kleinfelder, Inc.
- Kennedy-Jenks Engineers
- Krazen & Associates Inc.
- Law/Crandall, Inc.
- Leighton & Associates
- Moffatt & Nichols Engineering
- James M. Montgomery Cons. Engrs., Inc.
- Parsons-Brinckerhoff-Quade-Douglas
- Parsons-Brinckerhoff-Tudor-Douglas
- PRA Group
- SCA Engineers
- Tudor Engineers
- Treadwell & Rollo
- URS
- Wahler Associates
- Western Technologies
- Woodward-Clyde Consultants

1975 National Avenue
Hayward, CA 94545-1709
Tel: 510.887.2244

1330 W. Gaylord Street
Long Beach, CA 90813-2714
Tel: 562.432.4100

P.O. Box 1582
Mukilteo, WA 98275-1582
Tel: 206.621.0900

The PRESSURE GROUT COMPANY
Chemical grouting is the injection of one or more near-water-velocity liquids into a cohesionless soil to create an impervious sandstone-like mass, as shown in Figure 1. Because chemical grouting literally creates “instant sandstone” as tough as that of mother nature, it is one of the most successful techniques available today for stabilizing soils and controlling groundwater. The applications of chemical grouting are almost endless, and new uses are documented almost daily.

In many cases, chemical grouting offers substantial advantages over other techniques for stabilizing soils or controlling groundwater, e.g., economy, simplicity, flexibility, risk reduction, less noise, and minimal accessibility requirements.

The successful use of the technique requires knowledge and skill to analyze the soil and determine the optimum chemical system, pressure, gel time, and other variables. For more than 45 years, The Pressure Grout Company has provided chemical grouting services. We have designed our own specialized mixing and grouting equipment, conducted research on numerous chemical combinations, and developed more than 15 different chemical systems for a wide range of applications.

**Applications**

Chemical grouting is used for stabilizing foundations, underpinning structures, plugging tunnel leaks, creating impervious grout curtains, and other applications where the control or shutoff of groundwater or the solidification of sand or fissured rock is required above or below the water table in fresh-water or saltwater environments.

The Pressure Grout Company has successfully used chemical grouting for applications, such as:

- Solidification of sandy soils and fissured rock for underpinning foundations, providing support for excavations, stabilizing tunnel headings, preventing surface settlement, stabilizing slopes, controlling erosion, reducing liquefaction potential, creating sandstone anchors for tiebacks and tiewowns, and groundwater shutoff for structures, excavations, fissured rock, tunnels and tunnel linings, pipelines and sheet piling, and dams and landfills.

**Underpinning Foundations**

For existing foundations, chemical grouting can be used to increase the load-bearing capacity of an underlying soil, prevent settlement, or reduce the potential for soil liquefaction during a seismic event. The injected chemical grout combines with the soil to form a sandstone footing or a pier capable of transferring loads to lower strata, as shown in Figure 2. Such injections can form columnar piers, 3 to 5 feet in diameter, thereby underpinning existing foundations.

**Anchoring Tiebacks**

Chemical grouting is used to form “sandstone” masses that provide the necessary anchorage requirements for tiebacks or tiedowns in cohesionless soils. The technique is also highly effective in producing large bulkheads that provide the load-carrying capacity for tiebacks.

**Supporting Excavations**

There are at least three general ways in which chemical grouting can be used to support excavations, i.e., by providing a gravity wall of solidified soil, by solidifying soil in conjunction with another method of lateral support, and through minimal grouting to prevent sand sloughing and/or water seepage through the lagging, as shown in Figure 2. If conditions permit, the sides of an excavation can be cut back to a suitable slope, and a grout blanket produced on the surface of the slope to prevent erosion and surface sloughing.

**Controlling Groundwater**

Chemical grouting has been successfully used to shutoff the seepage of groundwater into tunnels, basements, excavations, and pipelines. Permanent or temporary shutoffs can be accomplished by using different chemical systems. The Pressure Grout Company has been involved in hundreds of water shutoff jobs, involving a wide spectrum of applications and conditions.

**Other Applications**

There are numerous other applications of chemical grouting, including a reduction in the liquefaction potential of sandy soils, seating interlocks of sheet piling, controlling erosion of sand cliffs, and seepage.

**Equipment**

The Pressure Grout Company has designed and built specialized mixing, pumping, and injection equipment for chemical grouting. This equipment can be operated at distances several hundred feet from the injection site. The work of The Pressure Grout Company on a chemical grouting assignment extends over a period of more than 45 years.