Statement of Qualifications
Transportation

Group Delta Consultants, Inc.

LA to Pasadena Gold Line


American Eagle, LAX


SR-22
2006 ASCE Project of the Year


Washington Blvd Grade Separation

Prepared By:
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Please visit us on the web at www.GroupDelta.com

Company Profile

GROUP DELTA CONSULTANTS

Company Profile

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

Group Delta Consultants, Inc. (GDC) is a consulting engineering firm with offices located in the counties of Orange, Los Angeles and San Diego. The firm has highly skilled professionals consisting of civil and geotechnical engineers, engineering geologists, laboratory and field technicians, deputy inspectors, drafting/CADD, and drilling and support personnel specialized in their respective fields. We offer a broad range of services to serve the needs of our clients. Our capabilities and services include geotechnical feasibility study, geotechnical field investigation, in-situ testing, foundation design, construction monitoring and materials testing, ground improvement and design, slope stability investigation and analyses, preparation of plans and specifications, coastal engineering, instrumentation, seismic studies and earthquake engineering.

We have established a record of completing projects on schedule and within budget for major clients in the public and private sectors since 1986. Our laboratories are licensed as an approved testing facility by various agencies including AASHTO and Caltrans. The involvement of our principals and senior managers in each project and particularly our focus on developing innovative design solutions to reduce overall construction cost has resulted in repeat business. The evidence of our work indicating the unique benefits of our approach and methodologies are provided in various awards and recommendations from well-known organizations in the public and private sectors.

Corporate Summary

Firm's Name:	Group Delta Consultants, Inc.
Firm Type:	California Corporation
Year Established:	1986
Small Business:	(SBE) State of California
Minority Business:	(MBE) City of Los Angeles

GROUP DELTA CONSULTANTS

Services

GROUP DELTA CONSULTANTS

Geotechnical Services

Geotechnical Engineering – Our services include:

- Feasibility Study
- Field Investigation
- Laboratory Testing
- Shallow Foundation Design
- Pile Foundation Design
- Settlement Analyses
- Ground Improvement & Design
- Slope Stability Investigation & Analyses
- Preparation of Plans & Specifications
- Earthwork & Grading Specifications
- Pavement Design
- Pile Drivability & Load Tests
- Instrumentation & Monitoring
- Forensic Engineering

Geologic and Seismic Hazard Evaluation - Our services include:

- Geologic Mapping
- Landslide Studies & Mitigation
- Groundwater Investigations
- Fault Hazard Investigations
- Geophysical Investigations
- Deterministic/Probabilistic Ground Motion Analyses
- Liquefaction & Lateral Spreading Analyses

Earthquake Engineering - Our services include:

- Liquefaction & Lateral Spreading Analyses
- Seismic Earth Pressure
- Seismic Deformation Analysis
- Seismically Induced Settlement
- Liquefaction Mitigation Measures
- Design Recommendations for New And Retro-fit Projects
- Seismic Design Criteria
- Earthquake Response Spectra

GROUP DELTA CONSULTANTS

Laboratory Services

Laboratory Testing Services

Group Delta Consultants, Inc. has in-house geotechnical and materials testing laboratory facilities to conduct a variety of testing on soils and other building materials. Our laboratories are equipped with state-of-the-art equipment to perform tests in accordance with the American Society of Testing and Materials (ASTM) and other applicable standards. Our laboratories are certified by Caltrans and the City of Los Angeles. Our service capabilities in geotechnical and materials laboratory testing include the following:

Materials Testing & Special Inspection

- Moisture Content
- Dry Density
- Maximum Density & Optimum
- Moisture Content
- Specific Gravity
- Atterberg Limits
- Sieve Analysis
- Hydrometer Analyses
- Sand Equivalent
- Corrosion Potential (pH, Sulfate, Chloride, and Resistivity)
- Consolidation/Collapse
- R-Value
- California Bearing Ratio (CBR)
- Los Angeles Abrasion
- Shear Shrinkage
- Swell Expansion Index
- Direct Shear
- Asphaltic Concrete (AC)
- Concrete
- Epoxy
- Masonry
- Structural Steel
- Reinforcing Steel
- Welding
- Fireproofing
- Batch Plant
- FRP

GROUP DELTA CONSULTANTS

Construction Phase Services

Construction Inspection & Materials Testing Services

Group Delta offers a full range of construction phase inspection and materials testing services. Our services during the construction phase are directed towards strict compliance of regulatory guidelines. Adherence to specifications is monitored and documented by registered geotechnical engineers, licensed inspectors and certified laboratories. Our service capabilities in construction monitoring and materials testing areas include:

Materials Testing

- Concrete & Masonry
- Beams
- Blocks
- Cubes
- Cylinders
- Grout/Mortar
- Prisms
- Vapor Emissions Testing

GROUP DELTA CONSULTANTS

Transportation Project Experience

GROUP DELTA CONSULTANTS

State Route 22 Design Build Project

Orange County, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

2006 ASCE Project of the Year

OCTA and Caltrans proposed to construct improvements for the SR-22 freeway in Orange County consisting of widening the freeway and construction of HOV lanes.

GDC performed laboratory testing on the samples recovered from the borings and developed 33 Post Advanced Planning Study Geotechnical Data Reports for 33 bridges along the alignment. These reports included compilation of existing and new boring and laboratory data, foundation conditions, assessment of liquefaction potential and discussion of various foundation types. Group Delta's responsibilities also included review of the design build contractor's submittals, and QA/QC testing during the construction. All work was performed under a formal QA/QC program in accordance with the ISO 9000 and was audited by Parsons Transportation, the team leader.

Key Geotechnical Issues:

- Coordination with multiple agencies, traffic control, night work, restrictive work hours and working on an operating freeway with narrow shoulders
- Moderate seismic accelerations and shallow groundwater
- High liquefaction potential along a significant portion of the alignment
- Bridges over Santa Ana River and Santiago Creek with shallow groundwater and difficult pile driving conditions due to presence of cobbles
- Working with Caltrans in-house geotechnical personnel to clarify foundation design criteria where liquefaction and downdrag are present

GROUP DELTA CONSULTANTS

State Route 22 West County Connector

Orange County, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

In support of OCTA and in cooperation with Caltrans, GDC performed a geotechnical investigation and developed complete geotechnical design recommendations for the I-405/SR-22 HOV Connector Segment, a 2.1 mile long alignment at the SR-22 / I-405 interchange.

Field investigation included sixteen soil borings and thirty-two (32) CPTs to depths of up to 163 feet.

GDC prepared foundation reports for replacement of 2 existing bridges and for a new 5-span HOV Connector bridge. Due to high seismic demand and poor soil conditions, bridge design included 4-foot diameter Cast-in-Steel-Shell (CISS) pile foundations to depths of up to 100 feet, and included design of a load testing program. Other bridge foundations included steel H-piles and prestressed concrete piles.

Due to long term settlement and low bearing capacity, GDC prepared 3 foundation reports recommending use of lightweight cellular concrete fill in lieu of costly ground improvements and long settlement waiting periods for thousands of feet of Pre-cast Lightweight Fill (PCLW) Retaining Walls, . An abutment surcharge program was developed to accelerate the schedule. GDC prepared a materials report and pavement design, and a Geotechnical Design Report (GDR) for earthwork and grading, slope stability, settlement, Standard Plan Retaining Walls and design of overhead sign foundations.

GROUP DELTA CONSULTANTS

Terminal Island Interchange

Port of Long Beach, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

The Port of Long Beach, in cooperation with the California Department of Transportation (Caltrans), proposed to construct a new traffic interchange to replace the existing Ocean Boulevard / Terminal Island Freeway intersection on Terminal Island in the City of Long Beach. The project consisted of elevating Ocean Boulevard as much as 10 meters above existing grades to facilitate grade separations at Henry Ford Avenue, Terminal Island Freeway, and a connector road between future Pier S and Pier T container terminals in the Port. More than 2,700 meters of Mechanically Stabilized Embankment (MSE) Walls up to 11 meters in height will retain most of the new roadway fill embankment. The three grade separations will be accomplished with five single-span bridge structures supported on driven piles.

Scope of Work:

- Field investigation consisting of 12 borings and 17 cone penetration tests
- Laboratory testing and characterization of subsurface conditions
- Seismic and geologic hazard assessment and recommendations,
- Geotechnical recommendations for roadway, retaining wall, and embankment construction
- Liquefaction potential and resulting settlement and lateral spreading potential
- Magnitude and time rate of anticipated consolidation settlement,
- Liquefaction mitigation at bridge abutments by ground improvements with stone columns

GROUP DELTA CONSULTANTS

State Route 210

San Bernardino, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

The State Route 210, Segment 11 project site is located at the interchange of State Route 30 and Interstate-215. The project involved the construction of a new 1.7-km freeway with six to eight mix-flow lanes, two to four HOV lanes and access ramps mainly on fill embankment, construction of new bridges and interchange connectors, MSE walls, tieback walls and soundwalls, and widening of existing roads and bridges and other street improvements including a new storm drain. The proposed alignment was located about 1 to 2.5 km from the San Jacinto Fault and 4 to 8 km from the San Andreas Fault which could generate maximum credible earthquake magnitude of 7.5 to 8.0, respectively with peak ground acceleration of up to 0.7g at the site.

Based on the results of fault-rupture investigation, about 0.2 meter fault displacement (both vertical and horizontal) was recommended for the design of structures in the interchange area.

GDC Achievements:

Group Delta Consultants provided comprehensive geotechnical design report (GDR) for the roadways and structure foundation reports (SFR) for the bridges and associated MSE walls and tieback walls in accordance with Caltrans guidelines.

GROUP DELTA CONSULTANTS

Knabe Road Widening

Riverside County, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

Group Delta Consultants (GDC) performed geotechnical investigation consisting of 4 borings and provided recommendations for the widening and pavement rehabilitation for 0.5 miles of Knabe Road in Riverside County, California between Forest Boundary Road and Weirick Road.

The widening required cuts up to 70 feet high into existing cut slopes west of the existing roadway, and extending existing fill embankments with slopes up to 25 feet high into the canyons west of the roadway. Where fills were placed in the canyons, existing culverts were extended under the new fills. Pavements work included new pavement and cold plane and overlay to rehabilitate existing pavement. GDC prepared a Geotechnical Investigation Report for SC Engineering and County of Riverside, and the project was successfully constructed.

Our report addressed the following key issues:

- Site Characterization Including Geology, Subsurface, and Groundwater Conditions, and Geologic / Seismic Hazards
- Stability of Cut and Fill Slopes
- Embankment Settlement
- Earthwork Criteria (clearing and grubbing, slope excavation, subgrade preparation, remedial grading, erosion control, and compaction of engineered fills)
- Pavement Structural Section Design, including new and overlay
- Soil corrosivity including selection of Culvert Materials for 50 year design life

GROUP DELTA CONSULTANTS

Hawthorne Boulevard Revitalization

Lawndale, California

Geotechnical Engineering

Geology

Hydrogeology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

GDC provided construction materials testing and inspection for this project with an approximate length of 1.8 miles, and includes Hawthorne Boulevard between Redondo Boulevard and Rosecrans Avenue. The project involved the rehabilitation and/or reconstruction of 3 to 4 traffic lanes in both directions and reconstruction of a 35- to 54-foot wide median area, which is generally paved and used for parking. Our services included observation and testing of grading; subgrade preparation; compaction of fill, backfill, base and bedding materials; and inspection of and testing of concrete and asphalt.

GROUP DELTA CONSULTANTS

SANBAG On-Call Contract

San Bernardino, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

San Bernardino Associated Governments (SANBAG) supports freeway construction projects, regional and local road improvements. Group Delta Consultants, Inc. (GDC) was selected to provide as-needed (on-call) construction phase support services. Our services included review of contractor's technical submittals for shoring, slope stabilities, walls, culvert to claim review and inspection of various potential damages related to freeway construction activities.

GDC has completed numerous assignments over a five year period under this on-call contract including:

- Various site inspections - the purpose of our inspections was to view damage allegedly caused by construction of the State Route 71 improvements.
- Review of the conflict between the surcharge outline and the Highland Avenue detour.
- Slope stability review for a number of retaining walls
- Temporary excavations of State Route 30/2 10 , Segment 2
- Shoring review of State Route 30 at Hermosa Avenue
- Shoring review of retaining wall 213, State Route 30
- Review of the strength characterization and slope stability calculations for temporary excavations at Alta Loma Channel. The excavation will be made in order to construct a u-shaped concrete channel and a box culvert.
- Stability evaluation of the cut slope excavated for storm drain construction along Haven Avenue on the south of Alta Loma Drive, State Route 30, Segment 4, Rancho Cucamonga, California
- Review comments for temporary soil nail walls, Route 30 Segment 4

GROUP DELTA CONSULTANTS

Los Angeles to Pasadena Gold Line

Los Angeles County, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

The Los Angeles to Pasadena Gold Line Extension project consisted of a 13.7-mile extension of the Blue Line beginning at Union Station in Los Angeles and ending east of Sierra Madre Villa Avenue in Pasadena. This light rail transit (LRT) line consists of a double tracked system using electric current overhead wire. The project is primarily at-grade following the abandoned Atchison Topeka & Santa Fe (ATSF) Railroad right-of-way. There are a total of 13 stations. The extension includes an aerial structure in Chinatown, and depressed box sections in Highland Park and in the Old Town area of Pasadena. Near the southern portion of the alignment, a new yard and shop was developed. The overall project had been divided into 10 segments by the design-build Contractor.

Group Delta Consultants, Inc. (GDC) was a subconsultant to the Joint Venture of Parsons, Washington, and Kiewit, the design-build Contractor.

GDC provided 10 segment reports, 13 station reports, two seismic retrofit reports, and one new pedestrian overcrossing report. Reports for Segments 4 and 8 included the Figueroa and Colorado boxes, which are being constructed using cut-and-cover method. The reports provided recommendations for retaining walls, MSE walls, stations and platforms, track design, excavation and shoring, probabilistic seismic hazard assessment, static and seismic earth pressures for temporary shoring and permanent walls, racking displacement of the tunnel sections during seismic event, slope stability, Caltrans Structure Foundation reports, etc.

GROUP DELTA CONSULTANTS

San Fernando Bus Rapid Transit

Los Angeles County, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

This MTA project included construction of a dedicated roadway exclusively for bus lanes, as well as the utilization of the old Southern Pacific Right-of-Way between Warner Center in Woodland Hills and the North Hollywood Metro Rail Station. The project alignment is 14 miles and the main features of the project included:

- A 26-foot wide bus way along the entire alignment;
- Replacement of three bridges;
- Construction of a retaining wall where the alignment crosses below the I-405 freeway;
- Approximately 30,500 linear feet of 12-foot high sound walls;
- Twelve BRT stations; and,
- Six park and ride facilities providing a total of 4,000 parking spaces.

Scope of Work:

Performed engineering analyses to develop geotechnical recommendations for the project and provided support during construction

GROUP DELTA CONSULTANTS

Mission Valley East Light Rail Transit

San Diego, California

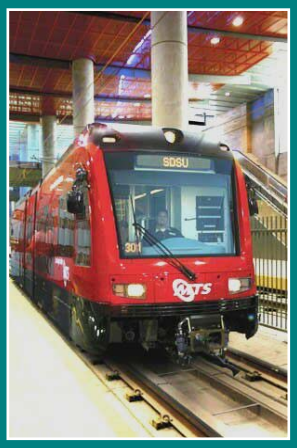
Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services



Award of Excellence, ASCE

The Mission Valley East Light Rail Transit (MVELRT) consisted of design and construction, connecting the existing "Blue Line" near San Diego Qualcomm Stadium in the City of San Diego to the existing "Orange Line" near Grossmont Center in the City of La Mesa. The total length of the extension is about 9.3 km. The overall project was divided into three segments: Grantville Segment (3.5 km), SDSU Segment (1.1 km), and La Mesa Segment (4.7 km).

Group Delta Consultants was responsible for the geotechnical investigation and design of the Grantville and La Mesa Segments. Our responsibilities included geotechnical investigation and foundation design for seven bridge structures and over 4,000 m of retaining walls. This included the 1.58–km–long Grantville Viaduct, supported on 34 large diameter CIDH piles with span lengths up to 80 meters.

Key geotechnical issues:

- Axial and lateral design of large diameter single cast-in-drilled-hole (CIDH) piles for soil conditions including liquefiable alluvium, formational soils, and hard rock. GDC conducted lateral and axial pile load tests to develop design parameters for the formational soils which resulted in significant reductions in the required pile lengths
- Liquefaction of the San Diego River alluvial soils and potential for lateral spreading and downdrag loads on the piles
- Retaining wall design

GROUP DELTA CONSULTANTS

Henry Ford Grade Separation

Port of Los Angeles, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

Group Delta Consultants, Inc. directed geotechnical studies for materials and bridge reports for the two grade separations within the Port of Los Angeles. The project included:

- New Dock Street and Henry Ford Avenue Grade Separations carrying five tracks over a depressed roadway
- Over 3,000 ft. of MSE walls with maximum height of 22 ft., and over 8,000 ft. of railroad track.
- Since the depressed roadway at Henry Ford Avenue Undercrossing is below the groundwater, a seal slab was originally designed to keep the water out.

A slurry wall was proposed along the outer boundary of the project to dewater the excavation for construction of the foundation construction. Due to the potential for liquefaction, 3.5 ft. diameter 45 ft. long stone columns were proposed at the site under the bridge and retaining walls. The original design called for pile supported walls. Final design includes the use of MSE walls supported on stone column strengthened soil

GROUP DELTA CONSULTANTS

Redondo Junction Grade Separation

Los Angeles County, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

GDC performed the geotechnical investigation for the Redondo Junction Grade Separation project for the Alameda Corridor in Los Angeles, California

- Mid-Speed" alignment, approximately 3,000 feet in length
- Structure is supported on 6 and 8 foot CIDH pile-columns.
- 4,000 feet of approach retaining walls.
- Mechanically stabilized earth (MSE) walls, up to 27 feet hight, were used to retain the approach fill.
- GDC developed recommendations that included site-specific response spectra; vertical and lateral capacity of large diameter-drilled piles; retaining walls; and approach embankments.

During constrruction, GDC provided inspection during installation of piles within the City of Los Angeles right-of-way.

GROUP DELTA CONSULTANTS

Washington Blvd. Grade Separation

Los Angeles, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

GDC provided the geotechnical foundation design for this Alameda Corridor project. The project included two new grade separations that replaced at-grade crossings for the lowering of Washington Boulevard at the north end of the Alameda Corridor.

Project elements included:

- Site specific response spectra
- Vertical and lateral capacity of large diameter drilled piles (up to 5 ft.)
- Retaining wall recommendations

GDC provided inspection during installation of all piles.

GROUP DELTA CONSULTANTS

Laguna Canyon Road

Irvine, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

The City of Irvine authorized the widening of the existing Laguna Canyon Road OC (Bridge No. 55-0247) over the I-405 freeway in Irvine. Laguna Canyon Road is currently a four-lane arterial, which narrows to two lanes across the existing bridge over I-405 freeway. Based on the as-built plans, the bridge is a four span structure with Abutments 1 and 5 supported on CIDH piles and three single column Bents (Nos. 2, 3, and 4) supported on spread footings. The original bridge structure is 427.37 ft long and 37 ft wide. The original structure was built in 1968. The bridge was seismic-retrofitted in 1995 by adding steel jackets to the columns and thickening the tops of the spread footings.

Lane closures and night work (11pm to 5am) were required for the freeway work, and CPTs were selected rather than borings to complete the work in one night and reduce costs. A Preliminary Foundation Report (PFR) providing geotechnical and seismic input for design was submitted to Caltrans for type selection. Final recommendations for the foundations in accordance with Caltrans guidelines will be presented in the Structure Foundation Report (SFR) after type selection is approved. Pavement recommendations for Laguna Canyon Road were provided for the City of Irvine in a separate letter-report.

In addition to geotechnical services, GDC performed collection and testing of soil samples for evaluation of aerially deposited lead (ADL) in accordance with Caltrans guidelines.

GROUP DELTA CONSULTANTS

Burbank Terminal Retrofit

Burbank, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

Group Delta Consultants, Inc. (GDC) provided the on-call materials testing and inspection of concrete, masonry steel and fireproofing for the security retrofit completed for the terminal at Burbank Airport.

GDC provided City of Los Angeles Certified Deputy Inspectors and ICBO Certified Inspectors.

Responsibilities also included the location of utilities for all excavating and new construction related to the retrofit.

All laboratory testing was performed at our AASHTO, accredited laboratory located in Torrance.

GROUP DELTA CONSULTANTS

LAX South Side Airfield Reconnaissance

Los Angeles, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

Group Delta Consultants, Inc. (GDC) provided claims support and material testing during runway and taxiway construction. GDC supported LAWA in avoiding a potential multi-million dollar claim from the contractor regarding the production and compaction of Processed Miscellaneous Base (PMB) beneath the new runway and taxiway.

GDC successfully defended and helped LAWA avoid this potentially multi-million dollar claim from the contractor for the project.

Scope of Work Included:

- Laboratory testing of the existing PMB stockpile and as-placed PMB, including gradation and maximum density testing per ASTM 1556/7.
- Observation of the current construction procedures and equipment.
- Met with the contractor to discuss the reasons for his difficulty in achieving the required relative compaction.

GROUP DELTA CONSULTANTS

March AFB Refueling Wing

Moreno Valley, California

Geotechnical Engineering

Geology

Earthquake Engineering

Materials Testing and Inspection

Forensic Services

The 163rd Refueling Wing of the California Air National Guard (CANG) proposed to replace an existing 1960's vintage hangar with a new larger aircraft maintenance hangar. The project was located at March Air Reserve Base (March Field) in California. Construction involved demolition of the existing hangar (Building 2305) and pavements, and construction of service roadways, airfield pavements, and a 56,500 square foot hangar.

GDC scope of work included the following:

- Reviewing available information and reports
- Drilling four geotechnical borings to depths of 21 to 61.5 feet, at the locations selected by the CANG.
- Performing geotechnical laboratory testing on selected soil samples
- Performing limited environmental screening and chemical testing of near-surface soils to test for the presence of potential contamination
- Performing engineering analyses to develop geotechnical recommendations for project design

GROUP DELTA CONSULTANTS

Key Staff

GROUP DELTA CONSULTANTS

Technical Staff

QUALIFICATIONS AND EXPERIENCE			
NAME	FUNCTION	REGISTRATION	YRS OF EXP.
Dr. Kul Bhushan	Principal Geotechnical Engineer	RCE, GE	40
Tom Swantko	Principal Geotechnical Engineer	RCE, GE	35
Mike Reader	Principal Geotechnical Engineer	RCE, GE	23
Shah Ghanbari	Principal Engineer	RCE	25
Curt Scheyhing	Senior Geotechnical Engineer	RCE, GE	14
Eugene Lewis	Senior Geologist	CEG	10
Chris Guesnon	Geologist	CEG	17
Joe Barr	Engineer / Geologist	RCE, CEG	10
Eric Holliday	Geologist		3
Opjit Ghuman	Environmental Engineer	RCE, GE	33
Vesna Glisic	Project Engineer	RCE	8
Nava Navaratnarajah	Field Engineer	RCE	5
Dr. Ying Liu	Seismic Engineer	RCE	12
Ray Basilio	Senior Field Engineer	ACI	25
Konrad Fernandes	CADD Manager	-	15
Jeanette Moreno	CADD Designer		5
Ray Green	Materials Testing Manager	ME	30
Richard Mahoney	Manager of Soils Testing	Deputy Inspector	15
Eric Ycoy	Soils Lab Manager-Torrance	Caltrans Certified	15
Henry Kim	Soils Lab Manager-Irvine	Caltrans Certified	34
Ray Basilio	Senior Geotechnical Technician	Deputy Inspector	25
Mike Jacobs	Senior Geotechnical Technician	Deputy Inspector	20
Arnold Ramirez	Senior Geotechnical Technician	Deputy Inspector	15
Pool of Technicians (25)	Inspectors	ICBO, DSA, City of Los Angeles & Caltrans	5 to 25
Support Personnel (11)	Support	-	2 to 20

GROUP DELTA CONSULTANTS