



Alameda Corridor East



# GROUP DELTA



Green Line LRT  
Mission Valley East

## Statement of Qualifications Light Rail - Heavy Rail - Grade Separations

*Serving California Since 1986*



Expo Line Phase 2



Gold Line Eastside  
Extension

**Irvine**  
32 Mauchly  
Suite B  
Irvine, CA 92618  
(949) 450-2100

**Torrance**  
370 Amapola Avenue  
Suite 212  
Torrance, CA 90501  
(310) 320-5100

**San Diego**  
9245 Activity Road  
Suite 103  
San Diego, CA 92126  
(858) 536-1000

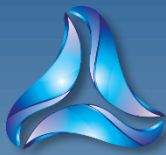
**Ontario**  
1035 So. Milliken Avenue  
Suite G  
Ontario, CA 91761  
(909) 295-5550

**Victorville**  
12180 Ridgecrest Road  
Victorville, CA 92395  
(760) 881-3224

**Oakland**  
1970 Broadway  
Suite 1100  
Oakland, CA 94612  
(510) 671-0010

**Anaheim**  
1320 South Simpson Circle  
Anaheim, CA 92806  
(714) 660-7500

*“Delta is the Difference”*



# GROUP DELTA

## WHO WE ARE



Group Delta is a consulting geotechnical and environmental engineering firm with seven offices located in the counties of Orange, Los Angeles, San Bernardino, San Diego and Alameda. Our team consists of civil and geotechnical engineers, environmental engineers, engineering geologists, laboratory and field technicians, deputy inspectors, drafting/CADD technicians, and drilling and support personnel specialized in their respective fields. We offer a broad range of services to serve the needs of our clients.

## GEOTECHNICAL ENGINEERING AND GEOLOGIC SERVICES

- Feasibility studies
- Third Party Reviews
- Foundation design
- Earth Retaining Structures Design
- Pavement Design
- Earthwork and Grading
- Earthquake and Fault Studies
- Geologic Hazard Evaluations
- Numerical Modeling Analyses
- Seismic Design & Hazard Assessments
- Hydrogeologic Evaluations
- Dewatering
- Ground Improvement Analysis & Design
- Laboratory Testing
- Slope Stability & Landslide Investigation & Mitigation
- Instrumentation and Ground Monitoring



Hollywood Fault Study

- Pile Drivability & Load Tests
- Seismic Retrofitting Design
- Geologic Reconnaissance & Mapping
- Geophysical Investigations
- Trenching Investigations

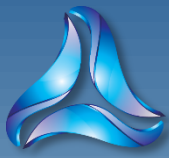
## ENVIRONMENTAL SERVICES



Tank/Hazardous Materials Sampling

- Phase I Initial Site Assessments (ISAs) / Environmental Site Assessments (ESAs)
- Hazardous Materials Management & Industrial Hygiene
  - Surveys and Investigations
  - Technical Abatement Specifications and Work Plans
  - Abatement and Remediation Monitoring Services
- Phase II Site Investigations (SIs)
- Construction Environmental Compliance
- Phase III Site Remediation
- Stormwater





# GROUP DELTA

## FORENSIC SERVICES

- Earthquake Damage Assessments: Causation studies and preparation of repair recommendations.
- Landslide Investigations: Causation studies and/or development of stabilization schemes.
- Construction Vibrations: Vibration monitoring and geotechnical testing.
- Dam Investigations
- Settlement Analyses: Floor level surveys, causation studies and/or preparation of repair recommendations.
- Expansive Soils: Subsurface investigations, preparation of repair recommendations.
- Groundwater: Subsurface investigations, preparation of subsurface drainage recommendation.

## TESTING AND INSPECTION SERVICES

Group Delta has two materials testing laboratories located in Anaheim and San Diego, California. Our laboratories are licensed as an approved testing facility by various agencies including the Division of the State Architect (DSA), City of Los Angeles, Caltrans, CCRL and AASHTO. In addition, Group Delta's San Diego laboratory has been awarded accreditation to the technical competence and quality assurance requirements of ISO/IEC 17025:2005 as determined by AASHTO Highway Subcommittee on Materials.

### Soils Testing

- Classification & Index
- Strength Tests
- Volumetric Change
- Permeability
- Compaction
- Aggregate/Subgrade

### Materials Testing

- Asphalt Testing
- Concrete Aggregate
- Concrete Cylinders
- Concrete Beams
- Masonry
- Masonry Unit Cubes
- Masonry Prisms
- Grout/Mortar
- Dry Pack Blocks
- Shotcrete
- Batch Plant Inspections
- Reinforcing Steel
- Structural Steel
- Chemical Physical Properties
- AWS/CWI Welding
- Post-Tensioning
- Epoxy Dowels/Drilled in Anchors
- Pull Testing
- Non Destructive Testing – UT/MT
- High Strength Bolting
- Fireproofing Inspections and Sampling
- Concrete & Masonry Coring and Extraction
- Mix Design Reviews & Trial Batched
- Fiber Wrap Inspection
- Vapor Emissions Testing



Direct Shear, Consolidation & Sand Equivalent Testing



Asphalt & R-Value Testing



# GROUP DELTA

Group Delta meets all the requirements as an approved testing agency with the following local and national accrediting/certification authorities:

- ISO 17025
- AASHTO (American Association of State Highway and Transportation Officials)
- ACI (American Concrete Institute)
- AMRL (AASHTO Materials Reference Laboratory)
- ANSI (American National Standards Institute)
- APWA (American Public Works Association)
- ASNT (American Society of Nondestructive Testing)
- ASTM (American Society for Testing and Materials)
- AWS/CWI (American Welding Society/Certified Welding Inspector)
- California Department of Transportation (Caltrans)
- CCRL (Cement and Concrete Reference Laboratory)



- City of Los Angeles
- DSA (Division of the State Architect)
- ICBO (International Conference of Building Officials)
- NICET (National Institute for Certification in Engineering Technologies)
- UBC (Uniform Building Code)

## Inspection

Earthwork Inspection and Testing – Group Delta provides geotechnical observation and testing services for all stages of site grading. Our field compaction testing services are provided by experience soils technicians working under the supervision of licenses professional engineers.

Asphalt Inspection and Testing – Group Delta provides comprehensive asphalt testing and AC Mix Design Services. We are regularly certified by AMRL in our laboratories.

Concrete Inspection and Testing – Group Delta’s concrete inspection and testing staff is re-certified bi-annually by the Cement and Concrete Reference Laboratory (CCRL) and annually by Caltrans. Our ACI certified concrete technicians perform field and batch plan sampling of concrete materials to assure compliance with project specifications.

Specialty Construction Inspection – Group Delta provides experienced special inspectors licensed by the International Code Counsel (ICC) for Sprayed Applied Fireproofing, Structural Masonry, Structural Steel Bolting and Welding, Pre-Stressed Concrete, and Reinforced Concrete. Group Delta can also provide Certified Welding Inspectors (CWI) licensed by the American Welding Society (AWS) and non-destructive testing such as mag-particle and ultra-sonic testing.

Group Delta Technicians & Inspectors hold the following certifications:

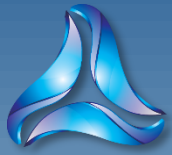
### ICC Inspection

- Masonry
- Structural Steel/Welding
- Concrete
- Fireproofing
- Pre-Stressed Concrete

### Caltrans Certified

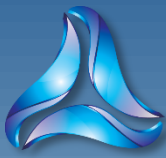
- Materials Testing
- Soils Testing
- Nuclear Gauge Safety
- ACI Certified Concrete
- Soils

City of LA Deputy Inspector



**GROUP DELTA**

# **PROJECT EXPERIENCE**



# GROUP DELTA

**DESIGN-BUILD  
\$300 MILLION**

## PASADENA MTA GOLD LINE Pasadena, CA

### Project Highlights

- Links Union Station in Downtown LA and Sierra Madre Villa in East 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

### Group Delta Highlights

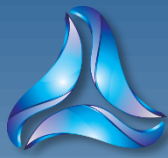
- Provided 10 segment reports, 13 station reports, 2 seismic and 1 new pedestrian overcrossing report
- The reports provided recommendations for retaining walls, MSE walls, stations and platforms, Caltrans structure foundations, static and seismic earth pressures for temporary shoring and permanent walls, etc.



### Project Information

<b>Client:</b>	Kiewit/Washington
<b>Owner:</b>	Los Angeles MTA
<b>Total Cost:</b>	\$300 Million
<b>Completed:</b>	2003





# GROUP DELTA

**DESIGN-BUILD  
\$1 BILLION**

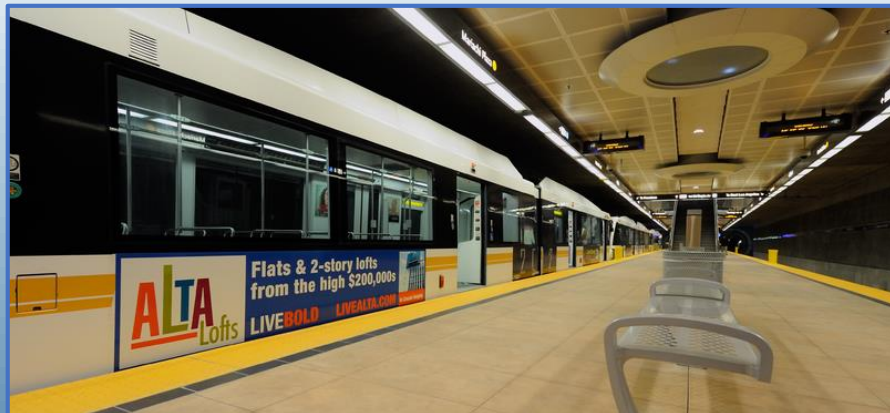
## **GOLD LINE EASTSIDE LIGHT RAIL EXTENSION Los Angeles, CA**

### Project Highlights

- Light rail system is powered electrically with overhead catenary wires
- Line includes twin tunnels measuring 1.8-miles under Boyle Heights
- Line includes eight new stations of which two stations are underground
- Directly connects to existing Metro Gold Line in Los Angeles to the Pasadena Line

### Group Delta Highlights

- Provided PFRs for bridges, plus an SFR and ISA for the 101 bridge, a 9-span bridge over US 101
- Provided a preliminary foundation report which included seismic investigations for existing structures
- Geotechnical design in accordance with Caltrans standards



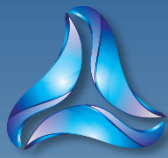
### Project Information

**Client:** Parsons  
Brinckerhoff

**Owner:** Los Angeles MTA

**Total Cost:** \$1 Billion

**Completed:** 2009



# GROUP DELTA

**DESIGN-BUILD  
\$1.5 BILLION**

## EXPOSITION LIGHT RAIL PHASE 2 Los Angeles, CA

### Project Highlights

- 15.2-mile light rail line utilizing the exposition corridor with 19 stations
- Phase 2 includes 7 new stations along the Westside
- The Exposition Light Rail Transit (LRT) to Santa Monica is a significant and long-term public investment in transit, city-wide and regional mobility, and sustainability

### Group Delta Highlights

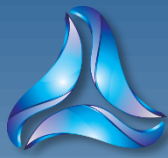
- Materials evaluation of 1920's brick arch tunnel under light rail road
- Provided geotechnical recommendations for Expo LRT stations over Sepulveda Blvd. and Centinela
- Multiple Mechanical Stabilized Earth (MSE) light rail walls



### Project Information

<b>Client:</b>	Parsons Brinckerhoff/ Skanska – Rados JV
<b>Owner:</b>	Los Angeles MTA
<b>Total Cost:</b>	\$1.5 Billion
<b>Completed:</b>	On-going





## REGIONAL CONNECTOR TRANSIT CORRIDOR Los Angeles, CA

### Project Highlights

- A 1.9-mile fully underground line will connect the Metro Gold Line, Blue Line and Expo Line and provide **three new downtown LA underground subway stations**
- A massive cut and cover operation is proposed for the construction of the tunnel due to the extensive underground utility lines

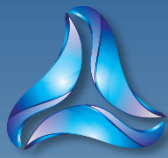
### Group Delta Highlights

- Static and dynamic geotechnical recommendations for stations and structures
- Geomechanical numerical analyses to study seismic racking behavior of the underground structures
- Adjacent buildings settlement analyses conducted to support the development of the building projection plan



### Project Information

<b>Client:</b>	Skanska
<b>Owner:</b>	Los Angeles MTA
<b>Total Cost:</b>	\$1.47 Billion
<b>Completed:</b>	Ongoing



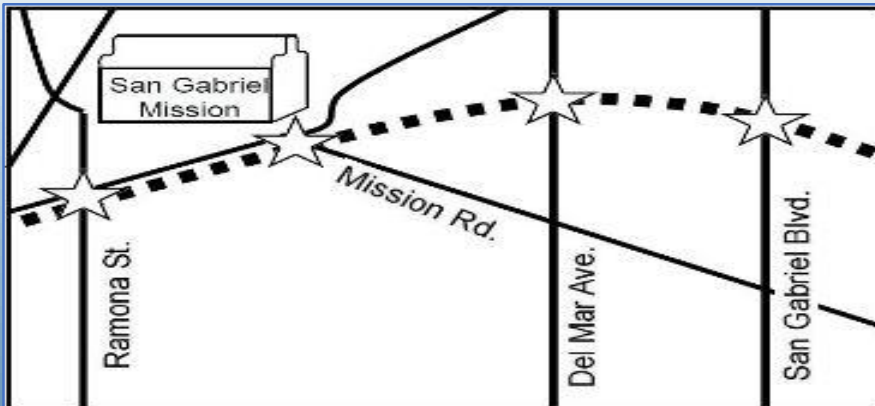
## SAN GABRIEL TRENCH GRADE SEPARATION San Gabriel , California

### Project Highlights

- The 2.2 mile grade separation will result in lowering of a 1.4 mile section of Union Pacific Railroad track into a trench through the City of San Gabriel
- Bridges constructed at Ramona Street, Mission Road, Del Mar Avenue and San Gabriel Boulevard allowing vehicles and pedestrians to pass over the tracks

### Group Delta Highlights

- Providing geotechnical instrumentation that includes traversing probe inclinometers, in-place inclinometers, tiltmeters and crack gauges
- Tiltmeters and in-place inclinometers are monitored with systems of remotely monitored data loggers. Data is posted on the web based data management system



### Project Information

<b>Client:</b>	The Walsh Group
<b>Owner:</b>	Alameda Corridor East
<b>Total Cost:</b>	\$336 Million
<b>Completed:</b>	2017





## SANBAG LAUREL STREET GRADE SEPARATION Colton, CA

### Project Highlights

- Built BNSF railway bridge and replaced existing six railroad tracks in order to separate vehicle and pedestrian traffic from train traffic
- Project runs along the Burlington Northern Santa Fe railroad tracks in the city of Colton
- Previously 90 trans passed through the crossing every day creating a “gate down” time of over four hours per day

### Group Delta Highlights

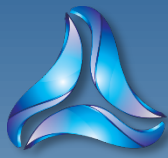
- Provided materials testing and inspection services through construction
- Provided grading observation and testing as well as pile installation observation
- Batch plant inspection and sampling services was provided through construction



### Project Information

<b>Client:</b>	Athalye
<b>Owner:</b>	SANBAG
<b>Total Cost:</b>	\$40 Million
<b>Completed:</b>	2015





## SUNSET AVENUE GRADE SEPARATION Banning, CA

### Project Highlights

- City of Banning and Riverside County Transportation Department constructed a vehicle underpass to separate vehicle traffic from train traffic
- Project lowered Sunset Avenue and provided sufficient vertical clearance
- A new railroad bridge structure was built

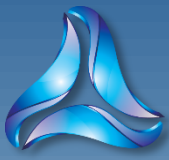
### Group Delta Highlights

- Provided a geotechnical engineering investigation of the site
- Provided construction materials testing and inspection services



### Project Information

<b>Client:</b>	RCTC and Harris & Associates
<b>Owner:</b>	City of Banning
<b>Total Cost:</b>	\$26.9 Million
<b>Completed:</b>	2016



## COLTON CROSSING GRADE SEPARATION Colton, CA

### Project Highlights

- Project elevates east-west UPRR rail line over Burlington Northern/Santa Fe rail line
- Project is adjacent to the I-10 Freeway in San Bernardino County
- Ground improvements were made with vibro-replacement stone columns
- Loose soils were densified in the upper 20 feet of the site

### Group Delta Highlights

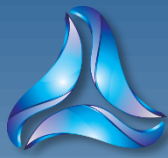
- Provided independent quality assurance verification testing
- Reviewed acceptance testing and quality assurance verification testing
- Prepared data reduction and analysis and prepared final report
- Coordinated with AECOM, UPRR and BNSF personnel to review safety requirements



### Project Information

<b>Client:</b>	AECOM
<b>Owner:</b>	City of Colton / UPRR
<b>Total Cost:</b>	\$331 Million
<b>Completed:</b>	2014





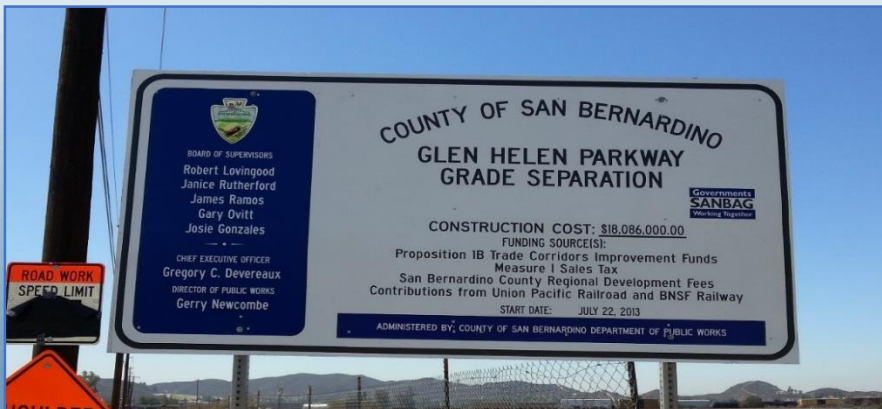
## GLENN HELEN PARKWAY GRADE SEPARATION Devore, CA

### Project Highlights

- Project raised Glen Helen Parkway over the Union Pacific and Burlington Northern Santa Fe railroads
- Separates the existing roadway from the existing railroad
- Improves traffic flow and safety

### Group Delta Highlights

- Prior to proceeding with materials testing and inspection services, Group Delta coordinated with Harris & Associates, UPRR and BNSF to review safety requirements and other logistics
- Staff were properly trained and certified by the required safety organizations.
- Providing full service quality assurance materials testing



### Project Information

<b>Client:</b>	Harris & Associates
<b>Owner:</b>	County of San Bernardino
<b>Total Cost:</b>	\$25 Million
<b>Completed:</b>	2014





## ANAHEIM REGIONAL TRANSPORTATION INTERMODAL CENTER Anaheim, CA

### Project Highlights

- New Architectural iconic terminal building, 117 ft. high with an approximate footprint of 48,000 sf
- 68,000 sf steel-framed tubular structure with Ethylene Tetrafluoroethylene (ETFE) and glass cladding as part of the terminal
- One of the largest welding projects in California

### Group Delta Highlights

- Managed and responsible for all inspection and testing including coordination of welding non-destructive testing (NDT)
- Responsible for deep dynamic soil compaction, ETFE roof installation, and monolithic mat foundation inspections



### Project Information

<b>Client:</b>	City of Anaheim
<b>Owner:</b>	Orange County Transportation Authority (OCTA)
<b>Total Cost:</b>	\$220 Million
<b>Completed:</b>	2014