



# GOMEZ INTERNATIONAL, INC. & PROCUREMENT SPECIALISTS

*WBE and WOSB Certified*

1415 East Elwood Street, Phoenix, Arizona 85040 USA

PO Box 10490, Casa Grande, Arizona 85130 USA

(520)836-7869

## COMPANY PROFILE

Gomez International Inc., formally Gomez Tunneling Systems International, was started in 1991, incorporated in 2005 and has been Certified as a Woman Business Enterprise (WBE) and Woman Owned Small Business Enterprise (WOSB) since 2018. Our staff has over 118 years of combined experience in the tunneling, construction, and mining industries. Specializing in heavy civil, bridge, power, mining and tunneling projects and equipment manufacturing, rebuild and supply, Gomez International is positioned to support your project in all aspects, whether it is a large public infrastructure or a small private project. Our Clients include owners, contractors, engineers, consultants, manufacturers, and suppliers. Providing Engineering, consulting, estimating, project field support, design, equipment manufacturing, sales, equipment rebuilds, and material supply. By interfacing and integrating with all participants and implementing high Quality Control/Quality Assurance (QC/QA) standards, a proactive and reactive company, quick to develop situation response teams as needed. From design and development to onsite installation, Gomez International Inc. surpasses project expectations with enhanced customer support.

We provide quality equipment and services to aid in our clients' successful completion of their projects. From complete diesel engine and equipment re-builds, to high voltage switch gear, mine power transformers, high voltage cable assemblies, ventilation fans, equipment/workshop Conex, tunnel excavators, conveyor systems, tunnel seals, peristaltic and submersible and slurry pumps, grout and bentonite mixing plants, to rolling stock i.e. tunnel locomotives, man cars, lift off muck boxes, segment handlers, etc., we can supply, manufacturer, build and/or remanufacturer nearly anything our customers request. As the North, Central and South American Sales and Service Representative for several innovative manufacturers we provide quality products to meet any requirement.



Gomez International, Inc., Engineering and Consulting Division and Procurement Specialists, Sales, Manufacturing and Rebuild Division, are ideally located in the Arizona dry desert at 1415 E Elwood Street, Phoenix, Arizona 85040. Our main administrative offices are located at 9075 Hazeldine Road/PO Box 10490, Casa Grande, Arizona 85130.

In 2011 – We expanded into our new shop facility that has over 20,000 square feet under one roof, with on and off-site equipment storage totaling over 30 acres. Fully staffed with heavy equipment mechanics, welders, metal workers, painters, electricians, and machinists. Our manufacturing/rebuild facility includes a complete machine shop, paint booth and all the necessary production equipment, engineering, fabrication, and administration support to meet our customer's needs.

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# GOMEZ INTERNATIONAL, INC. & Procurement Specialists



In 2012 - became the North, Central and South American Sales Representative for such innovative manufacturers as: Mutsubishi Rubber (tunnel Entrance and Exit Seals, TBM seals and more), Sagami Servo (Grout/Slurry Plants and Peristaltic pumps), Shin-Tomoe (Battery powered locomotives), Showa-Kogyo (TBM Tail Brushes), and Starloy (TBM cutters).

In 2018 - Renetta Gomez, President and CEO for Gomez International, Inc. and our manufacturing/sales division, Procurement Specialists achieved Certification as a Woman Owned Business Enterprise (WBE) and Woman Owned Small Business Enterprise (WOSB) for the US Small Business Association. We are a licensed Engineering Firm, available to assist with your engineering needs, with expertise in the tunneling, mining and construction industries.

In 2019 - became the U.S. and International Sales Representative for GIW Industries, Inc., a KSB America Corporation, in the tunneling industry for the United States, Australia, Canada, China, India, Japan, Mexico, South America and South Africa. GIW is an industry leader in the manufacturing and supply of heavy industrial slurry pumps. We can provide complete engineering and design for TBM slurry systems KSB/GIW Slurry pumping supply and return circuits proposals which includes all power and control calculations, selection of optimal pumps for pressure, flow, sphere size, and life, selection of the optimal electric motor from 4 to 24-pole, 1/2-1,500HP, and voltages from 120V through 480V, and up to 15kV. Along with the Variable Frequency Drive (VFD's), couplings, pump, coupling, gear reducers, motor/pump support frames, tunnel transformers, pump power and control systems.

In 2021 - became the North American Sales representatives for General Cable (Electrical Cable), Littelfuse (electrical components), TJB (high voltage cable couplers), Toshiba (Motors and Variable Frequency Drives (VFDs)), and Tsurumi (Pumps). Became WBE CERTIFIED for Bay Area Rapid Transit (BART)

## AREAS OF EXPERTISE

- \* Types of Tunnel Boring Machines we provide services for:
  - Hard Rock Tunnel Boring Machines
  - Slurry Shield Tunnel Boring Applications
  - Soft Ground Earth Pressure Balance (EPB) Applications
  - Single Shield Tunnel Boring Machines
  - Double Shield Tunnel Boring Machines
  - Directional Drills and Drilling Applications
  - Road Headers
  - Raise/Down Reaming/Box Hole, and Combination Boring Machines
  - Micro-tunneling/Pipe Jacking Applications
- \* Back-up/Trailing Floor and Auxiliary Support Systems
- \* Conventional Mining Applications
- \* Communications Systems
- \* Conveyor Haulage
- \* De-watering Systems
- \* Electrical Instrumentation and Control Systems Including PLC's
- \* Low, Medium, and High Voltage Electrical Distribution up to 115KV
- \* Rock Support Methods
- \* Rolling Stock
- \* Segment Lining Systems
- \* Ventilation Systems
- \* Data Collection Systems
- \* Engineer/Design/Build Custom Components and Systems including Tunnel Segments.
- \* Equipment procurement, manufacturing, rebuild.



# GOMEZ INTERNATIONAL, INC. & Procurement Specialists



## SERVICES INCLUDE

Gomez International Inc. offers services in the Mining, Tunneling and Construction Industries. The following is an abbreviated list of some of the services we have provided. Depending upon the projects' requirements and our clients' needs, we strive to accept any challenge to achieve success. The services we provide are not limited to those listed below and include all aspects of the mining, tunneling and construction industries.

- Constructability Review
- Contractual Issues
- Cost Estimating
- Data Collection and Instrumentation
- Design and Manufacturing Audits
- Engineer/Design/Tunnel Pre-cast Concrete Segments to Owners Specs
- Electrical System Design, procurement, supplier, equipment manufacturer and coordinate installation and training
- Dispute Review Analysis, Forensics and Resolution
- Manufacturing – Electrical, structural (conveyor systems), utility supports etc.)
- Equipment rebuild/refurbishment to meet project requirements.
- Equipment lease - including but not limited to tunnel locomotives, ventilations fans, conveyor systems, tunnel excavators.
- Job-site Support
- Manufacture Design Guidelines
- Performance Estimates
- Preventive Maintenance Program
- Project Management
- Project Scheduling
- Risk Analysis, Identification and Evaluation
- Site Investigation
- Startup Engineering
- Supplier Quality Control and Quality Assurance Audits
- TBM Feasibility Studies
- Utilization Analysis and Recommendations

## OFFERING SOLUTIONS FOR

- Improved Tunnel Boring Machine and Related Equipment Performance
- Low Tunnel Boring Machine and Related Equipment Production Rates
- Low Tunnel Boring Machine and Related Equipment Utilization
- Site Assembly and Assembly Delays
- Major Tunnel Boring Machine and Related Equipment Breakdowns
- Unacceptable Manufacturing Quality
- Unexpected Geological Delays
- Tunnel Boring Machine and Equipment Modifications
- Excessive Consumable Costs
- Owner/Contractor/Supplier Disputes Resolution
- Improving Personnel Expertise and Training
- Equipment/Systems Redesign to meet projects unique requirements.
- Can provide PE Stamped drawings for electrical, mechanical, and civil engineering.



# GOMEZ INTERNATIONAL, INC. & Procurement Specialists



## CLIENTS

Gomez International Inc. has participated in projects throughout the World. Our list of clients includes Tunneling Contractors, Project Owners, Designers, Specialty Contractors, Arbitrators, Associated Consultants, Municipalities, Federal and State Agencies, Tunnel Boring Machine Manufactures, Legal Firms, Equipment Suppliers, and Related Vendors.

### United States and Canada

- ❖ Anderson Electric Controls
- ❖ Atkinson Construction
- ❖ Affholder Construction
- ❖ B&W Controls
- ❖ Barnard Construction Co
- ❖ Broken Hills Properties (BHP)/Magma Copper Co
- ❖ CSR New England Pipe
- ❖ Colorado School of Mines
- ❖ DMJM-Daniel, Mann, Johnson & Mendenhall
- ❖ Dragados USA
- ❖ Frank Coluccio Construction
- ❖ Frontier Kemper Constructors
- ❖ Jay Dee Contractors
- ❖ Jenny Engineering
- ❖ Harrison Western Corporation
- ❖ Hatch, Mott, MacDonald
- ❖ Hecla Mining Co.
- ❖ Hitachi Zosen – USA
- ❖ ILF Consultants
- ❖ Impregilo
- ❖ Jacobs
- ❖ Kiewit
- ❖ Laborers International Union North America
- ❖ Lane Construction Corporation
- ❖ Kenaidan Construction
- ❖ Mass Electric
- ❖ McNally Construction
- ❖ McNally International
- ❖ Merco
- ❖ Metropolitan Water District of Southern California
- ❖ Michels Corporation
- ❖ Mott McDonald
- ❖ Nancy Creek Tunnel Constructors
- ❖ New York, Department of Environmental Protection
- ❖ Nova Group Inc
- ❖ Obayashi Corporation USA
- ❖ Oles, Morrison, Rinker, and Baker
- ❖ Ortiz Corporation
- ❖ S.A. Healy Company
- ❖ Snyder Engineering
- ❖ Shimmick Construction
- ❖ Skanska Construction Co
- ❖ Southland Contracting
- ❖ Stacy & Witbeck Inc
- ❖ Stillwater Mining Co
- ❖ Traylor Brothers
- ❖ Trumbull Corporation
- ❖ University of Arizona-Mining Safety Program
- ❖ University of Arizona San Xavier Mine & Mine Engineering Program
- ❖ UTILIX Corporation
- ❖ W.W. Clyde Brothers Construction

### Brazil

- ❖ Andrade Gutierrez

### China

- ❖ STEC (Shanghai Tunneling and Engineering Co.)
- ❖ Shanghai Yasui Construction & Development Co

### Germany

- ❖ Dielmann Haniel
- ❖ Herrenknecht AG
- ❖ ILF Consultants
- ❖ Soltau Microtunneling
- ❖ Zublin Contracting

### France

- ❖ Campenon Bernard SGE
- ❖ Spie Batignolles

### Japan

- ❖ Hitachi-Zosen-Japan
- ❖ Obayashi Corporation Tokyo

### United Kingdom

- ❖ Balfour Beatty

### South Africa

- ❖ LTA Contractors
- ❖ LHPC (Lesotho Highlands Project Contractor)

### Mexico

- ❖ Cotrisa/Constructora Andrade Gutierrez, S.A. de C.V
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# GOMEZ INTERNATIONAL, INC. & Procurement Specialists



## EXPERIENCE

Our employees have served as Engineer, Operations Manager, Project Manager, Tunnel Boring Machine Operations Manager, Projects Field Manager, Project Engineer, Field Engineer, Design Engineer, Superintendent, Start-up/Commissioning Engineer, Equipment Operations Manager, Field Supervisor, Expert Witness, Consultant, and in whole or part as the general superintendent, tunnel superintendent, equipment superintendent, mechanical superintendent, and electrical superintendent.

Below is a brief summary of various major projects and positions our company have held:

### **Project Engineer/Consultant/Project Manager Engineering Manager for:**

Eastside LRT Constructors, Los Angeles Gold Line Extension, Light Rail Tunnels and Stations  
Hitachi Zosen – Alaska Way Via Duct Tunnel (aka SR99)  
Jacob, Bay Area Rapid Transit (BART) Transbay Tube Project  
Lane Construction Corporation, Ship Canal Tunnel Project  
Magma Copper Lower Kalamazoo Tunneling Project, San Manuel, Arizona  
Mass Electric, Sound Transit N8830/E750 Tunnels  
Michels, Mountain Tunnel Project  
Michels, Schaffer Dam Project  
Metropolitan Water District of Southern California, San Bernardino Aqueduct, San Bernardino  
Nancy Creek Constructors, Nancy Creek Tunnel Project  
Nova Group Inc., Kailua Kona, Hawaii  
Obayashi / Kenaidan J.V., Sir Adam Beck Hydro Electric Tunneling Project, Ontario, Canada  
Obayashi-led JV, Eglinton Subway Tunnel Project  
Obayashi / W.W. Clyde J.V., Upper Diamond Fork Tunnel, Spanish Fork, Utah  
Obayashi / Johnson Bros. J.V., Minneapolis Light Rail Tunnel & Station  
Obayashi/MASSANNA JV, West Area CSO Tunnels and Pump Station  
Ortiz Corporation, Home Avenue Sewer II, San Diego, California  
Skanska/Jay Dee JV, First St. Tunnel  
Stacy and Witbeck, Sound Transit N180 Tunnels  
Stillwater Mining Company, East Boulder Project, Big Timber, Montana

### **Consultant/Engineer/Design/Build for**

Jacobs, Delta Conveyance Tunnel Project  
Hitachi Zosen, Alaskan Way Viaduct & Seawall Replacement Program SR99  
Obayashi/Kenny/Kenaidan/Technicore JV, Eglinton Subway Tunnel Project  
Southland Contractors, N. McGregor Shafts, Tunnel and Tunnel Segment-Design and complete pre-cast concrete production facility

### **Engineer/Design/Build for**

Beacon Hill Tunnels and Stations, Obayashi Corp.  
Colorado River Bridge (Hoover Dam Bypass), Obayashi PSM JV  
North Connector Tunnels and Station, North Shore Constructors JV  
Stacy & Witbeck, Sound Transit N180 Tunnels

### **Project Consultant/Commissioning Manager/Start-up Coordinator/Plant and Electrical Manager for**

BART Transbay Tube Project, San Francisco/Oakland California  
Blacklick Tunnel, Columbus Ohio  
Central Subway Tunnel, San Francisco, California  
Cotrisa-AG, Mexico City, Mexico  
Hitachi Zosen, SR99, Seattle, Washington  
Jay Dee Contractors-Michels-McNally, Coxwell Sanitary Bypass Tunnel, Toronto Canada



# **GOMEZ INTERNATIONAL, INC. & Procurement Specialists**



Jay Dee Contractors-Frank Coluccio Construction-Michels Corporation JV, N125 Tunnels and Stations, U230  
Tunnels and Station, Seattle, Washington  
Lesotho Highlands Project in the Kingdom of Lesotho, Africa  
Long Baseline Neutrino Facility, Lead/Home Stake Mine, South Dakota  
Michels – Mountain Tunnel Project Commissioning Coordinator  
Michels Corporation-Jay Dee Contractors-Frank Coluccio Construction JV, Bay Tunnel Project, Tunnels and  
Shafts, Menlo Park, California  
Northlink LLC (Jay Dee/Michels / Coluccio JV) N125 Northlink Light Rail Tunnels  
Silver Lake Tunnel, Reservoir Replacement Project, Los Angeles, California  
Vari-Claim (New York Siphon Tunnel)



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## EQUIPMENT SUPPLIER FOR

Aggregate Machinery  
Barnard/Impregilo/Healy JV  
Coluccio Construction  
Dragados  
Electrical Automation Specialists  
Frank Coluccio Construction  
Frontier Kemper  
Hitachi Zosen  
Intermountain Electronics  
Jay Dee Contractors  
Kraemer/Obayashi JV  
Kenaidan  
The Lane Construction Corporation  
Kenny Construction  
Kiewit

Mass Electric  
McNally Construction  
Merco  
Michels Contracting  
Obayashi Corporation  
Shimmick  
Skanska/Jay Dee Contractors  
Stacy & Witbeck  
Sun Dancer Electric  
Trumbull Corporation  
US Electric Corporation  
UTILIX Corporation  
Vegas Tunnel Constructors  
Vadnais Trenchless Services, Inc.  
W.W. Clyde & Company

### EXAMPLES OF SOME OF THE EQUIPMENT FOR SALE OR LEASE



**Liebherr R932T Tunnel Excavators - Fully Rebuilt**

**15kV Transformer**



**Hogg-Davis Reeler**

**Skid-Mounted Switchgear**



**Maxi-Power Centers      Custom Vertical Conveyor System –**

**Alimak Elevators**

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# GOMEZ INTERNATIONAL, INC. & Procurement Specialists



## OEM MANUFACTURER REPRESENTATIVE FOR

In addition to offering support in all aspects of the construction process, we are also able to offer specialized equipment through partnering with Major Manufacturers as their Sales and Service representative in North, Central and South American and Internationally. We are proud to be an OEM Representative for the following leading Manufacturers:

- ❖ **General Cable:** Electrical Cable
- ❖ **GIW/KSB:** Heavy Duty Slurry Pumps (US/Domestic, Australia, Canada, China, India, Japan, Mexico, South Africa)
- ❖ **Littelfuse:** Electrical Components
- ❖ **Mutsubishi Rubber** – Tunnel Entrance/ Exit Seals, TBM Seals, rail pads, disc cutter seals, Flex Rubber Seal (Omega type) and more.
- ❖ **Gomez International Inc & Showa Kogyo JV:** SK Hybrid TBM Tail Seals (patented)
- ❖ **Sagami Servo:** Grout/Slurry Plants, Peristaltic Pumps
- ❖ **Shin-Tomoe:** Battery Operated Tunnel Locomotives, Custom battery powered carrier.
- ❖ **TBM Cutters** – TBM Cutters, roller, disc, etc.
- ❖ **TJB:** Couplers for High Voltage Cable
- ❖ **Tsurumi** - Pumps

We offer help and assistance in Engineering and Design with the Manufactures to help our customers receive the most effective equipment possible to meet their needs.

<p><b>Type-A</b> For Launch of TBM Automatic</p>	<p><b>Type-B</b> For Arrival of TBM Breakthrough</p>	<p><b>Type-C</b> For Launch &amp; Arrival of TBM Compression</p>	<p><b>Gomez International, Inc. &amp; Showa Kogyo JV</b> – Patented TBM SK Tail Seals and wire brush Tail Seals</p> <p><b>TSURUMI PUMP</b> BUILT FOR WORK</p>
<p><b>Mutsubishi Rubber-</b> Entrance seal system (Launch and Exit), Flex rubber Seal at tunnel portal structure, Rail pad for vibration and noise prevention, Seals for TBMs and disc cutters</p>			
<p><b>GIW/KSB Industries</b> Heavy Duty Industrial Slurry Pumps</p>	<p><b>General Cable Industrial Cable</b> SERVING INDUSTRIAL, SPECIALTY AND COMMERCIAL APPLICATIONS</p>	<p><b>TBM Cutters, Shell Bits, Scrappers, Disc, Center, Main, Fishtail, Pre-Cutters</b></p>	<p><b>Littelfuse</b> Expertise Applied   Answers Delivered</p> <p><b>TJB INCORPORATED</b> Innovators of High Low-Voltage Couplers</p>
<p><b>Sagami-Servo</b> – Grout and Slurry Plants, Peristaltic Pumps</p>	<p><b>Shin-Tomoe Electrical Manufacturing Co.</b> Battery Locomotives, Custom Battery Powered Carrier</p>		

**FOR ADDITIONAL INFORMATION AND COMPLETE LIST OF EQUIPMENT OFFERED PLEASE CONTACT US**

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# GOMEZ INTERNATIONAL, INC. & Procurement Specialists



## KEY EXECUTIVES

### **Renetta Gomez - President/Chief Executive Officer**

Years of Experience – 1991 to Present

Education - Degree in Business Management, New Mexico State University, 1980

Summary of Qualifications

**WBE Certified through WBENC, WOSB Certified for SBA, WBE Certified for Bay Area Rapid Transit (BART)**

Comprehensive background in all aspects of business management, human resources management, employee benefits, accounting and financing, business development, marketing, contract negotiations, estimating, employee management, scheduling, international and domestic shipping, oversee daily operations of all aspects of corporate business.

Extensive knowledge of employee, customer and management relations, construction management organization, and training methods.

#### **Professional Positions**

President/CEO

Business Owner - Gomez International, Inc. (formally Gomez Tunneling Systems International) since 1991

Business Owner/Manager - Retail sales

Human Resource Manager

Benefits Administrator



### **Frederick (Rick) P Gomez - Vice-President/Chief Operations Officer**

Years of Experience – 1978 to Present

Summary of Qualifications

Comprehensive background in all aspects of electrical, mechanical, civil and underground construction applications, including mechanized-tunnel boring, micro-tunneling, directional drilling, raise boring, tunnel rock and pre-cast segments support systems, and methods, conventional underground excavation methods and procedures, concrete, grouting and shotcrete placement methods and procedures, hydroelectric generation, pumping stations, waste water treatment facilities, oil and natural gas refineries, coal fired generation facilities, nuclear device assembly facilities, acid plants, SO<sub>2</sub> removal systems, and fly ash recovery systems (bag-houses and precipitators).

Extensive knowledge of employee, customer and management relations, construction management organization, and training methods.

#### **Professional Positions**

Vice-President/COO

Consultant

Business Owner - Gomez International, Inc. (formally Gomez Tunneling Systems International) since 1991

Project Engineer

Project Field Manager

Project Manager/Superintendent

Start-up Engineer/Technician

Electrical Superintendent

Journeyman Electrician



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## James J Gomez - Vice-President of Operations

Years of Experience – 2002 to Present

### Summary of Qualifications

Manager of our Manufacturing/Rebuild Division, Procurement Specialists. Responsible for all equipment manufacturing and rebuild scheduling, equipment design, man-power allocation, budgeting, material procurement and safety. Supervises two teams of employees in all aspects of manufacturing, from design, through fabrication, to final inspection. Comprehensive background in electrical, mechanical, and metal fabrication. Some of the manufacturing/rebuild projects successfully overseen are the manufacturer and/or rebuild, repair and testing of both low and high voltage switchgear, transformers, mobile sub-stations, 15kV power cable assemblies, hydraulic cylinders and systems, pumps, Tunnel conveyor systems, ventilations systems, compressors and more. In charge of complete equipment tear down and rebuilds, including Liebherr 932 Tunnel Excavators, Brookville 30, 24 and 20-ton diesel powered locomotives, Caterpillar 80,000lb forklift and Duetz V-10 diesel engine rebuilds, and many more projects too numerous to list.



### Professional Positions

Vice-President of Operations  
Project Supervisor  
Field Supervisor

Operations Manager  
Project Manager

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## Asao Nomura - Vice-President of Engineering

Years of Experience – 1980 to Present

Education - B.Sc., Mechanical Engineering, Yamanishi University, 1980

### Summary of Qualifications

Supervised the design, procurement, start-up, and operation of a variety of typical and specialized equipment on many large, complex heavy construction projects. This equipment has included many pressurized face tunneling machines such as EPB TBM and Slurry TBM. Eight of these machines had personnel airlocks to allow hyperbaric interventions from 1.0 – 7.0 bars. Supervising the procurement, start-up and operation of the 14.14m (46.4') Slurry TBM used on the Trans-Tokyo Bay Highway Tunnel. Designed and implemented a variety of equipment applications specifically for controlled excavation in soft or difficult ground conditions. Recent 30 years of experience in soft ground tunneling; prior to that involved in the engineering and construction of heavy structural and earth retaining walls. Supervised equipment design, production and delivery, on-site installation, training and start-up, and daily equipment operations. Responsible for oversight of preventative maintenance and major repairs and overhauls performed by project field personnel. In addition, responsible for the on-site, training, development, and implementation of TBM hard rock, earth pressure balance and slurry, operating and excavation procedures, including but not limited to soil conditioning, grout injection, and tool replacement. Training also included the development of operational contingencies such as the inability to form plug in screw, unable to advance the TBM, Settlement mitigation procedures, unable to control muck discharge from the screw, and damage to segments.



### Professional Positions

Vice-President of Engineering  
Project Engineer  
Project Manager  
Project Engineer-Mechanical/Electrical  
Equipment Manager

Engineering Manager  
Tunnel Operation Engineer  
Equipment Operations Manager  
Field Mechanical Engineer

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## MAJOR PROJECTS

### November 2022 – Present

**CUSTOMER:** Michaels Trenchless, LLC  
**FOR:** San Francisco Public Utilities Commission  
**PROJECT:** Michels Mountain Tunnel Project, Mountain Tunnel Improvements – Hetch Hetchy, CA- (+/- \$138,965,566.00)  
**Position:** Commissioning Coordinator / Consulting Engineering  
**PROVIDED:** Project involves 11-miles of rehabilitation of 10-ft diameter, concrete-lined, horseshoe tunnel, which was completed in 1925. Work includes concrete lining repairs, contact grouting, downstream valve control structure, large control valve installations, new tunnel adit, adit/portal improvements, tunnel siphon extension, water cut-off grouting, water discharge treatment, access roadway improvements, temporary staging area excavations and grading, the construction of a new 1,075-ft Adit Tunnel at Priest Reservoir to improve maintenance access, and environmental mitigations. Prepare and submit commissioning and start-up plan, along with detailed testing protocols and documents. Prepare and implement “Factory Acceptance Tests” (FAT). Oversee hydrostatic testing and leakage testing of the double disk knife gate valves, and spool/sleeve valves, cranes, hoists, generators, and related systems. In charge of testing and startup of all electrical, mechanical, plumbing, pumping, PLC, and SCADA systems.

### November 2022 – Present

**CUSTOMER:** Michels Corporation  
**FOR:** USACE  
**PROJECT:** Schaffer Dam – Tule River Phase 2 Spillway Enlargement  
**Position:** Consulting Engineering  
**PROVIDED:** Technical Advisor, Consultant, Electrical Engineering Design for temporary power office complex, concrete batch plant, wash plant, freeze plant, ice plant, QCQA labs, and ancillary support equipment, along with Electrical Equipment Procurement.

### November 2021 – Present

**CUSTOMER:** Jacobs Engineers  
**FOR:** Delta Conveyance Authority  
**PROJECT:** Delta Conveyance Tunnels – Central, CA- (+/- \$16-Billion).  
**Position:** Consultants, Design/Application Engineering  
**PROVIDED:** Project includes the construction of +/- 44.7-miles of 40-ft O.D. tunnel, utilizing 4-each earth pressure balance tunnel boring machines (EPBM). Pre-cast concrete segmentally lined tunnels, with multiple launch shafts, intermediate and recovery shafts. Task order was issued for the conceptual design for the longest tunnel at 14.3-miles regarding temporary power for a 69kV x 24.5kV surface, tunnel, and EPBM. Provide all relevant data including schematics, load studies, electrical equipment requirements, applicable standards, along with all temporary power technical data required to size and determine the temporary power requirements for the project.

Prepared detailed engineering “Load Study” and calculations, included breakdown of the load (motors, lighting, constant MVA, etc.). Load Study included all surface, tunnel and EPBM TBM, electrical equipment, included size motor loads, electrical equipment loads, transformers, circuit breakers, fuses, and cables, followed with the load factor adjustment sizing the primary transformer for the longest TBM bore at 14.3 miles. Prepared complete 69kV substation design, surface, underground, and Tunnel Boring Machine detailed design, complete with single-line schematics.

### May 2017-2023

**CUSTOMER:** Dragados USA and Schiavone Construction Co. LLC (Chesapeake Tunnel JV)  
**FOR:** Chesapeake Bay Bridge and Tunnel District, Cape Charles, VA  
**PROJECT:** Parallel Thimble Shoal Tunnel (Chesapeake Bay Bridge Tunnel Project)  
**PROVIDED:** Custom TBM Entrance Seal and Technical Assistance.



### May 2020-2022

**CUSTOMER:** The Lane Construction Corporation  
**FOR:** City of Seattle  
**PROJECT:** Ship Canal Tunnel – Seattle WA- (\$255,000,000). Project includes the construction of one 4.26km x 5.74m O.D. x 6.3m I.D. Herrenknecht EPB TBM, with a personnel airlock to allow hyperbaric interventions at up to 4.5 bar. Pre-cast concrete segmentally lined tunnel, with two primary shafts corresponding to the location of structures, three drop shafts, one diversion structure and one 94-in curved micro-tunnel.

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**PROVIDED:** Consultants, Design, Application Engineering, PE Engineering, consulting services, ventilation design and ventilation equipment supplier. Designed equipment and manufactured for project including Electrical Equipment (transformers, high voltage cable with couplers, etc. ), custom designed and manufactured shaft ladders, barrier fences and material supplier.



## May 2020 - 2022

**CUSTOMER:** Hecla Mining Co.

**For:** Lucky Friday Mine

**PROJECT:** Mobile Miner (Bearing Failure) Project included the on-site evaluation of the EPIROC prototype mobile miner cutterhead bearing failure within the first few hours of the initial trial tests in Sweden.

**PROVIDED:** Consultants, Design/Application Engineering, Engineering, consulting services, research of equipment and material manufacturers.

## May 2019 - 2021

**CUSTOMER:** Mass Electric

**FOR:** Sound Transit

**PROJECT:** N830/E750- Seattle, Washington- (\$225,000,000) Project includes the installation of catenary rail power systems and related control systems.

**PROVIDED:** Consultants, Design/Application Engineering. Design temporary ventilation systems for seven miles of tunnel and two intermediate stations, including detailed drawings, calculations, and submittals. Supplied all equipment required ventilation of tunnels including the ventilation fans, cables, and variable frequency drives.

## May 2018 - 2020

**CUSTOMER:** North Tunnel Constructors ULC (Jay Dee/Michels/CW McNally JV)

**FOR:** City of Toronto

**PROJECT:** Coxwell Sanitary Bypass Tunnel - Toronto Canada- (\$404,260,934). Project includes the construction of one 10.3km x 7.3m O.D. x 6.3m I.D. Lovesun Shield TBM, segmentally lined tunnel, with five shafts corresponding to the location of structures, and eleven drop shafts, two diversion structures and two consolidation sewers. **SERVICES PROVIDED:** Technical, and engineering services for assembly, commissioning, and launch of the TBM, and other related works, detailed design engineering for shaft layouts, includes vertical conveyor, and tunnel conveyor systems.

**PROVIDED:** Consultants, Design/Application Engineering, material, and equipment supplier

## May 2018 - 2019

**CUSTOMER:** Stacy & Witbeck

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**FOR:** Sound Transit  
**PROJECT:** N180 – Seattle, Washington– (\$125,000,000). Project includes the installation of rail and support system.  
**PROVIDED:** Consultants, Design/Application Engineering, Technical, and engineering services for engineering and layout of a 480V, 600-Amp, 3-Phase substation, along with subcontractor coordination, and removal of the existing 26.4kV temporary power drop.

## July 2017 – 2021

**CUSTOMER:** Jacobs/BART  
**FOR:** Bay Area Rapid Transit (BART)  
**PROJECT:** BART Transbay Tube Project, San Francisco/Oakland CA– (\$267,000,000). Project includes the seismic retrofit of the existing tunnel with 3.6 miles of inner steel plate lining of the subway tunnels and other related works.  
**PROVIDED:** Consultant Design/Application Engineering. Detailed design engineering review of the lining installation equipment including structural, hydraulic, electrical, controls, and safety. Witness shop testing and review of operations and maintenance documentation.

## May 2017 – 2018

**CUSTOMER:** Stacy & Witbeck  
**FOR:** Sound Transit  
**PROJECT:** N180 – Seattle, Washington– (\$125,000,000). Project includes the installation of rail and support system.  
**PROVIDED:** Consultants, Design/Application Engineering. Design temporary ventilation systems for seven miles of tunnel and two intermediate stations, including detailed drawings, calculations, and submittals. Supplied all equipment required ventilation of tunnels including the ventilation fans, cables, and variable frequency drives.

## October 2016 – March 2017

**CUSTOMER:** Mott McDonald  
**FOR:** United States Department of Energy  
**PROJECT:** Fermi and Stanford Laboratories, Long Baseline Neutrino Facility– (\$233,000,000). Lead / Home Stake Mine, South Dakota. The solar neutrino experimental facilities and the physics program located within the former Home Stake Mine.  
**PROVIDED:** Consultants Design/Application Engineering Independent Technical assessment and review of the 90% Pre-Excavation Final Design submittal produced by ARUP, USA. Reviewed cost and schedule submittals. Participated in two days of discussions with, and presentations by, LBNF, SURF and Arup staff. On Site participation consisting of underground and surface facilities, reviewed report written by the Mott MacDonald review team, and preparation of a short review close-out presentation by the review team.

## September 2015 – 2019

**CUSTOMER:** Blacklick Constructors (Michels/Jay Dee Joint Venture)  
**FOR:** City of Columbus  
**PROJECT:** Blacklick Tunnel, Columbus OH– (\$109,000,000). Project includes the excavation of a 10-ft finished segment lined, sanitary interceptor sewer tunnel +/- 23,000 ft in length, Herrenknecht EPB TBM, with a personnel airlock to allow hyperbaric interventions at up to 4.5 bar. Includes 12 shafts, hydraulic drop structure, a passive order control vault and appurtenances.  
**PROVIDED:** Consultants Design/Application Engineering Technical, and engineering services for assembly, commissioning, ground conditioning, tunnel excavation methodology and launch of the TBM, and other related works. Material supplier.

## June 2014 – 2017

**CUSTOMER:** Obayashi/Kenny/Kenaidan/Technicore JV  
**FOR:** Metrolinx - Crosstown Light Rail Transit Link Toronto Canada  
**PROJECT:** Eglinton Subway Tunnel Project (Toronto Crosstown Link)  
**PROVIDED:** Technical Advisor; Tunnel/Electrical Equipment Procurement, Operations, Design

## June 2014 – 2016

**CUSTOMER:** Obayashi/Kenny/Kenaidan/Technicore JV  
**FOR:** Metrolinx – Crosstown Light Rail Transit Link Toronto Canada  
**PROJECT:** Eglinton Subway Tunnel Project (Toronto Crosstown Link) - (\$320,000,000 can). Project includes the construction of twin light rail tunnel 12-mi x 21ft 6-ft O.D. x 18-ft 10-in I.D. segmentally lined tunnel with multiple station shafts.  
**PROVIDED:** Technical Advisor/Consultant Detailed ventilation design and submittal documents for submission. Selected equipment and facilitated procurement for ventilation fans, ducting, air doors, variable frequency drives, power cables, and



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connections. Designed launch frame and cradle, included CAD drawings, and calculations. Onsite field evaluation startup oversite, during the assembly and commissioning and launch of the TBM. Detailed design for TBM "Entrance Seal" and supplied installation drawings, coordinated layout and field installation. Detailed annulus grout injection design and supplied Sagami Servo grout plant coordinated site commissioning and testing.

## October 2014 - October 2015

**CUSTOMER:** Aecon/Dragados JV

**FOR:** Toronto Metro Link

**PROJECT:** Eglinton Crosstown East Tunnels (Toronto Canada) - (\$1,139.7 Billion)

**PROVIDED:** Consultants Design/Application Engineering. Detailed design engineering for two TBM "Entrance Seal" and two "Arrival Seals" supplied installation drawings, coordinated layout and field installation. Supplied Entrance and Arrival Seals rated 7-bar for the Slurry-TBM O.D. 6.514M segment ring O.D. 6.250m



## October 2014 - September 2015

**CUSTOMER:** Trumbull Corporation

**FOR:** City of Columbus

**PROJECT:** OSIS Augmentation and Relief Sewer (OARS), Columbus OH- (\$76,900,000). Project included the construction of three deep shafts at separate locations throughout downtown Columbus, Ohio, as part of the OSIS Augmentation and Relief Sewer Project. The shafts are thirty feet in diameter and 150 feet below the surface. They were connected to an existing twenty-foot diameter tunnel that was built in Phase 1 by tunneling approximately 100 feet horizontally from the bottom of each shaft. This contract also involved building a pump electrical building, bridge crane, and the Scioto-Main Relief Structure which can be used as a bypass.

**PROVIDED:** Consultants Design/Application Engineering. Detailed electrical substation design engineering for all shaft sites, detailed ventilation design and equipment selection. Prepared detailed equipment specifications for temporary electrical and dewatering systems. Prepared shaft excavation "LAZY DUMP" excavation detailed drawing and methods. Engineered continuous gas monitoring system and prepared detailed equipment specifications.

## January 2014 - 2015

**CUSTOMER:** Michels Tunneling Division of Michels Corporation

**FOR:** Webcor/Obayashi/Lyles JV

**PROJECT:** Silver Lake Reservoir Storage Replacement Project - Headworks East Reservoir. Project includes the construction of one 4.600-lf x 12-ft O.D. x 10 I.D. Herrenknecht EPB TBM, hyperbaric pressure 3.5-bar, pre-cast concrete segmentally lined tunnel between two vertical access shafts. With a 10-ft diameter steel carrier pipe grouted in place for potable water

**PROVIDED:** Technical Advisor; Tunnel/Electrical Equipment Procurement Supply of personnel providing, Operations, Design, and Engineering. Provided technical, and engineering support for the GII on site engineer for assembly, commissioning, and launch of the TBM, and other related works. Designed and expedited the temporary power distribution system 480V x 13.2kV, 1600-amp substation, along with TBM vacuum switch house, protective relay, ground/check system, and 15kV feeder cables.

## June 2013 - September 2015

**CUSTOMER:** Skanska/Jay Dee JV

**FOR:** District of Columbia Water and Sewer Authority

**PROJECT:** First St. Tunnel - Washington DC - (\$157,000,000). Project includes the construction of one 2,700ft x 23-ft O.D. x 21-ft I.D. segmentally lined tunnel between two vertical access shafts,

**Position:** Onsite engineering personnel.

**PROVIDED:** Technical Advisor; Supply of personnel providing, Operations, Design, and Engineering. Technical and engineering services for assembly, commissioning, and launch of the TBM. Proposed and assisted with obtaining Japanese entrance seal system.

## December 2012 - May 2015

**CUSTOMER:** VariClaim Inc.

**FOR:** New York Department of Environmental Protection (NYDEP)

**PROJECT:** New York Siphon Tunnel - Staten Island, New York - (\$250,000,000). Project included the construction of potable water siphon tunnel 10.3km (9,500ft) x 3.8m (12.5ft) O.D. x 6.3m I.D. segmentally lined tunnel, with 72-in steel mortar lined pipe placed and grouted in the bored tunnel, between Staten Island and Brooklyn New York. On October 28, 2012 the project site was hit by the extreme "Hurricane Sandy" storm which exceed the height of the protective barriers around the 115-

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ft deep shaft and sent seawater down the 5% decline into the 1,500-ft of excavated tunnel and flooded nearly all 370-ft of the trailing floor and the entire interior of the TBM. Following months of delays to re-establish site power, infrastructure, and determine the practicality of rebuilding the TBM. In April 2014, the TBM resumed excavation and the tunnel were completed February 2015.

**PROVIDED:** Consultants, Engineering Expert Opinion, TBM and Equipment Claim Engineering and Loss Analysis. Technical, and engineering services evaluating the refurbishment of the TBM after being submerged in seawater. Prepared detailed on-site inspection of the entire TBM, trailing floor, shaft, and surface equipment.

Coordinated the inspections of the main bearing with the original manufacturer ROTTEK. Prepared detailed reports including the viability of the main bearing, planetary drive gear reducers, cutterhead drive motors, and thrust cylinders. Engineering and expert opinion that the TBM rebuild in place to complete the project.

## March 2012 – August 2015

**CUSTOMER:** Barnard/Impregilo JV

**FOR:** Bay Area Rapid Transit (BART)

**PROJECT:** Central Subway Tunnel (San Francisco CA) – (\$233,000,000)

**PROVIDED:** Consultants Design/Application Engineering. Detailed design engineering for two TBM “Entrance Seal” and two “Arrival Seals” supplied installation drawings, coordinated layout and field installation. Supplied “OMEGA” type flex rubber seal used for the interface between subway tunnel and main station structure, included installation drawings, coordinated layout, field installation, and testing.

## January 2012 – 2019

**CUSTOMER:** Northlink LLC (Jay Dee/Michels/Coluccio JV)

**FOR:** Sound Transit - Seattle WA

**PROJECT:** N125 Northlink Light Rail- (\$440,300,000). Project included construction of 36,782-lf x 21-ft 6-in bored, 18-ft I.D. segmentally lined twin running tunnels between Maple Leaf Portal and the University of Washington Station; excavation and initial support and TBM launch Maple Leaf Portal, Roosevelt Station University District Station, and exiting into the University Washington Station; Twenty three (23) SEM (sequential excavation method) and frozen cross-passages at intervals between pressurized face TBM bored tunnels; Two Earth Pressure Balance machine manufactured and supplied by Hitachi Zosen, and Robbins with continuous conveyor systems designed by Gomez International, Inc.

**PROVIDED:** Technical Advisor; Consultant, Designer, Commissioner, Plant & Electrical Manager Tunnel/Electrical Equipment Procurement, Operations Bid estimate preparation and JV bid review (Plant and Equipment, Temporary Electrical and Labor, Means and Methods, Sub-Contractor Selection) Direct Coordination with JCM-U Link JV, continual management and engineering support until project is complete. Pre- and post-bid design of pre-cast segmental lining. Equipment selection and procurement/ refurbishment of the earth pressure balance tunnel boring machines, continuous conveyor system, including surge bin, transfer conveyor, shuttle conveyor and storage bin design. Design of the conveyor system variable frequency drives and controls. Developed alternative concrete placement equipment responsible for drawings, specifications, and procurement. Hitachi & Robbins tunnel boring machine interface with the selected means and methods, Tunnel boring machine interface with the selected means and methods, OFTA coordination with JCM and Robbins. Design of One 26.4/13.2kV (6.5-MVA) Temporary Substation, two 26.4/kV x 480V 1.5-MVA, substations, one 480V x 1600-amp meter main substation, along with 23-service drops for multiple cross passage excavations using dewatering and ground freezing methods along with communications system, leaky feeder, wireless, fiber, and telephone. Design of the service air, water, wastewater, and the tunnel stand-pipe systems, Design of temporary twin tunnel ventilation system between the MLP portal to Roosevelt Station, Roosevelt Station to UDS Station, UDS Station to UW Station, totaling 7-miles, +/- 36,800-lf. Also includes the preparation of drawings, calculations, associated submittals, and contracts. Additional scope to include tunnel boring machine assembly and commissioning along with all ancillary support equipment and systems, Training of TBM operators, mechanics, electricians, and erector operators along with the development a full maintenance program. Direct contractor union labor as required to facilitate the construction of the project. Responsible for startup and commissioning of all temporary and permanent power, and mechanical systems. GII was directed and prepared a detailed evaluation of the historical and technical aspects related to the performance of the Robbins TBM.

## January 2012 – May 2015

**CUSTOMER:** Stacy & Witbeck Inc

**FOR:** Sound Transit - Seattle WA

**PROJECT:** U830 U-Link Subway Project Seattle WA - (\$7,139,169). The completed Sound Transit U220 and U230 tunnels required the final installation of all equipment including rail, electrical power, catenary systems, communications, and permanent ventilation systems prior of rail service.

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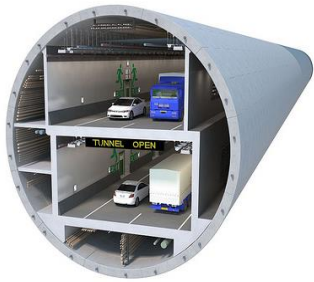
**PROVIDED:** Technical Advisor; Commissioner, Plant & Electrical Manager Tunnel/Electrical Equipment Procurement, Operations, Design. Detailed ventilation design and submittal documents for submission and review by Sound Transit and Safety personnel. Included AutoCAD drawings, calculations, and subcontractor instruction. Selected equipment and facilitated procurement for ventilation fans, ducting, air doors, variable frequency drives, power cables, and connections. Onsite field evaluation startup oversight, during the assembly and commissioning of multiple ventilation systems.

## January 2010 – February 2018

**CUSTOMER:** Hitachi Zosen

**FOR:** Washington State Department of Transportation

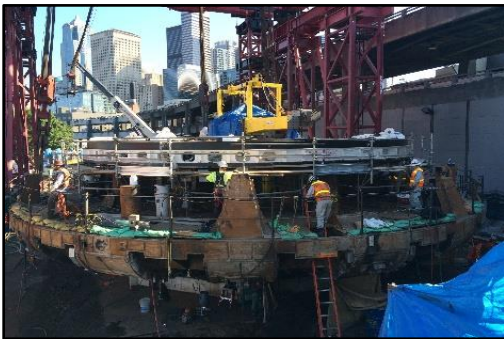
**PROJECT:** Alaskan Way Viaduct & Seawall Replacement Program, SR99 Bored



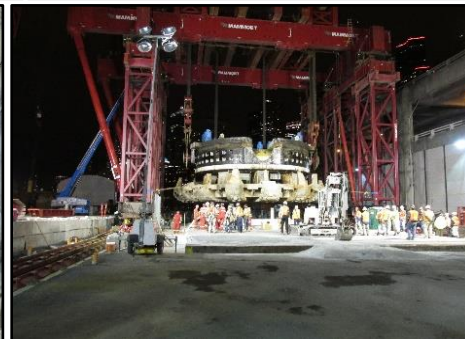
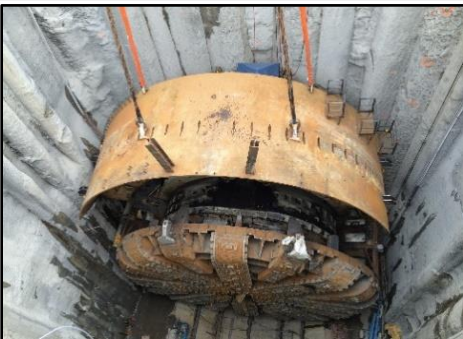
Tunnel Alternative Design-Build Project. – (\$1,139.7 Billion). The project is utilizing the world's largest Tunnel Boring Machine 57.5-ft diameter. Manufactured by Hitachi Zosen, this Earth Pressure Balance Machine will bore 2.7 miles of double-decker highway tunnel. Provided technical, engineering assistance, along with technical communication for the fabrication of the largest earth pressure balance TBM manufactured, 57.5-ft in diameter. Hyperbaric design pressure +/- 7-bar, with three 10-man personnel airlocks for hyperbaric designed for saturation dive pressures to 20-bar



**PROVIDED:** Consultant/Engineer/Field Operations Manager, supplied personnel to assist overseeing the project, Technical Advisor, engineering assistance, along with technical communication for the fabrication of the largest earth pressure balance TBM manufactured, 57.5-ft in diameter. Direct support for Hitachi Zosen during the procurement and manufacturer of the SR99/Alaska Way TBM in Seattle, beginning September 2011 to February 2013. Onsite field services provided as required during the assembly and operation of the TBM beginning January 2013 including, PE-evaluation and stamp for shuttle transport, hoists, and hyperbaric interface. Technical Standards confirmation for the application of methods, components, and materials. Support for Hitachi Zosen coordinating the



refurbishment of the TBM in December 2014 to February 2018. This included coordination and interface with Hitachi Engineers, all sub-contractors. E.g., National Welding, Mammoet, along with all contractors supplied union craft. Scope also



included the removal of the cutterhead, cutterhead support and related components to facilitate the replacement of the cutterhead seals, main bearing, refurbishment of the damaged cutterhead and structural enhancements. Responsible for locating "In-Place Machining" to provide onsite machining of the cutterhead support and cutterhead seal surfaces for the 57.5-ft diameter TBM.

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Coordinated all on site refurbishment and upgrades to the TBM, along with the procurement of parts and rental equipment daily to facilitate the enhanced schedule. Assisted and coordinated the re-assembly, including new slewing ring/main bearing assembly, until startup and commissioning of the TBM November/December 2015. Assisted and coordinated the day-to-day operation and maintenance of the TBM until the hole-through on April 4, 2017. Assisted and coordinated the final dis-assembly of the TBM and re-allocation of all the spare parts, until February 2018.

## January 2010 – November 2012

**CUSTOMER:** Shimmick/Skanska JV  
**FOR:** Bay Area Rapid Transit (BART)  
**PROJECT:** Warm Springs Tunnel – Fremont California – (\$137,000,000). Project included 1.1 miles of twin cut and cover tunnel built through Fremont's Central Park and Under Fremont Lake Elizabeth.  
**PROVIDED:** Consultants Design/Application Engineering. Detailed ventilation design and submittal documents for submission and review by Sound Transit and Safety personnel. Included AutoCAD drawings, calculations, and subcontractor instruction.  
Selected equipment and facilitated procurement for ventilation fans, ducting, air doors, variable frequency drives, power cables, and connections.  
Onsite field evaluation startup oversight, during the assembly and commissioning of multiple ventilation systems.

## January 2010 - May 2012

**CUSTOMER:** Jay Dee/Coluccio JV  
**FOR:** King County Washington  
**PROJECT:** Brightwater Project, Seattle, Washington  
**PROVIDED:** Consultant/Engineer. Detailed sub-station and pumping design, equipment supply, and for the completion and rescue of the HK TBM. Included AutoCAD drawings, calculations, and subcontractor instruction.  
Selected equipment and facilitated procurement for mine power centers, 1200-amp meter main, 15kV power cables, and connections. Onsite field evaluation startup oversight, during the assembly and commissioning of these systems.

## February 2010 – 2016

**CUSTOMER:** Michels/Jay Dee/Coluccio JV  
**FOR:** San Francisco Public Utilities Commission City and County of San Francisco  
**PROJECT:** San Francisco Water Department – Contract WD2531 Bay Division Pipelines Reliability Upgrade Bay Division Pipeline No.5 – Bay Tunnel - (\$215,294,530.00). The project utilized a Hitachi Zosen Earth Pressure Balance Tunnel Boring Machine to bore the water conveyance tunnel through soft ground under the San Francisco Bay. A 58 ft. diameter x 141 ft. deep launch shaft was excavated under water inside concrete diaphragm walls. A concrete plug was placed under 130 ft. of water. The retrieval shaft, 23 ft. diameter x 98 ft. deep was constructed using frozen walls with temporary ring beams and lagging support. There were no intermediate shafts in the 26,280 ft. in tunnel length. The tunnel utilized a two-pass lining system incorporating, bolted and gasketed, precast concrete segments 14-ft 10-in O.D. x 12-ft 10-in I.D., 5 ft. in length, for the initial tunnel support and a welded 9-ft diameter steel pipe, cement mortar lined, grouted in place for the final water carrier pipe. Included were various pipe connections at the surface along with control valves and site restoration.  
**PROVIDED:** TBM Operations/Plant & Electrical Manager - Design Engineer/Estimator/Consultant. Equipment and material supplier. Temporary electrical design, equipment supply.

WD2531 Bay Tunnel – 115kV Substation  
Equipment Supplied by  
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## July 2009 – 2013

**CUSTOMER:** JCM-U Link JV  
**FOR:** Sound Transit Seattle WA  
**PROJECT:** U-230 Capitol Hill Station to Pine Street Stub Tunnel - (\$154,139,000). Project included construction of two 3,800ft 21-ft 6-in O.D. x 18-ft I.D. segmental lined twin running tunnels between Capitol Hill Station and the Pine Street Stub Tunnel (PSST); excavation and initial support of the Capital Hill Station; five SEM (sequential excavation method) cross-passages at intervals between pressurized face TBM bored tunnels; and construction of a temporary TBM retrieval shaft at the PSST headwall and completion of the tunnel interfaces with the PSST. Hitachi Zosen Earth Pressure Balance tunnel boring machine with continuous conveyor system  
**PROVIDED:** TBM Operations Manager/Design Engineer/Estimator



# GOMEZ INTERNATIONAL, INC. & Procurement Specialists



## July 2008 – 2009

**CUSTOMER:** Shimmick/Obayashi, a Joint Venture

**FOR:** CalTrans, Sausalito, CA

**PROJECT:** Golden Gate Bridge Retrofit Phase IIIA, North Anchorage Housing, & North Pylon Seismic Retrofit (\$125,000,000). The seismic retrofit measures for this project consist of strengthening foundations, installation of micro piles and rock bolts, construction of reinforced concrete shear walls, replacement of the housing roof/roadway deck with a pre-cast concrete slab-on-steel stringer deck system involving nighttime lane closures, and other structural modifications.

**PROVIDED:** Consultant/Designer

## February 2007 - September 2008

**CUSTOMER:** Obayashi Corp. Tokyo, Japan

**FOR:** United States Army Corp of Engineers, Yokosuka Naval Station

**PROJECT:** P-998 Power Upgrades, USS Ronald Regan Berth. Design and construction contract included a new operational Medium Voltage electrical distribution system, extension to interconnect the existing 13.2 KV e-bus and 60 Hz distribution switchgear in Building 1805 to the two new 13.2 MV feeders from the new cogeneration facility with new switchgear, and to provide three new 13.2 KV looped feeders from the new switchgear to Substations A, B, and C with single feed from substation C to substation D at Yokosuka Naval Base, Japan, to support the ships that will be docked at berths 11.5, 12 and 13. In order to provide adequate reactive power support for the start-up of the large motors on the ships, a 15 MVA synchronous condenser and a 4.5 MVA frequency converter were also provided in new structures with supporting switchgear. The scope of work also included review of the 13.2kV short circuit coordination study and integration of with existing SCADA and existing condensers and frequency converters.

**PROVIDED:** Consultant/Designer

## November 2005 - March 2006

**CUSTOMER:** Colorado School of Mines

**FOR:** Bechtel SAIC Company Yucca Mountain Project Nevada Test Site NV

**PROJECT:** ECRB TBM Inspection, Yucca Mountain Project. Task Order #6 was prompted after DOE scientists determined that all equipment in the ECRB should be removed. The tunneling equipment inspected consisted of a complete TBM System: A modified Robbins 166-245 TBM, a six-car-plus-ramp single track trailing unit approximately 200 ft long.

**PROVIDED:** Consultant/Expert

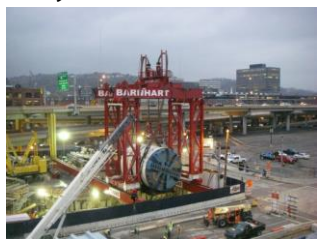


## June 2005 – April 2010

**CUSTOMER:** North Shore Constructors JV (Obayashi Corporation-led)

**FOR:** Port Authority of Allegheny County, Pittsburgh PA

**PROJECT:** North Shore Connector Tunnels and Station Shell (\$156,500,000). Project consisted of twin light rail 2,240-lf segment lined.



tunnels 21-ft, 10-in. diameter in addition to a cut-and-cover station and supporting structures. The Allegheny under-river portions of the tunnels are approximately 867 ft each way with the remainder of the alignment passing below the business district. The tunnel passes roughly 21-ft below the riverbed and through fluvioglacial and alluvial deposits. To bore the tunnels, a Herrenknecht slurry pressure balance mix shield TBM was selected along with modified Herrenknecht supplied slurry separation plant.

**PROVIDED:** Project Field Manager/TBM Operations Manager/Consultant/Designer

## September 2004 - 2010

**CUSTOMER:** Obayashi Corp/PS Mitsubishi JV

**FOR:** US Department of Transportation Federal Highway Administration

**Hoover Dam AZ/NV Border**

**PROJECT:** US93/Hoover Dam Bypass, Colorado River Bridge (\$114,000,000). Project



consisted of a Steel Concrete Composite Arch Bridge spanning the Black Canyon Gorge, 1600-ft. south of Hoover Dam, connecting the Arizona and Nevada approach highways, with four lanes 1,896-ft long, width of 88-ft, 1,060-ft twin-rib cast in place concrete arch, rise of 277-ft. With 15 pier footings with a maximum height of 287-ft (at P4, P15). The bridge deck is nearly 900-feet above the Colorado River.



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**PROVIDED:** Project Engineer/Superintendent/Designer/Consultant

## April 2004 - 2011

**CUSTOMER:** Obayashi Corp.

**FOR:** Sound Transit, Seattle WA

**PROJECT:** C710 Beacon Hill Tunnels and Stations – (\$279,000,000). Contract includes construction of two 4,400ft x 18-ft I.D. segment lined twin running tunnels. The contract included construction of one-mile tunnel under Beacon Hill, the west and east portals, a half mile of elevated trackway, and the Beacon Hill and Mount Baker stations. The main shaft of the tunnel station holds the station's four high-speed elevators, and the secondary shaft which provides ventilation and emergency staircases excavated to 165 feet deep. Mining methods included digging the northbound and southbound running tunnels (by use of the tunnel boring machine), all of the station's cross-passages (+/- 2000-lf) (3) and ventilation and the underground station concourse, using Alpine road header in conjunction with the



sequential excavation technique. A 21'6" Mitsubishi Heavy Industries, Earth Pressure Balance tunnel boring machine excavated with a continuous conveyor system.

**PROVIDED:** Project Field Manager/Start-Up Coordinator/Superintendent/ Consultant

## April 2004 - July 2007

**CUSTOMER:** Atlanta CSO Constructors (Obayashi Corporation, Mass Ana JV)

**FOR:** City of Atlanta Department of Watershed Management, Atlanta GA

**PROJECT:** West Area CSO Tunnels and Pump Station (\$243,288,000). Project consisted of multiple shafts, and wastewater tunnels bored 27-ft in diameter, approximately 43,700-lf in length, and concrete lined intermittently to a finished diameter of 24-ft. The North Avenue Tunnel runs 4.5 miles from the R.M. Clayton Water Reclamation Facility to the North Avenue CSO facility. The Clear Creek tunnel starts at the Rockdale shaft, located near the mid-point of the North Avenue tunnel, and runs 3.9 miles to the Clear Creek CSO facility. Two Herrenknecht hard rock main beam tunnel boring machines with continuous conveyor system

**PROVIDED:** Project Engineer/Designer/Consultant



## March 2004-July 2009

**CUSTOMER:** Eastside LRT Constructors (Washington Group, Obayashi Corporation, Shimmick Construction JV)

**FOR:** LA METRO Los Angeles CA

**PROJECT:** Metro Eastside Extension Light Rail Tunnels and Stations (Gold Line) (\$640,000,000). Project includes 1.7 miles 21-ft bored twin 18-ft I.D. segment lined tunnels, bored with two Herrenknecht EPB tunnel boring machines. Included were two underground stations Boyle and Soto, along with East Portal and West Portal stations. In addition to the construction of five miles of at-grade rail work, totaling 6-miles of track an extension of the Pasadena Gold Line, which runs 13.7 miles from Pasadena to Union Station in downtown Los Angeles.

**PROVIDED:** Project Engineer/Designer/Consultant

## May 2004-October 2006

**CUSTOMER:** Callegaus Municipal Water District, Thousand Oaks, CA

**FOR:** Callegaus Municipal Water District, Thousand Oaks, CA

**PROJECT:** Affholder/Elmore Pipe Jacking, Deficient Lovat EPB Tunnel Boring Machine Issue - Las Posas Feeder No. 3 Unit 2. The project consisted of number of 90-in jacked steel casing crossing including the Arroyo Simi where the Lovat TBM supplied by Affholder/Elmore was became entrapped requiring its subsequent rescue. The contractor elected not to operate in EPB mode, instead the EPB was assembled and installed to operate in the open mode, without the aid of the screw conveyor, and ability to inject conditioning agents as specified by LOVAT, the TBM became entrapped by the compaction of gravel, sands, and silts between the loading plates, and direct result the cutterhead could not rotate and muck could not be discharged through the muck ring located at the 12:00 position, therefore requiring its rescue

**PROVIDED:** Consultant/Expert

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## 2009

**CUSTOMER:** Frank Coluccio Construction Co.  
**FOR:** Central Utah Water Conservancy District  
**PROJECT:** Big Sandwash Dam (\$31,400,000). Clay core construction of the dam, with a new outlet tunnel 1200-ft x 8-ft diameter excavated by roadheader.  
**PROVIDED:** Consultant/Designer

## November 2003-January 2004

**CUSTOMER:** Colorado School of Mines, Anderson Electric Controls  
**FOR:** Bechtel SAIC Company, Yucca Mountain Project Nevada Test Site NV  
**PROJECT:** Task Order No.3 Power System and Distribution Study. Co-authored detailed study including cost estimation, drawings, and means and methods to design the power distribution system required to support 6-tunnel boring machines and related support equipment operating simultaneously at the Yucca Mountain, Nuclear Repository.  
**PROVIDED:** Consultant/Expert

## December 2003-February 2007

**CUSTOMER:** Southland Contracting  
**FOR:** City of Houston, Houston TX  
**PROJECT:** North MacGregor Storm Sewer Relief Tunnel (\$11 million). The project consisted of 7,340-foot by 13.5' diameter storm sewer in tunnel and is to be constructed using an approved one-pass precision cast concrete segmental lining tunneling method. The approved tunneling method required the utilization of a closed face tunneling machine (Earth Pressure Balance Machine) that will allow tunneling to proceed without active dewatering along the tunnel alignment from the ground surface. The six piece gasketed, and bolted, pre-cast concrete segmental lining will be installed simultaneously with the TBM's tail shield and will be grouted in place to establish positive ground support and maintain a pressure seal with the Earth Pressure Balance Machine. Ground conditions along most of the tunnel alignment consisted of mixed face conditions with low plasticity, silty and sandy clay above the tunnel and in the upper portion of the tunnel face, and silty sand and sandy silt in the lower portion of the tunnel face and below the tunnel. Ground water levels within the underlying silty sand and sandy silt deposits are expected to be at or above the contact between this deposit and the overlying clay and are dependent upon the season and recent precipitation levels.  
**PROVIDED:** Project Engineer/Consultant/Equipment Designer, Segment Designer, Manufacturing equipment design.



## July 2002-September 2002

**CUSTOMER:** Ortiz Corp.  
**FOR:** City of San Diego  
**PROJECT:** Holme Ave. Tunnel Project. Project consisted of the evaluation of a micro-tunnel boring machine's (MTBM) performance during the attempted boring of the Holme Ave. sewer pipeline replacement project. Report was submitted stating that geological baseline report was incorrect and that boulder half the size of the cutterhead could not be ingested into the stone crusher.  
**PROVIDED:** Expert/Consultant

## July 2002

**CUSTOMER:** Affholder Construction Co.  
**FOR:** South Mountain Water Transmission Tunnel  
**PROJECT:** TBM Electrical Distribution System Failure. The water transmission tunnel project consisted of approximately 6,332-lf of approximately 7-ft diameter tunnel.  
**PROVIDED:** Expert/Consultant

## March 2003-July 2004

**CUSTOMER:** Obayashi/W.W. Clyde Bros. J.V.  
**FOR:** US Bureau of Reclamation



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**PROJECT:** Tanner Ridge Pipeline, Tunnel, and Structures. Project included the estimate for the re-bid of the Tanner Ridge Portion of the Upper Diamond Fork Tunnel Project, and the design and installation of 25kV transmission system within the new pressure tunnel.

**PROVIDED:** Project Engineer/Consultant

## March 2002- June 2006

**CUSTOMER:** Nancy Creek Constructors

**FOR:** City of Atlanta, Georgia

**PROJECT:** Nancy Creek, Shafts, and Tunnels. Project consists of multiple shafts, and wastewater tunnels bored 18-ft in diameter, approximately 43,700-lf in length, and concrete lined to finished diameter of 16-ft. The Nancy Creek Tunnel is a deep tunnel, designed to store and convey wastewater by diverting flows from trunk sewers currently at or near capacity in the northwest of the City of Atlanta. Two 18-ft Robbins hard rock main beam tunnel boring machines with 24-in continuous conveyor system were utilized to excavate the tunnels.

**PROVIDED:** Project Engineer/Consultant

## March 2002-June 2006

**CUSTOMER:** Jenny Engineering Co.

**FOR:** New York Department of Environmental Protection

**PROJECT:** Water Tunnel No.3 Manhattan Section. Evaluate the Manhattan Tunnel Plans and Specifications, including inspection of cores and pertinent geological information prepared by DEP.

**PROVIDED:** Project Engineer/Consultant

## October 2021 – PRESENT

**CUSTOMER:** Michels Corporation

**FOR:** City and County of San Francisco, PUBLIC UTILITIES COMMISSION WATER ENTERPRISE

**PROJECT:** MOUNTAIN TUNNEL IMPROVEMENTS, CONTRACT NO. HH-1000R

**PROVIDED:** Consultants, Design/Application Engineering. Planned Bypass tunnel and Priest Adit excavation, steel pipe installation, backfill grout and contact grouting, including detailed drawings, calculations, and submittals. Consultants for Gate Valve fabrication/assembly and Commissioning of the valves.

## April 2001 – October 2004

**CUSTOMER:** Obayashi/Johnson Bros. J.V.

**FOR:** Minneapolis Airport Commission

**PROJECT:** Minneapolis/St. Paul Light Rail Tunnels, and Station (\$110,000,000). Light rail tunnels and station project, consisted of twin 7,400-lf tunnels driven 20-lf apart, totaling approximately 14,800-lf of tunnel, 24-ft diameter, with segmental lining finished at approximately 18-ft diameter. Using a refurbished Herrenknecht combination EPB/Open TBM, boring through limestone, sandstone, boulder, and alluvium. Lining consists of a six-piece ring and one smaller keystone. Annular grout, of approximately six cubic yards, was injected behind each five-foot ring. Excavation of midpoint station, twin 600-ft multi bench method with Alpine Road Header

**PROVIDED:** TBM Operations Manager/Project Engineer/Project Field Manager/Superintendent/Consultant

## March 2001-December 2003

**CUSTOMER:** Jenny Engineering Co.

**FOR:** New York Department of Environmental Protection

**PROJECT:** Queens Tunnel Dispute Resolution (\$172,000,000). Project included the evaluation of two requests for change submitted by the Joint Venture Contractors, Grow/Perini/Skanska, "Reduced Penetration" and "Disturbed Ground" The water tunnel project consisted of approximately 26,000-lf of 24-ft diameter tunnel excavated in granite and gneiss, with igneous intrusions. The Atlas Copco Robbins TBM 235-282 was utilized to bore these tunnels.

**PROVIDED:** Expert/Consultant

## September 2001-October 2001

**CUSTOMER:** Herrenknecht AG Germany

**FOR:** Herrenknecht USA

**PROJECT:** Tunnel Boring Machine Supply Guidelines North America. Project included the preparation of detailed electrical, mechanical, and operational design and supply specifications for the Minneapolis Light Rail Earth Pressure Balance TBM.

**PROVIDED:** Expert/Consultant

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## February 2001-October 2003

**CUSTOMER:** Shimmick/Obayashi J.V.

**FOR:** CalTrans

**PROJECT:** Golden Gate Bridge Rope House Structure Retrofit. Project consisted of evaluating the temporary power requirements and ventilation of the structure during the reconstruction of the Rope House Structure.

**PROVIDED:** Project Engineer/Consultant

## May 2001 - July 2002

**CUSTOMER:** Frank Coluccio Construction Co.

**FOR:** Frank & Joe Coluccio

**PROJECT:** Slurry Shield Cutterhead Drive System Torque Evaluation. Evaluated the drive system on a Herrenknecht Slurry Shield, and to provide a price for modifying the cutterhead drive system so that the contractor could pursue a tunneling project in Portland Oregon. Following the implementation of the preliminary changes the STBM achieved and exceeded the specified torque. Provided expert testimony before the arbitrator in the resulting dispute between the STBM Manufacture and the Contractor

**PROVIDED:** Expert/Consultant

## February 2000 - October 2005

**CUSTOMER:** Obayashi/W.W. Clyde J.V

**FOR:** U.S. Bureau of Reclamation

**PROJECT:** Upper Diamond Fork Tunnel and Pipeline (\$53,000,000). Project consisted of a design/build water supply tunnel, a continuation of the Central Utah Project. The scope of work included an intake shaft. Approximately 800-ft deep, tunnel approximately 24,000-lf in length bored at 12.5-ft diameter. The contractor selected a hard rock Robbins tunnel-boring machine remanufactured by Herrenknecht Tunneling Systems

**PROVIDED:** Project Engineer/Consultant



## September 1998 to October 1998

**CUSTOMER:** CRS New England Pipe

**FOR:** John Boyer, General Manager

**PROJECT:** Dispute Resolution

**PROVIDED:** Expert / Consultant. Evaluated the claim submitted by the Microtunneling contractor that the Reinforced Concrete Pipe (RCP) supplied by CRS New England Pipe was of a defective design and had failed causing the contractor to excavate and remove the concrete pipe. The claim stated that the gasketed joint was incapable of withstanding the forces exerted by the jacking system, as had been specified.

## July 1998 - September 1999

**CUSTOMER:** UTILIX Corp.

**FOR:** B&W Controls

**PROJECT:** Direction Drill Design and Equipment Supply. Project consisted of the evaluation, design, engineering, and manufacture of the electrical control systems for UTILIX Corps. Directional drilling system

**PROVIDED:** Consultant/Designer/Facilitator

## 1997 - 2005

**CUSTOMER:** Niagara Tunnelers JV (Obayashi/Kenaidan J.V.)

**FOR:** Ontario Hydro

**PROJECT:** Sir Adam Beck Hydro Electric Project Water Tunnels (\$300,000,000). The project consisted of approximately 6.5-miles of 48-ft diameter tunnel driven at an initial 11% decline and exiting at an 11% incline. The project will divert water from the Niagara River at night and will be release back into the river during the day driving massive turbines used to generate power during daytime peak demand period. The TBM will be a Herrenknecht hard rock double gripper shielded tunnel-boring machine, with a pre-cast concrete segmental lining installed within the shield section of the machine. Haulage of muck will be performed with conveyor belts and supply of segments and supplies is yet to be defined.

**PROVIDED:** TBM Operations Manager/Consultant

## 1997 - Present

**CUSTOMER:** Stillwater Mining Company

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**FOR:** East Boulder Project  
**PROJECT:** East Boulder Project Access Tunnels. The project consisted of twin 19,000-lf, 15-ft diameter access tunnels for the development of the East Boulder Access Drifts, to enhance the development Stillwater Mining Co. Palladium and Platinum mine. East portal Robbins Hard Rock tunnel boring machine, West portal CTS hard rock tunnel boring machine  
**PROVIDED:** Project Engineer/Consultant

## July 1997 – May 2003

**CUSTOMER:** Metropolitan Water District of Southern California's  
**Team Included:** Mr. Shel Coudray, Resident Engineer, Arrowhead East Tunnel  
Mr. John Townsend, Resident Engineer, Arrowhead West Tunnel  
Mr. Ron Drake, Resident Engineer, Badlands Tunnel.

**FOR:** Metropolitan Water District of Southern California  
**PROJECT:** Inland Feeder Project Tunnels, (\$201,000,000). The project consisted of 43.7-mile alignment of large diameter tunnels and pipelines, which connected the California and Colorado Aqueducts in Southern California. The geological conditions included granite gneiss, marble, sandstone, and quartz monzonites. The rock varied from massive, hard, strong, and very abrasive to very blocky, seamy, and crushed. Sheared rock and raveling/squeezing ground were encountered in various areas. In addition, the tunnels alignment crossed active splays of the San Andreas Fault in three locations. With a bored diameter of 18-lf, temporary concrete segments were installed with a final lining cast in place resulting in a finished diameter of 12-lf. The tunnels projects are identified as Arrowhead East, 31,495-lf, Arrowhead West, 20,341-lf and Badlands 43,235-lf. The Joint venture of Shank/Balfour Beatty was awarded all three of these contracts. Subsequently the contractors decided to build their own Tunnel Boring Machines and submitted the required documents.  
**PROVIDED:** Expert/Consultant

## January 1997 – April 1999

**CUSTOMER:** Nova Group Inc., Napa, California  
**PROJECT:** Dispute Resolution Involving Three Separate Cases

- Nova Group vs. Soltau Microtunneling: Breach of Contract, following the results of the investigation and subsequent modification made to the Soltau Micro Tunnel Boring Machine.
- Perron vs. Nova Group: Wrongful Death following underwater retrieval of Soltau, MTBM in 1996.
- Kona Cold Lobster vs. Nova Group: Wrongful Death following head on collision between Iron Man Triathlete and Kona Cold Lobster delivery van.

**PROVIDED:** Expert / Consultant

## January 1997 – October 1997

**CUSTOMER:** COTRISA-AG/Constructora Andrade Gutierrez, Mexico City, Mexico  
**FOR:** Mexico City  
**PROJECT:** San Francisco Tlalnepantla - 11 km., 3.8 m. diameter tunnel, driven through basaltic formation.  
**PROVIDED:** Consultant/Expert

## March 1996

**CUSTOMER:** Soltau Micro-Tunneling Ammann Group, Luneburg, Germany  
**FOR:** Soltau Micro-Tunneling USA.  
**PROJECT:** TBM equipment and engineering to modify Soltau RVS800AS in San Diego, California to match modifications made on machine located at Nova Group Project, Kailua Kona, Hawaii.  
**PROVIDED:** Consultant/Designer/Facilitator

## February 1995 – August 1997

**CUSTOMER:** Nova Group Inc., Napa, California  
**FOR:** Natural Energy Laboratory of Hawaii Authority (NELHA), Keahole Point, Kona, Hawaii  
**PROJECT:** NELHA's Kona Shore Crossing Project. The boring of twin suction intake pipelines, each 1,040 feet in length, 68 inch in diameter for the Natural Energy Laboratory of Hawaii Authority's experimental thermal energy conversion project.  
**PROVIDED:** TBM Operations Manager/Project Field Manager/Consultant

A Micro-Tunnel Boring Machine (MTBM) was procured by Nova Group Inc. from Soltau Microtunneling GmbH, Germany in 1993. The MTBM Model RVS800AS was remote controlled from the surface and was originally designed to operate in 100% permeable conditions. The motor was hydraulically driven at 170HP, yielding 195,000 ft/lbs. of torque. The cutterhead outside diameter



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was 68.75-inches and utilized seven 13.5-inch button type carbide cutters. Muck passed through the cutterhead spokes and entered the cone crusher that could handle boulders up to 22 inches in diameter.

Four jets in the cutterhead, controlled by a bypass valve, scoured the face in the event of overcharging the slurry chamber. The slurry chamber was charged with a 6-inch, 100 hp. Variable Frequency Drive controlled gravel pump. A paralleled pump located 25 feet from the face pumped the resulting slurry of 3 inch minus aggregate. It was designed for underwater recovery and was fitted with four bulkheads to seal the unit against flooding.

Ground support consisted of a .409-inch welded steel pipe, welded, and jacked in 20-foot sections. Inside was placed a 54-inch concrete pipe, in 12-foot lengths with a banded joint ring. Geological conditions consisted of lava flow formations with a very dense upper layer rock cap, over basaltic boulders, clinker, and basaltic sands. This formation was the result of hot lava flowing into the sea. Compressive strength was up to 20-30 psi.

The tunnels were driven from a center shoreline shaft located approximately 8 feet from the edge of the Pacific Ocean. This would allow for a shorter drive inland and an offshore drive of approximately 575 feet, utilizing the same shaft.



Evaluate and make recommendations regarding the RVS800AS's inability to perform as had been anticipated. This work included cutterhead stalling, variable frequency drive failures, hydraulic power pack performance, electrical equipment failures, and overall project equipment performance on the 8.5 percent decline ocean drives, as well as ocean retrieval.

## February 1993 - 1997

**CUSTOMER:** Magma Copper Company/Engineering Building, San Manuel, Arizona

**FOR:** Magma Copper Company

**PROJECT:** Magma Copper Company's San Manuel Mine, Lower Kalamazoo TBM Project. Access tunnels for the primary drifts in the Lower Kalamazoo (Lower "K") copper ore body, 33,200 feet in length, 15 foot in diameter. The tunnel construction took place at the 3,440 foot and 3,600-foot levels. The Robbins 1680 horsepower TBM#156-275 was specifically designed to negotiate 250-foot radius curves, and traverse grades of up to 5.5 percent. Designed to operate in temperatures of between 112- and 119-degrees F., it traversed eleven major fault zones. The TBM was constructed to conform to a shaft size of 6.8 feet in width, 13.6-foot depth and 39-foot high, with a maximum hoist drawbar capacity of 24-static tons. Contractors on site were Frontier Kemper Constructors, Evansville, Indiana, and Dielmann Haniel of Dortmund, Germany (FKC/DH Joint Venture). The trailing floor was constructed at Frontier Kemper's shop in Evansville, Indiana as a joint venture between FKC/DH and Magma Copper Company.

**PROVIDED:** Project Engineer/TBM Operations Manager/Consultant/Designer



## October 1991 - January 1991

**CUSTOMER:** Harrison Western Corporation

**FOR:** Guy F. Atkinson Construction

**PROJECT:** Pacific Gas and Electric's Grizzly Project, Quincy, California. Project consisted of 12,000 feet of hydroelectric penstock tunnel excavated through granite with Robbins hard rock TBM #119-222, leased from the Harrison Western Corporation. The 11-foot diameter TBM was rebuilt and upgraded from 600 hp. to 1000hp. at The Robbins Company facility, Kent, Washington.

**PROVIDED:** Projects Field Manager/TBM Operations Manager/Project Engineer/Consultant



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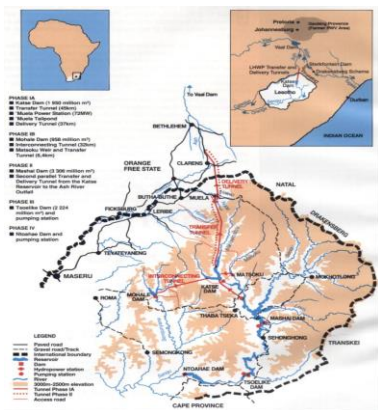


## June 1991 - February 1993

**CUSTOMER:** Harrison Western Corporation  
**FOR:** Lesotho Highlands Project Contractors, Kingdom of Lesotho (Africa)  
**PROJECT:** Lesotho Highlands Water Project. Water transfer and diversion tunnels form part of Phase 1-A of the Lesotho Highlands Water Project. Project work performed by the Lesotho Highlands Project Contractors for the Kingdom of Lesotho within the Republic of South Africa. A joint venture consortium, which included Zublin Contracting, Germany; Spie Batignolles, France; Campenon Bernard SGE, France; Balfour Beatty, United Kingdom; and LTA, Republic of South Africa. The combined tunnel drive in phase 1-A was 45 km. in length with an excavated diameter of 5 meters. All tunnel projects were connected in series to an underground power station. Tunnels were excavated through basalt and sandstone formations. Ground support methods included rock bolts, welded wire, arch sets, and shotcrete.



**PROVIDED:** Projects Field Manager/TBM Operations Manager/Project Engineer/Consultant



**Hololo/Noagajane Site:** 14 km. - length, Harrison Western Corporation modified, remanufactured Robbins TBM Model 186-206, 5.1-meter diameter, with three individual headings, (Harrison Western back-up).  
**Muela Site:** 12 km. - length, Robbins TBM Model 167-266, 5.1-meter diameter (Emil Lechner back-up).  
**Hlotse Site:** 14 km. - length, Robbins TBM Model 167-267, 5.1-meter diameter (Emil Lechner back-up).  
**Katse Site:** 12 km. - length, Atlas-Copco TBM Jarva Mark 15, 5.1-meter diameter (Fosdalen back-up).

**CUSTOMER:** Harrison Western Corporation, Wheat Ridge, Colorado  
**FOR:** Lesotho Highlands Water Project, Kingdom of Lesotho, Africa  
**PROJECT:** Robbins Tunnel Boring Machine 186-206 Remanufacture  
**PROVIDED:** Projects Field Manager/TBM Operations Manager/Project Engineer/Consultant

**CUSTOMER:** Harrison Western Corporation, Wheat Ridge, Colorado 80033  
**FOR:** Grizzly Creek Tunnel Project – Guy F. Atkinson Construction  
**PROJECT:** Robbins Tunnel Boring Machine 112- Remanufacture  
**PROVIDED:** Projects Field Manager/TBM Operations Manager/Project Engineer/Consultant

## May 1992

**CUSTOMER:** Snyder Engineering  
**FOR:** Guy F. Atkinson Construction  
**PROJECT:** Grizzly Creek Tunnel  
**PROVIDED:** Designed electrical and mechanical controls systems for Robbins TBM #186-206. Technical Advisor, Project Management, Tunnel Equipment Operations, Design

## October 1990 - June 1991

**CUSTOMER:** Harrison Western Corporation  
**FOR:** Guy F. Atkinson Construction  
**PROJECT:** Grizzly Creek Tunnel - Robbins Tunnel Boring Machine 112- Remanufacture  
**PROVIDED:** Technical Advisor, Project Management, Tunnel Equipment Operations, Design

## January 1990 - June 1992

**CUSTOMER:** Obayashi Corp.  
**FOR:** Energy Growth Partnership  
**PROJECT:** Forks of Butte Project, Paradise California  
**PROVIDED:** Electrical Superintendent



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## January 1988 - June 1990

**CUSTOMER:** Obayashi/Dillingham JV  
**FOR:** Arizona Department of Transportation  
**PROJECT:** Price Road Drainage Tunnel  
**PROVIDED:** Electrical Superintendent

## January 1979 - January 1990

**CONTRACTOR:** Gardner Zemke Co.  
**PROVIDED:** Project Supervisor  
**FOR:** U.S. Army Corps of Engineers  
**PROJECT:** Nevada Test Site-Device Assembly Facility. Las Vegas, Nevada

**FOR:** Bureau for Reclamation  
**PROJECT:** Yuma Desalt Plant, Yuma Arizona

**FOR:** U.S. Air Force  
**PROJECT:** Hughes Missile Systems, Building SO-1 Tucson, Arizona  
Upgrade of 5KV feeders and transformer retrofit.

**FOR:** Arizona Portland Cement  
**PROJECT:** Arizona Portland Cement Plant, Retrofit (CalMat Plant) El Rito, Arizona. Roll press modification and ball-mill and silo retrofit.  
**PROVIDED:** Project Manager/Superintendent

**FOR:** Bureau of Reclamation  
**PROJECT:** Central Arizona Water Distribution

**PROVIDED:** ELECTRICAL CRAFT AND STARTUP SUPERVISOR  
**FOR:** Arizona Public Service Company  
**PROJECT:** Four Corner's Generating Station, Fruitland, New Mexico



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## ASSISTED IN THE PREPARATION OF ESTIMATES FOR THE FOLLOWING PROJECTS

**January 1997 to Present:** Estimator / Consultant – Assisted with preparation of estimates for heavy civil projects, including bridges, dams, tunnels, shafts, and related heavy civil construction project. Scope included plant, equipment, means and methods, permanent mechanical and electrical, temporary power, temporary support systems including ventilation, de-watering ETC.

- Bergen Point Tunnel 2018
- Georgia-Mtkvari HPP Project 2018
- Chickamauga Lock – Army Corp of Engineers 2017
- Kemano Tunnel Project 2016
- Maline Creek Tunnel, St. Louis MO 2016
- Mill Creek Tunnel and Shafts Project, Dallas TX 2015
- Albany Park Tunnel, Chicago IL 2015
- N125 North Link Tunnels and Stations 2013 (440,000,000)
- Eglinton Tunnel and Stations Project, Toronto Canada 2012
- OARS Relief Sewer Tunnel, Columbus OH 2010 (\$260,000,000)
- WD2531 San Francisco Bay Tunnel Project 2009 (\$215,000,000)
- Manhattan Tunnel Project, New York City N.Y. (\$533,000,000)
- U230 Sound Transit, Seattle WA 2009 (\$154,139,000)
- U220 Sound Transit, Seattle WA 2009 (\$309,200,000)
- Ballard Siphon, Seattle WA 2009 (\$30,000,000)
- South Cobb Tunnel, Atlanta GA 2007 (\$305,000,000)
- Bradshaw Interceptor, Sacramento CA 2007 (120,000,000)
- Northwest Interceptor Sewer, Sacramento CA 2007
- Brightwater Central, Seattle WA 2006
- Highland Boy Tunnel, Bingham Canyon Mine, UT 2006
- San Vicente Aqueduct Pipeline CA 2005
- Yucca Mountain, South Ramp Nevada Test Site NV 2005
- Brightwater East, Seattle WA 2005
- Sir Adam Beck / Ontario Hydro Re-bid Canada 2005
- North Shore Connector, Pittsburgh PA 2005 (156,500.00)
- Big Sandwash Dam UT 2004 (\$31,400,000)
- Eastside Light Rail Tunnels Gold Line Extension, Los Angeles CA 2004
- Colorado River Bridge, Hoover Dam AZ/NV 2004 (\$114,000,000)
- Beacon Hill Tunnels and Stations WA 2004 (\$279,000,000)
- West Area CSO, Atlanta GA 2004 (\$243,288,000)
- MAC M-22 Tunnel, Minneapolis St Paul MN 2004
- North MacGregor Tunnel, Houston TX 2004
- Little Walnut Tunnel Project, Austin TX 2004 (\$12,700,000)
- Shoal Creek Tunnel Project, Austin TX 2004 (\$8,900,000)
- Eastside Extension Light Rail Tunnels and Stations 2004 (\$640,000,000)
- Park Ave. Tunnel, New York City NY 2003
- Mormon Temple Tunnel UT 2003
- Baumgartner Tunnel, St. Louis, MO 2003
- Upper Diamond Fork Tunnel and Tanner Ridge Tunnel Project Change Order No.6 UT 2003
- Big Walnut Tunnel Project, Columbus, OH 2003
- Tanner Ridge Tunnel and Pipeline, Spanish Fork, UT 2002 (\$22,000,000)
- Nancy Creek Shafts and Tunnels, Atlanta, GA 2002 (\$131,000,000)
- Golden Gate Bridge, Rope House and Pier Retrofit, CA 2001 (\$150,000,000)
- Upper Diamond Fork Tunnel, Spanish Fork, UT (\$53,000,000)
- Arrowhead East and West Tunnels Re-bid, San Bernardino, CA (\$242,000,000)
- Northeast Interceptor Sewer 2002
- Milwaukee Tunnel Estimate WI 2001
- Arrowhead East & West San Bernardino CA 2001
- Benicia-Martinez Bridge CA 2001
- Mission Valley San Diego State University Light Rail Station CA 2001
- Olivehaven Dam, San Diego County, CA 2001
- Northwest Side Relief Sewer, Milwaukee, WI, (\$116,800,000)
- Minneapolis/St. Paul Light Rail Tunnels and Station, MN 2000 (\$110,000,000)
- North Outfall Interceptor Sewer (ECIS) Tunnel, Los Angeles, CA 2000 (\$262,000,000)
- Mission Valley East LRT Tunnels and Station, San Diego, CA
- East Central Interceptor Sewer Tunnel, Los Angeles, CA (\$235,000,000)
- Chattahoochee, Wastewater Tunnel, Atlanta, GA 2000 (\$103,000,000)
- Carquinez Bridge Project \_\_ CA 2000 (\$0000)
- Upper Diamond Fork Tunnel, Spanish Fork, UT 1999 (\$53,000,000)
- Denny Way / Lake Union CSO Project, Mercer St. Tunnel 1999 (\$00000)
- Braintree Weymouth Wastewater Tunnel, Weymouth, MA 1999 (\$73,000,000)
- Fermilab Collider, NUMI Halls & Tunnels, accelerator tunnel, underground halls, and surface buildings, 1999 (\$30,500,000)
- Mill Creek, Waste-Water Tunnel, Cleveland, OH 1999 (\$51,500,000)
- Rochester Transit Authority, interstate highway and bridges, NY (\$240,000,000)
- Sir Adam Beck, Hydro Electric Water Supply Tunnel, Ontario Canada 1998 (\$300,000,000)

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## PROFESSIONAL AFFILIATIONS and MEMBERSHIP

<b>ASCE</b>	American Society of Civil Engineers
<b>ASME</b>	American Society of Mechanical Engineers
<b>ASME-PVHO</b>	American Society of Mechanical Engineers Pressure Vessels for Human Occupancy, Tunneling Task Group
<b>AUA</b>	American Underground Construction Association
<b>AIME</b>	American Institute Metallurgical and Petroleum Engineers
<b>BART-WBE</b>	Certified WBE for Bay Area Rapid Transit Authority
<b>IBEW</b>	International Brotherhood of Electrical Workers
<b>IEEE</b>	Institute of Electrical and Electronic Engineers
<b>SME</b>	Society of Mining and Engineering
<b>NFPA</b>	National Fire Protection Association
<b>WBE</b>	Certified Woman Business Enterprise through WBENC
<b>WOSB</b>	Certified Woman Owned Small Business Enterprise for the SBA through WBENC
<b>WBE</b>	Certified International Woman Owned Business Enterprise through WEConnect

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