



Thomas Marcher

RELEVANT EXPERIENCE (EXCERPT)

HYDROPOWER PLANTS PROJECTS (Full list available on request)

2014 - Valhalla Pumped Storage Developments, Chile. Client: Valhalla, Chile.

Position: Expert advice for geotechnical / tunnel design.

2014 - Alto Maipo SA, Chile. Client: AES/Gener, Chile.

Position: Member of the Advisory Board/Expert Panel during construction.

2013 - 2013 Naram Dam, Pakistan. Client: Sarhad Hydel Development Organization (SHYDO), Pakistan.

Position: Senior Geotechnical Expert.

2012 - 2013 Kirchbichl Hydroelectric Power Plant; Permit Application Design, Austria. Client: TIWAG - Tiroler Wasserkraft AG, Austria.

Position: Project coordinator for the geotechnical engineering discipline.

Key project data: Existing Kirchbichl HEPP, run-of-river plant, capacity: 19 MW, max. head: 9.7 m, design flow: 250 m³/s; Kirchbichl HEPP Expansion, run-of-river plant, capacity: 40 MW, max. head: 9.7 m, design flow: 595 m³/s.

2012 - 2013 Leinetal Pumped Storage Plant, Germany. Client: HOCHTIEF Solutions AG, Germany.

Position: Senior Geotechnical Expert.

Key project data: installed capacity: 200 MW, design flow: 133 m³/s, head: approx. 200 m, new upper reservoir, reservoir volume: 2.3 million m³, new lower reservoir, reservoir volume: 2.3 million m³, underground powerhouse: two Francis pump turbines, alternative solution: two Francis turbines and two pumps.

2012 - 2013 Expansion of Erzhausen Pumped Storage Power Plant, Germany. Client: Statkraft Markets GmbH, Germany.

Position: Project coordinator for the geotechnical engineering discipline

Key project data: expansion of an existing plant by means of an additional new pressure pipeline and a shaft power plant (existing unit approx. 200 MW, additional unit approx. 100 MW), increase of volume of upper and lower reservoir.

2010 - 2013 Tauernbach Matrei Hydroelectric Power Plant, Austria. Client: TIWAG - Tiroler Wasserkraft AG, Austria.

Position: Senior Geotechnical Expert.

Key project data: run-of-river plant, installed capacity: 57.1 MW, design flow: 12.7 m³/s, head: 527 m.

2011 - 2013 Atdorf Pumped Storage Plant, Germany. Client: Schluchseewerk AG, Germany.

Position: Geotechnical Expert.

Key project data: pumped storage plant, installed capacity: 1,400 MW, design flow: 266 m³/s, head: approx. 600 m.

2006 - 2013 Gemeinschaftskraftwerk Inn Hydroelectric Power Plant, Switzerland, Austria. Client: Gemeinschaftskraftwerk Inn GmbH, Austria, ARGE ILF/IUB, GKI. Los B, Austria.

Position: Senior Geotechnical Expert.

Key project data: design discharge: 75 m³/s, gross head: 160 m, installed capacity: 86.9 + 2.1 MW, annual power generation: 414,3 GWh.

2009 - 2010 Nizhne KP Hydroelectric Power Plant, Phase 1, Russia. Client: INFRA Project Development GmbH, Austria.

Position: Senior Geotechnical Expert.

Key project data: diversion plant with daily storage, installed capacity: 101 MW, design flow: 45 m³/s, gross head: 307 m, pressure tunnels, total length: 18 km.

2008 - 2009 Motyginskaya Hydroelectric Power Plant, Bankable Feasibility Study, Russia. Client: CJSC "Boguchanskaya Hydro-Electric Power Station", Russia.

Position: Senior Geotechnical Expert.

Key project data: Run-of-river plant, installed capacity: approx. 1,100 MW, design flow: 3,950 m³/s, head: approx. 27 m, annual power generation approx. 7,900 GWh.

2007 - 2010 Niederwartha Pumped Storage Plant, Germany. Client: Vattenfall Europe Generation AG, Germany.

Position: Senior Geotechnical Expert, responsible for power house shaft design.

Key project data: pumped storage plant, installed capacity: turbine operation 120 MW, pump operation 120 MW, design flow: turbine operation 108 m³/s, pump operation 73 m³/s, head: 143 m.

2007 - 2013 Limmern Power Plant, Tender and Construction Design, Switzerland. Client: Kraftwerke Linth - Limmern AG, Switzerland.

Position: Senior Geotechnical Expert and Member of the Geotechnical Task Force, responsible for expansion of upper reservoir, headrace, penstock, tailrace design, power house, cavern design.

Key project data: New pumped storage plant, installed capacity: 1,000 MW, head: 630 m, Q,T: 192 m³/s, Q,P: 146 m³/s, expansion of upper reservoir, construction of headrace, penstock, and tailrace incl. power house cavern and power transmission lines, 4 pump-turbine units.

2006 - 2013 Limberg II Pumped Storage Plant, Kaprun HEPP, Austria. Client: VERBUND Hydro Power AG, Austria.

Position: Senior Geotechnical Expert, responsible for geomechanical & structural design.

Key project data: pumped storage plant, installed capacity: 480 MW, design discharge: 144 m³/s, head: 366 m on average; headrace tunnel, length: 4.2 km, diameter (interior): 6.0 – 6.2 m; tailrace tunnel, length: 0.25 km, diameter (interior): 6.8 m; surge chamber, inclined shaft, length: 0.5 km, diameter (interior): 4.8 m;

2005 - 2013 Niagara Tunnel Facility Project, Canada. Client: STRABAG AG, Austria.

Position: Senior Geotechnical Engineer, responsible for stability analysis.

Key project data: length: 10.2 km, TBM, diameter: 14.4 m, lining: 60 – 70 cm cast in place prestressed concrete, Q: 500 m³/s.

2005 - 2006 Modernisation of Coya Hydropower Plant, Chile. Client: Pacific Hydro Chile S.A., Chile.

Position: Senior Geotechnical Engineer, responsible for geotechnical & structural design.

Key project data: Run-of-river plant with daily storage reservoir, design flow increase from 22.5 m³/s to 83 m³/s; capacity increase from 39 MW to 103 MW, gross head: 145 m.



CAVERNS PROJECTS (non water-power related; full list available on request)

2011 - 2013 Underground development, Disposal for nuclear waste, Switzerland. Client: Nagra, Switzerland.

Position: Senior Geotechnical Engineer / Project coordinator for geomechanical & structural design.

2009 - 2010 Central Subway, Third Street Light Rail Phase 2, USA. Client: SFMTA-San Francisco Municipal Transportation Agency, USA.

Position: Senior Geotechnical Engineer / Project coordinator for geomechanical & structural design.

Key project data: The platform box is located approximately 100 feet below Market Street. The width of the station is approximately 50 feet. The platform box is a hybrid between mined cavern and cut and cover box.

2007 - 2008 Stanford LINAC Coherent Light Source Project: Detailed Design, On-site Supervision, USA. Client: Affholder Incorporated, USA.

Position: Senior Geotechnical Expert, responsible for lead for geotechnical design and construction design analysis

Key project data: Undulator Hall Tunnel to house 33 undulators: Length approx. 600 ft; Location running east from new Beam Transport Hall to Front End Enclosure; Excavation cross-section approx. 21 ft wide by 19 ft high horseshoe section. X-ray Transport & Diagnostics Tunnel to house optical equipment: Length approx. 650 ft; Location extending from the Near Experimental Hall (NEH) to the Far Experimental Hall (FEH); excavation cross-section approx. 21 ft wide by 19 ft high horseshoe section. Far Experimental Hall (FEH): Length 250 ft (underground); Excavation cross-section approx. 49 ft wide x 33 ft high horseshoe section. Access Tunnel: Length approx. 350 ft; Location extending from the east side of the existing Stanford Linear Collider (SLC) Experimental Hall to FEH; Excavation cross-section approx. 21 ft wide by 19 ft high horseshoe section.

2008 - 2009 THE Trans Hudson Express: Extended Preliminary Engineering, USA. Client: THE Partnership, USA

Position: Senior Geotechnical Expert, responsible for lead for geotechnical design and construction design analysis

Key project data: New York Penn Station Expansion (NYPSE) Cavern: situated within the 34th Street right of way, and in bedrock approx. 30.5 m beneath street level; length 488 m, height 27.4 m, width 29.3 m. Including full depth of Hotel Interlocking Cavern, total length of cavern complex is approx. 700 m. The NYPSE package includes two caverns, six utility tunnels, three escalator tunnels, three elevator shafts, four access tunnels, and two fan plants.



METRO & LIGHTRAIL PROJECTS (full list available on request)

2010-2013 Warsaw Metro Line 2, Design, Poland. Client: ASTALDI S.p.A., Italy, Gülermak Ağır Sanayi İnşaat ve Taahhüt A.Ş., Turkey, Przedsiębiorstwo Budowy Dróg i Mostów Sp. z o.o., Poland

Position: Senior Geotechnical Expert, responsible for geotechnical design and construction design analysis

Key project data: New metro line, length: 6.5 km (all underground), 3 TBMs for tunnelling (diameter: 5.7 m), connection tunnel to existing Line 1 underpassing the river Wisła, 7 stations. Scope of work: EPC construction design, permit application design and as-built documentation.

2008 - 2011 Edmonton North LRT Extension - Downtown to NAIT: Preliminary Engineering to Final Design, Canada. Client: AECOM, Canada.

Position: Senior Geotechnical Expert, responsible for geotechnical design and construction design analysis.

Key project data: Twin tunnel lightrail extension connecting to existing Churchill Station: northbound tunnel length 367 m, southbound tunnel length 391 m; Approx. cross-section of each tunnel 37 m²; NATM softground excavation.

2009-2012 Dulles Corridor Metrorail Extension: Design Review, USA. Client: ATCS / CH2M HILL Joint Venture, USA

Position: Senior Geotechnical Expert / Project Coordinator, responsible for design checks / reviews of geotechnical & structural engineering.

Key project data: 23.2 mile metro extension with double tracks at-grade, elevated and underground sections, five new stations, emergency exits, and tail tracks. Scope of work: review Fire-Life-Safety Report, Ventilation System, Structural/Civil Design.

2009 Cat3 Check Transfer Baggage Tunnel - London Heathrow T5, United Kingdom. Client: Mott MacDonald, United Kingdom

Position: Project Manager.

Key project data: SCL Lined Tunnel, Baggage Transfer Tunnel, purpose: 20 m connection between T5C Chamber and New T5C Launch Chamber.

2007-2008 Muni San Francisco, USA. Client: Parsons Brinckerhoff Quade & Douglas, Inc., USA, San Francisco Municipality (SF Muni), USA

Position: Senior Geotechnical Expert, responsible for preliminary engineering design for Union Square Market Street Station.

Key project data: SEM/NATM, top-down construction; deep soil mix walls; diaphragm slurry walls; Jet Utility.

2002-2005 Heathrow Airport - T5 Terminal, Rail Tunnels, United Kingdom. Client: AECOM Limited, United Kingdom

Position: Project Manager, responsible for geotechnical and structural design check SCL lining (CAT3 check).

Key project data: Tunnels with shotcrete support using the LaserShell (tm) method; stormwater outfall tunnel, ART tunnel, HEX tunnel, PICCEX tunnel.



ROADWAY TUNNEL PROJECTS (full list available on request)

2012 - 2013 SR-710 (North) Gap Closure Tunnel; Preliminary and Environmental Impact Study Phase, USA. Client: CH2M HILL, USA.

Position: Senior Geotechnical Expert / Engineer for Tunnel Design including Seismic Design Evaluations

Key project data: gap closure tunnel, twin tubes, double decks, four lanes each deck. Preliminary analysis and comparison of different alternatives for a highway tunnel, utilizing the TBM method (different tunnel lengths, diameter approx. 50 ft).

2012 - 2013 D1 Presov Tunnel, Slovak Republic. Client: DOPRAVOPROJEKT, a.s., Slovak Republic.

Position: Senior Geotechnical Expert for Design Review. Key project data: Motorway tunnel with 2 tubes of length 2240 m, NATM excavation in hard and soft rock conditions.

2011 - 2013 Milowka-Wegierska Gorka, Expressway 69, Poland. Client: Generalna Dyrekcja Dróg Krajowych i Autostrad (GDDKiA), Poland.

Position: Senior Geotechnical Expert. Key project data: Two-lane road tunnel with parallel adit, tubes: 1, length: 2 x 1 km, built using the cut-and-cover method: 100 m, mining method: 2 km, sequential excavation method (A: 100 m²): 2 km.

2008 - 2011 Brisbane Airport Link and Northern Busway Project, Australia. Client: PBAJV Parsons Brinckerhoff Arup Joint Venture, Australia.

Position: Project Manager for the Innsbruck Design Team; EPC construction design. Key project data: Brisbane Airport Link, motorway tunnel, length: 15 km including road (5.7 km of twin tunnels), busway tunnels, connecting ramps, 25 bridges; Northern Busway Project, two-lane road for buses only, length: 3 km, underground between Truro Street, Windsor and Sadlier Street, Kedron, 1.5 km tunnel.

2006-2011 Pfänder Tunnel, 2nd Tube, Austria. Client: Amt der Vorarlberger Landesregierung, Austria, ASFINAG Bau Management GmbH, Austria

Position: Senior Geotechnical Expert, responsible for tender design analyses, geotechnical & structural design consultancy during construction. Key project data: twin-lane road tunnel, length: 6.586 km, mined tunnel: 6.531 km, cut-and-cover tunnel: 0.055 km, excavation cross section (tunnel): 80 - 180 m², TBM diameter: 11.75 m, excavation cross section (cavern): 144 - 183 m², number of laybys: 289 pieces, number of cross passages: 15 pieces, full transverse ventilation

2006-2009 Caldecott Tunnel 4th Bore:, USA. Client: Parsons Transportation Group, USA, Contra Costa Transportation Authority (CCTA), USA.

Position: Senior Geotechnical Expert, responsible for lead for initial and final lining, design check including seismic & design analysis of cross passages. Key project data: Bore #4 is 1,036 m long including two 3.6 m traffic lanes,

2002-2012 Devil's Slide Tunnel, Permit, Tender and Construction Design, USA. Client: CALTRANS, USA, HNTB Corporation, USA.

Position: Senior Geotechnical Expert, responsible for geotechnical & structural design expertise including seismic and design checks. Key project data: Twin tube road tunnel with one lane per tube: northbound tunnel length 1,249 m; southbound tunnel length: 1,265 m. Average tunnel width approx. 10 m; excavation cross-section: 79 - 93 m²; 9 cross-passages with a total length of approx 135 m. Three mined chambers; total length of SEM tunnels: 2,500 m.



RAILWAY TUNNELS (full list available on request)

2014 - Brenner Base Tunnel, Austria. Client: IG BBT-N, Austria

Position: Expert / advisory services to the IG BBT-N.

2012 - 2013 Stuttgart 21, PFA 1.5, Contract Section 3, Bad Cannstatt Tunnel, Germany. Client: HOCHTIEF Solutions AG, Germany.

Position: Project coordinator for the deotechnical / tunnel design team. Key project data: twin-track and single-track tunnels for interurban railway and light rail lines, length: approx. 1.74 km twin-/multiple-track tubes and approx. 5.5 km single-track tubes.

2012 - 2013 New Semmering Base Tunnel; Review of Tender Documents, Austria. Client: ÖBB-Infrastruktur AG, Austria.

Position: Geotechnical Expert for Design Check of Tunnels. Key project data: 2 single-track tunnel tubes, length: 27 km, design speed: 250 km/h.

2012 - 2013 TEN-T Bratislava Airport connection, Slovak Republic. Client: DOPRAVOPROJEKT, a.s., Slovak Republic.

Position: Project coordinator for Geotechnical/Tunnel Design. Key project data: NATM driven railway tunnel (singletrack) of the length 250 m in quarterian noncohesive soils under several roads.

2011-2013 Brenner Base Tunnel; Basis for Project Implementation Works of Further Detailed and Final Design, Austria/Italy. Client: Brenner Basistunnel BBT SE, Austria/Italy.

Position: Design joint venture lead / manager for the working group geological/geotechnical design. Key project data: twin-track high-speed railway line for mixed traffic, length: 55 km, design speed: 250 km/h; particularities: cross-border railway tunnel consisting of two single-track tunnel tubes with service tunnel, cross passages every 333 m, three multifunctional facilities (emergency stops).

2006 - 2010 Crossrail; Conceptual Design, United Kingdom. Client: Arup, United Kingdom.

Position: Senior Geotechnical Expert, responsible for grip Stage 3 analysis, value engineering analyses, scheme design analysis (grip stage 3+), numerical design guideline documents. Key project data: new rapid transit / underground system, length: 7 km.

2009-2013 California High Speed Railway Line; Program Management Oversight, USA. Client: TYLin International, USA.

Position: Senior Geotechnical Expert / Project Coordinator for the Geotechnical services of the program management oversight contract. Key project data: high-speed rail system from San Diego to Sacramento connecting all major cities. Length: 1,300 km; speed: 220 mph (350 km/h); 30 stations.

2002-2014 Gotthard and Ceneri Basetunnel, Safety-oriented design check (SIOP), Switzerland. Client: Ernst Basler + Partner AG, Switzerland.

Position: Senior Geotechnical Expert, responsible for design check, geotechnical & structural design within SIOP. Key project data: excavation work started 1996; base tunnel to be opened: 2016; line length: 57 km; 2 single track tunnels; operating speed: up to 250 km/h, max. overburden 2.300 m.



EXPERIENCE WITHIN OTHER BUSINESS AREAS (available on request)

- Oil & Gas: production facilities, gas storage facilities, process plants, tankfarms and terminals.
- Pipelines: pipeline systems for oil, pipeline systems for water.
- Water & Environment: water supply systems, wastewater disposal systems, solid waste treatment plants and landfills, river engineering works.
- Buildings: operations control buildings.
- Alpine Engineering: ski resorts and slopes, water storage reservoirs.
- Energy: thermal power plants, power transmission and distribution.