

Mohamed Younis, PE - Principal

With 30 years of experience in the management, design, and construction of large, complex water, transportation, and underground mine facilities and tunnel programs, Mr. Younis specializes in underground and tunnel design, with experience in every aspect of delivery. including planning, design, and construction. Mr. Younis is a technical leader recognized for leading multi-disciplinary teams to produce high-quality projects that achieve their functional and performance requirements. Mr. Younis is a hands-on practitioner of engineering. He focuses on preventing issues by developing a well-structured management plan that anticipates the activities of design and construction while applying the latest techniques and technologies. His attention to detail, mastery of analytical tools, and global experience enable him to solve complex technical issues associated with subsurface and tunnel engineering. Mr. Younis understands the link between contractual systems and project delivery; he has helped owners meet their project objectives through the use of various contracting and procurement approaches, including design-build, design-bid-build, and public-private partnerships. Mr. Younis has extensive experience in structural and geotechnical design, including a thorough understanding of standards and codes applicable in multiple jurisdictions.

Mr. Younis has provided his expertise on projects around the world, including the design and construction of underground water, transportation, and mine projects in Australia, Bahrain, Canada, Chile, Egypt, Hong Kong, India, Kuwait, Oman, Qatar, Saudi Arabia, the United Arab Emirates, and throughout the United States.

Specialty Skills: Tunnels and Underground Structures including Soft Ground and Hard Rock, Trenchless Technology, Geotechnical Assessment and Reporting, Shallow and Deep Foundation Systems, Support of Excavation, Numerical Analysis, evaluation of existing structures, concrete and steel structure design, Protection of Structure Assessment, Contract Preparation, Project and Program Management, Claim Support, Risk Analysis.

Recent & Notable Litigation and Arbitration Engagements

Providing expert litigation, arbitration, and mediation support, exclusively focusing on high-stakes underground design and construction disputes involving complex projects. Recent engagements include but are not limited to:

- Providing expert litigation support and testimony on behalf of a county's \$1.6B transportation project in defense of claims brought by the general contractor (2025, ongoing);
- Provided expert litigation support to legal team hired by a top-tier design-build team to defend claims associated with a \$1.4B transportation project (2022);
- Provided testimony on behalf of a contractor's defense team in conjunction with a \$2.4B transportation project (2018)

Notable Design and Construction Experience

BART Silicon Valley Phase II | San Jose, CA | Engineer of Record

The BART SVII project includes the construction of approximately 6 miles of rail. This consists of 5 miles of underground section with 3 stations. The stations are connected to the surface through entrance shafts with adits connecting the shafts to the station. Developed and supervised the detailed design of the permanent structures for the 11 adits. This includes ground condition assessment, as well as geomechanical and structural modeling (2D and 3D).



EDUCATION

- MS Geotechnical Engineering, University of Maryland, 1994
- BS Civil Engineering, Alexandria University, Egypt, 1987

PE STATE LICENSURE HELD

CA, DC, FL, KY, MA, MD, MI, NC, NY, OH, TX, and VA

INTERNATIONAL LICENSURE

Member of Egyptian Syndicate of Engineers (# 980/14 – Civil) -Egypt

YEARS OF EXPERIENCE 30

PROFESSIONAL ASSOCIATIONS

- American Underground Construction Association (UCA)
 USA
- American Society of Civil Engineers (ASCE) – USA
- Egyptian Syndicate of Engineers – Egypt

Developed the design drawings and prepared design packages. The design was performed to meet the VTA and AASHTO requirements.

Westside Purple Line Extension Project, Section 3 – Construction Management, Support of Excavation (SOE) | Los Angeles, CA | Role: Support of Excavation Specialist & Technical Support – 2021-Present.

Provided engineering support during construction. This includes review of the contractor's submittals, instrumentation reading reviews, interpretation, and recommendations for corrective actions. This included the interpretation of IPI and strain gauge readings. Provided technical support to LA Metro concerning the support of excavation (SOE). This included an independent check of the SOE system for the Westwood/VA Hospital underground station within the Caltrans right-of-way at Interstate I-405. The design of the SOE includes soldier piles and lagging, both of which are made of timber. The design also included a traffic deck to maintain traffic flow on the I-405 ramps above the excavation. The traffic deck consisted of pre-cast concrete panels supported on steel deck beams. The design check also included the design of a storm sewer support spanning over the excavation. An independent review was conducted to verify that the design met LA Metro and Caltrans design standards. The technical support also included assessing the impact of concurrent adjacent development excavation within 6 ft. of the Westwood/UCLA station SOE system. The assessment included numerical analysis to evaluate the interaction between the two concurrent excavations and to provide recommendations for maintaining stable and safe excavation conditions. The construction cost for this project is approximately \$3.2 billion.

Westside Purple Line Extension Project, Section 2 – Bid Phase, Tunnel Lining Design | Los Angeles, CA | Role: Tunnel Design Manager, Engineer of Record

Lead engineer and in charge of the segmental lining design for the WPLE2 project. Provided gasketed and bolted precast concrete segmental lining design as well as gasketed and bolted steel segmental lining associated with WPLE2. The tunnel construction comprises a twin bore, approximately 11,000 ft. each. The tunnel diameter was approximately 18 ft. The steel segment extended for 1400 ft. over a seismically active fault zone. The design was detailed due to the special seismic and restrictive geometry requirements. In addition, the bid-phase detailed design provided the contractor with a more accurate economic cost estimate while meeting the restrictive requirements. The design included two options for the concrete segmental lining: fiber-reinforced only and hybrid reinforcement (fiber/rebar), as an alternative. The segmental lining consisted of a universal tapered ring with 6 segments and one key. The concrete segmental lining design included analyses for both construction and permanent loading cases. The loading cases included demolding, transportation, stacking, lifting, and erection, as well as thrust forces, poor ring build, ground and groundwater loads, and seismic loads. The structural design was performed in accordance with ACI 318 and 544.4R standards, as well as the Fib Model Code 2010.

Bergen Point WWTP Outfall Replacement Project, Segmental Lining Design| Suffolk County, Babylon, NY | Role: Engineer of Record

Engaged as the lead design and engineer of record for the segmental lining and pipe jacking design. The Bergen Point WWTP Outfall (Bergen Tunnel) Project is approximately 14,200 feet long, with a 10-foot finished ID tunnel lined using a precast segmental lining support system. The tunnel extends from Bergen Point WWTP launch shaft to the Barrier Island receiving shaft. The tunnel was constructed with a slurry TBM. The project includes the replacement of pipes and valves within the existing Final Effluent Pump Station, as well as new site piping, gates, valve chambers, meter chambers, launch and receiving shafts, and HVAC and electrical works. The tunnel construction included a 400-ft-long pipe jacking as a starter tunnel to facilitate TBM assembly, and the remainder of the tunnel was supported with a segmental lining. A reinforced concrete transition pipe section (adapter) was designed and installed at the interface between the pipe jacking and segmental lining. Provided the tunnel detailed support system design, including reinforced concrete pipe jacking and segmental lining), as well as TBM face pressure analysis and recommendations. Additionally, a flood control support system, including sheet piling walls, is also in place.

Dubai Metro, Red Line and Green Line | Dubai, UAE | Role: Lead Tunnel Engineer

Served as the contractor's designer for the Dubai Metro design-build project. The Dubai Metro project includes approximately 6.83 miles (11 km) of twin-track tunnel (bored and cut-and-cover tunnels) and six annex structures. The design consists of bored tunnels using EPBM, cut-and-cover tunnel sections, and annex structures, utilizing a top-down construction method. It also includes audits, changes to accommodate field conditions, shop drawing reviews,



coordination of electrical and mechanical (E&M) systems, coordination with the rail team, and responses to the Owner's Engineer comments. Lead the design for tunnel lining, including segmental lining design, shotcrete lining for audits, diaphragm walls, and concrete durability.

Kolkata East-West Metro Project, Contract UG-1 | Kolkata, India | Role: Lead Tunnel Design Engineer

Led the detailed design for the Kolkata Metro UG-1 design-build contract. Led and performed tunnel design, including coordination with M&E teams. The design packages included segmental lining design, TBM parameters, NATM design for cross passages, ventilation shaft design (caisson sinking), and settlement/damage assessment. The project consisted of approximately 1.86 miles (3 km) of twin-bored tunnels (each with a diameter of 18 ft [5.55 m]), six cross passages including sumps, one ventilation shaft, and three underground stations.

Grosvenor Mine | Moranbah, Queensland, Australia | Role: Lead Designer

Provided precast concrete segmental design associated with new drift construction at the Anglo American, Grosvenor Mine (Execution Phase) located in Moranbah, Queensland, Australia. The design included special invert segments and tunnel segmental lining to accommodate loading resulting from modified TBM extraction techniques, thereby reducing the time required for dismantling and reassembly. The concrete segmental lining design was performed in accordance with the Australian Standard AS 3600 and the Fib Model Code 2010. The tunnel construction comprises a conveyor drift and a transport drift, approximately 795 meters (2,600 feet) and 921.5 meters (3,025 feet) in length, respectively.

Delhi Metro BC-45 Project, Tunnels and Underground Stations | New Delhi, India | Role: Tender Design Manager

Led multidisciplinary team for the tender design of 2 underground stations, 1.86 mi (3km) of twin-bored tunnels in soft ground. The design encompassed geotechnical, civil, structural, architectural, electrical, and mechanical (E&M) elements, as well as fire and life safety considerations. The finished inside diameter of the bored tunnels is 19 feet (5.8 meters). The design included cross passages and ventilation shafts. The tunnels were bored using EPBM/slurry TBM with gasketed segmental lining. Prepared tunnel preliminary design for the tender, including ground condition evaluation, construction techniques and methodologies, segmental lining design, temporary and permanent support systems (D-walls, rips, and lagging) for the stations, and preliminary construction schedule.

Chennai Metro Project, Phase I, Tunnels and Underground Stations, Contracts UAA-02, UAA-04 & UAA-05 | Chennai, India | Role: Tender Design Manager

Led multidisciplinary team for the tender design of 10 underground stations, 6.21 mi (10km) of twin-bored tunnels and cut & cover tunnels in soft ground. The design encompassed geotechnical, civil, structural, architectural, electrical and mechanical (E&M), and fire and life safety elements. The finished inside diameter of the bored tunnels is 19 feet (5.8 meters). The design included cross passages and ventilation shafts. The tunnels were bored using EPBM/slurry TBM with gasketed segmental lining. Provided technical support for ground condition evaluation, construction techniques, methodologies, and preliminary construction schedule.

