



Board Report

File #: 2026-0137, File Type: Contract

Agenda Number: 10.

CONSTRUCTION COMMITTEE APRIL 15, 2026

SUBJECT: TUNNEL ADVISORY PANEL SERVICES

ACTION: APPROVE RECOMMENDATION

RECOMMENDATION

AUTHORIZE the Chief Executive Officer or their designee to:

- A. EXECUTE Modification No. 01 to Contract No. PS1334-5600 with Dr. Youssef Hashash to continue to provide Tunnel Advisory Panel Services, in an amount Not-To-Exceed (NTE) \$781,459 increasing the total contract value from \$329,562 to \$1,111,021 and extend the contract from June 30, 2026, to June 30, 2029;
- B. EXECUTE Modification No. 09 to Contract No. PS-8510-2493 with Dr. Edward J. Cording, to continue to provide Tunnel Advisory Panel Services, in an amount NTE \$781,610, increasing the total contract value from \$3,671,235 to \$4,452,845 and extend the contract from June 30, 2026 to June 30, 2029; and
- C. EXECUTE Modification No. 03 to Contract No. PS1620-80000, with Dr. Thomas O'Rourke, to continue to provide Tunnel Advisory Panel Services, in an amount NTE \$642,469, increasing the total contract value from \$1,586,457 to \$2,228,926 and extend the contract from June 30, 2026, to June 30, 2029.

ISSUE

Metro is currently planning, designing, and constructing rail transit projects with extensive underground engineering and construction that involve complex geotechnical and tunneling conditions. Current projects with tunnel segments include the Westside Purple Line Extension Section 2 and Section 3 Projects, Southeast Gateway Line Project, Sepulveda Transit Project, Eastside Transit Corridor Phase 2 Project, and K Line Northern Extension. Los Angeles County has challenging geologic, seismic and tunneling conditions and deep underground station construction, with some through fault rupture zones, tar impregnated soil, toxic gases, high concentration of methane, squeezing ground and high groundwater pressures. While Metro has extensive experience from both staff and engineering consultants, there is the need for an independent Tunnel Advisory Panel (TAP) to provide expert advice and review of this engineering work. The Tunnel Advisory Panel, comprised of Dr. Youssef Hashash, Dr. Edward Cording, and Dr. Thomas O'Rourke, are

recognized in the industry and worldwide as engineering/construction experts in geotechnical analyses, tunneling, deep excavation, earthquake engineering, and building settlements.

BACKGROUND

The TAP was originally convened in August 1995 in response to questions posed by the Board regarding the feasibility of tunneling in Los Angeles ground conditions. Metro contracted with Drs. Dan Eisenstein, Geoffrey Martin and Harvey Parker to determine the feasibility of tunneling in Los Angeles, to assess the effectiveness of Metro's construction program to date, and to recommend any modifications to the current construction program deemed appropriate.

In June 2001, the Board approved two, five-year contracts to the members of the TAP in the amount not-to-exceed \$1,167,826 and directed staff to return each year for funding approval. Since then, the Board has approved funding and extensions to the TAP contracts. Due to Dr. Eisenstein's untimely death in April 2009, Metro procured an additional member for the TAP, Dr. Edward Cording, to provide expert technical services. With Dr. Harvey Parker passing away in May 2020, Metro staff procured an additional member for the TAP, Dr. Thomas O'Rourke, to provide expert technical services. With Dr. Geoffrey Martin retiring in April 2025, Metro procured an additional member for the TAP, Dr. Youssef Hashash in July 2025 to provide expert technical services.

The current TAP members are respected academics, with extensive industry engagement and were elected members of the National Academy of Engineering. Dr. Youssef Hashash is a Distinguished Professor of Civil Engineering at the University of Illinois Urbana-Champaign. Dr Edward Cording is a former Professor of Civil Engineering from the University of Illinois Urbana-Champaign with Emeritus status. Dr Tom O'Rourke is a Professor of Engineering Emeritus at Cornell University and President of the Earthquake Engineering Research Institute. All have led authoritative industry leading research and written definitive technical publications as well as engaged with other government agencies providing technical support in the areas of tunneling, deep excavations and design for seismic resiliency.

DISCUSSION

The TAP members, Drs. Hashash, Cording, and O'Rourke, have been providing advice on all Metro projects with underground construction elements. The projects that TAP has been involved with include extensive underground engineering and construction that involve complex geotechnical and tunneling issues in both soils and rock for which the TAP members are uniquely qualified.

The status of each project and the TAP members' involvement in them is as follows:

Westside Purple Line (D Line) Extension Project

The Westside Purple Line (D Line) Extension Project was adopted by the Board and the Final Environmental Impact Report (EIR) was certified in 2012. The project is being designed and constructed in three sections. The entire 9-mile project consists of twin-bored tunnels with 7 subway stations which are primarily under Wilshire Boulevard. Section 1 - Wilshire/Western to Wilshire/La Cienega is expected to open for revenue service on May 8, 2026.

Metro has retained the services of the TAP to provide independent review and monitoring of the following work that is being performed by Metro's engineering consultants and contractors:

- Section 2 - Wilshire/La Cienega to Century City Constellation Station (2.59 miles of twin-bored tunnels, 2 subway stations) - Since the tunneling and underground construction activities for this section of the project is complete, the TAP has concluded providing expert advice on a regular basis for this section of the project. The project will, however, seek expert advice on an as-needed basis with issues that may arise including claim resolution.
- Section 3 - Century City/Constellation Station to Westwood/VA Hospital Station (2.56 miles of twin-bored tunnels, 2 subway stations) - The Notice-To-Proceed (NTP) for the Design/Build Contract (Tunnels, Stations, Systems and Trackwork) Tunnel was issued on January 2019 and the NTP for Station was issued in May 2019. Final design is nearly complete and tunnel construction is complete. The TAP will be required to provide expert advice on the station design and construction including the geotechnical conditions encountered, the monitoring of potential ground movements associated with station construction adjacent to mission critical federal facilities and privately owned tall office buildings.

Southeast Gateway Line Project

The Southeast Gateway Line Project is a new light rail transit (LRT) line to southeast LA County, connecting Artesia, Cerritos, Bellflower, Paramount, Downey, South Gate, Cudahy, Bell, Huntington Park, Vernon and unincorporated Florence-Firestone. The project was environmentally cleared in August 2024.

TAP will be providing expert advice for the proposed crossing beneath the 710 freeway on the following topics:

- Techniques for excavating for and jacking a large tunnel/box structure beneath the freeway
- Ground movements and changes to the groundwater table associated with proposed methods
- TAP will also provide expert advice for the proposed northern extension of the project as required when planning and early engineering proceed

Sepulveda Transit Corridor Project

The Sepulveda Transit Corridor Project is currently in the planning and environmental clearance phase. The Board approved Modified Alternative 5, an underground heavy rail alternative, as the Locally Preferred Alternative for the project on January 22, 2026. Metro is working with a private sector contractor, Sepulveda Transit Corridor Partners, under a pre-development agreement to advance delivery of this project. The TAP will be providing expert advice for the following topics:

- Tunneling through the Santa Monica Mountain involves rock masses ranging from weak to strong with low to high abrasivity
- Tunneling through alluvial soils
- Tunneling through fault zones
- Tunneling with relatively high groundwater pressures
- Mixed face tunneling large diameter and long bored tunnels

Eastside Transit Corridor Project - Phase 2

The Eastside Transit Corridor Phase 2 Project will extend the existing Metro L (Gold) Line from the existing terminus station at Atlantic Boulevard and Pomona Boulevard in East Los Angeles to

Lambert Road in Whittier in eastern Los Angeles County. The Board adopted the Locally Preferred Alternative (LPA) as Pomona/Atlantic Station to Greenwood at the December 2022 Board meeting. About 3 miles of this alternative is an underground configuration along Atlantic Boulevard in unincorporated East Los Angeles. TAP will be providing expert advice for the following topics:

- Tunnel alignment design
- Ground movements and changes of the groundwater table associated with proposed methods of excavation and support for cut and cover structures
- Ground movements and changes to the groundwater table associated with proposed tunneling methods
- Crossing beneath Heavy Freight and Passenger Railroads

K Line Northern Extension

The K Line Northern Extension will extend the existing Metro K Line from the existing terminus station at the Crenshaw/Expo Station north to the D Line at Wilshire Blvd and the B Line at the Hollywood/Highland station with a potential terminus at the Hollywood Bowl. The new rail service will connect Metro's C, E, D and B Lines, serving six of LA's busiest bus corridors and improving access to jobs, healthcare and entertainment. TAP will be providing expert advice for the following topics as the environmental review and early engineering proceeds:

- Tunnel alignment design
- Ground movements and changes of the groundwater table associated with proposed methods of excavation and support for cut and cover structures
- Ground movements and changes to the groundwater table associated with proposed tunneling methods
- Impact of tunneling on residential and commercial buildings
- Asphalt infused soils and gassy ground conditions
- Potential active fault crossings
- Hard rock conditions

In addition to the above Projects, TAP may be asked to provide ad-hoc services to other projects and for the existing underground infrastructure as needed by Metro Staff.

TAP members are involved with on-going support relating to third party and project stakeholders' issues, which will require continuation of their services for the future. They have unique knowledge and background on Los Angeles County's underground conditions and intimate knowledge of Metro's past and current engineering and construction projects.

Board approval of the recommendations will allow the continuation of services of the three TAP members to support Metro on the aforementioned projects and will also allow the TAP to provide ad-hoc services to other projects as needed by Metro staff.

DETERMINATION OF SAFETY IMPACT

From a safety perspective, underground construction is inherently one of the most high-risk activities on transit projects. TAP provides independent reviews and imparts technical know-how and expertise for the safe construction of underground facilities. All services supported by this contract are centered

on promoting public and worker safety, avoiding project delays, and promoting cost saving measures to effectively deliver the projects with minimal impacts to the adjacent communities.

FINANCIAL IMPACT

The funding for these services is included in the Proposed FY27 budget in various Capital Projects. Task Orders will be issued and funded from the associated project's fiscal year and Life-of-Project (LOP) budgets. The funding source differs depending on the individual project. These activities will remain within the approved LOP for each project.

Since this is a multi-year contract, the cost center managers, respective project managers and Chief Program Management Officer will be responsible for budgeting the cost of the annual work program for each fiscal year for the term of the contract.

Impact to Budget

The funding for these Contract Modifications is provided by the specific project requiring the services. The source for these funds is in line with the respective projects' funding plans and fund sources may consist of federal and/or state grants as well as local funds. These funds are not operating eligible funds.

EQUITY PLATFORM

The Tunnel Advisory Panel services provide technical advice and expertise for various Metro projects with underground design and construction components throughout the County of Los Angeles, including several which serve Equity Focus Communities. These services are essential for the support and safe delivery of Metro projects which run across the greater Los Angeles area. All services supported by this contract are centered on delivering the projects with minimal impacts on the communities and provide benefits of enhanced mobility and regional access to all populations within the respective project areas. At the time of solicitation, the Diversity and Economic Opportunity Department did not establish a Disadvantaged Business Enterprise goal for procurement due to the lack of subcontracting opportunities, as the services provided are for specific named individuals, with no other services.

VEHICLE MILES TRAVELED OUTCOME

Vehicle Miles Traveled (VMT) and VMT per capita in Los Angeles County are lower than national averages, the lowest in the SCAG region, and on the lower end of VMT per capita statewide, with these declining VMT trends due in part to Metro's significant investment in rail and bus transit.* Metro's Board-adopted VMT reduction targets align with California's statewide climate goals, including achieving carbon neutrality by 2045. To ensure continued progress, all Board items are assessed for their potential impact on VMT.

As part of these ongoing efforts, this item is expected to contribute to further reductions in VMT. While this item does not directly encourage taking transit, sharing a ride, or using active transportation, it is a vital part of Metro operations, as it provides expert review and oversight of

tunneling and underground construction in Metro's operations. Because the Metro Board has adopted an agency-wide VMT Reduction Target, and this item supports the overall function of the agency, this item is consistent with the goals of reducing VMT.

*Based on population estimates from the United States Census and VMT estimates from Caltrans' Highway Performance Monitoring System (HPMS) data between 2001-2019.

IMPLEMENTATION OF STRATEGIC PLAN GOALS

This recommendation supports the Strategic Plan Goal # 5, *"Provide responsive, accountable, and trustworthy governance within the Metro organization"* by providing review and oversight of tunneling and underground construction.

ALTERNATIVES CONSIDERED

Staff has considered the alternative of allowing the current contracts with Dr. Hashash, Dr. Cording, and Dr. O'Rourke to expire and open a procurement notice to solicit applications from potential new members, but recommend to execute the contract modifications for the current TAP panel members for the following reasons:

- Current TAP members Drs. Hashash, Cording and O'Rourke have a long history and institutional knowledge of Metro together with their knowledge of local soil and rock conditions and technical understanding of specific tunnel related issues in general and those pertaining to local conditions in particular would require significant investment in time and resources to replicate even if other equally suitable candidates were found and used in this role. This would not only incur cost but would significantly reduce the benefit and validity of their advice, while this knowledge and understanding were obtained. This is not recommended as it will leave Metro without the benefit of their extensive local experience, knowledge and expertise and create a void in the required tunneling expertise for a considerable period, thereby creating the potential for delays and additional costs to ongoing Metro projects.
- Metro baseline documents include Design Criteria, Standard Drawings, Directive Drawings and Baseline Specifications. These baseline documents were adapted and updated from documents previously utilized for prior projects and are being continuously updated to incorporate the Lessons Learned from the past and current projects or to account for evolving technologies. Current TAP members have observed developments and successes on Metro's current projects that need to be documented and be made available to both current and future Metro projects. Executing the contract modification with the current TAP members would enable Metro to continue seeking this valuable input from them to update the baseline documents with the lessons learned from their engagements from all the current large projects. This will make the Metro Baseline a set of industry leading document and capture the issues from Metro's past and current Projects.

- Extension and additional funding for the TAP contracts are vital and essential to provide continuity that would otherwise be interrupted, should the Board decide to cancel and re-procure the TAP contracts (a six to nine-month process). Furthermore, the history and knowledge of the current designs, geotechnical conditions, and construction approaches will present a steep learning curve for a new team of TAP members, which could significantly delay the timely review and input necessary to provide this important layer of independent monitoring and oversight across these complex engineering and construction projects.

NEXT STEPS

Upon Board approval, staff will execute the Contract Modifications, and will direct the Tunnel Advisory Panel to continue providing tunnel engineering advice to Metro including supporting the aforementioned projects.

ATTACHMENTS

Attachment A - Procurement Summary

Attachment B - Contract Modification Change Log

Attachment C - DEOD Summary (CONTRACT NO. PS1334-5600)

Attachment D - DEOD Summary (CONTRACT NO. PS-8510-2493)

Attachment E - DEOD Summary (CONTRACT NO. PS1620-8000)

Prepared by: Matthew Crow, Deputy Executive Officer, Project Management (213) 842 8505
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Stephanie Wiggins
Chief Executive Officer

PROCUREMENT SUMMARY
TUNNEL ADVISORY PANEL SERVICES
CONTRACT NO. PS1334-5600

1.	Contract Number: PS1334-5600		
2.	Contractor: Dr. Youssef Hashash		
3.	Mod. Work Description: Continued Tunnel Advisory Panel Services		
4.	Contract Work Description: Tunnel Advisory Panel Services		
5.	The following data is current as of: February 10, 2026		
6.	Contract Completion Status		Financial Status
	Contract Awarded:	07/01/2025	Contract Award Amount: \$329,562
	Notice to Proceed (NTP):	07/01/2025	Total of Modifications Approved: N/A
	Original Complete Date:	06/30/2026	Pending Modifications (including this action): \$781,459
	Current Est. Complete Date:	06/30/2029	Current Contract Value (with this action): \$1,111,021
7.	Contract Administrator: Eva Rodriguez		Telephone Number: 213.922.1034
8.	Project Manager: Matthew Crow		Telephone Number: 213.842.8505

A. Procurement Background

This Board Action is to approve a Contract Modification in support of continued Tunnel Advisory Panel (TAP) services by Dr. Youssef Hashash.

This Contract Modification will be processed in accordance with Metro’s Acquisition Policy and the contract type is labor hour.

Refer to Attachment B – Contract Modification/Change Order Log for the modifications issued to date.

B. Cost/Price Analysis

This labor hour contract contains a fixed, negotiated labor rate established in 2025. The negotiated amount complies with all requirements of Metro’s Acquisition Policy and was determined to be fair and reasonable through fact-finding, clarifications,

technical evaluation and cost analysis at the time the contract was awarded. An Independent Cost Estimate (ICE) was obtained as part of the cost analysis.

Proposal Amount	Metro ICE	Negotiated Amount
\$781,459	\$781,459	\$781,459

**TUNNEL ADVISORY PANEL SERVICES
CONTRACT NO. PS-8510-2493**

1.	Contract Number: PS-8510-2493		
2.	Contractor: Dr. Edward Cording		
3.	Mod. Work Description: Continued Tunnel Advisory Panel Services		
4.	Contract Work Description: Tunnel Advisory Panel Services		
5.	The following data is current as of: February 10, 2026		
6.	Contract Completion Status		Financial Status
	Contract Awarded:	01/29/2010	Contract Award Amount: \$1,225,000
	Notice to Proceed (NTP):	01/29/2010	Total of Modifications Approved: \$2,446,235
	Original Complete Date:	01/28/2015	Pending Modifications (including this action): \$781,610
	Current Est. Complete Date:	06/30/2029	Current Contract Value (with this action): \$4,452,845
7.	Contract Administrator: Eva Rodriguez		Telephone Number: 213.922.1034
8.	Project Manager: Matthew Crow		Telephone Number: 213.842.8505

A. Procurement Background

This Board Action is to approve a Contract Modification in support of continued Tunnel Advisory Panel (TAP) services by Dr. Edward Cording.

This Contract Modification will be processed in accordance with Metro's Acquisition Policy and the contract type is labor hour.

Refer to Attachment B – Contract Modification/Change Order Log for the modifications issued to date.

B. Cost/Price Analysis

This labor hour contract contains a fixed, negotiated labor rate established as part of the contract. The negotiated amount complies with all requirements of Metro's Acquisition Policy and was determined to be fair and reasonable through fact-finding, clarifications, technical evaluation and cost analysis at the time the contract was awarded. An Independent Cost Estimate (ICE) was obtained as part of the cost analysis.

Proposal Amount	Metro ICE	Negotiated Amount
\$781,610	\$781,610	\$781,610

**TUNNEL ADVISORY PANEL SERVICES
CONTRACT NO. PS1620-80000**

1.	Contract Number: PS1620-80000		
2.	Contractor: Dr. Thomas O'Rourke		
3.	Mod. Work Description: Continued Tunnel Advisory Panel Services		
4.	Contract Work Description: Tunnel Advisory Panel Services		
5.	The following data is current as of: February 10, 2026		
6.	Contract Completion Status		Financial Status
	Contract Awarded:	01/29/2020	Contract Award Amount: \$947,457
	Notice to Proceed (NTP):	01/29/2020	Total of Modifications Approved: \$639,000
	Original Complete Date:	06/30/2023	Pending Modifications (including this action): \$642,469
	Current Est. Complete Date:	06/30/2029	Current Contract Value (with this action): \$2,228,926
7.	Contract Administrator: Eva Rodriguez		Telephone Number: 213.922.1034
8.	Project Manager: Matthew Crow		Telephone Number: 213.842.8505

A. Procurement Background

This Board Action is to approve a Contract Modification in support of continued Tunnel Advisory Panel (TAP) services by Dr. Thomas O'Rourke.

This Contract Modification will be processed in accordance with Metro's Acquisition Policy and the contract type is labor hour.

Refer to Attachment B – Contract Modification/Change Order Log for the modifications issued to date.

B. Cost/Price Analysis

This labor hour contract contains a fixed, negotiated labor rate established as part of the contract. The negotiated amount complies with all requirements of Metro's Acquisition Policy and was determined to be fair and reasonable through fact-finding, clarifications, technical evaluation and cost analysis at the time the contracts were awarded. An Independent Cost Estimate (ICE) was obtained as part of the cost analysis.

Proposal Amount	Metro ICE	Negotiated Amount
\$642,469	\$642,469	\$642,469

**CONTRACT MODIFICATION/CHANGE ORDER LOG
TUNNEL ADVISORY PANEL SERVICES
CONTRACT NO. PS1334-5600**

Mod. No.	Description	Status (approved or pending)	Date	\$ Amount
1	Increase contract value and extend period of performance to June 30, 2029	Pending	Pending	\$781,459
	Modification Total:			\$781,459
	Original Contract:			\$329,562
	Total:			\$1,111,021

**CONTRACT MODIFICATION/CHANGE ORDER LOG
TUNNEL ADVISORY PANEL SERVICES
CONTRACT NO. PS-8510-2493**

Mod. No.	Description	Status (approved or pending)	Date	\$ Amount
1	Extend period of performance to June 30, 2015	Approved	01/09/15	\$0
2	Increase contract value and extend period of performance to July 30, 2015	Approved	06/22/15	\$28,915
3	Increase contract value and extend period of performance to August 31, 2015	Approved	07/17/15	\$28,915
4	Increase contract value and extend period of performance to September 30, 2015	Approved	08/04/15	\$28,915
5	Increase contract value and extend period of performance to June 30, 2020	Approved	09/13/15	\$764,033
6	Increase contract value, update hourly rate and extend period of performance to June 30, 2023.	Approved	07/01/22	\$923,457
7	Increase contract value, extend period of performance to June 30, 2026	Approved	07/01/23	\$672,000
8	Increase hourly rate from \$300 to \$350	Approved	08/26/25	\$0
9	Increase contract value, extend period of performance to June 30, 2029	Pending	Pending	\$781,610
	Modification Total:			\$3,227,845
	Original Contract:			\$1,225,000
	Total:			\$4,452,845

**CONTRACT MODIFICATION/CHANGE ORDER LOG
TUNNEL ADVISORY PANEL SERVICES
CONTRACT NO. PS1620-80000**

Mod. No.	Description	Status (approved or pending)	Date	\$ Amount
1	Increase contract value, extend period of performance to June 30, 2026	Approved	07/01/23	\$639,000
2	Increase hourly rate from \$300 to \$350	Approved	08/26/25	\$0
3	Increase contract value, extend period of performance to June 30, 2029	Pending	Pending	\$642,469
	Modification Total:			\$1,281,469
	Original Contract:			\$947,457
	Total:			\$2,228,926

DEOD SUMMARY**TUNNEL ADVISORY PANEL SERVICES / PS1334-5600****A. Small Business Participation**

When this contract was initially solicited, the Diversity & Economic Opportunity Department did not establish a Disadvantaged Business Enterprise (DBE) goal for this project due to the lack of subcontracting opportunities. It is expected that Dr. Youssef Hashash will continue to perform the services as a member of the Tunnel Advisory Panel.

B. Living Wage and Service Contract Worker Retention Policy Applicability

The Living Wage and Service Contract Worker Retention Policy is not applicable to this modification.

C. Prevailing Wage Applicability

Prevailing wage is not applicable to this modification.

D. Project Labor Agreement/Construction Careers Policy

Project Labor Agreement/Construction Careers Policy is not applicable to this Contract. PLA/CCP is applicable only to construction contracts that have a construction related value in excess of \$2.5 million.

E. Manufacturing Careers Policy

The Manufacturing Careers Policy (MCP) does not apply to this contract. The MCP is required on Metro's Rolling Stock RFPs, with an Independent Cost Estimate of at least \$50 million.

DEOD SUMMARY

TUNNEL ADVISORY PANEL SERVICES / PS-8510-2493

A. Small Business Participation

When this contract was initially solicited, the Diversity & Economic Opportunity Department did not establish a Disadvantaged Business Enterprise (DBE) goal for this project due to the lack of subcontracting opportunities. It is expected that Dr. Edward J Cording will continue to perform the services as a member of the Tunnel Advisory Panel.

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DEOD SUMMARY

TUNNEL ADVISORY PANEL SERVICES / PS-1620-80000

A. Small Business Participation

When this contract was initially solicited, the Diversity & Economic Opportunity Department did not establish a Disadvantaged Business Enterprise (DBE) goal for this project due to the lack of subcontracting opportunities. It is expected that Thomas O'Rourke will continue to perform the services as a member of the Tunnel Advisory Panel.

B. Living Wage and Service Contract Worker Retention Policy Applicability

The Living Wage and Service Contract Worker Retention Policy is not applicable to this modification.

C. Prevailing Wage Applicability

Prevailing wage is not applicable to this modification.

D. Project Labor Agreement/Construction Careers Policy

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E. Manufacturing Careers Policy

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Tunnel Advisory Panel Services

Contract Extensions

Construction Committee

April 15, 2026

File No. 2026-0137

Androush Danielians

Senior Executive Officer, Program Management



Metro

RECOMMENDATION

AUTHORIZE the Chief Executive Officer to:

- A. EXECUTE Modification No. 01 to Contract No. PS1334-5600 with Dr. Youssef Hashash to continue to provide Tunnel Advisory Panel Services, in an amount Not-To-Exceed (NTE) \$781,459 increasing the total contract value from \$329,562 to \$1,111,021 and extend the contract from June 30, 2026, to June 30, 2029; and
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TUNNEL ADVISORY PANEL



- The Tunnel Advisory Panel (TAP) was originally convened in August 1995 in response to questions posed by the Board regarding the feasibility of tunneling in Los Angeles ground conditions.
- The TAP members, Dr. Hashash, Dr. Cording, and Dr. O'Rourke, have been providing advice on Metro projects with extensive underground engineering and construction
 - Dr. Youssef Hashash - Distinguished Professor of Civil Engineering at the University of Illinois Urbana-Champaign.
 - Dr. Edward Cording - Former Professor of Civil Engineering from the University of Illinois Urbana-Champaign with emeritus status.
 - Dr Tom O'Rourke - Professor of Engineering Emeritus at Cornell University and President of the Earthquake Engineering Research Institute.
- Projects involve complex geotechnical and tunneling issues in both soils and rock for which the TAP members are uniquely qualified.

CURRENT ACTIVE PROJECTS WITH TUNNEL SEGMENTS



- Metro is currently planning, designing, and constructing rail transit projects with extensive underground engineering and construction that involve complex geotechnical and tunneling conditions
 - Purple (D) Line Extension
 - Southeast Gateway Line
 - Sepulveda Transit Project
 - Eastside Transit Corridor Phase 2
 - K Line Northern Extension
- All the projects listed above are at critical stages in their respective planning, engineering, and construction phases



Thank you



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