July 23, 2024

The Honorable Members of the Board of Supervisors
City and County of San Francisco
1 Dr. Carlton Goodlett Place, Room 244
San Francisco, CA 94102

Subject: Request for Approval – Contract No. SFMTA-2024-20-FTA with WSP/PGH Wong Joint Venture for consulting services supporting the Train Control Upgrade Project for an initial five-year term, with five options to extend the term for an additional year, for a total of ten years and an amount not to exceed $36,000,000

Honorable Members of the Board of Supervisors:

On August 6, 2024, The San Francisco Municipal Transportation Agency (SFMTA)Board of Directors is scheduled to act on Contract No. SFMTA-2024-20-FTA, authorizing the Director of Transportation to exercise a contract with WSP/PGH Wong Joint Venture for consulting services supporting the Train Control Upgrade Project for an initial five-year term, with five options to extend the term for an additional year, for a total of ten years and an amount not to exceed $36,000,000; and further authorizing the Director of Transportation to approve individual task orders issued under the contract up to the aggregate total amount of $36,000,000.

Additionally, the SFMTA respectfully requests that the San Francisco Board of Supervisors approve a resolution to authorize the Director of Transportation to execute Contract No. SFMTA-2024-20-FTA with WSP/PGH Wong Joint Venture for consulting services supporting the Train Control Upgrade Project for an initial five-year term, with five options to extend the term for an additional year, for a total of ten years and an amount not to exceed $36,000,000; and further requests that the San Francisco Board of Supervisors authorize the Director of Transportation to approve individual task orders issued under the contract up to the aggregate total amount of $36,000,000.

BACKGROUND

CBTC Project Background

The SFMTA Muni Metro system currently relies on an Automatic Train Control System (ATCS) to operate trains automatically in the 5-mile Market Street Subway and the new 1.6-mile Central Subway. All but one of Muni's rail lines merge into the dual-track Market Street Subway, which

requires that trains move quickly through the tunnel to maintain vehicle flow and headways on the branch lines. While many other light rail systems in the United States still operate using older, fixed-block train control systems, Muni was an early adopter of sophisticated loop-cable based ATCS technology. In service since 1998, the ATCS enables safe, high-frequency service in the core of Muni's light rail network and is the backbone of rail service delivery. However, ATCS technology is now outdated, and the ATCS is at the end of its useful life. In its current condition, train control has caused an increasing number of delays to Muni's rail service due to daily communication failures, train timeouts and component failures. Upgrading the train control system is the investment in Muni infrastructure that will have the greatest benefit to rail service. The Train Control Upgrade Project (TCUP) is a capital project intended to deliver a modern Communications-Based Train Control (CBTC) system covering both the surface portions of the Muni Metro network and the subways. Replacing the ATCS with a state-of-the-art CBTC will maintain the excellent safety record of the current system, while also increasing the subway's efficiency and reliability. CBTC's technology boost will keep subway congestion to a minimum and reduce delays where trains become stuck between stations.

With this project, CBTC supervision will be expanded to street-level rail lines as well, bringing the entire Muni rail network under a single train control and supervision system. When the CBTC system is deployed on the surface, the train operator will continue to control the vehicle while supervised by the control center and the CBTC system. The CBTC system will coordinate with street traffic signals so that they synchronize with train movements, manage signaling of surface rail junctions, and provide driver assist functions which aid in maintaining vehicle speed and dwell times to keep trains evenly spaced. This will provide the SFMTA Transit Management Center with the tools necessary to manage the entire Muni Metro system and smooth out service, preventing conflicts at junctions and delays at tunnel portals.

During its first phase, the project will introduce the new CBTC on the street-level Embarcadero and Third Street rail corridors north of the Muni Metro East facility, which serve major civic destinations such as Oracle Park, Chase Center, and UCSF Mission Bay, as a technology demonstration phase. In the second phase, the project will replace the existing ATCS in the Market Street Subway and Central Subway so that Muni Metro train control is provided by a single CBTC system. Over the full eight-year span of the project, CBTC will be extended to the surface branches of the J, K, L, M, N and southern portion of the T line.

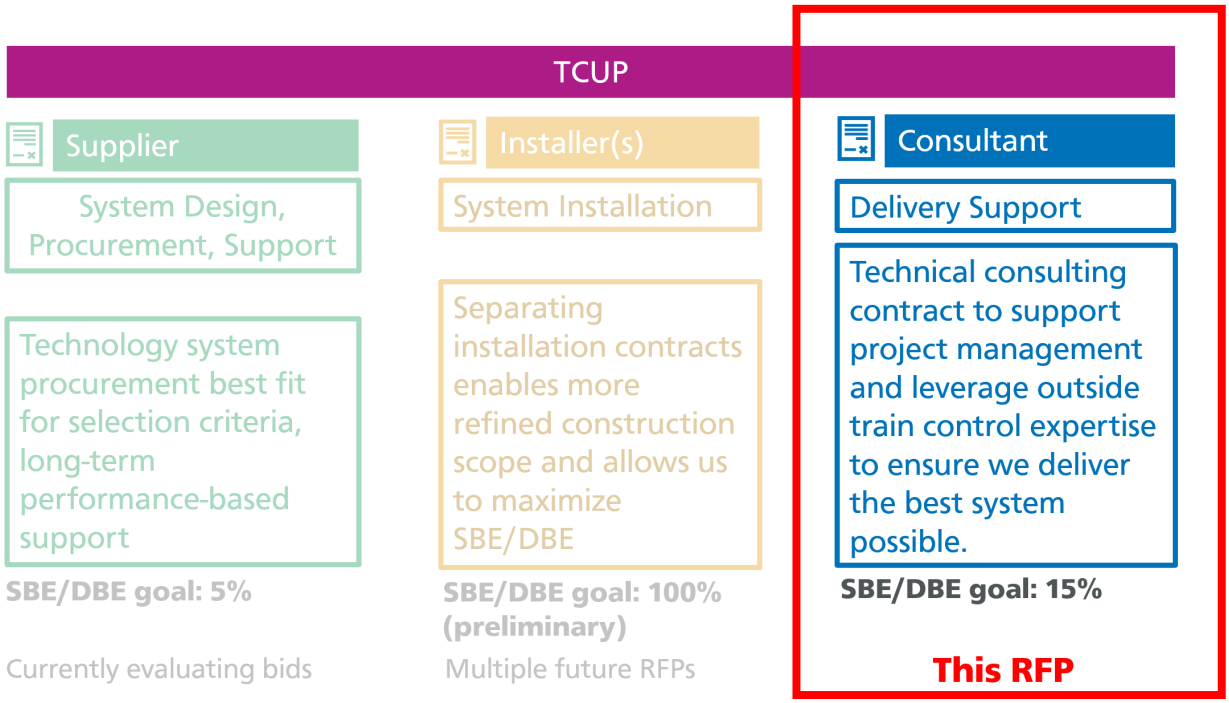
The SFMTA has issued a separate RFP to select a CBTC Supplier (SFMTA-2022-40-FTA) (Supplier RFP) and has received responsive proposals. Later this year, the SFMTA intends to award the contract for design, procurement and support of the CBTC system following successful negotiations. After Notice to Proceed is given for the Supplier contract, the project design phase will begin. The Supplier will perform design work customizing its baseline CBTC product to meet SFMTA's requirements, and provide the fully designed CBTC System components, kits and installation instructions to SFMTA for installation. The SFMTA will contract separately with local contractors (Installers) for the infrastructure construction, vehicle onboard equipment installation, and wayside equipment installation. The Installers procurement will be set aside for small and disadvantaged business enterprises. The Supplier will not perform any installation

work, but the Supplier will oversee, inspect, and test and commission the installed CBTC System to ensure the installed works conforms to its product specifications and design.

CBTC Consultant Services and Scope of Work

To complement the Supplier and Installer contracts, the SFMTA is now procuring a contract with a Consultant to support the project. The Consultant will provide international expertise in train control implementation, reducing project risk by anticipating and solving for challenges experienced in other systems. Collectively, the Consultant has decades of experience with modern train control and will assure Supplier accountability, provide in-house staff training, and will lead challenging project tasks such as construction management. The SFMTA intends to award the Consultant contract before the Supplier contract so that the Consultant is fully integrated into the SFMTA project team before the Supplier begins their work. The Consultant will hold the Supplier and Installers accountable for their performance as prescribed in their respective contracts and will provide guidance based on international best practices and experience with other CBTC procurement projects. Hiring a qualified technical consultant to mitigate the risk of disputes with the Supplier and/or Installers was among the recommendations in the Train Control Upgrade Project risk assessment issued in November 2022.

The structure of the separate Supplier, Installer(s), and Consultant contracts is in the image below:



Contract No. SFMTA-2024-20-FTA is for professional consulting services to support the SFMTA in the procurement, design, engineering, contract administration, integration, construction management, deployment, and acceptance of the new CBTC. The Consultant will provide

technical train control expertise to the SFMTA during the project. The SFMTA will order services generally described in the awarded contract through the issuance of individual Task Orders which would be released pursuant to the awarded contract during the contract term.

The SFMTA will use an integrated project team approach, which includes dedicated SFMTA management and design staff supported by SFMTA transit operations and maintenance staff working with the CBTC Supplier and Consultant, along with one or more separately contracted Installers to design and deliver the CBTC system. Train control system design and engineering is a one-time need, and once the train control system is deployed there is a minimal ongoing need for train control engineering services. Therefore, SFMTA does not have a roster of in-house engineering staff with train control experience to draw on for this project. SFMTA staff have extensive experience maintaining and operating the existing ATCS system; however, the ATCS technology is nearly 30 years old and the design, procurement, and installation of the new CBTC will require specialized knowledge of CBTC systems that the agency does not possess and cannot easily hire to obtain. It would not be cost effective to hire in-house staff to perform the consultant role, as the needed expertise will change throughout the course of the project and the workflow will ebb and flow in a way that would make it inefficient to staff internally. The consultants will provide valuable training for the SFMTA team that will lead the project delivery work and enable us to continue to operate and maintain this investment in-house.

Using the Consultant to meet these needs is cost effective because it enables the SFMTA to invest in developing staff's train control knowledge and capabilities while allowing the SFMTA flexibility to adjust the size of the project workforce as the project goes through periods where the SFMTA's share of the workload ebbs and flows. The ability to flex workforce avoids the SFMTA becoming the bottleneck when the SFMTA must review a large number of designs and documents, and also allows the SFMTA to not carry idling workers during periods where most of the project work is shifted to the system Supplier or Installers. Towards the end of the project, the project team expects to use less of the Consultant services as the SFMTA becomes better able to self-support its train control system with the knowledge and expertise it has built up over the course of the project. The last five years are structured as five one-year options to give the SFMTA the ability to terminate the contract if it finds no longer needs the Consultant's services.

The SFMTA will require continuous support from the Consultant from the beginning of design through final acceptance of the CBTC and during the initial years of support services to help address any lingering issues following full implementation. The types of skills and the level of consultant support needed will change as the project progresses through its different stages. For example, when the project is in the design phase at the beginning of the proposed contract, the SFMTA will need engineers and technical experts to support the CBTC design process and to assist the SFMTA with reviewing design submittals; about two years into the proposed contract as the project enters construction and procurement phases, the SFMTA's need for Consultant services will change to construction management, quality assurance, safety certification and testing.

CBTC Contract Structure

Contract No. SFMTA-2024-20-FTA will have a base term of five years and five options to extend the term for an additional year, for a maximum duration of ten years. The Contract outlines a general scope of services described in the previous section. The detailed scope of work will be determined by Task Orders issued as needed, but at least once per year. The price for each Task Order will be determined by level of effort, applying pre-negotiated labor rates (inclusive of all costs such as overhead) to the estimated hours, multiplied by the agreed-upon profit. Profit will be negotiated at each Task Order up to a maximum of 7 percent, based on the complexity of the scope envisioned in the Task Order. Each Task Order will be approved by the Director of Transportation before it goes into effect.

The pre-negotiated labor rates will increase automatically at an annual increase of 4.5 percent starting on the first anniversary of the effective date of the Agreement. To reduce the administrative burden on both staff and the contractor, to minimize disruptions to the project work and to fix project costs, the SFMTA has negotiated this annual fixed rate increase for the first five years. The 4.5 percent rate increase will be revisited when exercising each option, so SFMTA will have the opportunity to adjust it after the first five-year term if necessary, based on new economic projections or other circumstances.

Consultant Services Contract Procurement
The SFMTA issued an RFP in November 2023 for consulting services to support the SFMTA's work on the TCUP. In December 2024, staff hosted a pre-proposal conference with approximately 15 attendees from representatives from interested consulting/sub-consulting companies. In March 2024, SFMTA received three proposals in response to this RFP and undertook a rigorous evaluation process to determine the highest-ranked proposer. Following this evaluation, SFMTA staff negotiated an agreement with WSP/PGH Wong Joint Venture for a not-to-exceed amount of $36,000,000 over ten years.

WSP/PGH Wong Joint Venture was ranked the highest in the evaluation due to their excellent qualifications. WSP/PGH Wong Joint Venture has a deep bench of CBTC professionals to draw from, having delivered more than 60 CBTC installations in the past two decades across almost every continent. The Joint Venture combines the strengths of two established firms bringing together WSP's global train control experience with PGH Wong's extensive local construction management and engineering experience. The SFMTA expects to draw on these strengths to gather lessons learned from international CBTC projects and for support managing local installation contractors.

From the strength of the personnel identified in their proposal, it is clear that WSP/PGH Wong Joint Venture will be able to support SFMTA in reviewing the Supplier's design and monitoring the delivery and installation of the new CBTC. WSP/PGH Wong Joint Venture includes eight SBE/DBE firms and has committed to a 16 percent SBE/DBE participation goal. SBE employees have critical roles such as the Lead Vehicle Engineer, and the SBE firms will contribute strongly to project outcomes. Much of the project team is locally based in San Francisco and are familiar with the Muni rail system. It was evident from the oral interviews conducted during the selection process that many of the Consultant staff have an affinity for Muni and are enthusiastic about

supporting such a transformative project. For these reasons, the qualifications of the key personnel identified in the proposal aligned with the SFMTA's expectations for the Consultant role.

Additionally, it was evident that WSP/PGH Wong Joint Venture recognized that effective risk management is a key part of the TCUP strategy. Their approach provides visibility to different levels of risk management, resulting in proactive solutions and risk sharing – mitigating risk before implementation begins. The Consultant will also collect and assess value engineering opportunities and proposed innovations, putting them through the same risk management process as the design requirements. WSP/PGH Wong Joint Venture will provide design recommendations to the SFMTA based on its experiences and will facilitate knowledge transfers with peer agencies.

The SFMTA also will leverage the Consultant's CBTC knowledge as the SFMTA builds our internal project delivery team. WSP/PGH Wong Joint Venture has committed to partnering with the SFMTA project team to build the staff, processes, tools and experience to sustain the new CBTC infrastructure over the long term, as well as to help the SFMTA grow its internal staff capability to support future upgrades and expansions. Towards the end of the project, the SFMTA will be transitioning many of its project staff to permanent positions overseeing the operations, maintenance and engineering of the train control system. WSP/PGH Wong Joint Venture will work with SFMTA to ensure those staff are ready to take over when the project ends.

ALTERNATIVES CONSIDERED

No contract. Under this alternative, the SFMTA would manage the Train Control Upgrade Project without consultant support. This approach would likely result in avoidable problems, poor performance, increased costs and delay to the project due to the lack of specialized train control project delivery expertise among existing SFMTA staff and the lack of staff resources during project delivery.

The SFMTA is having trouble hiring train control engineers in part because the pool of qualified applicants is so small in the United States, and international applicants have difficulty meeting the minimum requirements for San Francisco engineer classifications, specifically the requirement to have a California registration as a professional engineer.

WSP/PGH Wong Joint Venture has worked with a variety of similarly sized transit agencies on domestic and international projects to procure new train control systems and support the design and delivery of CBTC technology. Without this support, the SFMTA would not benefit from this expertise which would lead to a lower quality design and implementation. Similarly, without consultant construction management and test witnessing support, the SFMTA would have a higher likelihood of encountering work-stopping issues during construction and testing, leading to project implementation delays and cost overruns.

STAKEHOLDER ENGAGEMENT

A Muni Reliability Working Group (MRWG) sponsored by the Mayor, the SFMTA Board, and members of the Board of Supervisors, comprised of transportation policy experts, labor union representatives, and outside transit agency executives was convened in 2019. The MRWG reviewed SFMTA's transit operations and the Agency's improvement efforts to reach a shared understanding of where Muni needs support, and recommended priority actions for policymakers. One of the topics considered by the MRWG was improving subway performance, and a key recommendation of the MRWG was to replace the existing train control system with a new CBTC system.

Since the procurement of this system will affect the day-to-day work of SFMTA rail operations and maintenance staff, internal SFMTA staff are the key stakeholders for this project. The project team has engaged with all SFMTA business units and maintenance shops who currently interact with the existing train control system in the subway and the surface signaling equipment, starting with the earliest planning activities for this project. Representatives of these units, specifically the Transportation Management Center (TMC), Fleet Engineering, Signal Maintenance, Maintenance of Way Engineering, Transit Engineering/SFgo, Transit Services, Transit Program Delivery, Transit Operations, and Technology Solutions and Integration have been identified as Subject Matter Experts (SMEs) for the project. These SMEs have participated in the development of the contract requirements for the Train Control Supplier and in the scoping of work for this Consultant contract. Several of these SMEs served on the selection panel for this contract alongside a senior member of the San Francisco County Transportation Authority staff member who served as an external panelist.

Muni Metro riders are the other primary stakeholders in this project as they will enjoy the benefits in transit service that a modern CBTC system provides. The SFMTA has conducted briefings with transit advocacy groups and elected officials informing them of this project and keeping them up to date with project developments. The SFMTA Board has also established a TCUP Committee to oversee and advise this project. The TCUP Committee has been consulted on the SFMTA's approach to risk management and SFMTA's plan to use consultants to help manage project risks prior to the issuance of the RFP. Members of the TCUP Committee were also briefed on the specifics of this contract following the successful negotiations.

Neighborhood and merchant groups along the Muni Metro rail corridors are also stakeholders because they will benefit from improved rail service to their neighborhoods and businesses, and because they may be impacted by TCUP construction activities. Since the design phase has not begun, the exact construction methodologies and impacts have not been determined. The SFMTA plans to outreach to those groups in parallel with outreach to District Supervisors once the construction impacts are better known, but well in advance of any construction activities. This stakeholder engagement will be reported to the SFMTA Board when the installation contracts are presented to the Board for approval.

FUNDING IMPACT

Work under the initial five-year term of the consultant services contract planned for completion during the current Capital Improvement Program (CIP) cycle (FY25-29) is $25,000,000 and is fully funded by FTA 5337 State of Good Repair funds.

If the additional five one-year options were to be exercised, this work would be funded and completed in future CIP cycles. The total value of these options would be up to $9,000,000 and would bring the contract value to the not-to-exceed limit of $36,000,000.

REQUEST FOR APPROVAL

The SFMTA respectfully requests that the Board of Supervisors approve a resolution to authorize the Director of Transportation to execute Contract No. SFMTA-2024-20-FTA with WSP/PGH Wong Joint Venture, and further requests that the San Francisco Board of Supervisors authorize the Director of Transportation to approve individual task orders issued under the contract up to the aggregate total amount of $36,000,000.

Sincerely,

Jeffrey P. Tumlin
Director of Transportation