THIS PRINT COVERS CALENDAR ITEM NO.: 12

SAN FRANCISCO
MUNICIPAL TRANSPORTATION AGENCY

DIVISION: Transit

BRIEF DESCRIPTION:

Authorizing the Director of Transportation to execute Contract Modification No. 6 to SFMTA Contract No. 2013-19: Procurement of New Light Rail Vehicles, with Siemens Mobility, Inc., to enhance the vehicle design with passenger comforts, updated operator cab features, and engineering refinements that improve fleet performance; and to advance Phase 2 long-lead activities to accelerate fleet replacement, for an amount not to exceed $9,799,688, with no increase in the total Contract price, achieved through a decrease in the escalation allowance, and no increase in the term of the Contract.

SUMMARY:

- In 2014, the SFMTA Board of Directors approved Contract No. 2013-19 with Siemens Industry, Inc. (Siemens) to provide up to 260 Light Rail Vehicles (LRVs) for an amount not to exceed $1,192,651,577, and a term not to exceed 15 years.
- Through Contract Modifications Nos. 1 through 4, the SFMTA Board approved updates to the vehicle design, 44 additional vehicles, and optional spare parts and equipment.
- On October 22, 2019, the Director of Transportation authorized Contract Modification No. 5 to expedite the design and pilot installation of track brakes to reduce flat wheels.
- The proposed Contract Modification No. 6 enhances the vehicle design with feedback-driven passenger comforts and engineering refinements that improve fleet performance.
- Contract Modification No. 6 will also advance Phase 2 long-lead activities essential to the early fleet replacement plan and realize benefits such as the reduction of operating and maintenance costs, and minimizing the complexity of operating a mixed fleet of vehicles.
- The proposed Contract Modification also provides for the payment of past and future weight incentives based on a successful weight reduction design program, establishes increased amounts for parent company guarantees, and addresses other administrative issues.

ENCLOSURES:

1. Resolution
2. Modification No. 6 to Siemens Contract
3. http://centralsubwaysf.com/FSEIS-SEIR (Central Subway Final SEIS/SEIR)
4. https://sfgov.org/sfplanningarchive/environmental-impact-reports-negative-declarations (Event Center SFEIR)

APPROVALS:	**DATE**
DIRECTOR _____	November 12, 2019
SECRETARY R. Boomer	November 8, 2019

ASSIGNED SFMTAB CALENDAR DATE: November 19, 2019

PURPOSE

The purpose of this item is to obtain authorization for the Director of Transportation to execute Contract Modification No. 6 to SFMTA Contract No. 2013-19: Procurement of New Light Rail Vehicles, with Siemens Mobility, Inc., to enhance the vehicle design with passenger comforts, updated operator cab features, and engineering refinements that improve fleet performance; and to advance Phase 2 long-lead activities to accelerate fleet replacement, for an amount not to exceed $9,799,688, with no increase in the total Contract price, achieved through a decrease in the escalation allowance, and no increase in the term of the Contract.

STRATEGIC PLAN GOALS AND TRANSIT FIRST POLICY PRINCIPLES

This request supports the following SFMTA Strategic Plan Goals:

Goal 1: Create a safer transportation system for everyone
Objective No. 1.2: Improve safety of the transit system

Goal 2: Make transit and other sustainable modes of transportation the most attractive and preferred means of travel
Objective No. 2.1: Improve transit service
Objective No. 2.2: Enhance and expand use of the city's sustainable modes of transportation.

Goal 3: Improve the quality of life and environment in San Francisco and the region
Objective No. 3.5: Achieve financial stability for the agency

This item will support the following Transit First Policy Principles:

1. Improves the safe and efficient movement of people and goods.
2. Improves public transit as an attractive alternative to travel by private automobile.
8. Allocates transit investments to meet the demand for public transit generated by new public and private commercial and residential developments.
9. Promotes the use of regional mass transit and the continued development of an integrated, reliable, regional public transportation system.

DESCRIPTION

Background

In 2014, the SFMTA Board of Directors approved Contract No. 2013-19 with Siemens Industry, Inc. (Siemens) to provide up to 260 Light Rail Vehicles (LRVs or LRV4s), including two options for expansion LRVs to handle growth related to the Central Subway Project and systemwide ridership increases (the LRV4 Contract or the Contract), all for an amount not to exceed $1,192,651,577, and a term not to exceed 15 years.

The LRV4 Contract includes the replacement of the 151 Breda LRVs, which are scheduled for retirement beginning in 2021. Replacing these older and less reliable vehicles is an established need in the SFMTA Capital Plan and will have immediate impact on overall system performance.

Through Contract Modifications Nos. 1 through 4, the SFMTA Board approved updates to the LRV4 design, the procurement of 44 additional LRVs (including four vehicles to provide enhanced service during basketball games and other events at the new Chase Center), the addition of optional spare parts and equipment, and miscellaneous other changes to the Contract.

On November 28, 2018, the Director of Transportation approved the assignment of the Contractor from Siemens Industry, Inc., to its affiliate, Siemens Mobility Inc. Both companies are wholly owned subsidiaries of Siemens, AG.

On October 22, 2019, the Director of Transportation executed Contract Modification No. 5 to expedite the design and pilot installation of track brakes to the power trucks as a method to reduce the frequency of flat spots on wheels caused by activation of the push button emergency brake (PBEB).

The LRV4 Contract includes the delivery of vehicles in two phases: Phase 1, for 68 expansion vehicles (24 from the base Contract, 40 from Option 1 and 4 Phase W [Warriors] vehicles), and Phase 2, for 151 replacement vehicles. Phase 1 deliveries are approaching completion, and Phase 2 deliveries are due to commence in May 2021, with completion of the Contract currently scheduled for 2027. Siemens has delivered 68 LRVs, 63 of which the Agency has conditionally accepted and placed in revenue service.

Modification No. 6

Working closely with staff of the San Francisco County Transportation Authority (SFCTA) and the Metropolitan Transportation Commission (MTC), the LRV4 project team has developed a fully funded LRV4 program plan that will seek approval to initiate Phase 2 in two steps. This Modification No. 6 is the first step, consisting of $9.8M in design enhancements and schedule compression activities, or approximately 0.8% of the total Contract value. The second step will require a future modification for an estimated $50-$55M (including approximately $20M to complete acceleration activities and $30-35M in additional design changes), or 4% of the Contract value, to be brought forward upon demonstrated progress toward fleet reliability and performance goals.

This Modification No. 6 accomplishes the following:

- **Design enhancements** that implement lessons learned on all future production vehicles and, where appropriate, retrofit vehicles previously delivered.
- **Phase 2 long-lead activities** to preserve the opportunity to compress the schedule by up to 16 months and realize the benefits of the early fleet replacement plan.

Design Enhancements

The design enhancements respond to passenger and operator feedback and implement valuable lessons learned throughout the Phase 1 deployment. The changes detailed in the table below improve the efficiency of maintenance and operations, standardize features across old and new fleets, and address the comfort of our passengers. These changes go beyond the original requirements of the Contract and are distinct from fleet defects or warranty issues, for which Siemens is responsible. Some of these changes will be implemented through software modifications or other retrofits to Phase 1 vehicles, while others have already been implemented through SFMTA-issued directives. Wherever necessary, the changes will be implemented on the entire LRV4 fleet, including retrofits to vehicles already delivered.

Modification No. 6 Changes

Change Order Title	Description	Continuous Improve-ment Benefits	Per Vehicle Cost [3]	Total Mod 6 Cost
Schedule Compression Activities	Long-lead carshell production line setup, essential to advance the early fleet retirement plan[1]	All	N/A[1]	$5,603,000
Engineering for Interior Seating - Single Transverse	Long-lead interior layout and seat changes, adds single transverse seating and other enhancements to 68 Phase 1 and 50 Phase 2 vehicles	Passenger	N/A[1]	$714,694
Engineering for Interior Seating - Double Transverse	Long-lead interior layout and seat changes, adds double transverse seating and other enhancements to 101 Phase 2 vehicles	Passenger	N/A[1]	$159,140
Continued Track Brakes Installation	Adding track brakes to alleviate flat wheels[2]	Maintenance	$21,411	$1,284,660
Illuminated and Twisting PBEB	Illumination of button provides readily identifiable feedback to operators and quick responders	Operations	$621	$136,031
Front Step Momentary Switch	Switch will automatically return to neutral position when not in use	Operations	$341	$74,642
Reduce Deadman Delay to Zero Seconds	Minimizes response time of vehicle after activation	Operations/ Safety	No Cost	No Cost
MDS Wireless Communication to Wayside	Transfer subsystem diagnostics data wirelessly from the vehicle	Maintenance	$426	$93,237
Step Audible and Visual Alert 1.5s Before Moving	Audible tone and flashing lights warn passengers prior to steps moving	Operations	No Cost	No Cost
Relocation of Clipper DCU	Relocation of unit improves camera view	Maintenance	$275	$60,300
Rotation of CCTV Firetide Router	Rotation of unit improves maintenance access	Maintenance	$159	$34,921

1 Non-recurring Costs for design, engineering, and setup – no per vehicle implementation costs are included.
2 Retrofit of 60 remaining Phase 1 vehicles to complete all 68.
3 For reference only.

Change Order Title	Description	Continuous Improve-ment Benefits	Per Vehicle Cost	Total Mod 6 Cost
LRV4 Decals	Addition of agency-requested decals for patron communications	Maintenance	$476	$104,258
Bracket for 5lb Fire Extinguisher	Fire extinguisher changed to match commonly stocked model	Maintenance	No Cost	No Cost
Floor Hatch Fasteners to Philips Head	Fasteners changed to preferred style of quick responders	Maintenance	No Cost	No Cost
Remove J Holder for Advertising Placards	SFMTA Rail System map decal does not require placard holders[3]	Maintenance	No Cost	No Cost
Track Iron Holder Clips	Replace track iron holder clips with style preferred by operators	Operations	No Cost	No Cost
Front Door Push Button to Blue	Button color change acts as visual cue to operators when servicing ADA stops	Operations	No Cost	No Cost
Additional Flip Seats	Added two flip-bench seats to center of vehicle[4]	Passengers	$10,338	$702,959
Exterior Carshell Roof Access Steps	Provides roof access for incident response in the field[5]	Maintenance	$3,798	$831,846
Additional of Door Open Tape Switch	Adds tape switch for holding door open	Passengers	No Cost	No Cost
Passenger Emergency Stop PB	Provides for passenger-initiated emergency stopping	Passengers	No Cost	No Cost
		TOTAL		$9,799,688

The largest design enhancement is continued implementation of track brakes as a method to reduce frequency of flat spots on wheels caused by activation of the PBEB. As part of Modification No. 5, the Director of Transportation authorized Siemens to design and initiate the pilot implementation of track brakes to the power trucks on eight vehicles, including a review of the proposed change by the Safety Committee and the California Public Utilities Commission in advance of fleetwide rollout. This modification funds track brake implementation on the 60 remaining Phase 1 vehicles, for a total of 68 vehicles. Installation of track brakes for Phase 2 vehicles during their production is anticipated as part of a future modification.

3 To be implemented on Phase 2 vehicles only for this non-essential interior simplification.
4 Interim retrofit of all Phase 1 vehicles to be reworked again with future Phase 1 reconfiguration.
5 Includes roof steps for on all Phase 1 and Phase 2 vehicles.

The LRV4 procurement project team has negotiated with Siemens the specified scope, as well as impact to cost, delivery schedule, and payment schedule for all changes in the table above. Staff compared the proposed costs for the modifications with independent cost estimates and believes they are fair and reasonable.

Phase 2 long-lead activities

Phase 2 long-lead activities focus on two key areas – the vehicle interior and seating reconfiguration, and the establishment of a new carshell production line. The program schedule requires that both of these activities begin in the fourth quarter of 2019 to preserve the opportunity to compress the vehicle delivery schedule by up to 16 months (from 2027 to 2025) and realize the benefits of replacing the legacy Breda fleet early.

Continued reliance on the aging Breda fleet is a known and well-documented risk to daily service. The Agency has identified retirement of the Breda vehicles as the most effective means to increase vehicle availability and service reliability in the future. Expanding the number of Siemens vehicles in service at an earlier date will result in fewer service interruptions due to breakdowns, reduced operations and maintenance costs, reduced passenger crowding, and enhanced accessibility to riders. To eliminate this known risk, the SFMTA developed an early fleet retirement plan, which was approved by the Federal Transit Administration. Compressing the vehicle delivery schedule comes at a cost, but that cost is offset by operating savings and other quantifiable benefits to service. Management has weighed these benefits and costs and remains resolved that this investment is critical to improving service reliability.

In April 2019, as staff prepared to initiate Phase 2 replacement on this accelerated timeline, the SFMTA experienced serious mechanical issues involving the LRV4 doors and couplers. During this time, the program also experienced low reliability performance with more vehicle breakdowns impacting service than expected. The SFMTA project team identified shortcomings to be resolved before Phase 2 of the procurement could be initiated. Working through a structured performance program, the SFMTA project team tracks Siemens' progress towards reliability and operations goals, and quickly identifies and resolves issues as they arise. In recent months, the LRV4 reliability has improved and is approaching expected levels. Reliability Mean Distance Between Failures (MDBF) for October was above 8,500 miles and is close to the projected growth in reliability which is 9100 miles between failures. The observed improvement is the result of several corrections to various systems including headlights, cameras and brake systems. The SFMTA project team continues to work with Siemens to ensure they make consistent and continued progress towards the established reliability targets.

While accelerating the retirement of the Breda fleet remains a primary goal, the SFMTA is unwilling to commit to this change unless and until the vehicle reliability is stable and meeting planned growth. This is expected to occur by early 2020. However, there are specific Phase 2 long-lead activities that must start sooner to maintain the delivery of the first Phase 2 vehicle in May 2021.

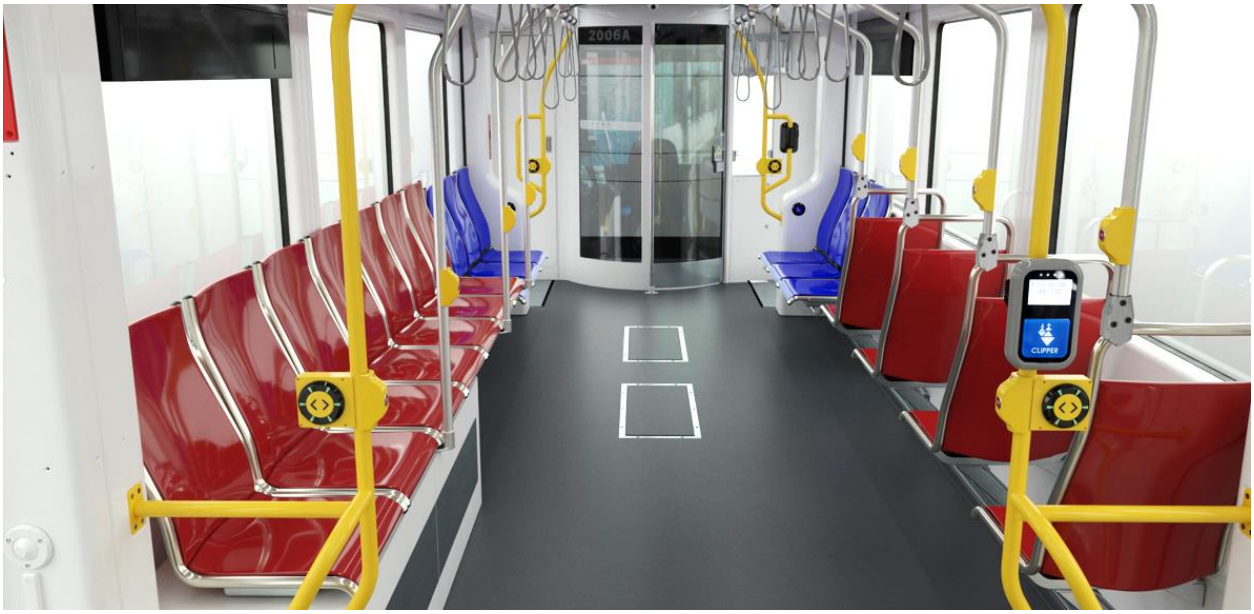
The first Phase 2 long-lead activity is design and engineering for the **passenger interior and seating reconfiguration** for both the Phase 1 style interior retrofit, and a Phase 2 style with double-wide transverse seating. Based on passenger feedback received during Phase 1, Siemens and its suppliers will develop the detailed plans for improved passenger amenities including additional stanchions, better hand straps, forward-facing transverse seats, and individual seating. This design work will enable the manufacture of the new interior materials to commence

production in March 2020, as required in the schedule, following design approval and direction to proceed with the new designs.

While Modification No. 6 only includes preliminary design, engineering, and testing, the long-term reconfiguration plan will apply to all vehicles. All Phase 1 vehicles (Nos. 2001-2068) will have:

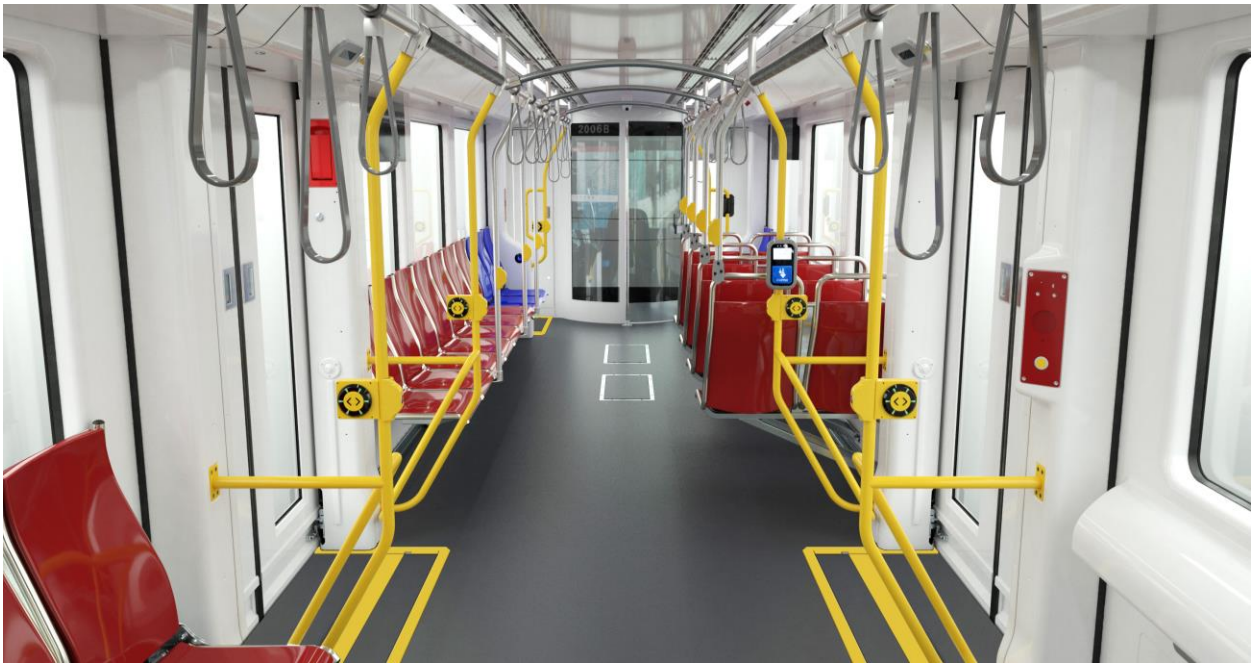
- All existing in-service seating removed.
- Two-inch lower seat height (except the fixed seating above and adjacent to the signalling system (ATCS) box)
- Single passenger inserts to replace bench seats and flip seats
- Areas of single passenger transverse seats

The first 50 Phase 2 vehicles (Nos. 2069-2118) will match the Phase 1 reconfiguration as demonstrated in the rendering below.



The final 101 Phase 2 vehicles (Nos. 2119-2219) will have a significant re-design to accommodate a new interior seating layout with double transverse seats as demonstrated in the rendering below and including:

- Two-inch lower seat heights (except the fixed seating above and adjacent to the ATCS box).
- Single passenger inserts to replace bench seats and flip seats
- Areas of double-wide passenger transverse seats



The carshell weight is expected to increase to accommodate structural reinforcements needed to handle the load of double-wide transverse passenger seats. The preliminary engineering work includes a carshell analysis to understand the structural changes necessary to support the new seating arrangement and verify that these changes can be accomplished within the 80,000-lb. weight limit of each vehicle.

The second Phase 2 long-lead activity is the **establishment of an additional production line for carshells**. Siemens production capacity for its existing facility is fully committed beyond the production rate currently scheduled in the Contract. Siemens has agreed to establish a new facility several miles from its current location in Sacramento. Leasing a new facility and fitting it out for carshell production is a significant undertaking and will require the following:

- Enter into a lease agreement and fit out a new facility including electrical, gas, and air.
- Acquire and install production equipment including crane, lifting, turning, integration and welding equipment.
- Retain staff for production ramp-up management at satellite facility.
- Establish site-specific materials management logistics.
- Coordinate supplier ramp-up.
- Other industrial engineering start-up tasks.

Establishing an additional production line for LRV4 carshells allows for a compressed schedule and moves up the completion of Phase 2, accelerating the delivery of all vehicles after #2131 with the final vehicle advanced 14-16 months to 2025 instead of 2027.

Modification No. 6 does not fully fund nor make a final SFMTA commitment to the compressed schedule. A future Contract modification, expected in the first quarter of 2020, will recommend a final decision on the compressed schedule based on Siemens' progress toward reliability targets. Should the SFMTA choose not to proceed with the next Contract modification committing full funding to the compressed schedule for Phase 2, then the revised schedule will be cancelled and the SFMTA will only be responsible for costs associated with proceeding with the current schedule. However, Modification No. 6 commits the Agency to fund $5,603,000 in start-up costs

to accelerate the schedule and will not be refunded should the Agency not receive the funding to complete the acceleration work. Should the SFMTA choose to continue with the compressed schedule, the remaining cost to complete the schedule compression activites (in the order of $20M) will be included in a future modification. Should the SFMTA choose to abandon the early fleet retirement plan and not pursue the schedule compression activities, Siemens will be responsible for delivering the vehicles according to the original non-compressed schedule, with completion in 2027.

Other Issues Addressed

Modification 6 also provides for the payment of weight incentives. The original contract included weight incentives or penalties to encourage weight savings in the design. That program has resulted in a vehicle weighing on average 2,000 lbs less than the Contract "nominal" weight of 78,770 lbs. The weight reduction program has also allowed the SFMTA to pursue additional design enhancements, such as extra track brakes and improved seating, with a low likelihood of exceeding the 80,000 lbs maximum vehicle weight. With Phase 1 complete, this Modification fixes the incentives due on each vehicle, including Phase 2 vehicles, and defines how the incentive will be calculated, by taking an average weight for the last ten cars in Phase 1. Assuming a consistent weight across the fleet is reasonable and avoids the administrative burden of tracking and settling weight incentives.

These Modification No. 6 changes will not increase the overall term of the Contract. Timely execution of this Modification preserves the ability to execute the revised Project Delivery Schedule (Exhibit 3) included with Modification No. 6.

STAKEHOLDER ENGAGEMENT

Throughout the project, the LRV4 team has worked with numerous stakeholder groups, including rail maintenance, transit management, transit operators, Safety, Accessible Services, Communications, as well as the Citizen's Advisory Council, the Multimodal Accessibility Advisory Committee, and the general public. As part of the original outreach process in 2014, the LRV4 team conducted a public survey of more than 8,000 participants to gather input to prioritize passenger comfort features of the LRV. In addition, a full scale mock-up of half a vehicle was built and used to gather input from several stakeholder groups, including operators, maintenance personnel, Accessible Services, and the general public. This feedback was used to determine key design features on the vehicles.

During the length of testing, commissioning, and acceptance of the Phase 1 expansion fleet, the LRV4 project team worked closely with SFMTA light rail operators and maintenance staff to identify areas of improvement. This feedback was solicited through informal conversations, anonymous staff surveys, and through formal reporting processes. The results of this feedback was the subject of multiple discussions with Local 250A, and several improvements were determined through an iterative prototyping process. Many of the items included in this change order are the result of this feedback and process. We anticipate including additional operator and maintenance-derived changes in the subsequent modification.

In January 2019, in response to public comment after the first LRV4 cars began revenue service, the SFMTA undertook a second round of public outreach to determine what changes may be desired to the interior configuration of the vehicle. The SFMTA conducted an intercept survey of

SFMTA passengers and hosted two focus groups that gathered valuable information about rider satisfaction with the new light rail fleet. While the responses to the survey were overwhelmingly positive, the project team endeavored to address areas of passenger comfort identified through this outreach.

Using the feedback from public outreach, the SFMTA developed three primary passenger comfort update scenarios. which were subsequently presented to the SFMTA Board, the SFMTA Citizens Advisory Council (CAC), the CAC's Finance and Administration Committee and the SFMTA Multimodal Advisory Committee for their input. The SFMTA also shared these three design options with the general public through the publication of a blog post on the SFMTA website, which included images of the three options. The SFMTA Communications team continued to solicit feedback via 311, Twitter, other social media applications, and email. Based on stakeholder feedback, the SFMTA is proceeding with the interior design configurations detailed above.

ALTERNATIVES CONSIDERED

The Agency considered the continuation of the procurement without the **design enhancements** and passenger interior reconfiguration as detailed above. The design enhancements included in this Modification reduce maintenance costs, improve operational functionality, and eliminate the need for future retrofits.

The Agency also conducted a cost-benefit analysis to identify the financial and operational benefits and liabilities of the **Phase 2 long-lead activities**. The passenger interior reconfiguration was weighed against a no-change alternative but was rejected because it was non-responsive to stakeholders. The replacement of the LRV fleet is an identified need within the Capital Plan and was determined among the various project alternatives to have the greatest immediate impact on light rail system performance. The benefits of accelerating the LRV replacement by speeding up the production rate and shrinking the delivery window include:

- Reduction of operating and maintenance costs
- Minimizing further investments in the existing LRV2/3 fleet
- Minimizing the time, cost and complexity of operating a mixed fleet of vehicles
- Introducing more reliable trains in service sooner

FUNDING IMPACT

Contract Cost

The Contract amount includes allowances for escalation as shown in the table below.

	Value	Escalation Allowance	Total
Base 175	$ 648,632,001	$ 133,300,188	$ 781,932,189
Option 40	$ 161,134,617	$ 14,920,188	$ 176,054,805
Option 45	$ 149,805,495	$ 84,859,087	$ 234,664,582
Total	$ 959,572,113	$ 233,079,464	$ 1,192,651,577

Staff re-evaluated the escalation allowance due to early exercise of Option 1, the accelerated delivery schedule for Phase 2 vehicles, and lower-than-anticipated escalation rates. The reduction in the escalation allowance allows the Contract Modifications to be added without increasing the overall not-to-exceed Contract amount. See updated table below.

	Value	Escalation Allowance	Total
Base 175	$648,632,001	$133,300,188	$781,932,189
Option 40 (Mod 1)	$161,134,617	$810,360	$161,944,977
Option 45	$149,805,495	$53,230,995	$203,036,490
Modifications 2 - 6	$45,737,921		$45,737,921
Total	$1,005,310,034	$187,341,543	$1,192,651,577

Funding Plan
The current funding plan is provided in the table below.

LRV4 Funding Plan Sources:	**Amount of Funds:**
Proposition K Sales Taxes	$ 193,920,784
Revenue Bonds	$ 145,050,650
Central Subway Project Contribution	$ 16,800,000
SFMTA Operating Funds	$ 46,247,904
Federal Transit Administration	$ 524,543,208
Bridge Tolls	$ 79,838,236
State Transportation and Inter City Rail Program (TIRCP)	$ 113,140,000
Regional Measure 3	$ 6,169,549
Developed Fees	$ 1,250,000
Total	**$ 1,126,960,331**

The total Contract amount, including Contract Modification No 6, will be $856,314,899. The funding plan above provides sufficient funding for the Siemens Contract up to and including Contract Modification No. 6, as well as other project administrative costs and sales taxes. Option 2 for 45 LRVs is not funded at this time and is not included in the funding plan above.

ENVIRONMENTAL REVIEW

The procurement of new light rail vehicles is subject to the California Environmental Quality Act (CEQA).

On June 19, 2014, the San Francisco Planning Department determined (Case Number 2014.0929E) that the Procurement of New Light Rail Vehicles is statutorily exempt from CEQA as defined in Title 14 of the California Code of Regulations Section 15275(a), which provides an exemption from environmental review for the institution or increase of passenger or commuter service on rail lines already in use.

The vehicles to be used for the Central Subway Project are within the scope of the Central Subway Final Supplemental Environmental Impact Statement/Supplemental Environmental Impact Report (Central Subway SEIS/SEIR), Case No. 1996.281E.

The vehicles to be used to provide enhanced Muni service to the Golden State Warriors Event Center Project are within the scope of the Golden State Warriors Event Center and Mixed Use Development at Mission Bay Blocks 29-32 Final Subsequent Environmental Impact Report (Event Center FSEIR), Case No. 2014.1441E.

The contract modifications are within the scope of the environmental review discussed above. No new significant effects have been identified, there is no substantial increase in significant effects already identified, and no new mitigation is required.

Copies of the CEQA determination are on file with the Secretary to the SFMTA Board of Directors, and may be found in the records of the Planning Department at 1650 Mission Street in San Francisco, and is incorporated herein by reference.

OTHER APPROVALS RECEIVED OR STILL REQUIRED

The City Attorney has reviewed this item.

RECOMMENDATION

Staff recommends that the SFMTA Board authorize the Director of Transportation to execute Contract Modification No. 6 to SFMTA Contract No. 2013-19: Procurement of New Light Rail Vehicles, with Siemens Mobility, Inc., to enhance the vehicle design with passenger comforts, updated operator cab features, and engineering refinements that improve fleet performance; and to advance Phase 2 long-lead activities to accelerate fleet replacement, for an amount not to exceed $9,799,688, with no increase in the total Contract price, achieved through a decrease in the escalation allowance, and no increase in the term of the Contract.

SAN FRANCISCO
MUNICIPAL TRANSPORTATION AGENCY
BOARD OF DIRECTORS

RESOLUTION No. _____

WHEREAS, In 2014, the SFMTA Board of Directors approved Contract No. 2013-19 with Siemens Industry, Inc. (Siemens) to provide up to 260 Light Rail Vehicles (LRVs), including two options for expansion LRVs (the Contract), all for an amount not to exceed $1,192,651,577, and a term not to exceed 15 years; and,

WHEREAS, The Contract included the replacement of the SFMTA's 151 Breda LRVs, as replacing these older and less reliable vehicles is an established need in the Agency's Capital Plan and will have immediate impact on overall system performance; and,

WHEREAS, Through Contract Modification Nos. 1 through 4, the SFMTA Board approved various updates to the vehicle design, the procurement of 44 additional LRVs (including four vehicles to provide enhanced service during basketball games and other events at the new Chase Center), the addition of optional spare parts and equipment, and miscellaneous other changes to the Contract; and,

WHEREAS, On November 28, 2018, the Director of Transportation approved the assignment of the Contract from Siemens Industry, Inc., to Siemens Mobility, Inc.; and,

WHEREAS, On October 22, 2019, the Director of Transportation executed Contract Modification No. 5 to expedite the design and pilot installation of track brakes to the power trucks as a method to reduce frequency of flat spots on wheels caused by activation of the push button emergency brake; and,

WHEREAS, The proposed Contract Modification No. 6 will enhance the Phase 1 vehicle design with feedback-driven passenger comforts, including seating changes, updated operator cab features, and engineering refinements that improve overall fleet performance; will continue the installation of track brakes as a means to reduce flat wheels, and will finalize payment of weight incentives; and,

WHEREAS, Contract Modification No. 6 will also provide funding to advance Phase 2 long-lead activities essential to eliminating known risks to future service through the early fleet replacement, and provide related benefits, including the reduction of operating and maintenance costs, minimizing further investments in the existing Breda fleet, and minimizing the complexity of operating a mixed fleet of vehicles; and,

WHEREAS, On June 19, 2014, the San Francisco Planning Department determined (Case Number 2014.0929E) that the Procurement of New Light Rail Vehicles is statutorily exempt from California Environmental Quality Act (CEQA) as defined in Title 14 of the California Code of Regulations Section 15275(a), which provides an exemption from environmental review for the institution or increase of passenger or commuter service on rail lines already in use; and,

WHEREAS, The vehicles to be used for the Central Subway Project are within the scope of the Central Subway Final Supplemental Environmental Impact Statement/Supplemental Environmental Impact Report (Central Subway SEIS/SEIR), Case No. 1996.281E; and,

WHEREAS, The vehicles to be used to provide enhanced Muni service to the Golden State Warriors Event Center Project are within the scope of the Golden State Warriors Event Center and Mixed Use Development at Mission Bay Blocks 29-32 Final Subsequent Environmental Impact Report (Event Center FSEIR), Case No. 2014.1441E; and,

WHEREAS, The changes in the current Contract Modification are within the scope of the environmental review discussed above; no new significant effects have been identified, there is no substantial increase in significant effects already identified, and no new mitigation is required; and,

WHEREAS, Copies of the CEQA determinations are on file with the Secretary to the SFMTA Board of Directors, and may be found in the records of the Planning Department at 1650 Mission Street in San Francisco, and are incorporated herein by reference; now, therefore, be it

RESOLVED, That the SFMTA Board of Directors has subsequently reviewed the Central Subway Supplemental Environmental Impact Statement/Supplemental Environmental Impact Report and the Event Center Final Subsequent Environmental Impact Report and finds that since the certification of the two documents, no changes have occurred in the proposed project or in the circumstances under which the project would be implemented that would cause new significant impacts or a substantial increase in the severity of impacts identified and analyzed in those documents, and that no new information has emerged that would materially change the analysis or conclusions set forth in the two documents; the actions approved herein would not necessitate implementation of additional or considerably different mitigation measures that those identified in those documents; and be it further

RESOLVED, That the SFMTA Board authorizes the Director of Transportation to execute Contract Modification No. 6 to SFMTA Contract No. 2013-19: Procurement of New Light Rail Vehicles, with Siemens Mobility, Inc., to enhance the vehicle design with passenger comforts, updated operator cab features, and engineering refinements that improve fleet performance; and to advance Phase 2 long-lead activities to accelerate fleet replacement, for an amount not to exceed $9,799,688, with no increase in the total Contract price, achieved through a decrease in the escalation allowance, and no increase in the term of the Contract.

I certify that the foregoing resolution was adopted by the San Francisco Municipal Transportation Agency Board of Directors at its meeting of November 19, 2019.

_____

Secretary to the Board of Directors
San Francisco Municipal Transportation Agency

CITY AND COUNTY OF SAN FRANCISCO
MUNICIPAL TRANSPORTATION AGENCY
ONE SOUTH VAN NESS AVE, 7TH FLOOR
SAN FRANCISCO, CA 94103

MODIFICATION NO. 6 TO AGREEMENT BETWEEN SIEMENS MOBILITY, INC. AND THE CITY AND COUNTY OF SAN FRANCISCO FOR PROCUREMENT OF NEW LIGHT RAIL VEHICLES (LRV4) (SFMTA No. 2013-19)

This Modification No. 6 to Agreement is made and entered into on _____, by and between Siemens Mobility Inc. (Contractor), and the City and County of San Francisco, a municipal corporation (City), acting by and through its Municipal Transportation Agency (SFMTA).

RECITALS

A. On September 30, 2014, the City entered into an agreement with Contractor (Agreement) to provide 175 light rail vehicles (LRVs), together with associated equipment and spare parts, as well as Options for additional LRVs and parts.

B. On March 31, 2015, the City approved Modification No. 1 to the Agreement to exercise Option 1 in accordance with Section 64.1 of the Agreement for 40 additional LRVs to be delivered after the Phase 1 delivery of 24 vehicles, and to exercise Options for additional Spare Parts and Equipment, in accordance with Sections 64.2, 64.3 and 64.4 of the Agreement.

C. On October 30, 2015, the City approved Modification No. 2 to the Agreement to update the list of approved major suppliers listed in Section 29, clarify the purpose of Item 1.1 (Allowance) in Exhibit 2 of Volume I, and specify the payment structure for changes to the LRVs paid under Item 1.1.

D. On August 16, 2016, the City approved Modification No. 3 to the Agreement to update the list of approved major suppliers, modify radio/CAD/AVL systems on the Vehicles, including related price and payment schedules, provide extra time for delivery of the vehicles and other project submittals, add a new parent

company guarantee, and make miscellaneous changes to the Technical Specification.

E. On June 20, 2017, the City approved Modification No. 4 to the Agreement to procure four additional LRVs to be delivered after the 24th production LRV, which Vehicles shall be part of the production fleet, conform to all requirements of the Technical Specification, and all prior design approvals and Buy America audits.

F. On November 28, 2018, the SFMTA, through the Director of Transportation, approved an Assignment and Assumption Agreement, assigning the Contract from Siemens Industry, Inc., to Siemens Mobility Inc.

G. On October 22, 2019, the City approved Modification No. 5 to the Agreement to commence design of and expedite the addition of track brakes to the power trucks on eight LRVs as a method to reduce frequency of flat spots on wheels caused by activation of the push button emergency brake (PBEB).

H. The SFMTA now wishes to modify the Agreement to (i) update the Vehicles with multiple changes and enhancements to improve passenger comfort, operational functionality, and maintainability and fleet reliability, some of which will be installed in the field, and some by the Contractor during production of the Vehicles; (ii) continue installation of the track brakes on the power trucks begun in Modification No. 5; and (iii) initiate activities in support of an accelerated Phase 2 delivery schedule with a goal for Phase 2 to be completed by 2025; and increase existing parent company guarantees and add a new parent company guarantee (corporate guarantee).

Now, therefore, the parties agree that the Agreement shall be modified as follows:

1. *Section 7.5 of the Agreement (Escalation) is replaced in its entirety to read as follows:*

> **7.5. Escalation.** The SFMTA will make price adjustments to this Contract to protect Contractor from economic inflation as set forth below. This adjustment will apply to the Base Order Phase 2 Vehicles, the Option Vehicles (Section 64.1), the optional Train Simulator, the spare parts for Phase 2, and the Option spare parts and special tools (see Section 7.5.4 below).

2. *Section 7.5.1 of the Agreement (Sole Remedy for Cost Increases) is replaced in its entirety to read as follows:*

> **7.5.1. Sole Remedy for Cost Increases.** This escalation adjustment shall be the sole remedy for any increases or decreases in the Contractor's

costs for Phase 2 Vehicles, Option Vehicles, equipment, spare parts and special tools due to inflation or deflation. Adjustments will be calculated and applied independently for each Option exercised.

3. *Section 7.5.4 of the Agreement (Escalation for Price of Spare Parts) is replaced in its entirety to read as follows:*

***7.5.*4 Escalation for Price of Spare Parts and Special Tools**. Any price adjustment for spare parts and special tools shall be determined according to the methodology described above for escalating the price of Vehicles and in accordance with the table below.

4. *Section 19.2 of the Agreement (Weight Limits and Incentives), is replaced in its entirety to read as follows :*

19.2. Weight Limits and Incentives

The nominal Vehicle weight shall be 78,770 pounds at AW0. Vehicles shall be weighed prior to delivery, and, for each pound in excess of the nominal weight, the City will deduct $10 per pound per Vehicle from the Contractor's invoice. For each pound below the nominal weight, the City will pay an incentive payment of $10 per pound per Vehicle. To allow for manufacturing variations, neither penalties nor incentives will be assessed on the first one percent in excess of or under the nominal weight. The SFMTA will reject Vehicles weighing in excess of 80,000 pounds at AW0 and shall not be required to pay any amount for rejected Vehicles.

The penalties or weight incentives due to Contractor as described above will be based on the average weight of the last 10 Vehicles delivered in Option 1 (Vehicles 2059 - 2068), taking into account SFMTA-directed changes on these 10 Vehicles as of the date of this Modification, without further recalculation. This average amount shall become the Agreed Delivery Weight for all Vehicles for the purpose of calculating weight incentives and penalties. All Vehicles will be weighed to determine whether they exceed the 80,000-pound weight limit without regard to penalties or incentives. This weight incentive is included as Bid Item 16 and will be paid in accordance with Exhibit 2.4, Bid Item 16.

5. *Section 59 (Reserved) of the Agreement is replaced with a new Section 59 (Production Acceleration Activities) to read as follows:*

59. Production Acceleration Activities

59.1. General. The Contractor agrees to accelerate delivery of the Phase 2 Vehicles, and perform all activities needed to establish a second production facility for carshells (Production Acceleration Activities), which will include:

59.1.1. Facility Lease and Tenant Improvements. Enter into a lease and fit out a new carshell production facility with required infrastructure.

59.1.2. Production Equipment. Acquire and install crane, lifting, welding, and integration equipment.

59.1.3. Management and Supervision. Retain staff for production ramp-up management at satellite facility.

59.1.4. Logistics and Materials Handling. Establish site-specific materials management structures and processes.

59.1.5. Supplier Ramp-Up. Coordinate suppliers.

59.1.6. Industrial Engineering. Other costs associated with facility start-up.

59.2. Reimbursement. The City shall reimburse the Contractor for the preliminary activities of the Production Acceleration Activities up to the amount set forth in Exhibit 1A, Item 21 (Initial Production Acceleration Activities) and according to the milestones in Exhibit 2.4, Item 21 (Production Acceleration). The Contractor shall deliver Phase 2 Vehicles in accordance with the milestones in Exhibit 3B (Vehicle Delivery Schedule).

59.3. Additional Modifications

59.3.1. To maintain the accelerated schedule in Exhibit 3B, prior to February 28, 2020, the City must approve an additional Contract Modification to pay the Contractor for those Production Acceleration Activities costing in excess of the not-to-exceed amount in Item 21 of Exhibit 1A.4.

59.3.2. Should the City not approve such additional Modification, the Project Delivery Schedule would revert back to the non-accelerated Phase 2 delivery dates in Exhibit 3 of Modification No. 4 of the Agreement. In such a case, the Contractor shall be entitled to full payment for item 17 of Exhibit 1A.4, and the City shall not be responsible for any other costs related to the acceleration.

6. *Section 64.1 of the Agreement (Option for New Light Rail Vehicles) is deleted and replaced in its entirety to read as follows:*

64.1 Option for New Light Rail Vehicles. At the option of the City, the Contractor shall provide additional Vehicles in quantities indicated in the Schedule of Prices. Option 1 shall be for an additional 1 to 40 Vehicles and Option 2 shall be for an additional 45 Vehicles. (See Item 7 on Exhibit 2 -- Payment Schedule.) Either Option may be executed at intervals and at any time within seven years after NTP. The price of Option Vehicles will be adjusted in accordance with Section 7.5 of this Agreement. Options will only be exercised to the extent that there is sufficient escalation allowance remaining to cover the escalated price.

7. *Section 64.3 of the Agreement (Spare Parts For Options) is deleted and replaced in its entirety to read as follows:*

64.3. Spare Parts and Special Tools. At the option of the City, Contractor shall provide spare parts and special tools (Item 9 on the Exhibit 2 Payment Schedule). The price of spare parts and special tools will be adjusted in accordance with Section 7.5 of this Agreement.

8. *Section 64.4 of the Agreement (Optional Train Simulator) is deleted and replaced in its entirety to read as follows:*

64.4. Optional Train Simulators. At the option of the City, Contractor shall provide six additional hybrid train simulators, as delivered under Item 4.2 of Exhibit 1A, and one additional training station (Item 10 on the Exhibit 2 Payment Schedule), as defined in Technical Specification Section 22.2.8. The price of optional train simulators will be adjusted in accordance with Section 7.5 of this Agreement.

9. *Exhibit 1A (Schedule of Prices) of the Agreement is replaced in its entirety with a new Exhibit 1A (Schedule of Prices), which is attached to this Modification. Exhibits 1A.1, 1A.2, and 1A.3 are deleted.*

10. *A new Exhibit 2.4 (Payment Schedule–Modification No. 6 Work) is added to the Agreement and is attached to this Modification.*

11. *Exhibit 3A (Project Delivery Schedule) of the Agreement is replaced in its entirety with a new Exhibit 3A (Project Delivery Schedule), which is attached to this Modification.*

12. *Exhibit 3B (Vehicle Delivery Schedule) of the Agreement is replaced in its entirety with a new Exhibit 3B (Vehicle Delivery Schedule), which is attached to this Modification.*

13. *Exhibit 6 is modified by adding a new Exhibit 6.5 (Phase 2 Corporate Guarantee Form), which is attached to this Modification. Additionally, the Contractor shall increase the existing Parent Company Guarantees to reflect the increase in the Contract Amounts for each one, respectively as follows: The amount of the guarantees (or reduced amount, if applicable) shall be increased by $879,822 for the 24 Base Order Vehicles (Guarantee number 466742), $1,466,371 for the Option 1 Vehicles (Guarantee number 484678) and $146,637 for the Phase W Vehicles (Guarantee number 556963) until the Phase 1, Option 1, Phase W Modification 6 work is complete. To facilitate increases to the existing Guarantees, Contractor shall execute amended Guarantees upon approval of this Modification.*

14. *Section 3.4 of the Technical Specification (Maintenance Requirements) is modified to add a new subsection 3 to read as follows*:

3. The carbody shall include lockable, folding exterior steps allowing access to the roof.

15. *Subsection 3 of Section 5.3.4.1 (General) of the Technical Specification is modified to read as follows* :

3. The deadman feature shall be active, and shall not delay when the brakes are applied.

16. *Section 5.3.5 (Emergency Stop Pushbutton) of the Technical Specification is modified to add subsection 2 to read as follows*:

2. The emergency stop pushbutton shall be illuminated and of a twist-to-release style.

17. *Subsection 2 of Section 5.3.9 (Fire Extinguisher) of the Technical Specification is modified to read as follows* :

2. The fire extinguisher shall be 5 lb. capacity.

18. *A new Section 5.3.10.4 (Track Iron Retention) is added to the Technical Specification to read as follows*:

5.3.10.4 Track Iron Retention

1. The carbuilder shall supply adequate means to hold a standard track iron in place during revenue operations, subject to approval by the SFMTA.

19. *Subsection 1 of Section* 6.3.4.3 (Operator's Console Door Control Pushbuttons) *of the Technical Specification is modified to read as follows:*

1. The door control panel shall include the following functions:
   (a) Open/close right front door of the Vehicle with a blue button
   (b) Open all right side doors
   (c) Release all right side doors and enable passenger door controls
   (d) Close/lock all right side doors
   (e) Open/close left front door of the Vehicle with a blue button
   (f) Open all left side doors
   (g) Release all left side doors and enable passenger door controls
   (h) Close/lock all left side doors

20. *Section 6.3.4.4* (*Passenger Controls) of the Technical Specification is modified to add a new subsection 4 to read as follows*:

4. Each door portal shall include a "Keep Door Open" tape switch located on the door post cover closest to each door panel.

21. *Subsection 6 of Section 6.3.7 (Step System) of the Technical Specification is modified to read as follows*:

6. An audible and visual warning shall sound at the step location whenever the high/low switch is activated and 1.5 seconds prior to the steps changing position.

22. *Subsection 12 of Section 6.3.7 (Step System) of the Technical Specification is modified to read as follows*:

12. The front right step shall be capable of being operated in UP and DOWN position independently from the other steps by using a momentary switch on the operator control panel in the cab. This operation shall be available in the leading Vehicle only; the trailing Vehicle shall be unaffected.

23. *A new Section 15.1.10 (Additional Interfaces) is added to the Technical Specification to read as follows*:

15.1.10 Additional Interfaces

1. The interior shall include a passenger emergency stop button located on a corner hatch, one in each carbody half. Upon application, the push button shall command an irretrievable full service brake.

24. *Section 17.1 (Performance Requirements of the Technical Specification is modified to add subsections 2 and 3 to read as follows:*

2. The MDS system shall transmit all diagnostic information and the Vehicle mileage to the wayside when the LRVs are within range of the

depots.

3. The Vehicle mileage shall be displayed on the train operator's display screen.

25. *Section 22.2.8 (Train Simulator) of the Technical Specification is modified to read as follows:*

1. The Contractor shall provide two hybrid functional cab simulators that mimic the operational functions with the following features (CDRL 60):
   (a) Complete cab layout including cab seat and other typical cab equipment;
   (b) Functional controls, including, but not limited to, throttle and brake stand, deadman, switches, indicator lights, horn, bell, gong, CCTV viewing screens;
   (c) Viewing screen in place of the windshield with high quality graphics;
   (d) Ability to simulate actual SFMTA lines and record round trip times and operator performance;
   (e) Open architecture allowing interchangeable rolling stock controls;
   (f) Work station for trainer monitoring

26. The table in Exhibit 7 lists all change orders that are incorporated into this Modification. Change Order Nos. 9-14, 18, and 21-24 are included in the above modifications to the Technical Specification.

Change Order Nos. 8, 15-20, and 25-27 are changes directed by the SFMTA after the First Article Inspection process in Section 20.9.3 of the Technical Specification (FAI Changes). The Contractor agrees to perform the following FAI Changes:

A. Change Order 8 (Flip Seats) – Prove a four-passenger flip seat for 68 Phase 1, Option 1, Phase W Vehicles in the multi-purpose area to allow the options of additional seating or standee capacity.

B. Change Order 15 – (Relocate Clipper® Display Control Unit (DCU)). Relocate Clipper® DCU to improve the operator's camera view.

C. Change Order 16 (Firetide Router Rotation) – Reinstall and rotate the Firetide router located in the cab of the Vehicle 180 degrees, reroute cables, and test.

D. Change Order 17 (Additional Decals) – Add decals to the Vehicle, which includes the engineering work required to make the decal changes.

E. Change Order 19 (Floor Hatch Fasteners) – Replace current hex hardware to Phillips head for all floor access hatches.

F. Change Order 20 (Remove J-Holder for Advertising) – Remove the J-holder for advertising placards from corner hatches for Phase 2 vehicles.

G. Change Order 25 (Track Brake Continued Installation) – Install track brakes on 60 Phase 1, Option 1, Phase W Vehicles (completing the installation on all 68 Phase 1, Option 1, Phase W Vehicles).

H. Change Orders 26 and 27 (Seating Design Development) – Perform preliminary design and engineering work for seats and carshell to realize transverse seating configurations requested by the SFMTA. (Implementation costs are not included and will be part of a future modification.)

These activities shall be compensated according to payment milestones as shown in Exhibit 2.4. These activities shall be completed as provided in Exhibits 3A and 3B.

27. ***Release***. Contractor acknowledges and agrees that the amounts agreed for the work described in Modifications Nos. 1-5 and this Modification No. 6 shall be full accord and satisfaction for all past, current and prospective costs incurred in connection with Contractor's performance of all work under the Contract up to and including the work covered under this Modification No. 6, without limitation including any and all markups and overhead. If this modification involves the granting of an extension of time, with or without cost, Contractor releases the City from all claims and costs associated with such extension of time. Said costs may include, but are not limited to, costs for labor, materials, equipment, disruption, lost productivity, escalation, delay, extended overhead, administration and extended performance time. Contractor releases the City from all claims for which full accord and satisfaction is made, as set forth above. Notwithstanding the foregoing, this Release does not apply to work associated with change orders that are currently under discussion between Contractor and the City at the time of this Modification. This paragraph replaces the release paragraphs in Modification Nos. 1, 2, 3, 4 and 5.

28. ***Effective Date.*** Each of the amendments set forth above shall be effective on and after all parties have signed the Amendment.

29. ***Legal Effect***. Except as expressly modified by this Modification No. 6, all other terms and conditions of the Contract remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the parties hereto have entered into and executed this Modification No. 6 on the date set forth on page 1 above.

CITY

San Francisco Municipal Transportation Agency

_____
Thomas G. Maguire
Interim Director of Transportation

San Francisco Municipal Transportation Agency
Board of Directors

Resolution No. _____
Dated: _____

Attest:

_____
Secretary

Approved as to Form:

Dennis J. Herrera
City Attorney

By: _____
Robin M. Reitzes
Deputy City Attorney

CONTRACTOR

Siemens Mobility, Inc.

_____
Michael Cahill
President

_____
Christopher Halleus
Vice President, FBA

City vendor number: 50009
Federal Taxpayer ID No.13-2762488

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Attachments
Exhibit 1A – Schedule of Prices
Exhibit 2.4 – Payment Schedule - Modification No. 6 Work
Exhibit 3.A and 3.B – Project Delivery Schedules
Exhibit 6.5 – Corporate Guarantee
Exhibit 7 – Modification No. 6 Change Orders

EXHIBIT 1A
Schedule of Prices

BASE

ITEM	ORIGINAL CONTRACT/ MOD NO.	DESCRIPTION	UNIT PRICE	QUANTITY	EXTENDED PRICE [3]
Item 1	Original	Engineering Design, Project Management and Design Qualification Testing	Lump Sum		$37,541,102
Item 1.1	Original	Allowance for Regulatory- Mandated Changes, Requested Passenger Enhancements and System Modifications Resulting from Changes to Project Interfaces	Lump Sum		$10,000,000
Item 2.1	Original	Vehicle Price for Base Order Phase 1	$3,327,250	24 Cars	$79,854,000
Item 2.2	Original	Vehicle Price for Base Order Phase 2	$3,327,250 [1]	151 Cars	$502,414,750
Item 3	Original	Operating, Maintenance and Parts Manuals	Lump Sum		$809,478
Item 4.1	Original	Training	Lump Sum		$361,557
Item 4.2	Original	Train Simulator (1) (In accordance with Section 22.2.8 of Technical Specifications)	Lump Sum		$1,704,650
Item 5.1	Original	Spare Parts (Total of Exhibit 1.B, Phase 1)	Lump Sum		$14,153,840
Item 5.2	Original	Spare Parts (Total of Exhibit 1.B, Phase 2) [1]			
Item 6	Original	Special Tools, Test and Diagnostic Equipment (Total of Exhibit 1.D)	Lump Sum		$1,792,624
Item 7.1	Mod 1	Option 1 for 40 Additional New Light Rail Vehicles	$3,349,270 [2]	40 Cars	$133,970,800

Item 8.1	Mod 1	Additional Spare Parts (Exhibit 1.C Phase 1)	Lump Sum		$11,269,527
Item 8.2	Mod 1	Additional Spare Parts (Exhibit 1.C Phase 2) [1]			
Item 9	Mod 1	Spare parts for Option Cars [1]	Lump Sum		$15,000,000
Item 10	Mod 1	Train Simulator (2) (In accordance with Section 22.2.8 of Technical Specifications) [1]	Lump Sum		$1,704,650
Item 11	Mod 3	Modification No. 3 (Non-Recurring Costs)			
Item 11.1	Mod 3	Engineering	Lump Sum		$6,128,416
Item 11.2	Mod 3	SIBAS Expert 2 Monitoring and Diagnostic Software	Lump Sum		$71,000
Item 12	Mod 3	Modification No. 3 (Base Recurring Costs)			
Item 12A	Mod 3	Base Phase 1	$62,313	24 Cars	$1,495,514
Item 12B	Mod 3	Base Phase 2	$62,313 [1]	151 Cars	$9,409,275
Item 13	Mod 3	Modification No. 3 Option 1 (Recurring Costs)	$62,313	40 Cars	$2,492,523
Item 14	Mod 4	Modification No. 4 (Vehicle Price for Phase W)	$3,968,750	4 Cars	$15,875,000
Item 15	Mod 5	Track Brakes Phase 1			
Item 15.1	Mod 5	Non-recurring Costs for track brake, including engineering, testing, and updates to manuals.	Lump Sum		$286,617
Item 15.2	Mod 5	Installation of track brakes on 8 Phase 1 Cars.	$22,486	8 Cars	$179,888
Item 16	Mod 6	Weight Incentives	TBD	TBD	TBD
Item 17	Mod 6	Non Recurring Engineering Costs			
Item 17.1	Mod 6	Phase 1, Option 1, Phase W Engineering Costs for Changes 8 – 25	Lump Sum	1	$492,738

Item 17.2	Mod 6	Phase 2 Preliminary Design Work, Single Transverse Seat	Lump Sum	1	$714,694
Item 17.3	Mod 6	Phase 2 Preliminary Design Work, Double Transverse Seat	Lump Sum	1	$159,140
Item 18	Mod 6	Recurring Costs Phase 1, Option 1, Phase W			
Item 18.1	Mod 6	Modifications Performed at Siemens Facility (Change Orders 8 - 11)	$11,179	68 Cars	$760,172
Item 18.2	Mod 6	Modifications Performed at SFMTA (Change Orders 12 - 24)	$2,284	68 Cars	$155,312
Item 19	Mod 6	Recurring Costs for Phase 2 (Change Orders 9 - 24)	$4,172[1]	151 Cars	$629,972
Item 20	Mod 6	Track Brake Installation on 60 Phase 1, Option 1, Phase W Cars	$21,411	60 Cars	$1,284,660
Item 21	Mod 6	Initial Production Acceleration Activities	Lump Sum	1	$5,603,000
				SUBTOTAL	**$856,314,899**

Option

ITEM	CONTRACT MOD.	DESCRIPTION	UNIT PRICE	QUANTITY	EXTENDED PRICE [3]
Item 7.2	Original	Option 2 for 1 to 45 Additional New Light Rail Vehicles	$3,329,011[1]	45 Cars	$149,805,495

Escalation

ITEM	CONTRACT MOD.	DESCRIPTION	UNIT PRICE	QUANTITY	EXTENDED PRICE [3]
Allowance	Original, Mod 6 adjustment	Allowance for Escalation in accordance with Agreement, Section 7.5	n/a	n/a	$186,531,183

Not to exceed CONTRACT LIMIT	**$1,192,651,577**

Notes:
[1] This price does not include escalation. Escalation will be applied in accordance with Section 7.5 of the Agreement.
[2] Price for Item 7.1 includes escalation.
[3] Prices do not include sales taxes.

Exhibit 2.4
PAYMENT SCHEDULE

(All Item references are to Exhibit 1A)

Item 16 – Weight Incentives – *Actual amount will be determined when Vehicles are delivered*.

Item 16.1 – Phase 1, Option 1, Phase W Weight Incentives

	Milestone	Percent of Bid Item
A	SFMTA Acceptance for shipment of Vehicle 2068 from final assembly site to SFMTA	100%

Item 16.2 – Phase 2 Weight Incentives

	Milestone	Percent of Bid Item
A	SFMTA Acceptance for shipment of Vehicle from final assembly site to SFMTA	100%

Item 17 – Non-Recurring Engineering Costs for Modification No. 6 Work

Item 17.1 – Phase 1, Option 1, Phase W Non-Recurring Engineering

	Milestone	Percent of Bid Item
A	Submittal and Approval of Design Documentation for Change Orders 8 – 11	55%
B	Submittal and Approval of Field Modification Instructions and/or Design/Software Documentation for Change Orders 12 – 24	45%

Item 17.2 – Phase 2 Preliminary Design Work, Single Transverse Seat

	Milestone	Percent of Bid Item
A	Submittal and Approval of Preliminary Design Review for Change Order 26 - Single Transverse Arrangement	75%
B	Submittal and Approval of Final Design Review for Change Order 26 - Single Transverse Arrangement	25%

Item 17.3 – Phase 2 Preliminary Design Work, Double Transverse Seat

	Milestone	Percent of Bid Item
A	Submittal and Approval of Carshell Analysis for Change Order 27 - Double Seat Arrangement	100%

Item 18 – Recurring Costs for Modification No. 6 – Phase 1, Option 1, Phase W

Item 18.1 – Modifications Completed at Siemens Facility

	Milestone	Percent of Bid Item
A	Completion of Installation of Modifications for Change Orders 8 -11 Phase 1, Option 1, Phase W Cars	100%

Item 18.2 – Modifications Completed at SFMTA

	Milestone	Percent of Bid Item
A	Completion of Installation of Modifications for Change Orders 12 - 24 for Phase 1, Option 1, Phase W Cars	100%

Item 19 – Recurring Costs for Modification No. 6 – Phase 2

	Milestone	Percent of Bid Item
A	Completion of Installation of Modifications for Change Orders 9 - 24 for Phase 2 Cars	100% per Vehicle

Item 20 – Track Brake Modifications

	Milestone	Percent of Bid Item
A	Completion of Installation of Modifications for Track Brakes in 28 Cars (Change Order 25)	33%
B	Completion of Installation of Modifications for Track Brakes in 48 Cars (Change Order 25)	33%
C	Completion of Installation of Modifications for Track Brakes in 68 Cars (Change Order 25)	34%

Item 21 – Production Acceleration

	Milestone	Percent of Bid Item
A	Occupation of Facility for Change Order 28	50%
B	Completed Installation of Major Equipment Items (Crane, Integration and Lifting/Turning Equipment) for Change Order 28	50%

EXHIBIT 3
PROJECT DELIVERY AND VEHICLE DELIVERY SCHEDULE

A. Project Delivery Schedule

Item	Date
Notice To Proceed	9/30/2014
Project Plan	11/29/2014
Training Start	4/17/2017
Training Complete	8/15/2017
Special Tools / Diagnostic Test Equipment	4/17/2017
Delivery of Publications (Manuals, Parts Book, Drawings) - Prelim	2/16/2017
Delivery of Publications (Manuals, Parts Book, Drawings) - Final	11/13/2017
Delivery of Spare Parts (Phase 1)	8/15/2017
Contract Mod 5, Item 15.1 Completion of Engineering for Additional Track Brakes	9/30/2019
Contract Mod 5, Item 15.2 Installation of Additional Track Brakes on 8 Vehicles	10/31/2019
Contract Mod 6, Item 17.1 A – Phase 1, Option 1, Phase W Non-Recurring Engineering, Submittal of Design Documentation for Change Orders 8 – 11	5/31/2017
Contract Mod 6, Item 17.1 B – Phase 1, Option 1, Phase W Non-Recurring Engineering, Submittal of Field Modification Instructions and or Software/ Design Documentation for Change Orders 12 – 24	1/3/2020
Contract Mod 6, Item 17.2 A - Phase 2 Preliminary Design Work, Single Transverse Seat, Completion of Preliminary Design Review for Change Order 26 - Single Transverse arrangement	1/24/2020
Contract Mod 6, Item 17.2 B - Phase 2 Preliminary Design Work, Single Transverse Seat, Completion of Final Design Review for Change Order 26 - Single Transverse arrangement	3/15/2020
Contract Mod 6, Item 17.3 A – Phase 2 Preliminary Design Work, Double Transverse Seat, Submittal of Carshell Analysis for Change Order 27 - Double Seat Arrangement	2/28/2020
Contract Mod 6, Item 18.1 A – Modifications Completed at Siemens Facility, Completion of Installation of modifications for Change Orders 8 -11 Phase 1, Option 1, Phase W Cars	10/8/2019
Contract Mod 6, Item 18.2 A – Modifications Completed at SFMTA, Completion of Installation of modifications for Change Orders 12 - 24 for Phase 1, Option 1, Phase W Cars	10/1/2020
Contract Mod 6, Item 19 A – Recurring Costs for Modification\6 – Phase 2, Completion of Installation of modifications for Change Orders 8 - 24 for Phase 2 Cars	Per Phase 2 vehicle delivery
Contract Mod 6, Item 20.1 A – Retrofit Track Brakes in 60	2/15/20

Cars Phase 1, Option 1, Phase W, Completion of Installation of modifications for Track Brakes in 28 Cars (Change Order 25)	
Contract Mod 6, Item 20.1 B – Retrofit Track Brakes in 60 Cars Phase 1, Option 1, Phase W, Completion of Installation of modifications for Track Brakes in 48 Cars (Change Order 25)	3/15/20
Contract Mod 6, Item 20.1 C – Retrofit Track Brakes in 60 Cars Phase 1, Option 1, Phase W, Completion of Installation of modifications for Track Brakes in 68 Cars (Change Order 25)	4/15/20
Contract Mod 6, Item 21 A – Production Acceleration, Occupation of Facility, Change Order 28	11/30/2019
Contract Mod 6, Item 21 B – Production Acceleration, Completed Installation of Major Equipment Items (Crane, Integration and Lifting/turning equipment) Change Order 28	3/31/2020
Delivery of Spare Parts (35% of Phase 2 Quantity)	5/15/2021
Delivery of Spare Parts (35% of Phase 2 Quantity)	With Delivery of 50th Vehicle (Phase 2)
Delivery of Spare Parts (30% of Phase 2 Quantity)	With Delivery of 100th Vehicle (Phase 2)
Acceptance of Training Simulator 1	5/31/2018
Delivery of Additional Spare Parts (Exhibit 1 C)	TBD
Delivery of Spare Parts for Option Vehicles	TBD
Delivery of Training Simulator 2	TBD

Note: See Exhibit 3.B for Vehicle Delivery Schedule.

B. Vehicle Delivery Schedule [1]

Item	Vehicle Delivery Date	Completion of Acceptance Testing
Notice To Proceed	9/30/2014	
Delivery of 1st Vehicle (Phase 1) to SFMTA (LRV 2001)	1/10/2017	8/12/2017
LRV 2002	2/27/2017	9/20/2017
LRV 2003	3/29/2017	8/25/2017
LRV 2004	10/16/2018	12/26/2018
LRV 2005	5/31/2017	8/3/2017
LRV 2006	7/11/2017	9/8/2017
LRV 2007	7/31/2017	9/27/2017
LRV 2008	10/17/2017	12/16/2017
LRV 2009	11/14/2017	1/14/2018
LRV 2010	3/8/2018	5/6/2018
LRV 2011	1/10/2018	3/18/2018
LRV 2012	1/18/2018	3/17/2018
LRV 2013	2/1/2018	3/31/2018
LRV 2014	2/8/2018	4/16/2018
LRV 2015	5/3/2018	6/28/2018
LRV 2016	1/25/2018	3/22/2018
LRV 2017	2/15/2018	4/12/2018
LRV 2018	3/29/2018	5/24/2018
LRV 2019	4/19/2018	6/10/2018
LRV 2020	3/1/2018	4/25/2018
LRV 2021	4/26/2018	6/20/2018
LRV 2022	3/15/2018	5/9/2018
LRV 2023	5/10/2018	7/4/2018
LRV 2024	4/6/2018	5/31/2018
LRV 2025 (Delivery of 1st Phase W Vehicle to SFMTA)	5/17/2018	7/11/2018
LRV 2026	5/24/2018	7/18/2018
LRV 2027	5/21/2018	7/15/2018
LRV 2028 (Delivery of 4th Phase W Vehicle to SFMTA)	6/7/2018	8/1/2018
LRV 2029 (Delivery of 1st Option 1 Vehicle to SFMTA)	6/14/2018	8/8/2018
LRV 2030	7/9/2018	9/2/2018
LRV 2031	6/4/2018	7/29/2018
LRV 2032	6/21/2018	8/15/2018
LRV 2033	6/28/2018	8/22/2018
LRV 2034	7/12/2018	9/05/2018
LRV 2035	8/2/2018	9/26/2018

Item	Vehicle Delivery Date	Completion of Acceptance Testing
LRV 2036	7/26/2018	9/19/2018
LRV 2037	8/9/2018	10/3/2018
LRV 2038	7/23/2018	9/16/2018
LRV 2039	9/20/2018	11/14/2018
LRV 2040	9/27/2018	11/21/2018
LRV 2041	8/16/2018	10/10/2018
LRV 2042	8/23/2018	10/17/2018
LRV 2043	8/27/2018	10/21/2018
LRV 2044	8/30/2018	10/24/2018
LRV 2045	8/31/2018	10/25/2018
LRV 2046	9/17/2018	11/11/2018
LRV 2047	10/18/2018	12/12/2018
LRV 2048	10/25/2018	12/19/2018
LRV 2049	11/6/2018	12/31/2018
LRV 2050	11/12/2018	1/6/2019
LRV 2051	10/04/2018	11/28/2018
LRV 2052	11/20/2018	1/14/2019
LRV 2053	11/28/2018	1/22/2019
LRV 2054	12/13/2018	2/6/2019
LRV 2055	12/20/2018	2/13/2019
LRV 2056	1/10/2019	3/6/2019
LRV 2057	1/17/2019	3/13/2019
LRV 2058	1/31/2019	3/27/2019
LRV 2059	2/7/2019	4/3/2019
LRV 2060	2/15/2019	4/11/2019
LRV 2061	2/25/2019	4/21/2019
LRV 2062	3/7/2019	5/1/2019
LRV 2063	4/16/2019	6/10/2019
LRV 2064	05/02/2019	6/26/2019
LRV 2065	6/20/2019	8/14/2019
LRV 2066	7/11/2018	9/4/2018
LRV 2067	8/15/2019	10/9/2019
LRV 2068	10/8/2019	12/2/2019
LRV 2069	5/15/2021	9/26/2021
LRV 2070	6/30/2021	10/13/2021
LRV 2071	7/30/2021	11/5/2021
LRV 2072	8/30/2021	11/29/2021
LRV 2073	9/15/2021	12/8/2021
LRV 2074	9/30/2021	12/16/2021
LRV 2075	10/15/2021	12/24/2021
LRV 2076	10/30/2021	1/1/2022
LRV 2077	11/15/2021	1/10/2022

LRV 2078	11/30/2021	1/25/2022
LRV 2079	12/15/2021	2/9/2022
LRV 2080	12/30/2021	2/24/2022
LRV 2081	1/17/2022	3/14/2022
LRV 2082	1/31/2022	3/28/2022
LRV 2083	2/14/2022	4/11/2022
LRV 2084	2/28/2022	4/25/2022
LRV 2085	3/16/2022	5/11/2022
LRV 2086	3/31/2022	5/26/2022
LRV 2087	4/15/2022	6/10/2022
LRV 2088	4/30/2022	6/25/2022
LRV 2089	5/16/2022	7/11/2022
LRV 2090	5/31/2022	7/26/2022
LRV 2091	6/16/2022	8/11/2022
LRV 2092	6/30/2022	8/25/2022
LRV 2093	7/15/2022	9/9/2022
LRV 2094	7/30/2022	9/24/2022
LRV 2095	8/17/2022	10/12/2022
LRV 2096	8/31/2022	10/26/2022
LRV 2097	9/15/2022	11/10/2022
LRV 2098	9/30/2022	11/25/2022
LRV 2099	10/17/2022	12/12/2022
LRV 2100	10/31/2022	12/26/2022
LRV 2101	11/15/2022	1/10/2023
LRV 2102	11/30/2022	1/25/2023
LRV 2103	12/15/2022	2/9/2023
LRV 2104	12/30/2022	2/24/2023
LRV 2105	1/16/2023	3/13/2023
LRV 2106	1/31/2023	3/28/2023
LRV 2107	2/14/2023	4/11/2023
LRV 2108	2/28/2023	4/25/2023
LRV 2109	3/16/2023	5/11/2023
LRV 2110	3/31/2023	5/26/2023
LRV 2111	4/15/2023	6/10/2023
LRV 2112	4/30/2023	6/25/2023
LRV 2113	5/16/2023	7/11/2023
LRV 2114	5/31/2023	7/26/2023
LRV 2115	6/16/2023	8/11/2023
LRV 2116	6/30/2023	8/25/2023
LRV 2117	7/18/2023	9/12/2023
LRV 2118	7/31/2023	9/25/2023
LRV 2119	8/30/2023	10/25/2023
LRV 2120	9/30/2023	11/25/2023
LRV 2121	10/31/2023	12/26/2023
LRV 2122	11/15/2023	1/10/2024

LRV 2123	11/30/2023	1/25/2024
LRV 2124	12/16/2023	2/10/2024
LRV 2125	12/30/2023	2/24/2024
LRV 2126	1/16/2024	3/12/2024
LRV 2127	1/30/2024	3/26/2024
LRV 2128	2/8/2024	4/4/2024
LRV 2129	2/19/2024	4/15/2024
LRV 2130	2/28/2024	4/24/2024
LRV 2131	3/8/2024	5/3/2024
LRV 2132	3/19/2024	5/14/2024
LRV 2133	3/28/2024	5/23/2024
LRV 2134	4/10/2024	6/5/2024
LRV 2135	4/19/2024	6/14/2024
LRV 2136	4/30/2024	6/25/2024
LRV 2137	5/9/2024	7/4/2024
LRV 2138	5/17/2024	7/12/2024
LRV 2139	5/29/2024	7/24/2024
LRV 2140	6/10/2024	8/5/2024
LRV 2141	6/19/2024	8/14/2024
LRV 2142	6/28/2024	8/23/2024
LRV 2143	7/11/2024	9/5/2024
LRV 2144	7/22/2024	9/16/2024
LRV 2145	7/31/2024	9/25/2024
LRV 2146	8/12/2024	10/7/2024
LRV 2147	8/21/2024	10/16/2024
LRV 2148	8/30/2024	10/25/2024
LRV 2149	9/10/2024	11/5/2024
LRV 2150	9/19/2024	11/14/2024
LRV 2151	9/30/2024	11/25/2024
LRV 2152	10/8/2024	12/3/2024
LRV 2153	10/15/2024	12/10/2024
LRV 2154	10/22/2024	12/17/2024
LRV 2155	10/29/2024	12/24/2024
LRV 2156	11/5/2024	12/31/2024
LRV 2157	11/12/2024	1/7/2025
LRV 2158	11/19/2024	1/14/2025
LRV 2159	11/27/2024	1/22/2025
LRV 2160	12/12/2024	2/6/2025
LRV 2161	12/21/2024	2/15/2025
LRV 2162	12/30/2024	2/24/2025
LRV 2163	1/10/2025	3/7/2025
LRV 2164	1/17/2025	3/14/2025
LRV 2165	1/24/2025	3/21/2025
LRV 2166	1/31/2025	3/28/2025
LRV 2167	2/7/2025	4/4/2025

LRV 2168	2/14/2025	4/11/2025
LRV 2169	2/21/2025	4/18/2025
LRV 2170	2/28/2025	4/25/2025
LRV 2171	3/10/2025	5/5/2025
LRV 2172	3/17/2025	5/12/2025
LRV 2173	3/24/2025	5/19/2025
LRV 2174	3/31/2025	5/26/2025
LRV 2175	4/9/2025	6/4/2025
LRV 2176	4/16/2025	6/11/2025
LRV 2177	4/23/2025	6/18/2025
LRV 2178	4/30/2025	6/25/2025
LRV 2179	4/30/2025	6/25/2025
LRV 2180	5/9/2025	7/4/2025
LRV 2181	5/16/2025	7/11/2025
LRV 2182	5/23/2025	7/18/2025
LRV 2183	5/30/2025	7/25/2025
LRV 2184	5/30/2025	7/25/2025
LRV 2185	6/9/2025	8/4/2025
LRV 2186	6/16/2025	8/11/2025
LRV 2187	6/23/2025	8/18/2025
LRV 2188	6/30/2025	8/25/2025
LRV 2189	6/30/2025	8/25/2025
LRV 2190	7/9/2025	9/3/2025
LRV 2191	7/16/2025	9/10/2025
LRV 2192	7/23/2025	9/17/2025
LRV 2193	7/30/2025	9/24/2025
LRV 2194	7/30/2025	9/24/2025
LRV 2195	8/9/2025	10/4/2025
LRV 2196	8/16/2025	10/11/2025
LRV 2197	8/23/2025	10/18/2025
LRV 2198	8/30/2025	10/25/2025
LRV 2199	8/30/2025	10/25/2025
LRV 2200	9/9/2025	11/4/2025
LRV 2201	9/16/2025	11/11/2025
LRV 2202	9/23/2025	11/18/2025
LRV 2203	9/30/2025	11/25/2025
LRV 2204	9/30/2025	11/25/2025
LRV 2205	10/9/2025	12/4/2025
LRV 2206	10/16/2025	12/11/2025
LRV 2207	10/23/2025	12/18/2025
LRV 2208	10/30/2025	12/25/2025
LRV 2209	10/30/2025	12/25/2025
LRV 2210	11/9/2025	1/4/2026
LRV 2211	11/16/2025	1/11/2026
LRV 2212	11/23/2025	1/18/2026

LRV 2213	11/30/2025	1/25/2026
LRV 2214	11/30/2025	1/25/2026
LRV 2215	12/9/2025	2/3/2026
LRV 2216	12/16/2025	2/10/2026
LRV 2217	12/23/2025	2/17/2026
LRV 2218	12/30/2025	2/24/2026
LRV 2219	12/30/2025	2/24/2026
Delivery of 1st Option 2 Vehicle to SFMTA	TBD	TBD
Delivery Rate of Option 2 Vehicles	TBD	TBD
Delivery of the last Option 2 Vehicle	TBD	TBD

[1] This schedule assumes Contract Modification 6 NTP no later than November 30, 2019.

Exhibit 6.5
Phase 2 Corporate Guarantee

SIEMENS

Guarantee November … , 2019

RE: Procurement of New Light Rail Vehicles (LRV4) Contract No. SFMTA-2013-19 between Siemens Mobility Inc. (as successor by assignment from Siemens Industry Inc., hereafter "Obligor") and the City and County of San Francisco ("City'), through its Municipal Transportation Agency ("Beneficiary") dated September 29, 2014 ("Contract").

The Contract requires that Obligor provide a performance bond, labor and materials bond, warranty bond (the "bonds"), letters of credit or other security, as approved by the City's Risk Manager, to secure Obligor's performance, warranty and other obligations under the Contract. Siemens Corporation ("Guarantor") offers to provide Beneficiary with the following guarantee in lieu of the bonds or letters of credit required under the Contract for the Phase 2 Work, as set forth in Modification No. 6 of the Contract.

For value received, Guarantor, a corporation duly organized and validly existing under the laws of the state of Delaware, unconditionally guaranties to Beneficiary the prompt and complete payment when due, whether by acceleration or otherwise, of all amounts owing by Obligor under Phase 2 of the Contract (including any liquidated damages). If at any time Obligor fails, neglects or refuses to timely or fully pay any sum due under Phase 2 of the Contract, and if within 15 calendar days after the written notice of such failure from the Beneficiary and the expiration of any grace period applicable with respect thereto under the Contract, Obligor has not made such payment in full, then upon receipt of written notice from Beneficiary specifying such default, Guarantor shall promptly make such payment in immediately available funds to the order of the Beneficiary. This guaranty is one of payment and not of collection. If more expeditious and appropriate than a direct payment to SFMTA (and if agreed to by SFMTA and Guarantor), in the event of any default on the part of the Obligor regarding its obligations under Phase 2 of the Contract, Guarantor agrees to perform all such obligations under the Contract that are necessary to cure the default and complete performance of all such work under the Contract.

Guarantor waives notice of acceptance of this Guarantee and notice of any liability to which it may apply, and waives presentment, demand for payment, protest, and notice of dishonor or non-payment of any kind.

Beneficiary may at any time and from time to time without notice to or consent of the Guarantor and without impairing or releasing the obligations of the Guarantor hereunder: (1) agree to any change in the terms of any obligation or liability of the Obligor to Beneficiary under the Contract, (2) grant any waivers to Obligor, (3) take or fail to take any action of any kind in respect of Phase 2 of the Contract, or (4) exercise or refrain from exercising any rights against Obligor under the Contract. In addition, Guarantor agrees that its obligations hereunder shall not be impaired in any manner whatsoever by any bankruptcy, extensions, moratoria or other relief granted to Obligor.

Notwithstanding anything contained in this Guarantee to the contrary, Guarantor's liability under this Guarantee shall not exceed $7,306,858.

With respect to any claim, action or proceeding against Guarantor in connection with this Guarantee, Guarantor shall be entitled to assert those defenses which Obligor would be able to assert if such claim, action or proceeding were to be asserted or instituted against Obligor based upon the Contract. By its acceptance hereof, reliance hereon, Beneficiary affirms to Guarantor any and all representations, warranties, and covenants made by the Beneficiary to the Obligor under the Contract.

This Guarantee shall continue in full force and effect until Guarantor gives Beneficiary notice of termination of this Guarantee, except that, notwithstanding any such termination, this Guarantee shall continue in full force and effect with respect to all obligations and/or liabilities incurred prior to such termination. Notwithstanding the foregoing, however, this Guarantee shall terminate and cease to be of further effect on the earlier of: (a) 2/24/2031; (b) the Acceptance or Conditional Acceptance of the last Vehicle of Phase 2, provided that the Contractor has furnished a separate Guarantee or other security for the warranty provisions that meets the requirements of section 15.2.4. of the Contract; (c) the end of the agreed warranty period of the Phase 2 Vehicles; (d) the date of any permitted assignment of Obligor's interest in the Contract; or (e) the Beneficiary has been provided with a replacement guaranty, letter of credit, or other financial accommodation from a party with a credit rating equal to or better than that of Guarantor as of the date of this Guarantee, which financial accommodation provides Beneficiary with no less protection than that which is contained in this Guarantee (the acceptance of such replacement guarantee being within the sole and reasonable discretion of the Beneficiary). Guarantor shall, as of such date (the "Expiration Date"), have no further obligations or liability under this Guarantee, whether or not the Guarantee is returned to the Guarantor. To the extent feasible, Beneficiary will return the original of this Guarantee to the Guarantor after the Expiration Date.

Nothing contained herein shall be construed as conferring any rights upon persons or entities other than the Beneficiary. This Guarantee shall be governed and construed in accordance with the laws of the State of California without giving effect to principles of conflicts of law. Guarantor submits, and by its acceptance hereof Beneficiary hereby submits, to the jurisdiction of the courts of the state of California and to federal courts located within the city of San Francisco. Neither Guarantor nor Beneficiary may assign its rights or delegate its duties without the written consent of the other party. Any amendments to this Guarantee must be in writing. This Guarantee may be executed in counterparts, each of which, when taken together,

shall be deemed to be one and the same instrument.

This Guarantee has been duly executed by authorized representatives of the Guarantor as follows:

SIEMENS CORPORATION

By:_____
*Name:
Title:

By:_____
*Name:
Title:

Accepted:

Municipal Transportation Agency

By _____
Thomas G. Maguire
Interim Director of Transportation

Approved as to Form:
Dennis J. Herrera, City Attorney

By_____
Robin M. Reitzes
Deputy City Attorney

Exhibit 7
Modification No. 6 Change Orders

Change Order No.	Description	Technical Specification (TS) Change vs. FAI Change	Total
8	Additional flip seats	FAI Change	$702,959
9	Exterior carshell roof access steps	TS Change	$831,846
10	Additional of door open tape switch	TS Change	No cost
11	Passenger emergency stop pushbutton	TS Change	No cost
12	MDS wireless communication to wayside	TS Change	$93,237
13	Front step momentary switch	TS Change	$74,642
14	Step audible and visual alert 1.5s before moving	TS Change	No cost
15	Relocation of Clipper® door control unit	FAI Change	$60,300
16	Rotation of CCTV Firetide router	FAI Change	$34,921
17	LRV4 decals	FAI Change	$104,258
18	Bracket for 5lb. fire extinguisher	TS Change	No cost
19	Floor hatch fasteners to Philips head	FAI Change	No cost
20	Remove J-holder for advertising placards	FAI Change	No cost
21	Illuminated and twisting emergency stop pushbutton	TS Change	$136,031
22	Reduce Deadman delay to zero seconds	TS Change	No cost
23	Track iron holder clips	TS Change	No cost
24	Change front door pushbutton to blue	TS Change	No cost
25	Track brakes - remainder of Phase 1 and Option 1, Phase W	FAI Change	$1,284,660
26	Engineering for interior seating - single transverse 50 Vehicles (2A)	FAI Change	$714,694
27	Engineering for interior seating - double transverse 101 Vehicles (2B)	FAI Change	$159,140
		Change Orders Total	**$4,196,688**
n/a	Initial Production Acceleration Activities	n/a	$5,603,000
		Mod 6 Total	**$9,799,688**