

File No. 250491

Committee Item No. 4

Board Item No. 17

COMMITTEE/BOARD OF SUPERVISORS

AGENDA PACKET CONTENTS LIST

Committee: Budget and Finance Committee Date June 4, 2025

Board of Supervisors Meeting Date June 10, 2025

Cmte Board

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| <input type="checkbox"/> | <input type="checkbox"/> | Introduction Form |
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| | | • MTA Briefing Letter 5/2/2025 |
| | | • MYR Memo 5/6/2025 |
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| <input type="checkbox"/> | <input type="checkbox"/> | Grant Information Form |
| <input type="checkbox"/> | <input type="checkbox"/> | Grant Budget |
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| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Contract/Agreement |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Form 126 – Ethics Commission |
| <input type="checkbox"/> | <input type="checkbox"/> | Award Letter |
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| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <u>MTAB Resolution No. 250506-043 5/6/2025</u> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <u>MTAB Calendar Summary 5/1/2025</u> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <u>MTA CEQA Determination 3/21/2025</u> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <u>MTA Presentation 6/4/2025</u> |
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Completed by: Brent Jalipa Date May 29, 2025

Completed by: Brent Jalipa Date June 5, 2025

1 [Sole Source Contract - Wabtec Passenger Transit - Overhaul of the LRV4 Brake System -
2 Not to Exceed \$15,527,933]

3 **Resolution authorizing the Director of the Municipal Transportation Agency to execute**
4 **Contract No. SFMTA-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec**
5 **Passenger Transit to perform the scheduled overhaul of key components of the LRV4**
6 **brake system on 68 vehicles, for a contract amount not to exceed \$15,527,933 and a**
7 **term of two years and six months, effective upon approval of this Resolution.**

8
9 WHEREAS, On September 30, 2014, the City entered into Contract No. SFMTA-
10 No. 2013-19 with Siemens Mobility Inc. (Siemens Contract) to provide light rail vehicles
11 (LRV4s); and

12 WHEREAS, Wabtec Passenger Transit (Wabtec or Contractor) is the brakes
13 manufacturer subcontractor under the Siemens Contract; and

14 WHEREAS, Between November 17, 2017, and August 31, 2020, the Municipal
15 Transportation Agency (SFMTA) placed in service 68 Siemens LRV4 vehicles numbered 2001
16 through 2068 (commonly known as Phase 1); and

17 WHEREAS, All Phase 1 LRV4 vehicles have reached, or will soon reach, the end of
18 their five-year warranty period, but some parts of the brake system continue to be covered
19 under extended warranty (beyond five years) due to warranty defects and pending corrections
20 for which the original vendor, Siemens (supported by their subcontractor Wabtec), is
21 contractually responsible; and

22 WHEREAS, Phase 1 LRV4 vehicles are due for an overhaul of the brake system; and

23 WHEREAS, The SFMTA is responsible for the overhaul as part of its obligations under
24 the Siemens Contract to maintain the brake system in a state of good repair to preserve the
25 extended warranty; and

1 WHEREAS, As part of its obligations under the Siemens Contract, Contractor will – at
2 no additional cost to the SFMTA – remove and reinstall brake components, ship parts being
3 overhauled to the overhaul factory, and replace defective parts under the Siemens warranty;
4 and

5 WHEREAS, Funding for this project will be provided by a mix of sources including the
6 SFMTA's operating and capital budget; and

7 WHEREAS, The Contract Compliance Office (CCO) waived the Local Business
8 Enterprise (LBE) goal for this Project due to the specialized nature of the work and lack of
9 subcontracting opportunities; and

10 WHEREAS, The agreement with Contractor requires approval from the Board of
11 Supervisors pursuant to Charter, Section 9.118, as it is over \$10,000,000; and

12 WHEREAS, On March 21, 2025, the SFMTA, under authority delegated by the
13 Planning Department determined that SFMTA Contract No. SFMTA2025-28-LOC is not a
14 "project" under California Environmental Quality Act (CEQA) pursuant to Title 14 of the
15 California Code of Regulations, Sections 15060(c) and 15378(b); and

16 WHEREAS, A copy of the CEQA determination is on file with the Clerk of the Board of
17 Supervisors in File No. 250491, to the SFMTA Board of Directors, which is hereby declared to
18 be a part of this Resolution as if set forth fully herein; and

19 WHEREAS, A copy of the Agreement, inclusive of the scope of work and bill of
20 materials, is on file with the Clerk of the Board of Supervisors in File No. 250491, which is
21 hereby declared to be a part of this Resolution as if set forth fully herein; now, therefore, be it

22 RESOLVED, That the Board of Supervisors authorizes the Director of Transportation to
23 execute Contract No. SFMTA-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with
24 Wabtec Passenger Transit (Wabtec) to perform the scheduled overhaul of key components of
25

1 the LRV4 brake system on 68 vehicles, for a contract amount not to exceed \$15,527,933 and
2 a term of two years and six months; and, be it

3 FURTHER RESOLVED, That within 30 days of full execution of the agreement by all
4 parties, the final documents shall be provided to the Clerk of the Board for inclusion in the
5 official file.

Item 4 File 25-0491	Department: Municipal Transportation Agency (SFMTA)
EXECUTIVE SUMMARY	
<p style="text-align: center;">Legislative Objectives</p> <ul style="list-style-type: none"> The proposed resolution would approve a new contract between the SFMTA and Wabtec Passenger Transit (Wabtec) to overhaul the brake system on 68 light rail vehicles, with a term of two years and six months and a not to exceed amount of \$15,527,933. <p style="text-align: center;">Key Points</p> <ul style="list-style-type: none"> The Board of Supervisors previously approved a contract with Siemens, Industry Inc. to expand and replace the SFMTA's light rail fleet. Phase 1 included delivery of 68 new vehicles to expand the fleet, and Phase 2, which is still in progress, will replace all 151 existing light rail vehicles. SFMTA must overhaul the brake system of Phase 1 vehicles, as part of regular maintenance. SFMTA identified defects in the brake system while the vehicles were still under manufacturer five-year warranty. The vehicles are still being operated safely, but the defects are causing more service interruptions than what is permitted under the contract. Wabtec is the brake manufacturer for the new vehicles and is a subcontractor under the Siemens contract. Wabtec is completing the warranty work on the brake system, which Siemens is funding. MTA also selected Wabtec to complete the brake overhaul work at the same time on a sole source basis. <p style="text-align: center;">Fiscal Impact</p> <ul style="list-style-type: none"> The not to exceed amount of \$15.5 million includes \$11.9 million for parts, \$3.5 million for labor, and a \$100,000 contingency. SFMTA determined that Wabtec pricing and labor rates were reasonable based on an independent cost estimate completed by SFMTA engineers. The contract is funded by dedicated revenue sources for transportation. <p style="text-align: center;">Policy Consideration</p> <ul style="list-style-type: none"> SFMTA is proposing a sole source contract for regular brakes maintenance with Wabtec to ensure that the SFMTA maintains the extended warranty for the fixed fleet components. Subsequent brake overhauls would not have to be completed by Wabtec. The proposed agreement would address the first overhaul for 68 of the 219 vehicles (out of four overhauls over the useful life). However, selecting Wabtec on a sole-source basis for each subsequent overhaul may prevent the SFMTA from obtaining competitive pricing. <p style="text-align: center;">Recommendations</p> <ul style="list-style-type: none"> Request SFMTA to (a) issue a competitive solicitation to procure a brake maintenance vendor for subsequent brake maintenance; (b) determine whether it would be more cost effective for any of the work to be performed in-house or contracted out, and (c) report on long-term plans for brake overhauls when the next overhaul contract is brought to the Board for approval. Approve the proposed resolution. 	

MANDATE STATEMENT

City Charter Section 9.118(b) states that any contract entered into by a department, board or commission that (1) has a term of more than ten years, (2) requires expenditures of \$10 million or more, or (3) requires a modification of more than \$500,000 is subject to Board of Supervisors approval.

BACKGROUND

In September 2014, the Board of Supervisors approved a contract with Siemens, Industry Inc. (Siemens) to expand and replace the SFMTA's light rail fleet through the manufacture and delivery of new light-rail vehicles (File 14-0882). Phase 1 included delivery of 68 new vehicles to expand the fleet, and Phase 2, which is still in progress, will replace all 151 existing Breda light rail vehicles. Phase 1 vehicles were placed in service between November 2017 and August 31, 2020. Final delivery of Phase 2 vehicles is expected in early 2026, and 96 out of 151 Phase 2 vehicles have been delivered to date.

After delivery of the 68 Phase 1 vehicles, the SFMTA identified defects in the brake system while the vehicles were still under manufacturer five-year warranty. According to the May 2, 2025 memo to the Board of Supervisors on the proposed contract (SFMTA Memo), the vehicles are still being operated safely despite the defects due to redundancy in the brake system that ensures the vehicles can stop on demand even if components are defective. However, the defects affect the maintenance costs and long-term reliability of the brake system. Defects in the brake systems are causing service interruptions more than once every 50,000 miles, which does not comply with contract requirements, according to SFMTA staff. Under the Siemens contract, Siemens is required to fix fleet defects, and an extended five-year warranty is added once the defects are fixed for the corrected parts.

The warranty provisions of the contract also require the SFMTA to conduct regular maintenance (as specified in manuals developed by Siemens) to maintain the warranty. According to SFMTA staff, the contractor manual recommends that the SFMTA overhaul the brake system of the Phase 1 vehicles after six years in service, and the overhaul is required to be eligible for the extended five-year warranty for the fixed fleet defects.

Siemens is funding the warranty work on the brake system (for all existing light rail vehicles)¹, and the SFTMA is funding the brake overhaul work.

Selection

Wabtec Passenger Transit (Wabtec) is the brake manufacturer for the new light rail vehicles and is a subcontractor under the Siemens contract. Wabtec is completing the warranty work on the brake system, which Siemens is funding. MTA also selected Wabtec to complete the brake

¹ According to SFMTA staff, new vehicles to be delivered will have upgraded brakes without the defective parts.

overhaul work on a sole source basis. According to the SFMTA Memo, Wabtec, as the original manufacturer, is the only party that can perform the work to ensure that the SFMTA maintains the extended warranty for the fixed fleet components.

DETAILS OF PROPOSED LEGISLATION

The proposed resolution would approve a new contract between the SFMTA and Wabtec Passenger Transit to overhaul the brake system on 68 light rail vehicles. The proposed contract has a term of two years and six months and a not to exceed amount of \$15,527,933.

As part of the brakes overhaul, Wabtec will rebuild the calipers, rebuild the hydraulic power units, and replace the accumulators.² Wabtec will deliver 68 sets of overhauled brakes to replace the brakes in 68 Phase 1 light rail vehicles. Wabtec will remove and replace the brake components on-site. Wabtec will overhaul the brake components off-site at its facility in South Carolina and will be responsible for shipping the old brake components to its facility and the overhauled brakes from its facility to San Francisco. According to SFMTA staff, the vehicles would each be out of service for a total of approximately one week during brake removal and replacement.³

Project Delivery Schedule

According to the project delivery schedule in the contract, Wabtec would install brakes on the vehicles over an 18 month period. In the first month, Wabtec would install brakes on two vehicles and conduct pilot testing, and in subsequent months Wabtec would install brakes on four vehicles per month.

Under section 4.9 of the agreement, the contractor would be required to pay liquidated damages if installation is delayed beyond the scheduled milestones. The contractor would pay the SFMTA: (a) \$10,000 per month if the project is not completed within 75 days of the original end date, and (b) \$500 per vehicle per day if a vehicle is not returned to service within 14 days.

Warranty

Once accepted by the SFMTA, the defective brake parts that are being upgraded and replaced will be covered under a five-year warranty, and the complete brake components rebuilt or replaced through the brake overhaul will be covered under a three-year warranty. During the warranty period, Wabtec will repair or replace any defective components and pay for any associated shipping charges.

² Calipers use hydraulic pressure to squeeze brake pads. Hydraulic power units regulate the hydraulic pressure into the caliper, and the accumulators manage hydraulic pressure during operation.

³ When the brakes are removed from each vehicle they will be shipped to the off-site facility to be overhauled. Wabtec will provide an initial five sets of overhauled brakes so that vehicles can have their brakes replaced immediately after removal. The brakes removed from the first five vehicles will be shipped back to the SFMTA facility once they are overhauled and will be placed in the next five vehicles. In this way, the brake overhaul will continue on a rolling basis with the brakes removed from one vehicle, shipped, then overhauled, then shipped, and replaced onto a different vehicle.

Liability Limitation

The proposed contract limits Wabtec's liability to the value of the contract (\$15.3 million), not including claims made by third parties. A similar provision is included in the Siemens contract.

FISCAL IMPACT

The proposed not to exceed amount of \$15.5 million includes a \$100,000 contingency and is based on the prices for parts and labor specified in Appendix B of the proposed contract. The total budget of \$15.4 million (\$226,881 per vehicle) includes \$11.9 million for parts and \$3.5 million for labor. Exhibit 1 below shows the parts and labor prices, and Exhibit 2 below shows the total cost and not to exceed amount.

Exhibit 1: Parts and Labor Prices per Vehicle

Description	Items / Vehicle	Price / Item	Parts Cost / Vehicle	Labor Cost / Vehicle	Parts and Labor / Vehicle
Motor Truck Caliper Parts Kit	8	\$10,374	\$82,996	\$33,476	\$116,471
Center Truck Caliper Parts Kit	2	10,059	20,119	7,005	27,124
Motor Truck Hydraulic Power Unit (HPU)	2	20,333	40,665	7,158	47,823
Center Truck HPU	1	20,333	20,333	3,579	23,912
Accumulator TT16548	3	1,925	5,776		5,776
Accumulator 1-60039	3	1,925	5,776		5,776
Total			\$175,664	\$51,218	\$226,881

Source: Appendix B, Proposed Contract

Exhibit 2: Total Cost and Not to Exceed Amount for 68 Vehicles

Description	Total Parts Cost	Total Labor Cost	Total Parts and Labor Cost
Motor Truck Caliper Parts Kit	\$5,643,706	\$2,276,335	\$7,920,042
Center Truck Caliper Parts Kit	1,368,074	476,356	1,844,431
Motor Truck HPU	2,765,242	486,733	3,251,975
Center Truck HPU	1,382,621	243,367	1,625,987
Accumulator TT16548	392,749		392,749
Accumulator 1-60039	392,749		392,749
Total	\$11,945,141	\$3,482,791	\$15,427,933
Contingency			100,000
Not to Exceed			\$15,527,933

Source: Appendix B, Proposed Contract

According to the SFTMA staff, the prices developed by Wabtec are fixed. The SFTMA determined that the pricing and labor rates were reasonable based on an independent cost estimate

developed by SFMTA engineers. Wabtec will be responsible for all removal and replacement costs, and all shipping costs since Wabtec will be completing the warranty work at the same time.

Funding Sources

Funding sources for the proposed contract include dedicated sales tax revenue for transportation projects, SFMTA operating revenues, required baseline contributions from the City's General Fund to MTA, City fees on new development to fund transportation improvements, and State funding available through the Low Carbon Fuel Standard program to support the delivery of electric transit service.

Exhibit 3: Funding Sources

Source	Amount
SFCTA Prop L Sales Tax	\$4,965,970
Operating Revenues	4,500,000
General Fund (MTA baseline)	2,949,042
Transit Sustainability Fee (TSF)	2,737,921
Low Carbon Fuel Standard (LCFS)	375,000
Total	\$15,527,933

Source: SFMTA

Independent Cost Estimate

Based on an independent cost estimate completed by SFMTA engineering staff, SFMTA determined that the proposed costs are reasonable. The independent cost estimate found that the proposed costs for parts and labor were approximately three percent less than the independent cost estimate. The memo also notes that the proposed costs do not include costs associated with planning, facility set-up, training, quality review, and other costs not itemized in Wabtec pricing as the original brakes manufacturer but may accrue to the SFMTA if the work were to be performed by SFMTA.

POLICY CONSIDERATION

The SFMTA procured new light rail vehicles through a competitive process and selected Siemens to deliver the vehicles. However, the resulting contract did not include a maintenance and operations component for the vehicles, including the brakes. Siemens selected Wabtec as the brakes manufacturer, and now the SFMTA is proposing to enter into a sole source contract for regular brakes maintenance with Wabtec to ensure that the SFMTA maintains the extended warranty for the fixed fleet components. Subsequent brake overhauls would not have to be completed by Wabtec. According to the SFTMA, the light rail vehicles have a useful life of 25 years. Therefore, the SFMTA will need to overhaul the brakes three or four times for each vehicle. The proposed agreement would address the first overhaul for 68 of the 219 vehicles. However, selecting Wabtec on a sole-source basis for each subsequent brake overhaul may prevent the SFMTA from obtaining competitive pricing. The SFMTA should: (a) issue a competitive solicitation to procure a brake maintenance vendor for subsequent brake maintenance; and (b) determine

whether it would be more cost effective for any of the brake maintenance work to be performed in-house or contracted out. The Board of Supervisors' should request that the SFMTA report on long-term plans for brake overhauls of the light rail vehicles when the SFMTA brings the next overhaul contract to the Board for approval.

RECOMMENDATIONS

1. Request SFMTA to (a) issue a competitive solicitation to procure a brake maintenance vendor for subsequent brake maintenance; (b) determine whether it would be more cost effective for any of the brake maintenance work to be performed in-house or contracted out and (c) report on long-term plans for brake overhauls of the light rail vehicles when the SFMTA brings the next overhaul contract to the Board of Supervisors for approval.
2. Approve the proposed resolution.

**City and County of San Francisco
Municipal Transportation Agency
One South Van Ness Ave., 7th Floor
San Francisco, California 94103**

**Agreement between the City and County of San Francisco and
Wabtec Passenger Transit**

LRV4 Phase 1 Brakes Overhaul

Contract No. SFMTA-2025-28-LOC

Table of Contents

Article 1: Definitions	1
Article 2: Term of the Agreement	5
Article 3: Financial Matters	5
3.1 Certification of Funds; Budget and Fiscal Provisions	5
3.1.1 Termination in the Event of Non-Appropriation	5
3.1.2 Maximum Costs	6
3.2 Authorization to Commence Work	6
3.3 Compensation	6
3.3.1 Calculation of Charges	6
3.3.2 Payment Limited to Satisfactory Services and Delivery of Goods	6
3.3.3 Withhold Payments	6
3.3.4 Invoice Format	6
3.3.5 Reserved. (LBE Payment and Utilization Tracking System)	7
3.3.6 Getting Paid by the City for Goods and/or Services	7
3.3.7 Reserved. (Grant-Funded Contracts)	7
3.3.8 Payment Terms	7
3.4 Audit and Inspection of Records	7
3.5 Submitting False Claims	8
3.6 Reserved. (Payment of Prevailing Wages)	8
3.7 Reserved. (Displaced Worker Protection Act)	8
Article 4: Services and Goods	8
4.1 Reserved. (Primary and Secondary Contractors)	8
4.2 Reserved. (Term Agreement – Indefinite Quantities)	8
4.3 Personnel	8
4.1 Services	8
4.4.1 Services Contractor Agrees to Perform	8
4.4.2 Subcontracting	8
4.4.3 Independent Contractor; Payment of Employment Taxes and Other Expenses	9
4.5 Warranty	10
4.6 Goods	11
4.6.1 Place of Manufacture	11
4.6.2 Condition of Goods	11
4.6.3 Inspection	11

4.6.4 F.O.B.....	11
4.6.5 Failure to Deliver	11
4.6.6 Safety Data Sheets	11
4.7 Changes.....	12
4.8 Assignment	12
4.9 Liquidated Damages	12
4.10 Performance and Payment Security	13
Article 5: Insurance and Indemnity	13
5.1 Insurance.....	13
5.2 Indemnification	15
5.3 Notice of Claim; Tender of Defense	16
Article 6: Liability of the Parties	16
6.1 Liability of City.....	16
6.2 Liability for Use of Equipment.....	17
Article 7: Payment of Taxes	17
7.1 Contractor to Pay All Taxes.....	17
7.2 Possessory Interest Taxes	17
7.3 Withholding	17
Article 8: Termination and Default.....	17
8.1 Termination for Convenience	17
8.1.1 Exercise of Option	17
8.1.2 Contractor Actions.....	18
8.1.3 Contractor Invoice	18
8.1.4 Nonrecoverable Costs.....	19
8.1.5 Deductions	19
8.1.6 Payment Obligation	19
8.2 Termination for Default; Remedies	19
8.3 Non-Waiver of Rights.....	21
8.4 Rights and Duties upon Termination or Expiration.....	21
Article 9: Rights In Deliverables	22
9.1 Ownership of Results.....	22
9.2 Works for Hire	22
Article 10: Additional Requirements Incorporated by Reference	22
10.1 Laws Incorporated by Reference	22

10.2	Conflict of Interest	22
10.3	Prohibition on Use of Public Funds for Political Activity	22
10.4	Consideration of Salary History	23
10.5	Nondiscrimination Requirements	23
10.5.1	Nondiscrimination in Contracts	23
10.5.2	Nondiscrimination in the Provision of Employee Benefits	23
10.6	Reserved. (Local Business Enterprise and Nondiscrimination in Contracting Ordinance).	23
10.7	Minimum Compensation Ordinance	23
10.8	Health Care Accountability Ordinance	24
10.9	First Source Hiring Program	24
10.10	Alcohol and Drug-Free Workplace	24
10.11	Limitations on Contributions	24
10.12	Reserved. (Slavery Era Disclosure)	25
10.13	Reserved. (Working with Minors)	25
10.14	Consideration of Criminal History in Hiring and Employment Decisions	25
10.15	Reserved. (Nonprofit Contractor Requirements)	25
10.16	Food Service Waste Reduction Requirements	25
10.17	Reserved. (Distribution of Beverages and Water)	25
10.18	Tropical Hardwood and Virgin Redwood Ban	25
10.19	Reserved. (Preservative-Treated Wood Products)	26
10.20	Reserved. (Sweat Free Procurement)	26
10.21	Reserved. (Environment Code Chapter 5, Resource Conservation Ordinance)	26
10.22	Reserved. (Prop J Approval)	26
10.23	Use of City Opinion	26
Article 11:	General Provisions	26
11.1	Notices to the Parties	26
11.2	Compliance with Laws Requiring Access for People with Disabilities	26
11.3	Incorporation of Recitals	27
11.4	Sunshine Ordinance	27
11.5	Modification of this Agreement	27
11.6	Dispute Resolution Procedure	27
11.6.1	Negotiation; Alternative Dispute Resolution	27
11.6.2	Government Code Claim Requirement	28
11.7	Agreement Made in California; Venue	28

11.8 Construction	28
11.9 Entire Agreement	28
11.10 Compliance with Laws	28
11.11 Severability	28
11.12 Cooperative Drafting	28
11.14 Notification of Legal Requests	29
11.15 Time of Essence	29
Article 12: SFMTA Specific Terms	29
12.1 Large Vehicle Driver Safety Training Requirements	29
Article 13: Data and Security.....	30
13.1 Nondisclosure of Private, Proprietary or Confidential Information	30
13.1.1 Protection of Private Information	30
13.1.2 City Data, Confidential Information.....	30
13.2 Reserved. (Payment Card Industry (PCI) Requirements).....	30
13.3 Reserved. (Business Associate Agreement)	30
13.5 Management of City Data.....	30
13.4.1 Use of City Data	30
13.4.2 Disposition of City Data	31
13.4.3 Protected Health Information	31
13.5 Ownership of City Data	31
13.6 Loss or Unauthorized Access to City’s Data; Security Breach Notification	31
Article 14: MacBride and Signature	32
14.1 MacBride Principles - Northern Ireland	32
Article 15: Included Appendices.....	32

**City and County of San Francisco
Municipal Transportation Agency
One South Van Ness Ave., 7th Floor
San Francisco, California 94103**

**Agreement between the City and County of San Francisco and
Wabtec Passenger Transit
Contract No. SFMTA-2025-28-LOC**

This Agreement is made as of _____, in the City and County of San Francisco (City), State of California, by and between the Wabtec Passenger Transit division of Westinghouse Air Brake Technologies Corporation, a Delaware corporation (Contractor), and the City, a municipal corporation, acting by and through its Municipal Transportation Agency (SFMTA).

Recitals

A. The SFMTA wishes to procure services to overhaul brake system components for 68 LRV4 Phase 1 Vehicles and parts kits and replacement components for 68 of those vehicles.

B. Due to the proprietary nature of the Goods and Services required to support the overhaul, this Agreement was procured in accordance with sole source requirements set out in San Francisco Administrative Code Section 21.5(b) (sole source).

C. This is a contract for Goods and Services and the Local Business Enterprise (LBE) subcontracting participation requirement has been waived pursuant to waiver CMD14B0004213.

D. Contractor represents and warrants that it is qualified to perform the Services required by the City as set forth under this Agreement.

E. The City's Civil Service Commission approved Contract number 40625-23/24 for this Agreement on May 6, 2024.

F. The City's Board of Supervisors approved this Agreement by [insert resolution number] on [insert date of Commission or Board action].

Now, THEREFORE, the parties agree as follows:

Article 1 Definitions

The following definitions apply to this Agreement. Where any word or phrase defined below, or a pronoun in place of the word or phrase, is used in any part of this Agreement, it shall have the meaning set forth below:

1.1 "Acceptance" means the formal written acceptance by the City that all Work, or a specific portion thereof, under the Contract has been satisfactorily completed.

1.2 “**Agreement**” or “**Contract**” means this contract document covering the performance of the Work and furnishing of labor, materials, equipment, tools, and services, including Work incidental to the procurement, to include all Conformed Contract Documents, the Contract bonds or other security, any future amendments, all attached appendices, and all applicable City Ordinances and Mandatory City Requirements that are specifically incorporated into this Agreement by reference as provided herein.

1.3 “**Award**” means notification from the City to Contractor of acceptance of Contractor’s Proposal, subject to the execution and approval of a satisfactory Contract and bond to secure the performance of the Contract, and to such other conditions as may be specified or otherwise required by law.

1.4 “**CCO**” means the SFMTA Contract Compliance Office.

1.5 “**City**” or “**the City**” means the City and County of San Francisco, a municipal corporation, acting by and through its Municipal Transportation Agency.

1.6 “**City Data**” or “**Data**” means that data as described in Article 13 of this Agreement, which includes, without limitation, all data collected, used, maintained, processed, stored, or generated by or on behalf of the City in connection with this Agreement, as well as Confidential Information.

1.7 “**CMD**” means the Contract Monitoring Division of the City.

1.8 “**Confidential Information**” means confidential City information including, but not limited to, personally-identifiable information (PII), protected health information (PHI), or individual financial information (collectively, "Proprietary or Confidential Information") that is subject to local, state or federal laws restricting the use and disclosure of such information, including, but not limited to, Article 1, Section 1 of the California Constitution; the California Information Practices Act (Civil Code § 1798 et seq.); the California Confidentiality of Medical Information Act (Civil Code § 56 et seq.); the federal Gramm-Leach-Bliley Act (15 U.S.C. §§ 6801(b) and 6805(b)(2)); the privacy and information security aspects of the Administrative Simplification provisions of the federal Health Insurance Portability and Accountability Act (45 CFR Part 160 and Subparts A, C, and E of part 164); and San Francisco Administrative Code Chapter 12M (Chapter 12M).

1.9 “**Conformed Contract Documents**” Contract documents revised to incorporate all addenda, and information included in the Contractor's Proposal and accepted by the City.

1.10 “**Contract Administrator**” means the contract administrator assigned to the Contract by the SFMTA, or his or her designated agent.

1.11 “**Contract Modification**” means a written amendment to the Contract, agreed to by the City and Contractor, covering changes in the Conformed Contract Documents within the general scope of the Contract and establishing the basis of payment and time adjustments for the Work affected by the changes.

1.12 “Contractor” or “Consultant” means the Wabtec Passenger Transit division of Westinghouse Air Brake Technologies Corporation (“Wabtec”), having an address at 130 Ridgeview Center, Duncan, SC 29334.

1.13 “Controller” means the Controller of the City.

1.14 “Correction” means the elimination of a Defect.

1.15 “Day” (whether or not capitalized) means a calendar day, unless otherwise designated.

1.16 “Defect” means any patent or latent malfunctions or failure in manufacture or design of any component or subsystem.

1.17 “Deliverables” means Contractor’s work product resulting from the Services provided by Contractor to the City during the course of Contractor’s performance of the Agreement, including without limitation, the work product described in the “Scope of Work” attached as Appendix A.

1.18 “Director” means the Director of Transportation of the SFMTA or his or her designee.

1.19 “Effective Date” means the date the SFMTA notifies Contractor through a Purchase Order that the City’s Controller has certified the availability of funds for this Agreement as provided in Section 3.1.

1.20 “Equipment” means the hardware, computers, servers, and other components, diagnostic and simulation tools, spare parts and other parts and electronic, mechanical or components to be supplied by Contractor under this Agreement.

1.21 “Engineer” means the SFMTA Engineer assigned to the Contract or his or her designated agent.

1.22 “Final Acceptance” means the formal written Acceptance by the Director of Transportation or his or her designee that all Contract Deliverables for the Contract have been satisfactorily completed and accepted.

1.23 “FTA” means the Federal Transit Administration.

1.24 “Goods” means the products, parts, materials, Equipment or supplies to be provided by Contractor under this Agreement, including but not limited to the Vehicle calipers, hydraulic power units (HPUs) and accumulators.

1.25 “Mandatory City Requirements” means those City laws set forth in the San Francisco Municipal Code, including the duly authorized rules, regulations, and guidelines implementing such laws that impose specific duties and obligations upon Contractor.

1.26 “Notice to Proceed” means written notice to the Contractor of the date on which it shall begin prosecution of the Work to be done under the Contract.

1.27 “Overhaul” means work performed by the Contractor to replace or rebuild major systems or components of the City’s Vehicles.

1.28 “Party” and “Parties” mean the City and Contractor either collectively or individually.

1.29 “Project Manager” means the project manager assigned to the Contract for the SFMTA, or his or her designated agent.

1.30 “Purchase Order” means the written order issued by the City to the Contractor, authorizing the Effective Date as provided in Section 2.1.

1.31 “San Francisco Municipal Transportation Agency” or “SFMTA” means the agency of the City with jurisdiction over all surface transportation in San Francisco, as provided under Article VIIIA of the City’s Charter.

1.32 “Services” or “Work” means the work performed by Contractor under this Agreement as specifically described in the “Scope of Work” attached as Appendix A, including all services, labor, supervision, Goods, actions and other requirements to be performed and furnished by Contractor under this Agreement.

1.33 “Siemens Contract” means the Agreement between the City and County of San Francisco, San Francisco Municipal Transportation Agency and Siemens Industry, Inc. for Procurement of New light Rail Vehicles (LRV4) Contract No. SFMTA-2013-19, as amended.

1.34 “Subcontractor” means any individual, partnership, firm, or corporation that, under an agreement with Contractor, undertakes integrally on the Project the partial or total design, manufacture, performance of, or furnishes one or more portions of the Work under the terms of the Contract. As used in this Agreement, the term Subcontractor does not include any of Contractor’s suppliers of raw materials, hardware, parts or other materials that are purchased and used for, or incorporated into, the Work or Deliverables by Contractor.

1.35 “Unavoidable Delay” means an interruption of the work beyond the control of the Contractor, which the Contractor could not have avoided by the exercise of care, prudence, foresight, and diligence. Such delays include and are limited to acts of God; floods; windstorms; tornadoes; wars; riots; insurrections; epidemics; quarantine restrictions; strikes and lockouts; freight embargoes; acts of a governmental agency; priorities or privileges established for the manufacture, assembly, or allotment of materials by order, decree, or otherwise of the United States or by any department, bureau, commission, committee, agent, or administrator of any legally constituted public authority; changes in the work ordered by the City insofar as they necessarily require additional time in which to complete the entire work; the prevention by the City of the Contractor's commencing or prosecuting the work. The duration of said Unavoidable Delay shall be limited to the extent that the commencement, prosecution, and completion of the work are delayed thereby, as determined by the City.

1.36 “Unforeseeable Work” means any work performed by the Contractor that is not reasonably able to be anticipated or expected and that is not included in the Scope of Work.

1.37 “Vehicles” or “Cars” means the vehicles for which equipment is being Overhauled under this Contract.

1.38 “Warranty Period” means the period of time, from the date the SFMTA provides written notice of Acceptance of the Goods and Services, as described in Section 4.5.

1.39 “Work” or “Services” means the furnishing of all design, engineering, manufacturing, labor, supervision, services, products, materials, machinery, equipment, tools, supplies, and facilities and the performance of all requirements called for by the Contract and necessary to the completion and warranty of brake components on the Vehicles, including all services, labor, supervision, Goods, actions and other requirements to be performed and furnished by Contractor under this Agreement.

1.40 “Working Days” means those Days during which regular business is conducted, excluding Saturdays, Sundays, and all Federal, State, and municipal holidays that are observed by the SFMTA during the duration of the Contract.

Article 2 Term of the Agreement

2.1 The term of this Agreement shall commence on the Effective Date and expire after two (2) years and six (6) months, unless earlier terminated as otherwise provided herein.

Article 3 Financial Matters

3.1 Certification of Funds; Budget and Fiscal Provisions

3.1.1 Termination in the Event of Non-Appropriation. This Agreement is subject to the budget and fiscal provisions of the City’s Charter. Charges will accrue only after prior written authorization certified by the Controller in the form of a Purchase Order, and the amount of the City’s obligation hereunder shall not at any time exceed the amount certified for the purpose and period stated in such advance authorization. This Agreement will terminate without penalty, liability or expense of any kind to the City at the end of any fiscal year if funds are not appropriated for the next succeeding fiscal year. If funds are appropriated for a portion of the fiscal year, this Agreement will terminate, without penalty, liability or expense of any kind at the end of the term for which funds are appropriated. The City has no obligation to make appropriations for this Agreement in lieu of appropriations for new or other agreements. City budget decisions are subject to the discretion of the Mayor and the Board of Supervisors. Contractor’s assumption of risk of possible non-appropriation is part of the consideration for this Agreement.

THIS SECTION CONTROLS AGAINST ANY AND ALL OTHER PROVISIONS OF THIS AGREEMENT.

3.1.2 Maximum Costs. The City's payment obligation to Contractor cannot at any time exceed the amount certified by the City's Controller for the purpose and period stated in such certification. Absent an authorized Emergency per the City Charter or applicable Code, no City representative is authorized to offer or promise, nor is the City required to honor, any offered or promised payments to Contractor under this Agreement in excess of the certified maximum amount without the Controller having first certified the additional promised amount and the Parties having modified this Agreement as provided in Section 11.5 (Modification of this Agreement).

3.2 Authorization to Commence Work. Contractor shall not commence any work under this Agreement until the SFMTA has issued formal written authorization to proceed, such as a Purchase Order, task order or notice to proceed. Such authorization may be for a partial or full scope of work.

3.3 Compensation

3.3.1 Calculation of Charges. The amount of this Agreement shall not exceed fifteen million, five hundred twenty-seven thousand, nine hundred and thirty-three Dollars (\$15,527,933), the breakdown of which appears in Appendix B, Schedule of Prices. Compensation for Unforeseeable Work shall be negotiated as a lump sum, based on parts prices established in Appendix B. The City shall not be liable for interest or late charges for any late payments. The City will not honor minimum service order charges for any Services or Goods covered by this Agreement.

3.3.2 Payment Limited to Satisfactory Services and Delivery of Goods. Contractor is not entitled to any payments until the SFMTA approves the Services rendered and Goods delivered. Payments to Contractor by the City shall not excuse Contractor from its obligation to replace the unsatisfactory delivery of Services and Goods even if the unsatisfactory character was apparent or could have been detected at the time such payment was made. Non-conforming Goods may be rejected by the SFMTA and in such case must be replaced by Contractor without delay at no cost to the City.

3.3.3 Withhold Payments. If Contractor fails to provide Goods and Services in accordance with Contractor's obligations under this Agreement, the City may withhold any and all payments due Contractor until such failure to perform is cured, and Contractor shall not stop work as a result of the City's withholding of payments as provided herein.

3.3.4 Invoice Format. Invoices furnished by Contractor under this Agreement must be in a form acceptable to the City's Controller and the SFMTA, and include a unique invoice number and a specific invoice date. The City will make payment as specified in Section 3.3.7, or in such alternate manner as the Parties have mutually agreed upon in writing. Each Contractor invoice shall contain the following information:

- (a) Contract Number
- (b) Purchase Order Number

- (c) PeopleSoft Supplier Name and ID
- (d) Relevant milestones
- (e) Description of the Services performed and Goods delivered
- (f) Quantity of items
- (g) Unit price
- (h) Contract payment terms
- (i) Sales/use tax (if applicable)
- (j) Total contract price/invoice amount
- (k) Supporting documentation and/or documentation referencing submittal or delivery.

Invoices that do not include all required information or contain inaccurate information will not be processed for payment.

3.3.5 Reserved. (LBE Payment and Utilization Tracking System)

3.3.6 Getting Paid by the City Payment for Goods and Services

(a) The City utilizes a commercial product through its banking partner to pay City contractors electronically. Contractor shall sign up to receive electronic payments to be paid under this Agreement. To sign up for electronic payments, visit http://portal.paymode.com/city_countyofsanfrancisco.

(b) At the option of the City, Contractor may be required to submit invoices directly in the City's financial and procurement system. Refer to <https://sfcitypartner.sfgov.org/pages/training.aspx> for more information.

3.3.7 Reserved. (Grant-Funded Contracts)

3.3.8 Payment Terms

(a) **Payment Due Date:** Upon Acceptance of the Deliverables identified in Appendix C, Contractor shall provide an acceptable invoice to the SFMTA. Unless the SFMTA notifies the Contractor that a dispute exists, Payment will be made within 30 Days, measured from the date of receipt of an acceptable invoice. Payment is deemed to be made on the date the City issued a check to Contractor or, if Contractor has agreed to electronic payment, the date the City posted the electronic payment to Contractor.

(b) Reserved. (Payment Discount Terms)

(c) No additional charge shall accrue against City in the event City does not make payment within any time specified by Contractor.

3.4 Audit and Inspection of Records. In the event an audit relating to this Agreement is initiated, Contractor agrees to maintain and make available to the City, during regular business hours, accurate books and accounting records relating to its Services. Contractor will permit the City to audit, examine and make excerpts and transcripts from such books and records, and to make audits of all invoices, materials, payrolls, records or personnel and other

data related to all other matters covered by this Agreement, whether funded in whole or in part under this Agreement. Contractor shall maintain such data and records in an accessible location and condition for a period of not less than five years after final payment under this Agreement or until after final audit has been resolved, whichever is later. The State of California or any Federal agency having an interest in the subject matter of this Agreement shall have the same rights as conferred upon the City by this Section. Contractor shall include the same audit and inspection rights and record retention requirements in all subcontracts.

3.5 Submitting False Claims. The full text of San Francisco Administrative Code Section 21.35, including the enforcement and penalty provisions, is incorporated into this Agreement. Any contractor or subcontractor who submits a false claim shall be liable to the City for the statutory penalties set forth in that section.

3.6 Reserved. (Payment of Prevailing Wages)

3.7 Reserved. (Displaced Worker Protection Act)

Article 4 Services and Goods

4.1 Reserved. (Primary and Secondary Contractors)

4.2 Reserved. (Term Agreement – Indefinite Quantities)

4.3 Personnel. Contractor represents and warrants that it is qualified to deliver the Services and Goods required by the SFMTA, and that all Services and Goods will be delivered by competent personnel with the degree of skill and care required by current and sound professional procedures and practices. Contractor will comply with the SFMTA's reasonable requests regarding assignment and/or removal of personnel, but all personnel, including those assigned at the SFMTA's request, must be supervised by Contractor. Contractor shall commit sufficient resources for timely completion within the project schedule.

4.4 Services

4.4.1 Services Contractor Agrees to Perform. Contractor agrees to perform Services, as described in Appendix A, according to the Project Delivery Schedule set forth in Appendix C. Contractor agrees to perform the Work provided for in the Conformed Contract Documents. Officers and employees of the City are not authorized to request, and the City is not required to reimburse the Contractor for, Services beyond the Scope of Services listed in Appendix A, unless Appendix A is modified as provided in Section 11.5 (Modification of this Agreement).

4.4.2 Subcontracting. Contractor will not employ Subcontractors in the performance of this Agreement, provided however, that Contractor may use subcontractors for purposes of performing field Services work, subject to the City's prior written consent by the SFMTA's Project Manager, which shall not be unreasonably withheld.

4.4.3 Independent Contractor; Payment of Employment Taxes and Other Expenses

(a) Independent Contractor. For the purposes of this Section 4.4.3, “Contractor” shall be deemed to include not only Contractor, but also any agent or employee of Contractor. Contractor acknowledges and agrees that at all times, Contractor is an independent contractor and is wholly responsible for the manner and means by which it performs the Services and work required under this Agreement. Contractor, its agents, and employees will not represent or hold themselves out to be employees of the City at any time. Contractor shall not have employee status with the City, nor be entitled to participate in any plans, arrangements, or distributions by the City pertaining to or in connection with any retirement, health or other benefits that the City may offer its employees. Contractor is liable for its acts and omissions. Contractor shall be responsible for all obligations and payments, whether imposed by federal, state or local law, including, but not limited to, FICA, income tax withholdings, unemployment compensation, insurance, and other similar responsibilities related to Contractor’s performing Services and work, or any agent or employee of Contractor providing same. Nothing in this Agreement shall be construed as creating an employment or agency relationship between the City and Contractor or any of its agents or employees. Contractor agrees to maintain and make available to the City, upon request and during regular business hours, accurate books and accounting records demonstrating Contractor’s compliance with this Section. Should the City determine that Contractor is not performing in accordance with the requirements of this Section, the City shall provide Contractor with written notice of such failure. Within five Working Days of Contractor’s receipt of such notice, and in accordance with Contractor policy and procedure, Contractor shall remedy the deficiency. Notwithstanding, if the City believes that an action of Contractor warrants immediate remedial action by Contractor, the City shall contact Contractor and provide Contractor in writing with the reason for requesting such immediate action.

(b) Payment of Employment Taxes and Other Expenses. Should the City, in its discretion, or a relevant taxing authority such as the Internal Revenue Service or the State Employment Development Division, or both, determine that Contractor is an employee for purposes of collection of any employment taxes, the amounts payable under this Agreement shall be reduced by amounts equal to both the employee and employer portions of the tax due (and offsetting any credits for amounts already paid by Contractor which can be applied against this liability). The City shall then forward those amounts to the relevant taxing authority. Should a relevant taxing authority determine a liability for past services performed by Contractor for the City, upon notification of such fact by the City, Contractor shall promptly remit such amount due or arrange with the City to have the amount due withheld from future payments to Contractor under this Agreement (again, offsetting any amounts already paid by Contractor which can be applied as a credit against such liability). A determination of employment status pursuant to this Section 4.4.3 shall be solely limited to the purposes of the particular tax in question, and for all other purposes of this Agreement, Contractor shall not be considered an employee of the City. Notwithstanding the foregoing, Contractor agrees to indemnify and hold harmless the City and

its officers, agents and employees from, and, if requested, shall defend them against any and all claims, losses, costs, damages, and expenses, including attorneys' fees, arising from this Section.

4.5 Warranty

(a) The warranties made by Contractor in this Agreement are made expressly in lieu of all other warranties or guarantees, express or implied, including any implied warranties of merchantability or fitness for a particular purpose.

(b) The warranty period for the Services and the Goods shall be three (3) years from the date of written Acceptance by the SFMTA of the Goods and Services; provided, however, that the warranty period of the Goods identified in Section 5 of the Statement of Work shall be five (5) years from the date of written Acceptance by the SFMTA of the Goods (the "Warranty Period").

(c) Contractor warrants to the City that the Services will be performed with the degree of skill and care that is required by current, good and sound professional procedures and practices, and in conformance with generally accepted professional standards prevailing at the time the Services are performed so as to ensure that all Services performed are correct and appropriate for the purposes contemplated in this Agreement.

(d) During the applicable Warranty Period, the Contractor warrants to the SFMTA that the Goods that Contractor provides under this Agreement shall be correct and serve their intended purpose as demonstrated in Appendix A, free from Defects in material and workmanship, and shall conform to their specifications. Contractor shall, at no additional charge, promptly: (i) repair or replace any such Defective Goods, materials or Equipment, (ii) remove such Defective Goods, materials and Equipment from the Vehicle(s), and (iii) reinstall the repaired or replaced Goods, materials and Equipment. Contractor shall pay: (i) all shipping charges incurred in returning Defective Goods to Contractor, if Contractor requests the return of such Defective Goods, and (ii) all shipping charges to return the repaired or replacement Goods to SFMTA. All costs for warranty repair and replacement of Goods are included in the Fee for the Goods.

(e) Contractor shall promptly notify the SFMTA of any Defect in Accepted Goods and Services. Contractor shall promptly comply with any timely written direction from the SFMTA to correct or partially correct a Defect, at no cost to the SFMTA, and Contractor shall also promptly correct any other systems or components of the Vehicle to the extent any system or component has been directly damaged as a result of the Defect, or reimburse the SFMTA for the actual costs of repair.

(f) The warranty shall be voided and not apply to any Goods, or part or component thereof, that has failed as a direct result of the SFMTA's misuse, negligence, or accident, or that the SFMTA has repaired or altered in any way so as to affect adversely its performance or reliability, except insofar as such repairs were in accordance with the Contractor's maintenance manuals and the workmanship was in accordance with recognized

standards of the industry. The warranty on any Goods, or part or component thereof, shall also be void if SFMTA fails to conduct normal inspections and scheduled preventive maintenance procedures on the same Goods, or part or component thereof, substantially as recommended in the latest version of Contractor's maintenance manuals received by the SFMTA, and such failure by SFMTA is the direct cause of the failure of the Goods, or any part or component thereof.

(g) Nothing stated herein shall modify, supersede or amend the warranty(ies) provided in the Siemens Contract. The warranty provided in this Agreement is separate from and addition to the warranty(ies) provided by Siemens in the Siemens Contract.

(h) The warranty provided herein shall be enforceable and shall survive the expiration or termination of this Agreement.

4.6 Goods

4.6.1 Place of Manufacture. No article furnished hereunder shall have been made in prison or by convict labor. The SFMTA may require Contractor to provide within twenty (20) Working Days from the date they are requested to do so, information and documentation related to the Goods to be provided hereunder, including but not limited to: sources of supply, distribution, dealership or agency agreements and authorizations from manufacturer(s) they claim to represent, lines of credit with financial institutions for manufacturer(s) they claim to represent, lines of credit with financial institutions and suppliers, numbers of employees, trade references and any other applicable information to determine Contractor's fitness to supply the Goods in accordance with the Agreement requirements.

4.6.2 Condition of Goods. Goods offered and furnished must be new and previously unused, and of the model and/or type specified in Appendix E (Bill of Materials), except for the reused Goods described in Appendix A and excluded from the Appendix E. Contractor shall establish quality control measures, as applicable to a department's operations, and promptly provide documented reports to the SFMTA of any Defects or premature failures in the Goods.

4.6.3 Inspection. All Goods supplied shall be subject to inspection and acceptance or rejection by the SFMTA. Non-conforming or rejected Goods may be subject to reasonable storage fees.

4.6.4 F.O.B. Goods shall be shipped Freight on Board, to any destination named in a Purchase Order issued by the City against this Agreement. *The cost of shipment must be incorporated into the offered unit costs.*

4.6.5 Failure to Deliver. If Contractor fails to deliver Goods of the quality, in the manner or within the time called for by this Agreement, the City may terminate the Agreement for default in accordance with Article 8.2; or, the City may return uninstalled parts already made and receive a refund.

4.6.6 Safety Data Sheets. Where required by law or by the City, and only as requested by the City, Contractor will include Safety Data Sheets (SDSs) with delivery of the Goods for such requested items. Failure to include the SDSs for such items will constitute a material breach of contract and may result in refusal to accept delivery.

4.7 Changes. The SFMTA may at any time, by a written order, make changes within the general scope of this Agreement, in its sole discretion. Such change shall serve to modify this Agreement to the extent necessary to execute the change as directed. If any such change causes an increase or decrease in the cost of, or the time required for, the performance of any part of the Services under this Agreement, whether changed or not changed by the order, the SFMTA shall make an equitable adjustment in the Contract price, the delivery schedule, or both, and shall modify the Agreement accordingly. The Contractor must assert its right to an adjustment under this article within ten (10) Working Days from the date of receipt of the written order. Failure by Contractor to give timely notice of the change could constitute waiver of a claim for an equitable adjustment. However, if the SFMTA decides that the facts justify it, the SFMTA may receive and act upon a proposal submitted at any time before final payment of the Agreement. If the Contractor's proposal includes the cost of Equipment or materials made obsolete or excess by the change, the SFMTA shall have the right to prescribe the manner of the disposition of such Equipment or materials. Failure to agree to any adjustment shall be a dispute under Section 11.6, Dispute Resolution Procedure. However, nothing in this provision shall excuse the Contractor from proceeding with the Agreement as changed.

4.8 Assignment. The Services and Goods to be delivered by Contractor are personal in character. This Agreement may not be directly or indirectly assigned, novated, or otherwise transferred unless first approved by the City by written instrument executed and approved in compliance with City law, the SFMTA Contract Approval Delegation and Requirements Policy, as amended, and applicable SFMTA policies. Any purported assignment made in violation of this provision shall be null and void.

4.9 Liquidated Damages. By entering into this Agreement, Contractor agrees that in the event the Services and Goods are delayed beyond the scheduled milestones and timelines as provided in Appendix C, Project Delivery Schedule, the SFMTA will suffer actual damages that will be impracticable or extremely difficult to determine. Contractor agrees that the sums listed below per Day for each Day of delay beyond scheduled milestones and timelines are not penalties, but are reasonable estimates of the loss that the SFMTA will incur based on the delay, established in light of the circumstances existing at the time this Agreement was awarded. Except where the delay is the result of an Unavoidable Delay, or due to the failure of SFMTA or the City to provide timely access to the Vehicles the City may deduct a sum representing the liquidated damages from any money due to Contractor under this Agreement. Such deductions shall not be considered a penalty, but rather agreed monetary damages sustained by the SFMTA because of Contractor's failure to furnish deliverables to the SFMTA within the time fixed or such extensions of time permitted in writing by the SFMTA. Liquidated damages imposed under this Agreement shall be the sole and exclusive remedy available to the City for the late delivery of any Work or Deliverables, or the delayed or late performance of any Services. In no event shall the total amount of Liquidated Damages payable by Contractor under the Contract exceed ten percent of the total amount of the Contract.

Item	Cost
Failure to complete the project within seventy-five (75) Days of the originally scheduled end date, which is the last Day of final scheduled month.	\$10,000 per month, to be calculated and pro-rated by days beyond seventy-five (75) Days.
Failure to receive SFMTA approval to return a car to service in fourteen (14) Days unless SFMTA agrees in writing to additional delay.	\$500 per Vehicle per Day

4.10 Performance and Warranty Security. Wabtec Passenger Transit division of Westinghouse Air Brake Technologies Corporation is an unincorporated division of Westinghouse Air Brake Technologies Corporation and is the same legal entity as Westinghouse Air Brake Technologies Corporation. In lieu of a parent company guarantee, Contractor represents and warrants that Westinghouse Air Brake Technologies Corporation, as the signatory to this Agreement, is responsible for the obligations, undertakings and liabilities in connection with the Agreement.

Article 5 Insurance and Indemnity

5.1 Insurance

5.1.1 Required Coverages. Without in any way limiting Contractor's liability pursuant to the "Indemnification" section of this Agreement, Contractor must maintain in force, during the full term of the Agreement, insurance in the following amounts and coverages, unless noted as Reserved:

(a) Commercial General Liability Insurance with limits not less than \$10 Million each occurrence for Bodily Injury and Property Damage, including Contractual Liability, Personal Injury, Products and Completed Operations.

(b) Commercial Automobile Liability Insurance with limits not less than \$5 Million each occurrence, "Combined Single Limit" for Bodily Injury and Property Damage, including Owned, Non-Owned and Hired auto coverage, as applicable.

(c) Workers' Compensation Liability Insurance, in statutory amounts, with Employers' Liability Limits not less than \$1 Million each accident, injury, or illness.

(d) Professional Liability Insurance, applicable to Contractor's profession, with limits not less than \$5 Million for each claim with respect to negligent acts, errors or omissions in connection with the Services.

- (e) Reserved. (Technology Errors and Omissions Liability Coverage)
- (f) Reserved. (Cyber and Privacy Coverage)
- (g) Reserved. (Pollution Liability Insurance)
- (h) Inland Marine insurance in a form appropriate for the nature of City property in the care, custody, or control of Contractor including while in transit by Contractor and/or third parties engaged by Contractor, on an all-risk form including earthquake and flood, in the amount not less than full replacement value of the City's property.

5.1.2 Additional Insured

(a) The Commercial General Liability Insurance policies must be endorsed to provide Additional Insured status to the City and County of San Francisco, and its Officers, Agents, and Employees.

(b) The Commercial Automobile Liability Insurance policy must include as Additional Insured the City and County of San Francisco, and its Officers, Agents, and Employees.

(c) Reserved. (Auto Pollution)

5.1.3 Waiver of Subrogation. The Workers' Compensation Liability Insurance policy(ies) shall include a waiver of subrogation in favor of the City for all work performed by the Contractor, and its employees, agents and subcontractors.

5.1.4 Primary Insurance

(a) The Commercial General Liability Insurance policy shall provide that such policies are primary insurance to any other insurance available to the Additional Insureds, with respect to any claims arising out of this Agreement, and that the insurance applies separately to each insured against whom claim is made or suit is brought.

(b) The Commercial Automobile Liability Insurance policy shall provide that such policies are primary insurance to any other insurance available to the Additional Insureds, with respect to any claims arising out of this Agreement, and that the insurance applies separately to each insured against whom claim is made or suit is brought.

(c) Reserved. (Pollution Liability Insurance)

5.1.5 Other Insurance Requirements

(a) Thirty Days' advance written notice shall be provided to the City of cancellation, intended non-renewal, or reduction in coverages, except for non-payment, for which no less than 10 Days' notice shall be provided to City. Notices shall be sent to the City address set forth in Section 11.1 (Notices to the Parties). All notices, certificates and endorsements shall include the SFMTA contract number and title on the cover page.

(b) Should any of the required insurance be provided under a claims-made form, Contractor shall maintain such coverage continuously throughout the term of this Agreement and, without lapse, be maintained for a period of three years beyond the expiration of this Agreement, to the effect that, should occurrences during the Agreement term give rise to claims made after expiration of the Agreement, such claims shall be covered by such claims-made policies.

(c) Should any of the required insurance be provided under a form of coverage that includes a general annual aggregate limit or provides that claims investigation or legal defense costs be included in such general annual aggregate limit, such general annual aggregate limit shall be double the occurrence or claims limits specified above.

(d) Should any required insurance lapse during the term of this Agreement, requests for payments originating after such lapse shall not be processed until the City receives satisfactory evidence of reinstated coverage as required by this Agreement, effective as of the lapse date. If insurance is not reinstated, the City may, at its sole option, terminate this Agreement effective on the date of such lapse of insurance.

(e) Before delivering any Goods or commencing any Services, Contractor shall furnish to the City certificates of insurance and additional insured and waiver of subrogation status, as required, with insurers with ratings comparable to A-, VIII or higher, that are authorized to do business in the State of California, and that are satisfactory to the City, in form evidencing all coverages set forth above. Approval of the insurance by the City shall not relieve or decrease Contractor's liability hereunder.

5.2 Indemnification.

5.2.1 General. Contractor shall indemnify and save harmless City and its officers, agents and employees from, and, if requested, shall defend them against any and all loss, cost, damage, injury, liability, and claims thereof for injury to or death of a person, including employees of Contractor or loss of or damage to property, arising directly or indirectly from Contractor's performance of this Agreement, including, but not limited to, Contractor's use of facilities or equipment provided by City or others, regardless of the negligence of, and regardless of whether liability without fault is imposed or sought to be imposed on City, except to the extent that such indemnity is void or otherwise unenforceable under applicable law in effect on or validly retroactive to the date of this Agreement, and except where such loss, damage, injury, liability or claim is the result of the active negligence or willful misconduct of City and is not contributed to by any act of, or by any omission to perform some duty imposed by law or agreement on Contractor, its subcontractors or either's agent or employee. The foregoing indemnity shall include, without limitation, reasonable fees of attorneys, consultants and experts and related costs and City's costs of investigating any claims against the City.

5.2.2 Duty to Defend. In addition to Contractor's obligation to indemnify City, Contractor specifically acknowledges and agrees that it has an immediate and independent

obligation to defend City from any claim which actually or potentially falls within this indemnification provision, even if the allegations are or may be groundless, false or fraudulent, which obligation arises at the time such claim is tendered to Contractor by City and continues at all times thereafter.

5.2.3 Intellectual Property. Contractor shall indemnify and hold the City harmless from all loss and liability, including attorneys' fees, court costs and all other litigation expenses for any infringement of the patent rights, copyright, trade secret or any other proprietary right or trademark, and all other intellectual property claims of any person or persons arising directly or indirectly from the receipt by the City, or any of its officers or agents, of Contractor's Goods and Services.

5.3 Limitation of Liability. Except as provided herein, Contractor's aggregate liability to the City under this Agreement shall be limited to the Contract amount stated in Section 3.3, as that amount may be modified by a properly approved and executed Contract Modification. Said limitation on liability shall not apply to:

5.3.1 damages and other liability caused by Contractor's willful, intentional acts or omissions;

5.3.2 liability arising under or for violation of any applicable statute, City ordinance, regulation, or other laws;

5.3.3 damages and other liability arising under claims by third parties, including indemnity or contribution for claims brought by a third party (see Paragraph 5.2);

5.3.4 damages and other liability for infringement of any intellectual property right as provided in Section 5.2.3.

5.4 Notice of Claim; Tender of Defense. The City shall use its best efforts to give prompt written notice to Contractor of any claim for which it requires indemnification from Contractor and will not admit liability or fault as to the allegations of the claim. Provided Contractor accepts the City's tender of defense without reservations, City agrees to grant Contractor sole control over the defense and settlement of the claim and provide timely assistance to Contractor in the defense of the claim.

5.5 Incidental and Consequential Damages. Except for liquidated damages, Contractor shall not be responsible for indirect, incidental and consequential damages resulting from Contractor's acts or omissions, including but not limited to, lost profits or revenue and business interruption. Nothing in this Agreement shall constitute a waiver or limitation of any rights that City may have under applicable law.

Article 6 Liability of the Parties

6.1 Liability of the City. CITY'S PAYMENT OBLIGATIONS UNDER THIS AGREEMENT SHALL BE LIMITED TO THE PAYMENT OF THE COMPENSATION PROVIDED FOR IN SECTION 3.3.1 (CALCULATION OF CHARGES) OF THIS

AGREEMENT. NOTWITHSTANDING ANY OTHER PROVISION OF THIS AGREEMENT, IN NO EVENT SHALL CITY BE LIABLE, REGARDLESS OF WHETHER ANY CLAIM IS BASED ON CONTRACT OR TORT, FOR ANY SPECIAL, CONSEQUENTIAL, INDIRECT OR INCIDENTAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT OR THE SERVICES PERFORMED IN CONNECTION WITH THIS AGREEMENT.

6.2 Liability for Use of Equipment. The City shall not be liable for any damage to persons or property as a result of the use, misuse or failure of any equipment used by Contractor, or any of its Subcontractors, or by any of their employees, even though such equipment is furnished, rented or loaned by the City.

Article 7 Payment of Taxes

7.1 Contractor to Pay All Taxes. Except for any applicable California sales and use taxes charged by Contractor to the City, Contractor shall pay all taxes, including possessory interest taxes levied upon or as a result of this Agreement, or the Goods and Services delivered pursuant hereto. Contractor shall remit to the State of California any sales or use taxes paid by the City to Contractor under this Agreement. Contractor agrees to promptly provide information requested by the City to verify Contractor's compliance with any State requirements for reporting sales and use tax paid by the City under this Agreement.

7.2 Possessory Interest Taxes. Contractor acknowledges that this Agreement may create a "possessory interest" for property tax purposes. Contractor accordingly agrees on behalf of itself and its permitted successors and assigns to timely report on behalf of the City to the County Assessor the information required by San Francisco Administrative Code Section 23.39, as amended from time to time, and any successor provision. Contractor further agrees to provide such other information as may be requested by the City to enable the City to comply with any reporting requirements for possessory interests that are imposed by applicable law.

7.3 Withholding. Contractor agrees that it is obligated to pay all amounts due to the City under the San Francisco Business and Tax Regulations Code during the term of this Agreement. Pursuant to Section 6.10-2 of the San Francisco Business and Tax Regulations Code, Contractor further acknowledges and agrees that the City may withhold any payments due to Contractor under this Agreement if Contractor is delinquent in the payment of any amount required to be paid to the City under the San Francisco Business and Tax Regulations Code. Any payments withheld under this paragraph shall be made to Contractor, without interest, upon Contractor coming back into compliance with its obligations.

Article 8 Termination and Default

8.1 Termination for Convenience

8.1.1 Exercise of Option. The City shall have the option, in its sole discretion, to terminate this Agreement, at any time during the term hereof, for convenience and without

cause. The City shall exercise this option by giving Contractor written notice of termination (Notice of Termination). The notice shall specify the date on which termination shall become effective (Termination Date).

8.1.2 Contractor Actions. Upon receipt of the Notice of Termination, Contractor shall commence and perform, with diligence, all actions necessary on the part of Contractor to effect the termination of this Agreement on the Termination Date and to minimize the liability of Contractor and the City to third parties as a result of termination. All such actions shall be subject to the prior approval of the City. Such actions may include any or all of the following, without limitation:

(a) Completing performance of any Services and delivery of any Goods that the SFMTA requires Contractor to complete prior to the Termination Date.

(b) Halting the performance of all Services on and after the Termination Date and halting the delivery of all Goods on and after the Termination Date unless such Goods were ordered prior to the Termination Date.

(c) Canceling all existing orders and subcontracts by the Termination Date, and not placing any further orders or subcontracts for materials, Services, equipment or other items.

(d) At the SFMTA's direction, assigning to the City any or all of Contractor's right, title, and interest under the orders and subcontracts terminated. Upon such assignment, the SFMTA shall have the right, in its sole discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

(e) Subject to the SFMTA's approval, settling all outstanding liabilities and all claims arising out of the canceled orders and subcontracts.

(f) Taking such action as may be necessary, or as the SFMTA may direct, for the protection and preservation of any property related to this Agreement which is in the possession of Contractor and in which the SFMTA has or may acquire an interest.

8.1.3 Contractor Invoice. Within 30 Days after the Termination Date, Contractor shall submit to the SFMTA an invoice, which shall set forth each of the following as a separate line item:

(a) The reasonable cost to Contractor, without profit, for all Services provided and all Goods ordered prior to the Termination Date, for which the SFMTA has not already made payment. Reasonable costs may include a reasonable allowance for actual overhead, not to exceed a total of 10% of Contractor's direct costs for Services. Any overhead allowance shall be separately itemized. Contractor may also recover the reasonable cost of preparing the invoice.

(b) A reasonable allowance for profit on the cost of the Services described in the immediately preceding subsection (a), provided that Contractor can establish, to

the satisfaction of the SFMTA, that Contractor would have made a profit had all Services under this Agreement, and provided further, that the profit allowed shall in no event exceed the profit percentage included by Contractor in the accepted proposal price.

(c) A deduction for the cost of materials to be retained by Contractor, amounts realized from the sale of such materials and not otherwise recovered by or credited to the SFMTA, and any other appropriate credits to the SFMTA against the cost of the Services or other work.

8.1.4 Nonrecoverable Costs. In no event shall the City be liable for costs incurred by Contractor or any of its Subcontractors after the Termination Date, except for those costs specifically listed in Section 8.1.2. Such nonrecoverable costs include, but are not limited to, anticipated profits on the Services under this Agreement, post-termination employee salaries, post-termination administrative expenses, post-termination overhead or unabsorbed overhead, attorneys' fees or other costs relating to the prosecution of a claim or lawsuit, prejudgment interest, or any other expense which is not reasonable or authorized under Section 8.1.2 or 8.1.3.

8.1.5 Deductions. In arriving at the amount due to Contractor under this Section, the SFMTA may deduct: (i) all payments previously made by the SFMTA for Services covered by Contractor's final invoice; (ii) any claim which the SFMTA may have against Contractor in connection with this Agreement; (iii) any invoiced costs or expenses excluded pursuant to the immediately preceding subsection 8.1.4; and (iv) in instances in which, in the reasonable opinion of the SFMTA, the cost of any Service performed under this Agreement is excessively high due to costs incurred to remedy or replace defective or rejected Services, the difference between the invoiced amount and the SFMTA's estimate of the reasonable cost of performing the invoiced Services in compliance with the requirements of this Agreement.

8.1.6 Payment Obligation. The City's payment obligation under this Section shall survive termination of this Agreement.

8.2 Termination for Default; Remedies

8.2.1 Each of the following shall constitute an immediate event of default (Event of Default) under this Agreement:

(a) Contractor fails or refuses to perform or observe any term, covenant or condition contained in any of the following Sections of this Agreement:

3.5	Submitting False Claims
4.7	Assignment
Article 5	Insurance and Indemnity
Article 7	Payment of Taxes
10.10	Alcohol and Drug-Free Workplace
11.10	Compliance with Laws
Article 13	Data and Security

(b) Contractor fails or refuses to perform or observe any other term, covenant or condition contained in this Agreement, including any obligation imposed by ordinance or statute and incorporated by reference herein, and such default is not cured within ten Working Days after written notice thereof from the SFMTA to Contractor. If Contractor defaults a second time in the same manner as a prior default cured by Contractor, the SFMTA may in its sole discretion immediately terminate the Agreement for default or grant an additional period not to exceed five Working Days for Contractor to cure the default.

(c) Contractor (i) is generally not paying its debts as they become due; (ii) files, or consents by answer or otherwise to the filing against it of a petition for relief or reorganization or arrangement or any other petition in bankruptcy or for liquidation or to take advantage of any bankruptcy, insolvency or other debtors' relief law of any jurisdiction; (iii) makes an assignment for the benefit of its creditors; (iv) consents to the appointment of a custodian, receiver, trustee or other officer with similar powers of Contractor or of any substantial part of Contractor's property; or (v) takes action for the purpose of any of the foregoing.

(d) A court or government authority enters an order (i) appointing a custodian, receiver, trustee or other officer with similar powers with respect to Contractor or with respect to any substantial part of Contractor's property, (ii) constituting an order for relief or approving a petition for relief; reorganization or arrangement; or any other petition in bankruptcy or for liquidation or to take advantage of any bankruptcy, insolvency or other debtors' relief law of any jurisdiction; or (iii) ordering the dissolution, winding-up or liquidation of Contractor.

8.2.2 Default Remedies. On and after any Event of Default, the City shall have the right to exercise its legal and equitable remedies, including, without limitation, the right to terminate this Agreement or to seek specific performance of all or any part of this Agreement. In addition, where applicable, the City shall have the right (but no obligation) to cure (or cause to be cured) on behalf of Contractor any Event of Default; Contractor shall pay to the City on demand all costs and expenses incurred by the City in effecting such cure with interest thereon from the date of incurrence at the maximum rate then permitted by law. The City shall have the right to offset from any amounts due to Contractor under this Agreement or any other agreement between the City and Contractor: (i) all damages, losses, costs or expenses incurred by the City as a result of an Event of Default; and (ii) any liquidated damages levied upon Contractor pursuant to the terms of this Agreement; and (iii), any damages imposed by any ordinance or statute that is incorporated into this Agreement by reference, or into any other agreement with the City.

8.2.3 All remedies provided for in this Agreement may be exercised individually or in combination with any other remedy available hereunder or under applicable laws, rules and regulations. The exercise of any remedy shall not preclude or in any way be deemed to waive any other remedy. Except as otherwise provided in Section 4.5 (Warranty), Section 4.9 (Liquidated Damages) Section 5.3 (Limitation on Liability of Contractor), and

Section 5.5 (Incidental and Consequential Damages), nothing in this Agreement shall constitute a waiver or limitation of any rights that the City may have under applicable law.

8.2.4 Any notice of default must be sent in accordance with Article 11.

8.3 Non-Waiver of Rights. The omission by either Party at any time to enforce any default or right reserved to it, or to require performance of any of the terms, covenants, or provisions hereof by the other Party at the time designated, shall not be a waiver of any such default or right to which the Party is entitled, nor shall it in any way affect the right of the Party to enforce such provisions thereafter.

8.4 Rights and Duties upon Termination or Expiration

8.4.1 This Section and the following Sections of this Agreement listed below, shall survive termination or expiration of this Agreement:

3.3.2	Payment Limited to Satisfactory Services and Delivery of Goods
3.4	Audit and Inspection of Records
3.5	Submitting False Claims
4.5	Warranty
Article 5	Insurance and Indemnity
Article 6	Liability of the Parties
Article 7	Payment of Taxes
8.1.6	Payment Obligation
8.2.2	Default Remedies
9.1	Ownership of Results
9.2	Works for Hire
11.6	Dispute Resolution Procedure
11.7	Agreement Made in California; Venue
11.8	Construction
11.9	Entire Agreement
11.10	Compliance with Laws
11.11	Severability
Article 13	Data and Security

8.4.2 Subject to the survival of the Sections identified in Section 8.4.1 above, if this Agreement is terminated prior to expiration of the term specified in Article 2, this Agreement shall be of no further force or effect. Contractor shall transfer title to the City, and deliver in the manner, at the times, and to the extent, if any, directed by the City, any work in progress, completed Goods, supplies, Equipment, and other materials produced as a part of, or acquired in connection with the performance of this Agreement, and any completed or partially completed work which, if this Agreement had been completed, would have been required to be furnished to the City, and City shall pay Contractor as provided in Section 8.1.3.

Article 9 Rights In Deliverables

9.1 Ownership of Results. Any interest of Contractor or its Subcontractors, in the Deliverables, including any drawings, plans, specifications, blueprints, studies, reports, memoranda, computation sheets, computer files and media or other documents prepared by Contractor or its Subcontractors for the purposes of this Agreement, shall become the property of and will be transmitted to the City; provided however, that the foregoing shall not include any of Contractor's pre-existing intellectual property (including, without limitation, patented technology, trade secrets, know-how or designs) embodied in, or used to develop, provide or produce, any of the Good or Services provided under the Contract.

9.2 Works for Hire. All copyrights in Deliverables under Section 9.1 that are considered works for hire under Title 17 of the United States Code shall be the property of the City. If any of such Deliverables are ever determined not to be works for hire under federal law Contractor hereby assigns all Contractor's copyrights to such Deliverables to City, agrees to provide any material and execute any documents necessary to effectuate such assignment, and agrees to include a clause in every subcontract imposing the same duties upon its subcontractors. With City's prior written approval, Contractor and its subcontractors may retain and use copies of such works for reference and as documentation of their respective experience and capabilities provided that any such use is in conformance with the confidentiality provisions of this Agreement.

Article 10 Additional Requirements Incorporated by Reference

10.1 Laws Incorporated by Reference. The full text of the laws listed in this Article 10, including enforcement and penalty provisions, are incorporated by reference into this Agreement. The full text of the San Francisco Municipal Code provisions incorporated by reference in this Article and elsewhere in the Agreement (Mandatory City Requirements) are available at http://www.amlegal.com/codes/client/san-francisco_ca.

10.2 Conflict of Interest. By executing this Agreement, Contractor certifies that it does not know of any fact which constitutes a violation of Section 15.103 of the City's Charter; Article III, Chapter 2 of the City's Campaign and Governmental Conduct Code; Title 9, Chapter 7 of the California Government Code (Section 87100 *et seq.*), or Title 1, Division 4, Chapter 1, Article 4 of the California Government Code (Section 1090 *et seq.*), and further agrees promptly to notify the City if it becomes aware of any such fact during the term of this Agreement.

10.3 Prohibition on Use of Public Funds for Political Activity. In delivering the Services and Goods, Contractor shall comply with San Francisco Administrative Code Chapter 12G, which prohibits funds appropriated by the City for this Agreement from being expended to participate in, support, or attempt to influence any political campaign for a candidate or for a ballot measure. Contractor is subject to the enforcement and penalty provisions in Chapter 12G.

10.4 Consideration of Salary History. Contractor shall comply with San Francisco Labor and Employment Code Article 141, the Consideration of Salary History Ordinance or "Pay Parity Act." Contractor is prohibited from considering current or past salary of an applicant in determining whether to hire the applicant or what salary to offer the applicant to the extent that such applicant is applying for employment to be performed on this Agreement or in furtherance of this Agreement, and whose application, in whole or part, will be solicited, received, processed or considered, whether or not through an interview, in the City or on City property. The ordinance also prohibits employers from (a) asking such applicants about their current or past salary or (b) disclosing a current or former employee's salary history without that employee's authorization unless the salary history is publicly available. Contractor is subject to the enforcement and penalty provisions in Article 141. Information about and the text of Article 141 is available on the web at <https://sfgov.org/olse/consideration-salary-history>. Contractor is required to comply with all of the applicable provisions of Article 141, irrespective of the listing of obligations in this Section.

10.5 Nondiscrimination Requirements

10.5.1 Nondiscrimination in Contracts. Contractor shall comply with the provisions of San Francisco Labor and Employment Code Articles 131 and 132. Contractor shall incorporate by reference in all subcontracts the provisions of Sections 131.2(a), 131.2(c)-(k), and 132.3 of the San Francisco Labor and Employment Code and shall require all Subcontractors to comply with such provisions. Contractor is subject to the enforcement and penalty provisions in Articles 131 and 132.

10.5.2 Nondiscrimination in the Provision of Employee Benefits. San Francisco Labor and Employment Code 131.2 applies to this Agreement. Contractor does not as of the date of this Agreement, and will not during the term of this Agreement, in any of its operations in San Francisco, on real property owned by San Francisco, or where work is being performed for the City elsewhere in the United States, discriminate in the provision of employee benefits between employees with domestic partners and employees with spouses and/or between the domestic partners and spouses of such employees, subject to the conditions set forth in San Francisco Labor and Employment Code Section 131.2.

10.6 Reserved. (Local Business Enterprise and Nondiscrimination in Contracting Ordinance)

10.7 Minimum Compensation Ordinance. Labor and Administrative Code Article 111 applies to this Agreement. Contractor shall pay covered employees no less than the minimum compensation required by San Francisco Labor and Employment Code Article 111, including a minimum hourly gross compensation, compensated time off, and uncompensated time off. Contractor is subject to the enforcement and penalty provisions in Article 111. Information about and the text of the Article 111 is available on the web at <http://sfgov.org/olse/mco>. Contractor is required to comply with all of the applicable provisions

of Article 111, irrespective of the listing of obligations in this Section. By signing and executing this Agreement, Contractor certifies that it complies with Article 111.

10.8 Health Care Accountability Ordinance. Labor and Employment Code Article 121 applies to this contract. Contractor shall comply with the requirements of Article 121. For each Covered Employee, Contractor shall provide the appropriate health benefit set forth in Article 121.3. If Contractor chooses to offer the health plan option, such health plan shall meet the minimum standards set forth by the San Francisco Health Commission. Information about and the text of Article 121, as well as the Health Commission's minimum standards, is available on the web at <http://sfgov.org/olse/hcao>. Contractor is subject to the enforcement and penalty provisions in Article 121. Any Subcontract entered into by Contractor shall require any Subcontractor with 20 or more employees to comply with the requirements of Article 121.3 and shall contain contractual obligations substantially the same as those set forth in this Section.

10.9 First Source Hiring Program. Contractor must comply with all of the provisions of the First Source Hiring Program, Chapter 83 of the San Francisco Administrative Code, that apply to this Agreement, and Contractor is subject to the enforcement and penalty provisions in Chapter 83.

10.10 Alcohol and Drug-Free Workplace. The City reserves the right to deny access to, or require Contractor to remove from, City facilities personnel of any Contractor or Subcontractor who the City has reasonable grounds to believe has engaged in alcohol abuse or illegal drug activity which in any way impairs the City's ability to maintain safe work facilities or to protect the health and well-being of City employees and the general public. The City shall have the right of final approval for the entry or re-entry of any such person previously denied access to, or removed from, City facilities. Illegal drug activity means possessing, furnishing, selling, offering, purchasing, using or being under the influence of illegal drugs or other controlled substances for which the individual lacks a valid prescription. Alcohol abuse means possessing, furnishing, selling, offering, or using alcoholic beverages, or being under the influence of alcohol.

10.11 Limitations on Contributions. By executing this Agreement, Contractor acknowledges its obligations under Section 1.126 of the City's Campaign and Governmental Conduct Code, which prohibits any person who contracts with, or is seeking a contract with, any department of the City for the rendition of personal services, for the furnishing of any material, supplies or equipment, for the sale or lease of any land or building, for a grant, loan or loan guarantee, or for a development agreement, from making any campaign contribution to (a) a City elected official if the contract must be approved by that official, a board on which that official serves, or the board of a state agency on which an appointee of that official serves, (b) a candidate for that City elective office, or (c) a committee controlled by such elected official or a candidate for that office, at any time from the submission of a proposal for the contract until the later of either the termination of negotiations for such contract or twelve months after the date the City approves the contract. The prohibition on contributions applies to each prospective party

to the contract; each member of Contractor's board of directors; Contractor's chairperson, chief executive officer, chief financial officer and chief operating officer; any person with an ownership interest of more than 10% in Contractor; any Subcontractor listed in the bid or contract; and any committee that is sponsored or controlled by Contractor. Contractor certifies that it has informed each such person of the limitation on contributions imposed by Section 1.126 by the time it submitted a proposal for the contract, and has provided the names of the persons required to be informed to the City department with whom it is contracting.

10.12 Reserved. (Slavery Era Disclosure)

10.13 Reserved. (Working with Minors)

10.14 Consideration of Criminal History in Hiring and Employment Decisions

10.14.1 Contractor agrees to comply fully with and be bound by all of the provisions of Article 142, "City Contractor/Subcontractor Consideration of Criminal History in Hiring and Employment Decisions", of the San Francisco Labor and Administrative Code (Article 142), including the remedies provided, and implementing regulations, as may be amended from time to time. The provisions of Article 142 are incorporated by reference and made a part of this Agreement as though fully set forth herein. The text of Article 142 is available on the web at <http://sfgov.org/olse/fco>. Contractor is required to comply with all of the applicable provisions of Article 142, irrespective of the listing of obligations in this Section. Capitalized terms used in this Section and not defined in this Agreement shall have the meanings assigned to such terms in Article 142.

10.14.2 The requirements of Article 142 shall only apply to a Contractor's or Subcontractor's operations to the extent those operations are in furtherance of the performance of this Agreement, shall apply only to applicants and employees who would be or are performing work in furtherance of this Agreement, and shall apply when the physical location of the employment or prospective employment of an individual is wholly or substantially within the City of San Francisco. Article 142 shall not apply when the application in a particular context would conflict with federal or state law or with a requirement of a government agency implementing federal or state law.

10.15 Reserved. (Nonprofit Contractor Requirements)

10.16 Food Service Waste Reduction Requirements. Contractor shall comply with the Food Service Waste Reduction Ordinance, as set forth in San Francisco Environment Code Chapter 16, including but not limited to the remedies for noncompliance provided therein.

10.17 Reserved. (Distribution of Beverages and Water)

10.18 Tropical Hardwood and Virgin Redwood Ban. Pursuant to San Francisco Environment Code Section 804(b), the City urges Contractor not to import, purchase, obtain, or use for any purpose, any tropical hardwood, tropical hardwood wood product, virgin redwood or virgin redwood wood product.

10.19 Reserved. (Preservative-Treated Wood Products)

10.20 Reserved. (Sweat Free Procurement)

10.21 Reserved. (Environment Code Chapter 5, Resource Conservation Ordinance)

10.22 Reserved. (Prop J. Approval)

10.23 Use of City Opinion. Contractor shall not quote, paraphrase, or otherwise refer to or use any opinion of City, its officers or agents, regarding Contractor or Contractor's performance under this Agreement without prior written permission of the Director of Transportation.

Article 11 General Provisions

11.1 Notices to the Parties. Unless otherwise indicated in this Agreement, all written communications sent by the Parties may be by U.S. mail or e-mail, and shall be addressed as follows:

To the City: San Francisco Municipal Transportation Agency
Muni Metro East Facility, Transit Division
601 25th Street, San Francisco, CA 94107
Attention: Joe Speaks, Project Manager
joe.speaks@sfmta.com

To Contractor: Wabtec Passenger Transit
130 Ridgeview Center, Duncan, SC 29334
Attn: Program Manager
Email: jean-michel.loubiere@wabtec.com

Any notice of default or data breach must be sent by certified mail or other trackable written communication, and also by email, with the sender using the receipt notice feature. Either Party may change the address to which notice is to be sent by giving written notice thereof to the other Party at least 10 days prior to the effective date of such change. If email notification is used, the sender must specify a receipt notice.

11.2 Compliance with Laws Requiring Access for People with Disabilities

11.2.1 Contractor acknowledges that, pursuant to the Americans with Disabilities Act (ADA), programs, services and other activities provided by a public entity to the public, whether directly or through a contractor, must be accessible to people with disabilities. Contractor shall provide the services specified in this Agreement in a manner that complies with the ADA and all other applicable federal, state and local disability rights legislation. Contractor agrees not to discriminate against people with disabilities in the provision of services, benefits or activities provided under this Agreement and further agrees that any violation of this prohibition

on the part of Contractor, its employees, agents or assigns will constitute a material breach of this Agreement.

11.2.2 Contractor shall adhere to the requirements of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. Sec. 1201 et seq.), Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. Sec. 794d), Section 255 of the Communications Act Guidelines, the applicable Revised Section 508 Standards, and Web Content Accessibility Guidelines 2.1, Level AA, as amended from time to time. Contractor shall ensure that all information content and technology provided under this Agreement fully conforms to the applicable Revised 508 Standard, as amended from time to time, prior to delivery and before the City's final acceptance of the Services and/or Deliverables.

11.3 Incorporation of Recitals. The matters recited above are hereby incorporated into and made part of this Agreement.

11.4 Sunshine Ordinance. Contractor acknowledges that this Agreement and all records related to its formation, Contractor's delivery of Services and Goods, and the City's payment are subject to the California Public Records Act, (California Government Code §7920 et. seq.), and the San Francisco Sunshine Ordinance (San Francisco Administrative Code Chapter 67). Such records are subject to public inspection and copying unless exempt from disclosure under federal, state or local law.

11.5 Modification of this Agreement. This Agreement may not be modified, nor may compliance with any of its terms be waived, except as noted in Section 11.1 (Notices to Parties) regarding change in personnel or place, and except by written instrument executed and approved as required under City law and under the policy of the SFMTA Board of Directors. Contractor shall cooperate with the SFMTA to submit to the CCO any amendment, modification, supplement or change order that would result in a cumulative increase of the original amount of this Agreement by more than 20% (CMD Contract Modification Form).

11.6 Dispute Resolution Procedure

11.6.1 Negotiation; Alternative Dispute Resolution. The Parties will attempt in good faith to resolve any dispute or controversy arising out of or relating to delivery of the Goods and Services under this Agreement. If the Parties are unable to resolve the dispute, then, pursuant to San Francisco Administrative Code Section 21.36, Contractor may submit to the Contract Administrator a written request for administrative review and documentation of the Contractor's claim(s). Upon such request, the Contract Administrator shall promptly issue an administrative decision in writing, stating the reasons for the action taken and informing the Contractor of its right to judicial review. If agreed by both Parties in writing, disputes may be resolved by a mutually agreed-upon alternative dispute resolution process. If the Parties do not mutually agree to an alternative dispute resolution process or such efforts do not resolve the dispute, then either Party may pursue any remedy available under California law. Disputes will not be subject to binding arbitration. The status of any dispute or controversy notwithstanding,

Contractor shall proceed diligently with the performance of its obligations under this Agreement in accordance with the Agreement and the written directions of the City. Neither Party will be entitled to legal fees or costs for matters resolved under this Section.

11.6.2 Government Code Claim Requirement. No suit for money or damages may be brought against the City until a written claim therefor has been presented to and rejected by the City in conformity with the provisions of San Francisco Administrative Code Chapter 10 and California Government Code Section 900, et seq. Nothing set forth in this Agreement shall operate to toll, waive or excuse Contractor's compliance with the California Government Code Claim requirements set forth in San Francisco Administrative Code Chapter 10 and California Government Code Section 900, et seq.

11.7 Agreement Made in California; Venue. The formation, interpretation and performance of this Agreement shall be governed by the laws of the State of California. Venue for all litigation relative to the formation, interpretation and performance of this Agreement shall be in San Francisco.

11.8 Construction. All paragraph captions are for reference only and shall not be considered in construing this Agreement.

11.9 Entire Agreement. This Contract, including the appendices, sets forth the entire Agreement between the Parties, and supersedes all other oral or written provisions. This Agreement may be modified only as provided in Section 11.5 (Modification of this Agreement).

11.10 Compliance with Laws. Contractor shall keep itself fully informed of the City's Charter, codes, ordinances and duly adopted rules and regulations of the City and of all state, and federal laws in any manner affecting the performance of this Agreement, and must at all times comply with such local codes, ordinances, and regulations and all applicable laws as they may be amended from time to time. Notwithstanding the foregoing, if there are any changes to tariffs during the course of the Agreement which impacts the Contractor's delivery of the Works or cost thereof, the Parties shall meet and discuss in good faith the possibility of reducing the impact of such change.

11.11 Severability. Should the application of any provision of this Agreement to any particular facts or circumstances be found by a court of competent jurisdiction to be invalid or unenforceable, then (a) the validity of other provisions of this Agreement shall not be affected or impaired thereby, and (b) such provision shall be enforced to the maximum extent possible so as to effect the intent of the Parties and shall be reformed without further action by the Parties to the extent necessary to make such provision valid and enforceable.

11.12 Cooperative Drafting. This Agreement has been drafted through a cooperative effort of the City and Contractor, and both Parties have had an opportunity to have the Agreement reviewed and revised by legal counsel. No Party shall be considered the drafter of this Agreement, and no presumption or rule that an ambiguity shall be construed against the Party drafting the clause shall apply to the interpretation or enforcement of this Agreement.

11.13 Order of Precedence. The Parties agree that this Agreement, including all appendices, sets forth the Parties' complete agreement. If (i) the Appendices to this Agreement include or reference any standard printed or hyperlinked terms from the Contractor, or (ii) the Parties use a purchase order and/or acknowledgement form that includes or references any standard printed or hyperlinked terms from the Contractor or the City, it is agreed that all such boilerplate, pre-printed or referenced terms and conditions shall be of no force or effect. It is the parties' intent that the Conformed Contract Documents shall govern all terms and conditions related to all Deliverables, Work, Services or Equipment provided under the Contract.

11.14 Notification of Legal Requests. Contractor shall immediately notify the City upon receipt of any subpoenas, service of process, litigation holds, discovery requests, and other legal requests (Legal Requests) related to any City Data under this Agreement, and in no event later than 24 hours after it receives the request. Contractor shall not respond to Legal Requests related to the City without first notifying the City other than to notify the requestor that the information sought is potentially covered under a non-disclosure agreement. Contractor shall retain and preserve City Data in accordance with the City's instruction and requests, including, without limitation, any retention schedules and/or litigation hold orders provided by the City to Contractor, independent of where the City Data is stored.

11.15 Time of Essence. Time is of the essence in this Agreement.

Article 12 SFMTA Specific Terms

12.1 Large Vehicle Driver Safety Training Requirements

12.1.1 Contractor agrees that before any of its employees and Subcontractors drive large vehicles within the City and County of San Francisco, those employees and Subcontractors shall successfully complete either (a) the SFMTA's Large Vehicle Urban Driving Safety training program or (b) a training program that meets the SFMTA's approved standards for large vehicle urban driving safety. The SFMTA's approved standards for large vehicle urban driving safety is available for download at www.SFMTA.com/largevehicletainingstandards. This requirement does not apply to drivers providing delivery services who are not employees or Subcontractors of the Contractor. For purposes of this section, "large vehicle" means any single vehicle or combination of vehicle and trailer with an unladen weight of 10,000 pounds or more, or a van designed to carry 10 or more people.

12.1.2 By entering into this Agreement, Contractor agrees that in the event the Contractor fails to comply with the Large Vehicle Driver Safety Training Requirements, the City will suffer actual damages that will be impractical or extremely difficult to determine; further, Contractor agrees that the sum of up to One Thousand Dollars (\$1,000) per employee or Subcontractor who is permitted to drive a large vehicle in violation of these requirements is not a penalty, but is a reasonable estimate of the loss that the City will incur based on the Contractor's failure to comply with this requirement, established in light of the circumstances existing at the time this Contract was awarded. The City may deduct a sum representing the liquidated damages

from any money due to Contractor. Such deductions shall not be considered a penalty, but rather agreed monetary damages sustained by the City because of Contractor's failure to comply.

Article 13 Data and Security

13.1 Nondisclosure of Private, Proprietary or Confidential Information

13.1.1 Protection of Private Information . If this Agreement requires the City to disclose "Private Information" to Contractor within the meaning of San Francisco Administrative Code Chapter 12M, Contractor and Subcontractor shall use such information only in accordance with the restrictions stated in Chapter 12M and in this Agreement and only as necessary in performing the Services. Contractor is subject to the enforcement and penalty provisions in Chapter 12M.

13.1.2 City Data; Confidential Information . In the delivery of the Services and Goods, Contractor may have access to, or collect on the City's behalf, City Data, which may include proprietary or Confidential Information that if disclosed to third parties may damage the City. If the City discloses proprietary or Confidential Information to Contractor, or Contractor collects such information on the City's behalf, such information must be held by Contractor in confidence and used only in performing the Agreement. Contractor shall exercise the same standard of care to protect such information as a reasonably prudent contractor would use to protect its own proprietary or Confidential Information.

13.2 Reserved. (Payment Card Industry (PCI) Requirements)

13.3 Reserved. (Business Associate Agreement)

13.4 Management of City Data

13.4.1 Use of City Data. Contractor agrees to hold City Data received from, or collected on behalf of the City, in strictest confidence. Contractor shall not use or disclose City Data except as permitted or required by the Agreement or as otherwise authorized in writing by the City. Any work by Contractor or its authorized subcontractors using, or sharing or storage of, City Data outside the United States is prohibited, absent prior written authorization by the City. Access to City Data must be strictly controlled and limited to Contractor's staff assigned to this project on a need-to-know basis only. Contractor is provided a limited non-exclusive license to use City Data solely for performing its obligations under the Agreement and not for Contractor's own purposes or later use. Nothing herein shall be construed to confer any license or right to the City Data, by implication, estoppel or otherwise, under copyright or other intellectual property rights, to any third-party. Unauthorized use of City Data by Contractor, Subcontractors, or other third parties is prohibited. For purpose of this requirement, the phrase "unauthorized use" means the data mining or processing of data and/or machine learning from the data, stored or transmitted by the service, for commercial purposes, advertising or advertising-related purposes, or for any purpose that is not explicitly authorized other than security or service delivery analysis.

13.4.2 Disposition of City Data. Upon request of the City or termination or expiration of this Agreement, Contractor shall promptly, but in no event later than 30 Days, return all City Data given to, or collected or created by Contractor on the City's behalf, which includes all original media. Once Contractor has received written confirmation from the City that the City Data has been successfully transferred to the City, Contractor shall within 10 Days clear or purge all City Data from its servers, any hosted environment Contractor has used in performance of this Agreement, including its subcontractors' environment(s), work stations that were used to process the data or for production of the data, and any other work files stored by Contractor in whatever medium. Contractor shall provide the City with written certification that such purge occurred within five Working Days of the purge. Secure disposal shall be accomplished by "clearing," "purging" or "physical destruction," in accordance with National Institute of Standards and Technology (NIST) Special Publication 800-88 or most current industry standard.

13.4.3 Protected Health Information. Where applicable, Contractor, all subcontractors, all agents and employees of Contractor and any subcontractor shall comply with all federal and state laws regarding the transmission, storage and protection of all private health information, if any, disclosed to Contractor by the City in the performance of this Agreement. Contractor agrees that any failure of Contractor to comply with the requirements of federal and/or state and/or local privacy laws shall be a material breach of the Agreement. In the event that the City pays a regulatory fine, and/or is assessed civil penalties or damages through private rights of action, based on an impermissible use or disclosure of protected health information given to Contractor or its subcontractors or agents by the City, Contractor shall indemnify the City for the amount of such fine or penalties or damages, including costs of notification. In such an event, in addition to any other remedies available to it under equity or law, the City may terminate the Agreement.

13.5 Ownership of City Data. The Parties agree that as between them, all rights, including all intellectual property rights, in and to City Data and any derivative works of City Data is the exclusive property of the City.

13.6 Loss or Unauthorized Access to City's Data; Security Breach Notification. Contractor shall comply with all applicable laws that require the notification to individuals in the event of unauthorized release of PII, PHI, or other event requiring notification. Contractor shall notify City of any actual or potential exposure or misappropriation of City Data (any "Leak") within twenty-four (24) hours of Contractor becoming aware that City Data may have been subject to a Leak, but within twelve (12) hours if the Leak involved PII or PHI. Contractor, at its own expense, will reasonably cooperate with City and law enforcement authorities to investigate any such Leak and to notify injured or potentially injured parties. The remedies and obligations set forth in this subsection are in addition to any other City may have. City shall conduct all media communications related to such Leak.

Article 14 MacBride and Signature

14.1 MacBride Principles - Northern Ireland. The provisions of San Francisco Administrative Code Chapter 12F are incorporated herein by this reference and made part of this Agreement. By signing this Agreement, Contractor confirms that Contractor has read and understood that the City urges companies doing business in Northern Ireland to resolve employment inequities and to abide by the MacBride Principles, and urges San Francisco companies to do business with corporations that abide by the MacBride Principles.

Article 15 Included Appendices

The documents listed below are attached to this Agreement as Appendices and are incorporated into this Agreement by reference.

Appendix A:	Scope of Work
Appendix B:	Schedule of Prices
Appendix C:	Project Delivery Schedule
Appendix D:	Payment Milestones
Appendix E:	Contract Bill of Materials

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement on the day first mentioned above.

<div>CITY</div> <div>San Francisco</div> <div>Municipal Transportation Agency</div> <div>Julie B. Kirschbaum</div> <div>Director of Transportation</div> <div>Authorized By:</div> <div>Municipal Transportation Agency Board of Directors</div> <div>Resolution No: _____</div> <div>Adopted: _____</div> <div>Attest: _____</div> <div>Secretary, to the Board</div> <div>Board of Supervisors</div> <div>Resolution No: _____</div> <div>Adopted: _____</div> <div>Attest: _____</div> <div>Clerk of the Board</div> <div>Approved as to Form:</div> <div>David Chiu</div> <div>City Attorney</div> <div>By: _____</div> <div>Annie Smiddy</div> <div>Deputy City Attorney</div>	<div>CONTRACTOR</div> <div>Wabtec Passenger Transit</div> <div><i>Brandon Shafer</i></div> <div>Brandon Shafer</div> <div>Vice President, Transit-Americas</div> <div>Acknowledgement of Large Vehicle Driver Safety Training Requirements:</div> <div>By signing this Agreement, Contractor acknowledges that it has read and understands Section 12.1: Large Vehicle Driver Safety Training Requirements.</div> <div>City Supplier Number: 10000056451</div>
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Appendices

- A: Scope of Work
- B: Schedule of Prices
- C: Project Delivery Schedule
- D: Payment Milestones
- E: Bill of Materials

Appendix A Scope of Work

Section 1. Summary of Scope

The Contractor will provide Goods and Services to support the overhaul and upgrade of major components of the brakes system for the SFMTA's Phase 1 LRV4 vehicles, as described in this Scope of Work.

Goods

The Contractor will deliver 68 sets of Parts Kits (including replacement components) as required for the brake system overhaul and upgrade. The contents of the Parts Kits will be fully defined as part of the services provided under this contract.

The 68 Parts Kits will be provided inclusive of parts that are:

1. Unchanged from original design;
2. Upgraded from original design; and
3. Corrected from original design to address reliability issues.

Services

The Contractor will perform the following services for 68 SFMTA Phase 1 LRV4 vehicles:

1. Prepare a Bill of Materials for Parts Kits, subject to SFMTA approval;
2. Prepare an Overhaul and Upgrade Program Plan;
3. Remove and replace brake components specified in this Scope of Work;
4. Overhaul the specified components; and
5. Upgrade the specified components to improve the reliability and performance of the braking system.

Work paid for under other contracts

Some of the Goods and Services being provided under this Scope of Work are included in the price of other, separate contracts, and thus are not included in the price of this Contract. Table 1 designates which Goods and Services are included in the price of this Contract, and which Goods and Services are being provided under other contracts, at no extra cost under this Contract.

Table 1

Item	Description of Activity	Compensation Provided in Price of this Contract
<u>Goods</u>		
Unchanged Parts	Parts to be replaced in the overhaul that remain unchanged from the original design	Yes
Upgraded Parts	Parts to be replaced in the overhaul that have been changed, improved or upgraded from the original design, but are unrelated to any known failures or reliability issues. (See Appendix E, Bill of Materials)	Yes
Corrected Parts	Parts to be replaced in the overhaul that have been upgraded from the original design to address reliability issues. (See Appendix E, Bill of Materials)	No
Replacement Components	Components to be replaced as part of the Overhaul (Accumulator)	Yes
<u>Services</u>		
Design and Management	All design and production oversight of parts as well as the logistics and management of the entire overhaul process.	Yes
Removal and Replacement	Removal and replacement of components, including related activities of tracking and shipping.	No
Overhaul and Upgrade	Rebuilding of components that are overhauled and upgraded	Yes
<u>Warranty</u>		
Warranty	Management and tracking of warranty claims, and performance of warranty obligations	Yes

Work Provided

The Work provided under this Contract can be broken down into the following tasks:

1. Confirmation, Documentation, and SFMTA Approvals of a Bill of Materials of Overhaul kit and ICD drawings of each product
2. Sourcing, Ordering, Procurement, Inspection, Testing, Acceptance, Logistics, and Kitting of Parts
3. Prepare Overhaul Program Plan
4. Overhaul Program Management and Monthly Reporting

5. On-site Removal and Replacement of Brake System Components on each Phase 1 LRV4 vehicle
6. Handling including Packaging, Transport, and Shipment of Brake System Components from and to one SFMTA site.
7. Off-site Overhaul of MT Calipers, CT Calipers, MT HPUs, and CT HPUs
8. Replacement of Accumulators
9. Quality Management and Testing
10. Documentation of Serialized Product History (Original build, RMA if applicable, and Overhaul)
11. Tracking of Vehicle Removal and Replacement performed under this contract.

Section 2. Detailed Description of Work

1. Confirmation, Documentation, and Approval of Bill of Materials

The Contactor shall prepare a Final Bill of Materials of all parts to be replaced as part of the overhaul and upgrade. The submitted Bill of Materials will be subject to SFMTA approval, and including design revision number, quantity, and manufacturing lot of all parts. Contractor will retain and make available to SFMTA this information as a deliverable of this contract and part of project reporting.

Deliverables:

1.A Final Bill of Materials of Overhaul Parts Kit in an Excel file and as a drawing with attribution of part numbers: subject to SFMTA Approval

2. Sourcing, Ordering, Procurement, Inspection, Acceptance, Logistics, and Kitting of Parts

The Contactor shall be responsible for all aspects of sourcing and procuring parts including:

- a. Sourcing – Qualifying and selecting parts manufacturers and supplies
- b. Ordering & Procurement – Managing all aspects of order placement and timing for parts
- c. Inspection, Validation, and Acceptance – Managed through the Wabtec PPAP (Production Part Approval Process) which include First Article Inspection, Audit of suppliers, and specific testing if requested by Engineering and Quality specification
- d. Logistics – All aspects of supply chain management including lead times, shipping, customs clearance
- e. Kitting – as required to serve disposition of materials and to facilitate the flow of production supporting the overhaul of products.

Deliverables: None for This Section

3. Prepare Overhaul Program Plan

The Contactor shall be responsible for development of an Overhaul Program Plan subject to SFMTA approval.

The Overhaul Program Plan shall be either a written document or slide presentation detailing the following:

- a. Coordination with SFMTA to manage the removal and replacement of old brake components with new or overhauled float sets, and required SFMTA support
- b. Process by which vehicles will be withheld from service
- c. Lead staff and key roles of personnel
- d. Expectations and process for maintaining the required number float sets
- e. Inspection and Testing Processes and Criteria
- f. Reuse criteria for parts to be reused, and disqualification of reused parts
- g. Schedule of production, delivery, and Remove and Replace

Deliverables:

3.A Overhaul Program Plan, subject to SFMTA approval

3.B Overhaul Program Schedule, subject to SFMTA approval

4. Demo Fleet Pilot Test

In accordance with the SFMTA approved Overhaul Production Schedule, Contractor shall perform and track a Demo Fleet Pilot Test as follows:

- a. Installation of overhaul equipment on 2 Phase 2 vehicles of 16 x MT calipers and 4 x CT Calipers.
 - i. 1 vehicle will receive new OEM calipers with upgraded parts (8 x MT caliper & 2 x CT caliper)
 - ii. 1 vehicle will receive RMA calipers Phase 2 (serial number produced after July 2021) but with overhaul BOM kit parts (8 x MT caliper & 2 x CT caliper)
- b. The inspection plan of these demo fleet of 2 vehicles and population of 16 x MT calipers and 4 x CT calipers is defined as follow:
 - i. Frequency:
 1. 1,000 mi
 2. 3,750 mi (1 month)
 3. 11,000 mi (3 months)
 4. 22,000 mi (6 months)

5. 44,000 mi (12 months)
 - ii. Visual Inspections from start to 6-months (22,000 miles)
 1. Gap inspection (A4D100000106031 / Inspection 61)
 2. Pad Flatness and Body Interference (A4D100000106030 / Inspection 60)
 3. Leak Inspection (A4D100000122222 / Inspection 64)
 4. Actuator Bolt Inspection (A4D100000131293 / Inspection 37)
 5. Photographs
 - c. Teardown 2 MT calipers at 6-month mark (22,000 mi) → 1 Phase 2 OEM / 1 Phase 2 RMA (Replace with the same)
 - i. Water ingress
 - ii. Workmanship
 - iii. Binding of pivot and backing plate
 - iv. ATP / serial test
 - v. Report detailing teardown with photographs
 - d. Teardown 2 MT calipers at 12-month mark (44,000 mi) → 1 Phase 2 OEM / 1 Phase 2 RMA (Replace with 2 Phase 2 Retrofit)
 - i. Water ingress
 - ii. Workmanship
 - iii. Binding of pivot and backing plate
 - iv. ATP / serial test
 - v. Report detailing teardown with photographs

Deliverables:

- 4.A Demo Fleet Pilot Inspection Reports (for a and b above)
- 4.B Teardown Reports (for c and d above)

5. Overhaul Program Management and Monthly Reporting

The Contactor shall be responsible for coordinating the day-to-day management of the Overhaul Program and providing monthly reporting including:

- a. Maintaining a designated Overhaul Program Lead
- b. Maintaining an up-to-date and SFMTA-accessible Overhaul Program Plan including schedule
- c. Providing a brief monthly report and a monthly meeting update, including any quality and manufacturing significant finding, mitigation of schedule delays, tracking of any and all warranty claims, per reporting template established by mutual agreement

Deliverables:

- 5.A Monthly Report
- 5.B Monthly Meeting Update

6. On-site Removal and Replacement of Brake System Components on Each LRV4

The Contractor shall provide:

- a. A named local On-site Lead who can be the Overhaul Program Lead or other resident staff member
- b. Adequate local staffing levels with the needed skills to perform on-site overhaul functions regardless of commitments to other contracts, including but not limited to the Siemens Contract.
- c. Local access for SFMTA Inspection and/or oversight if requested by SFMTA
- d. Adherence to the Overhaul Program Plan and schedule

Deliverables:

- 6.A Serial Test Specification (ATP), for each product overhauled
- 6.B Quality Inspection Procedure (QIP), for each product overhauled
- 6.C Certificate of Compliance (CoC), for each product overhauled
- 6.D Flushing & depollution certificate, for each vehicle overhauled
- 6.E Static Test Specification, for each vehicle overhauled
- 6.F Traceability of each serial number on vehicle removed and installed, for each vehicle overhauled.

7. Handling including Packaging, Transport, and Shipment of Brake System Components

The Contractor shall provide:

- a. On-site removal from vehicle
- b. On-site inspection
- c. Crating/Packaging for shipment
- d. Coordination of shipping logistics
- e. Payment of all Transport/Shipment/Handling

The contractor will deliver on site at San Francisco MME, packaging of products in quantity corresponding to one vehicle:

- 2 x crate of MT Calipers with 2 x LH MT caliper (TT16531-1) and 2 x RH MT caliper (TT16530-1)
- 1 x crate with CT calipers (2 x TT18130)
- 2 x crate with 1 MT HPU (TT17648), 1 Brake Accumulator (TT16538) and 1 Leveling Accumulator (1-60039)
- 1 x crate with 1 CT HPU (TT17649), 1 Brake Accumulator (TT16538) and 1 Leveling Accumulator (1-60039)

This contractor will lead, coordinate with SFMTA, and facilitate the movement of vehicles into the pit area next to each truck and location and optimize time of handling.

Packaging of crate will be designed to be reusable for both product being sent OUT and product coming IN.

Serialization of products will be managed by contractor at his facility so that only Phase 1 product (based on date of manufacturing between the 2 OEM phases of production) will be re-installed on Phase 1 vehicle during this overhaul program.

Deliverables: None for This Section

8. Off-site Overhaul

The Contractor shall overhaul the Brakes components at their own off-site facility meeting the following criteria:

- a. A dedicated production facility where hydraulic brake systems are manufactured and/or assembled including a clean room which achieves Class 8 @0,5micron, Class 9 @0,5micron & @ 0,1Micron according to standard ISO 14644-1.
- b. Over 5 years of Brake System production and assembly at the designated facility
- c. On-site Brakes engineering, Quality & Manufacturing Engineer competencies
- d. At least 1 year of permanent and ongoing experience with Hydraulic Brakes Manufacturing
- e. Prior experience working with the LRV4 Brake System and its components

Deliverables: None for This Section

9. Quality and Testing

The Contractor shall provide and perform:

- a. Work Instructions for Overhaul of components
- b. Overhaul Production Quality Plan (Wabtec QIP process)
- c. Quality Assurance and Quality Control Function, including access upon request to Contractor's quality and inspection records
- d. First Article Inspections (FAI) for new production parts and parts being produced by new sub-suppliers including FAI reports shall be available for review by the SFMTA on site at Wabtec, but do not need to be sent to the SFMTA

Deliverables:

- 9.A Work Instructions
- 9.B Overhaul Production Quality Plan
- 9.C FAI reports available for review on site at Wabtec

10. Documentation and Tracking of Component

Documentation of Serialized Component History, Overhaul History, and Vehicle Installation History.

Deliverables:

- 10.A Serial Component History
- 10.B Overhaul History
- 10.C Vehicle Installation History

11. Tracking of Vehicle Removal and Replacement

Tracking of Removal and Replacement of components by LRV4 vehicle number as performed under this contract.

Deliverables:

- 11.A Vehicle Removal and Replacement Tracker

Section 3. Components to be Overhauled

The following brake parts shall be removed and rebuilt/replaced with new parts.

Item #	Description	Overhaul Interval	Overhaul Condition	OH Work Scope	Carset Quantity
1	MT Caliper	In accordance with RMS document, 6 years and/or 264k miles, whichever occurs first.	Rebuild/Overhaul without condition	Rebuild	8
2	CT Caliper	In accordance with RMS document, 6 years and/or 264k miles, whichever occurs first.	Rebuild/Overhaul without condition	Rebuild	2
3	MT HPU	In accordance with RMS document, 6 years and/or 264k miles, whichever occurs first.	Rebuild/Overhaul without condition	Rebuild	2
4	CT HPU	In accordance with RMS document, 6 years and/or 264k miles, whichever occurs first.	Rebuild/Overhaul without condition	Rebuild	1
5	Accumulator TT16538	In accordance with RMS document, 6 years and/or 264k miles, whichever occurs first.	Replacement (no OH kit)	Replace	3
6	Accumulator 1-60039	In accordance with RMS document, 6 years and/or 264k miles, whichever occurs first.	Replacement (no OH kit)	Replace	3

Section 4. Detailed Description of Activities

1. Overhaul of Calipers and HPUs

MT calipers (TT16530-1 & TT16531-1), CT caliper (TT18130), MT HPU (TT17648), and CT HPU (TT17649) are to be overhauled.

Overhaul activities will be prescribed by work instructions prepared by Manufacturing Engineer and validated by Quality and Product Engineer prior to start of the overhaul program, including:

- a. Reception of product and 1st general cleaning (over water jet)
- b. Disassemble of product and parts and sorting by:
 - Non-reusable parts as identified by Overhaul Kit BOM
 - Reusable parts (not included in Overhaul Kit)
- c. Non-reusable parts are removed and disposed of
- d. Reusable Parts are visually checked for damage and dimensional conditions, and for meeting the reuse criteria defined by Contractor's Engineering and Quality team, subject to approval by the SFMTA.
 - Parts not passing reuse criteria will be logged in a document available to SFMTA as part of the monthly report and differentiate between rework and replace, and differentiate between replacement/rework costs assigned to Wabtec or to SFMTA (with costs born by SFMTA requiring advanced justification for costs and SFMTA concurrence)
- e. Perform detailed cleaning over washing machine of reusable parts
- f. Reassemble products with overhaul parts, reusable parts, and parts needed based on assessment (unforeseen parts and agree with SFMTA).
 - The reassembly will be done over the same OEM process assembly and following same work instructions and rules that OEM assembly.
 - During the assembly process, the technician and Production Quality inspector will follow the quality control and steps defined by the Quality Inspection Procedure (QIP) and documented/stamped accordingly.
- g. Each product after assembly will be flushed over a level of cleanliness,
- h. Each product will be tested according to ATP specification.

2. Replacement of Accumulators

Accumulator TT16538 and Accumulator 1-60039 are to be exchanged only, no overhaul.

The contractor shall deliver for onsite replacement and installation the same OEM part number TT16538 and 1-60039 according to the same process, work instructions and deliveries that performed during the OEM period with Siemens car builder.

Section 5. Extended Warranty Items

In accordance with Section 4.5 of the Agreement, the Contractor shall provide a five (5) year Warranty Period on the following parts of the Goods:

For MT Calipers:

Parts	Description
TTP200-511	O-RING
1-62503	BUSH DETAIL
1-62501	CLAMP DETAIL
1-62502	CLAMP DETAIL
1-61619	SEAL-HYDRAULIC U-CUP
1-61618	SEAL-HYDRAULIC U-CUP
1-61617	SEAL-HYDRAULIC U-CUP
1-61616	SEAL-HYDRAULIC U-CUP
1-61615	SEAL-HYDRAULIC BUFFER
1-61614	SEAL-HYDRAULIC BUFFER PURCHASE REFERENCE
TTP200-506	O-RING
TTP200-179	O-RING
TTP200-508	O-RING
1-61624	HEAVY DUTY ROLL PIN

For CT Calipers

Parts	Description
1-61621	SEAL-HYDRAULIC BUFFER
1-61620	SEAL-HYDRAULIC U-CUP
1-62511	CLAMP DETAIL
1-62504	PISTON GUIDE
1-514770018	WASHER-NORDLOCK 18MM
1-61623	HEXAGON HEAD SCREW SCREW-M18X70 HHC

Appendix B
Schedule of Prices

Description	Items/ Vehicle	Price/ item	Price/ Vehicle	Vehicles	Price
MT Caliper Parts Kit	8	\$10,374.46	\$82,995.68	68	\$5,643,706.24
CT Caliper Parts Kit	2	\$10,059.37	\$20,118.74	68	\$1,368,074.32
MT HPU	2	\$20,332.66	\$40,665.32	68	\$2,765,241.76
CT HPU	1	\$20,332.66	\$20,332.66	68	\$1,382,620.88
Accumulator TT16538	3	\$1,925.24	\$5,775.72	68	\$392,748.96
Accumulator 1-60039	3	\$1,925.24	\$5,775.72	68	\$392,748.96
<i>Parts Subtotal</i>			\$175,663.84		\$11,945,141.12
MT Caliper Labor	8	\$4,184.44	\$33,475.52	68	\$2,276,335.36
CT Caliper Labor	2	\$3,502.62	\$7,005.24	68	\$476,356.32
MT HPU Labor	2	\$3,578.92	\$7,157.84	68	\$486,733.12
CT HPU Labor	1	\$3,578.92	\$3,578.92	68	\$243,366.56
Acc' TT16538 Labor	3	\$0.00	\$0.00	68	\$0.00
Acc' 1-60039 Labor	3	\$0.00	\$0.00	68	\$0.00
<i>Labor Subtotal</i>			\$51,217.52		\$3,482,791.36
Allowance for unforeseen part replacement					\$100,000
					\$15,527,932.48

Appendix C

Project Delivery Schedule

Milestone	Description	Quantity	Installed Count	Days after NTP
1	Overhaul Parts vehicle sets Delivered in Duncan	5	n/a	0
2	Overhaul/Install Complete	2	2	30
3	Overhaul/Install Complete	2	4	61
4	Overhaul/Install Complete	4	8	92
5	Overhaul/Install Complete	4	12	122
6	Overhaul/Install Complete	4	16	153
7	Overhaul/Install Complete	4	20	183
8	Overhaul/Install Complete	4	24	214
9	Overhaul/Install Complete	4	28	245
10	Overhaul/Install Complete	4	32	273
11	Overhaul/Install Complete	4	36	304
12	Overhaul/Install Complete	4	40	334
13	Overhaul/Install Complete	4	44	356
14	Overhaul/Install Complete	4	48	396
15	Overhaul/Install Complete	4	52	426
16	Overhaul/Install Complete	4	56	457
17	Overhaul/Install Complete	4	60	487
18	Overhaul/Install Complete	4	64	518
19	Overhaul/Install Complete	4	68	548

Appendix D Payment Milestones

Milestone	Description	Price per Unit	Quantity	Installed Count	Amount
1	Overhaul Parts Vehicle sets delivered and accepted at overhaul site in Duncan, SC, 50%	\$175,663.84	5	n/a	\$439,159.60
2a	Installation complete and Accepted - Labor	\$51,217.52	2	2	\$102,435.04
2b	Installation complete and accepted - Parts	\$175,663.84	2	2	\$351,327.68
3a	Installation complete and accepted - Labor	\$51,217.52	2	4	\$102,435.04
3b	Installation complete and accepted - Parts	\$175,663.84	2	4	\$351,327.68
4a	Installation complete and accepted - Labor	\$51,217.52	4	8	\$204,870.08
4b	Installation complete and accepted - Parts	\$175,663.84	4	8	\$702,655.36
5a	Installation complete and accepted - Labor	\$51,217.52	4	12	\$204,870.08
5b	Installation complete and accepted - Parts	\$175,663.84	4	12	\$702,655.36
6a	Installation complete and accepted - Labor	\$51,217.52	4	16	\$204,870.08
6b	Installation complete and accepted - Parts	\$175,663.84	4	16	\$702,655.36
7a	Installation complete and accepted - Labor	\$51,217.52	4	20	\$204,870.08
7b	Installation complete and accepted - Parts	\$175,663.84	4	20	\$702,655.36
8a	Installation complete and accepted - Labor	\$51,217.52	4	24	\$204,870.08
8b	Installation complete and accepted - Parts	\$175,663.84	4	24	\$702,655.36
9a	Installation complete and accepted - Labor	\$51,217.52	4	28	\$204,870.08

Milestone	Description	Price per Unit	Quantity	Installed Count	Amount
9b	Installation complete and accepted - Parts	\$175,663.84	4	28	\$702,655.36
10a	Installation complete and accepted - Labor	\$51,217.52	4	32	\$204,870.08
10b	Installation complete and accepted - Parts	\$175,663.84	4	32	\$702,655.36
11a	Installation complete and accepted - Labor	\$51,217.52	4	36	\$204,870.08
11b	Installation complete and accepted - Parts	\$175,663.84	4	36	\$702,655.36
12a	Installation complete and accepted - Labor	\$51,217.52	4	40	\$204,870.08
12b	Installation complete and accepted - Parts	\$175,663.84	4	40	\$702,655.36
13a	Installation complete and accepted - Labor	\$51,217.52	4	44	\$204,870.08
13b	Installation complete and accepted - Parts	\$175,663.84	4	44	\$702,655.36
14a	Installation complete and accepted - Labor	\$51,217.52	4	48	\$204,870.08
14b	Installation complete and accepted - Parts	\$175,663.84	4	48	\$702,655.36
15a	Installation complete and accepted - Labor	\$51,217.52	4	52	\$204,870.08
15b	Installation complete and accepted - Parts	\$175,663.84	4	52	\$702,655.36
16a	Installation complete and accepted - Labor	\$51,217.52	4	56	\$204,870.08
16b	Installation complete and accepted - Parts	\$175,663.84	4	56	\$702,655.36
17a	Installation complete and accepted - Labor	\$51,217.52	4	60	\$204,870.08
17b	Installation complete and accepted - Parts	\$175,663.84	4	60	\$702,655.36
18a	Installation complete and accepted - Labor	\$51,217.52	4	64	\$204,870.08
18b	Installation complete and accepted - Parts	\$175,663.84	3	64	\$526,991.52

Milestone	Description	Price per Unit	Quantity	Installed Count	Amount
18c	Installation complete and accepted – Parts, 50%	\$175,663.84	1	64	\$87,831.92
19a	Installation complete and accepted - Labor	\$51,217.52	4	68	\$204,870.08
19b	Installation complete and accepted – Parts, 50%	\$175,663.84	4	68	\$351,327.68
20	Allowance - As Agreed	TBD	TBD	TBD	TBD
	Total				\$15,527,932.48

Appendix E Bill of Materials

MT Caliper Overhaul Kit BOM
(FT0267401-K00 MT Caliper LH_RH)

Component	Description	Qty	Design Status
TTP799-04	BOLT-MOUNTING	6	Original/Unchanged
TTP166-21	WASHER-FLAT,HIGH STR	6	Original/Unchanged
TT15963	PLATE-WEAR	1	Updated
TT15969	BOOT DETAIL	1	Updated
1-61312	SCREW-SHOULDER	1	Original/Unchanged
1-61306	ROD - PUSH	1	Original/Unchanged
1-61307	PIN - PUSH ROD	2	Original/Unchanged
TT17239	ROD-PIVOT	1	Original/Unchanged
TTP200-511	O-RING	2	corrected/modified
TTP150-02	FITTING-LUBE	2	Original/Unchanged
TTP200-510	O-RING	2	Updated
TTP200-364	SEAL-O-RING	2	Original/Unchanged
TTP327-17	PIN-SPIROL	2	Original/Unchanged
1-613170002	RING - SNAP	2	Original/Unchanged
TTP595-02	CAP-GREASE	4	Original/Unchanged
TTP700-66	SPRING-DISC	3	Original/Unchanged
TTP877-19	SCREW-FLAT HD SOCKET	4	Original/Unchanged
TT16136	BUSHING-PIVOT PIN	2	Updated
TTP132-02	SEAL-DOUBLE WIPER	4	Original/Unchanged
1-62503	BUSH DETAIL	2	corrected/modified
TT15506-2	BOOT-GUIDE PIN	4	Original/Unchanged
TT15520	ROD-PIVOT	1	Updated
TT15527	SPACER	2	Original/Unchanged
TT16126	SCREW-PAD HOLDER	2	Original/Unchanged
TT17290	ARM-HANGER	2	Original/Unchanged
TT17291	PIN-HANGER	2	Original/Unchanged
TT15534	VALVE-BLEEDER,ASSY	2	Original/Unchanged
1-62066	SHAFT-BRAKE PAD HLD TOP	1	Updated
TT17289	SCREW-PAD HOLDER	3	Original/Unchanged
TTP1040-02	WASHER-SEAL	2	Original/Unchanged

Component	Description	Qty	Design Status
1-62067	SHAFT-BRAKE PAD HLD BOT	1	Updated
1-514770020	WASHER-NORDLOCK M12 SP	4	Original/Unchanged
TTP200-361	SEAL-O-RING	2	Original/Unchanged
TT17230	PIN-RETAINING	3	Original/Unchanged
TTP501-44	RING-RETAINING,INTERNAL	2	Original/Unchanged
1-613170001	RING - SNAP	2	Original/Unchanged
TTP601-10	PLUG-DUST COVER	2	Original/Unchanged
TTP603-07	PLUG-HOLLOW HEX,W/O-RING	2	Original/Unchanged
TTP603-16	PLUG-HOLLOW HEX,W/O-RING	2	Original/Unchanged
TTP720-177	SPRING-COMPRESSION	2	Original/Unchanged
TTP720-165	SPRING-COMPRESSION	2	Original/Unchanged
TTP769-40	PIN-ROLL	2	Original/Unchanged
TTP900-48	NUT-HEX,SELF-LOCKING	2	Original/Unchanged
TTP934-50	CLAMP-HOSE	8	Original/Unchanged
TTP971-01	SCREW-SOC HD CAP	4	Original/Unchanged
TTP975-19	SCREW-SOC HD CAP	4	Original/Unchanged
TTP925-03	LOCKWIRE	0.012	Original/Unchanged
TT15508	PIN-TAPERED GUIDE	2	Original/Unchanged
TTP867-43	SCREW-SET	2	Original/Unchanged
TT15499	BUSHING-GUIDE PIN	4	Original/Unchanged
TT16129	BUSHING-PIVOT PIN	2	Updated
TT16138	BUSHING-PIVOT	2	Original/Unchanged
TTP133-02	SEAL-DOUBLE WIPER	2	Original/Unchanged
TTP150-04	FITTING-LUBE	2	Original/Unchanged
TTP867-42	SCREW-SET	4	Original/Unchanged
TT15479	SPRING-DISC	9	Original/Unchanged
TT15487	NUT-SLACK ADJUST,ASSY	1	Original/Unchanged
TT16693	PISTON-RELEASE	1	Original/Unchanged
TT16709	PISTON ASSEMBLY	1	Original/Unchanged
TT15497	RETURN-SPRING MECH REL	1	Original/Unchanged
TT15536	RETAINER-WIRE	1	Original/Unchanged
TT15537	KEY	3	Original/Unchanged
TT15627	RING-FRICTION	1	Original/Unchanged
TT15632	RACE-BEARING	2	Original/Unchanged
TT16248	SCREW & FACE GEAR SET ASSY	1	Original/Unchanged

Component	Description	Qty	Design Status
TT16249	WASHER-TAG	2	Original/Unchanged
1-62501	CLAMP DETAIL	1	corrected/modified
1-62502	CLAMP DETAIL	1	corrected/modified
TT16306	BOOT DETAIL	1	Original/Unchanged
TT16307	CLAMP	1	Original/Unchanged
TT16696	GUIDE-CYLINDER PISTON	1	Original/Unchanged
1-61619	SEAL-HYDRAULIC U-CUP	1	corrected/modified
1-61618	SEAL-HYDRAULIC U-CUP	1	corrected/modified
TTP103-24	RING-WEAR	1	Original/Unchanged
TTP113-15	SEAL-WIPER	1	Original/Unchanged
TTP113-17	SEAL-WIPER	1	Original/Unchanged
1-61617	SEAL-HYDRAULIC U-CUP	1	corrected/modified
1-61616	SEAL-HYDRAULIC U-CUP	1	corrected/modified
1-61615	SEAL-HYDRAULIC BUFFER	1	corrected/modified
1-61614	SEAL-HYDRAULIC BUFFER PURCHASE REFERENCE	1	corrected/modified
TTP148-09	BEARING-NEEDLE THRUST	1	Original/Unchanged
TTP200-506	O-RING	1	corrected/modified
TTP200-115	SEAL-O-RING	1	Original/Unchanged
TTP200-179	O-RING	1	corrected/modified
TTP200-210	SEAL-O-RING	1	Original/Unchanged
TTP200-291	SEAL-O-RING	1	Original/Unchanged
TTP200-508	O-RING	1	corrected/modified
TTP501-74	RING-RETAINING, INTERNAL	1	Original/Unchanged
TTP502-06	RING-RETAINING, BEVELED	2	Original/Unchanged
TTP720-164	SPRING-COMPRESSION	8	Original/Unchanged
TTP769-25	PIN-ROLL	1	Original/Unchanged
1-61624	HEAVY DUTY ROLL PIN	2	corrected/modified
TTP877-18	SCREW-FLAT HD SOCKET	7	Original/Unchanged
TTP201-40	RING-BACK-UP	1	Original/Unchanged
TTP976-37	SCREW-SOC HD CAP	6	Original/Unchanged
TTP976-39	SCREW-SOC HD CAP	1	Original/Unchanged
TT17232	RETAINER	1	Original/Unchanged
TT17489	BUSHING	4	Original/Unchanged
TTP161-05	WASHER-FLAT	4	Original/Unchanged
TTP848-09	SCREW-SOCKET HEAD CAP	4	Original/Unchanged

Component	Description	Qty	Design Status
TT15933	SCREW-CUTOUT	1	Original/Unchanged
TT15934	COVER	1	Original/Unchanged
TT15628	SPLINE-MALE	1	Original/Unchanged
TT15477	CAP-ADJUSTABLE END	1	Original/Unchanged
TT15478	SPRING-FRICTION RING	1	Original/Unchanged
TT16708	STOP-PISTON	1	Original/Unchanged
TTP320-20	PIN-COTTER,3/32 X 1/2 LG (for LH caliper only)	1	Original/Unchanged
TTP329-08	PIN-STRAIGHT HEADED (CLEVES) (for LH caliper only)	1	Original/Unchanged
TT15515	SCREW-PAD HOLDER (for LH caliper only)	1	Original/Unchanged

MT Caliper Overhaul Kit BOM
(1-60124 CT Caliper)

Component	Description	Qty	Design Status
1-61621	SEAL-HYDRAULIC BUFFER	2	corrected/modified
1-61620	SEAL-HYDRAULIC U-CUP	2	corrected/modified
TTP103-09	RING-WEAR	2	Original/Unchanged
TT18193	SHIM	2	Original/Unchanged
TT18271	SHIM	2	Original/Unchanged
TT17880	DISC-SPRING	10	Updated
TTP200-385	O-RING	2	Original/Unchanged
TT18289	BOOT-PISTON	1	Original/Unchanged
TT17936	RING-FRICTION	1	Original/Unchanged
TT17937	SPRING-FRICTION RING	1	Original/Unchanged
TT18286	BEARING-PLAIN SLEEVE	1	Original/Unchanged
TTP502-17	RING-RETAINING, BEVELED	1	Original/Unchanged
1-62511	CLAMP DETAIL	1	corrected/modified
1-557690020	SCREW-HEX SOCH M6x1.0x20,GEOMET	6	Original/Unchanged
TTP503-17	RING-RETAINING,EXTERNAL	1	Original/Unchanged
TTP976-54	SCREW-SOC HD. CAP	16	Original/Unchanged
TT18290	CAP	1	Original/Unchanged
TTP971-20	SCREW-SOC. HD. CAP (M5)	4	Original/Unchanged
TT18269	GASKET	1	Original/Unchanged

Component	Description	Qty	Design Status
TT14752	BOOT-GUIDE PIN	2	Original/Unchanged
TT14938	BUSHING ASSEMBLY	1	Original/Unchanged
TT14539	BEARING-SLEEVE	4	Original/Unchanged
TTP321-03	PIN-COTTER HAIR	4	Original/Unchanged
TTP867-34	SCREW-SET	4	Original/Unchanged
1-600400625	SHCS 6-40 X .63 SS	4	Original/Unchanged
TT18305	GEO 12LM	1	Original/Unchanged
TT14717	VALVE-BLEEDER,ASSY	1	Original/Unchanged
TT14756	CAP-BLEEDER	1	Original/Unchanged
TTP603-13	PLUG-HOLLOW HEX,W/O-RING	1	Original/Unchanged
TT18267	BOOT-BACK HOUSING	1	Original/Unchanged
TT18306	MINIATURE BREATHER VENT	2	Original/Unchanged
1-62504	PISTON GUIDE	2	corrected/modified
1-514770018	WASHER-NORDLOCK 18MM	2	corrected/modified
1-61623	HEXAGON HEAD SCREW SCREW-M18X70 HHC	2	corrected/modified
TTP166-35	WASHER-FLAT (HIGH STRENGTH), M24	4	Updated
TT18294	SLACK ADJUSTER	1	Original/Unchanged
TTP200-299	SEAL-O-RING	1	Original/Unchanged
TTP166-20	WASHER-FLAT,HIGH STR	2	Original/Unchanged
TTP800-22	BOLT-HEX HEAD	1	Original/Unchanged
TTP857-12	BOLT-SHOULDER	1	Original/Unchanged
TTP900-41	NUT-HEX,SELF-LOCKING	1	Original/Unchanged
TT18155	SPACER	2	Original/Unchanged
TT14754	CLAMP-LOW PROFILE	4	Original/Unchanged
TTP976-19	SCREW-SOC HD CAP	4	Original/Unchanged
TT14538	PIN-BRAKE PAD	2	Original/Unchanged
TTP327-37	PIN-SPIROL	4	Original/Unchanged
TTP150-04	FITTING-LUBE	1	Original/Unchanged
TTP595-02	CAP-GREASE	1	Original/Unchanged

MT HPU Overhaul Kit BOM

(1-60086 MT HPU)

Component	Description	Qty
TTP160-39	WASHER-SPLIT,MEDIUM	1
TTP161-39	WASHER-FLAT	2
TTP800-30	BOLT-HEX HEAD	1

Component	Description	Qty
TT15965	MOUNT-ISOLATION	8
TTP166-23	WASHER-FLAT,HIGH STR	12
TTP800-42	BOLT-HEX HEAD	4
TTP900-28	NUT-HEX,SELF-LOCKING	4
1-535772012	FITTING-PMA STRAIGHT,METRIC	2
TT16062	SPACER-SLC MOUNT PLATE	4
TT16115	ADAPTOR	1
TT18239	SWITCH - FLOAT	1
1-60655	WIRING-HARNESS-HPU	1
C031082	CONDUIT-LIQUIDTITE 12MM	0.3
TTP1074-02	ELBOW - STRAIGHT THD	1
TTP186-09	GASKET-CONNECTOR	1
TTP200-213	SEAL-O-RING	4
TTP200-294	SEAL-O-RING	8
TTP200-303	SEAL-O-RING	1
TTP200-310	SEAL-O-RING	1
TTP200-316	SEAL-O-RING	1
TTP200-317	SEAL-O-RING	1
TTP200-326	SEAL-O-RING	1
TTP200-327	SEAL-O-RING	1
TTP200-363	SEAL-O-RING	3
TTP200-368	O-RING	1
TTP200-387	O-RING	6
TTP200-398	O-RING	1
TTP351-07	KEY-SQUARE RECTANGLE	1
TTP375-02	BUSHING-DRILL	4
TTP413-24	COUPLER-QUICK DISCONNECT	1
TTP414-01	CAP-DUST	1
1-60924	MOTOR	1
FT0114495-102	BLDC MOTOR DRIVE W/SW	1
TTP471-01	SIGHT-LIQUID-LEVEL	2
TTP552-03	CONNECTOR-MALE	1
TTP553-02	UNION, STRAIGHT THD	1
TTP558-02	HUB-COUPLING	1
TTP603-14	PLUG-HOLLOW HEX,W/O-RING	1
TTP603-18	PLUG-HOLLOW HEX,W/O-RING	3
TTP606-06	VENT-BREATHER	1
TTP610-03	ADAPTER-STRAIGHT	1
TTP971-01	SCREW-SOC HD CAP	8

Component	Description	Qty
TTP971-21	SCREW-SOC. HD. CAP (M5)	4
TTP972-30	SCREW-SOC HD CAP	1
TTP973-21	SCREW-SOC HD CAP	8
TTP973-31	SCREW-SOC HD CAP	8
TTP973-39	SCREW-SOC HD CAP	6
TTP973-41	SCREW-SOC HD CAP	4
TTP974-10	SCREW-SOC HD CAP,M10	6
TTP975-16	SCREW-SOC HD CAP	4
TTP976-15	SCREW-SOC HD CAP	4
1-557170008	WASHER-M8 METRIC LOCK,GEOMET	4
1-60060	TRANSDUCER-PRESSURE	1
1-60075	VALVE-RELIEF	1
TT14862	CAP-END	1
TT15714	SPOOL & SLEEVE ASSY	1
TT15779	CAP-END	1
1-61229	ASSY-SOLENOID	1
TT16269	PLATE-LOCKING	1
TT17143	SPOOL ASSEMBLY	1
TTP1001-12	TRANSDUCER-PRESSURE	5
TTP200-08	SEAL-O-RING	1
TTP200-58	SEAL-O-RING	1
TTP200-204	SEAL-O-RING	1
TTP200-297	SEAL-O-RING	1
TTP200-323	SEAL-O-RING	4
TTP201-44	BACK-UP RING	1
TTP451-06	FILTER ELEMENT	1
TTP475-01	VALVE-DIRECTIONAL POPPET	2
TTP702-06	WASHER-CURVED SPRING	2
TTP720-74	SPRING-COMPRESSION	2
TTP720-129	SPRING-COMPRESSION	1
TTP740-37	VALVE-RELIEF	1
TTP747-04	VALVE-CHECK	2
TTP747-13	VALVE-CHECK	1
TTP774-25	2WAY POPT SOL VLV	1
TTP774-26	2WAY POPT SOL VLV	2
TTP774-32-1	VALVE-CARTRIDGE	1
TTP774-33-1	COIL	1
TTP793-10-2	PROPORTIONAL VALVE	2

Component	Description	Qty
TTP793-10-3	COIL	2
1-60519	VALVE-SOLENOID	2
TTP867-45	SCREW-SET	1
TTP971-04	SCREW-SOC HD CAP	2
TTP971-16	SCREW-SOC HD CAP	6
TTP972-26	SCREW-SOC HD CAP	8
TT15769	HUB-COUPLER	1
TT16097	ELBOW	1
TTP128-06	WASHER-RIBBED LOCK	1
TTP200-304	SEAL-O-RING	1
TTP439-12	PUMP-GEAR	1
TTP449-10	STRAINER-NUT STYLE	1
TTP559-05	SPIDER-COUPLING	1
TTP698-02	ELBOW-MALE	1
TTP909-21	NUT-SELF LOCKING	1
TTP972-35	SCREW-SOC HD CAP	2
1-608180000	PLATE-ADAPTER BLDC	1
1-608180001	SCREW-SKT FL CSSKH SS	4
1-60535	DISC-ORIFICE	2
TT15724	SPACER	1
TT14767	SPACER-CYLINDRICAL	1
TTP720-173	SPRING-COMPRESSION	1
TT17864	SOLENOID ASSEMBLY	1

CT HPU Overhaul Kit BOM
(1-60087 CT HPU)

Component	Description	Qty
TTP160-39	WASHER-SPLIT,MEDIUM	1
TTP161-39	WASHER-FLAT	2
TTP800-30	BOLT-HEX HEAD	1
TT15965	MOUNT-ISOLATION	8
TTP166-23	WASHER-FLAT,HIGH STR	12
TTP800-42	BOLT-HEX HEAD	4
TTP900-28	NUT-HEX,SELF-LOCKING	4
1-535772012	FITTING-PMA STRAIGHT,METRIC	2
TT16062	SPACER-SLC MOUNT PLATE	4
TT16115	ADAPTOR	1

Component	Description	Qty
TT18239	SWITCH - FLOAT	1
1-60656	WIRING-HARNESS-HPU	1
C031082	CONDUIT-LIQUIDTITE 12MM	0.3
TTP1074-02	ELBOW - STRAIGHT THD	1
TTP186-09	GASKET-CONNECTOR	1
TTP200-213	SEAL-O-RING	4
TTP200-294	SEAL-O-RING	8
TTP200-303	SEAL-O-RING	1
TTP200-310	SEAL-O-RING	1
TTP200-316	SEAL-O-RING	1
TTP200-317	SEAL-O-RING	1
TTP200-326	SEAL-O-RING	1
TTP200-327	SEAL-O-RING	1
TTP200-363	SEAL-O-RING	3
TTP200-368	O-RING	1
TTP200-387	O-RING	6
TTP200-398	O-RING	1
TTP351-07	KEY-SQUARE RECTANGLE	1
TTP375-02	BUSHING-DRILL	4
TTP413-24	COUPLER-QUICK DISCONNECT	1
TTP414-01	CAP-DUST	1
1-60924	MOTOR	1
FT0114495-102	BLDC MOTOR DRIVE W/SW	1
TTP471-01	SIGHT-LIQUID-LEVEL	2
TTP552-03	CONNECTOR-MALE	1
TTP553-02	UNION, STRAIGHT THD	1
TTP558-02	HUB-COUPLING	1
TTP603-14	PLUG-HOLLOW HEX,W/O-RING	1
TTP603-18	PLUG-HOLLOW HEX,W/O-RING	3
TTP606-06	VENT-BREATHER	1
TTP610-03	ADAPTER-STRAIGHT	1
TTP971-01	SCREW-SOC HD CAP	8
TTP971-21	SCREW-SOC. HD. CAP (M5)	4
TTP972-30	SCREW-SOC HD CAP	1
TTP973-21	SCREW-SOC HD CAP	8
TTP973-31	SCREW-SOC HD CAP	8
TTP973-39	SCREW-SOC HD CAP	6
TTP973-41	SCREW-SOC HD CAP	4
TTP974-10	SCREW-SOC HD CAP,M10	6

Component	Description	Qty
TTP975-16	SCREW-SOC HD CAP	4
TTP976-15	SCREW-SOC HD CAP	4
1-557170008	WASHER-M8 METRIC LOCK,GEOMET	4
1-60060	TRANSDUCER-PRESSURE	1
1-60075	VALVE-RELIEF	1
TT14862	CAP-END	1
TT15714	SPOOL & SLEEVE ASSY	1
TT15779	CAP-END	1
1-61229	ASSY-SOLENOID	1
TT16269	PLATE-LOCKING	1
TT17143	SPOOL ASSEMBLY	1
TTP1001-12	TRANSDUCER-PRESSURE	5
TTP200-08	SEAL-O-RING	1
TTP200-58	SEAL-O-RING	1
TTP200-204	SEAL-O-RING	1
TTP200-297	SEAL-O-RING	1
TTP200-323	SEAL-O-RING	4
TTP201-44	BACK-UP RING	1
TTP451-06	FILTER ELEMENT	1
TTP475-01	VALVE-DIRECTIONAL POPPET	2
TTP702-06	WASHER-CURVED SPRING	2
TTP720-74	SPRING-COMPRESSION	2
TTP720-129	SPRING-COMPRESSION	1
TTP740-38	VALVE-RELIEF	1
TTP747-04	VALVE-CHECK	2
TTP747-13	VALVE-CHECK	1
TTP774-25	2WAY POPT SOL VLV	1
TTP774-26	2WAY POPT SOL VLV	2
TTP774-32-1	VALVE-CARTRIDGE	1
TTP774-33-1	COIL	1
TTP793-10-2	PROPORTIONAL VALVE	2
TTP793-10-3	COIL	2
1-60519	VALVE-SOLENOID	2
TTP867-45	SCREW-SET	1
TTP971-04	SCREW-SOC HD CAP	2
TTP971-16	SCREW-SOC HD CAP	6
TTP972-26	SCREW-SOC HD CAP	8
TT15769	HUB-COUPLER	1

Component	Description	Qty
TT16097	ELBOW	1
TTP128-06	WASHER-RIBBED LOCK	1
TTP200-304	SEAL-O-RING	1
TTP439-12	PUMP-GEAR	1
TTP449-10	STRAINER-NUT STYLE	1
TTP559-05	SPIDER-COUPLING	1
TTP698-02	ELBOW-MALE	1
TTP909-21	NUT-SELF LOCKING	1
TTP972-35	SCREW-SOC HD CAP	2
1-608180000	PLATE-ADAPTER BLDC	1
1-608180001	SCREW-SKT FL CSSKH SS	4
1-60535	DISC-ORIFICE	2
TT15724	SPACER	1
TT14767	SPACER-CYLINDRICAL	1
TTP720-173	SPRING-COMPRESSION	1
TT17864	SOLENOID ASSEMBLY	1



Light Rail Vehicle (LRV4) Brakes Overhaul

Phase 1 Vehicles

SFMTA Board of Supervisors

June 4, 2025

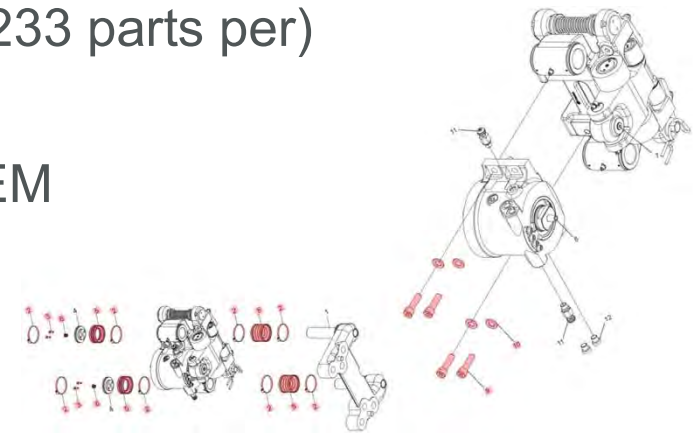
LRV4 Fleet Status

- LRV4 Contract with Siemens, NTP September 2014
- \$1B – On Schedule – On Budget – 75% Complete
- 165 of 219 LRV4s Conditionally Accepted and in revenue service
- 54 Vehicles remaining, final delivery in early 2026
- Phase 1: 68 expansion vehicles 2017-2019
- Phase 2: 151 replacement vehicles 2021-2026



Phase 1 Brakes Overhaul

- 68 Phase 1 LRV4s over 5 years old
 - End of base 5-year warranty
 - First overhaul interval – Trucks, Couplers, Brakes
- All 68 Phase1 LRV4s due for Brakes Overhaul – 6 years
- Maintain Warranty – SFMTA fulfills obligation to keep system in state-of-good-repair per Siemens maintenance recommendations
- Complex System Overhaul:
 1. Rebuild Calipers (10 Calipers per vehicle, 230 parts per MT caliper)
 2. Rebuild Hydraulic Power Units (3 HPU's, 233 parts per)
 3. Replace Accumulators (6 per vehicle)
- Overhaul components to original standards in OEM factory clean room facility, Duncan SC



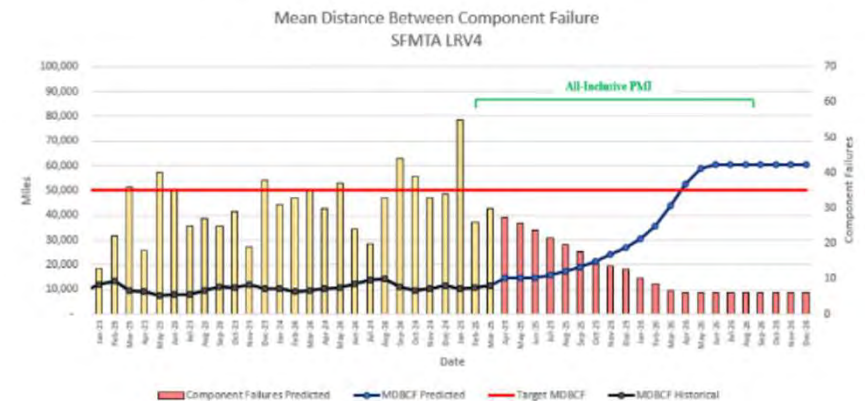
LRV4 Motor Truck Partial Brake Assembly

Phase 1 Brakes Overhaul

- Phase 1 Overhaul simultaneous with corrective actions required to address warranty defects under the Siemens LRV4 contract
- No safety related brakes concerns – unmet contract reliability target, recurring failures, entitles SFMTA to system improvements/upgrades
- Ensures enforceability of all warranties, maintains Siemens/Wabtec responsibility for ongoing system performance
- Combining overhaul activities with corrective actions (one program) saves money and increases vehicle availability
 - no-cost removal and replacement
 - no-cost shipping
 - non-standard 3-year warranty

SFMTA LRV4 Reliability Report March 2025

Component Failure Prediction Summary



Brakes Overhaul Contract

- Not to exceed \$15,527,933 – parts and labor
- 18-month project schedule – roughly 1 car per week
- Sole source contract with Wabtec Passenger Transport
 - Original Equipment Manufacturer (OEM) to optimize production
 - Delivers upgrades due SFMTA to meet performance targets, address defects
 - Re-warranties the brake system components



Recommend Approval

Authorizing the Director of Transportation to execute Contract No. SFMTA2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for an overall amount not to exceed \$15,527,933, and a term not to exceed 2 years and 6 months.



SAN FRANCISCO
MUNICIPAL TRANSPORTATION AGENCY
BOARD OF DIRECTORS

RESOLUTION No. 250506-043

WHEREAS, On September 30, 2014, the City entered into Contract No. SFMTA- No. 2013-19 with Siemens Mobility Inc. (Siemens Contract) to provide light rail vehicles (LRV4s); and,

WHEREAS, Wabtec Passenger Transit (Wabtec or Contractor) is the brakes manufacturer subcontractor under the Siemens Contract; and,

WHEREAS, Between November 17, 2017 and August 31, 2020, the SFMTA placed in service 68 Siemens LRV4 vehicles numbered 2001 through 2068 (commonly known as Phase 1); and,

WHEREAS, All Phase 1 LRV4 vehicles have reached, or will soon reach, the end of their 5-year warranty period, but some parts of the brake system continue to be covered under extended warranty (beyond 5 years) due to warranty defects and pending corrections for which the original vendor, Siemens (supported by their subcontractor Wabtec), is contractually responsible; and,

WHEREAS, Phase 1 LRV4 vehicles are due for an overhaul of the brake system; and,

WHEREAS, The SFMTA is responsible for the overhaul as part of its obligations under the Siemens Contract to maintain the brake system in a state of good repair to preserve the extended warranty; and,

WHEREAS, As part of its obligations under the Siemens Contract, Contractor will – at no additional cost to the SFMTA – remove and reinstall brake components, ship parts being overhauled to the overhaul factory, and replace defective parts under the Siemens warranty; and,

WHEREAS, Funding for this project will be provided by a mix of sources including the SFMTA's operating and capital budget; and,

WHEREAS, The Contract Compliance Office (CCO) waived the LBE goal for this Project due to the specialized nature of the work and lack of subcontracting opportunities; and,

WHEREAS, The agreement with Contractor will require approval from the Board of Supervisors pursuant to San Francisco Charter Section 9.118, as it is over \$10,000,000; and,

WHEREAS, On March 21, 2025, the SFMTA, under authority delegated by the San Francisco Planning Department determined that SFMTA Contract No. SFMTA2025-28-LOC is not a "project" under California Environmental Quality Act (CEQA) pursuant to Title 14 of the California Code of Regulations Sections 15060(c) and 15378(b), and,

WHEREAS, A copy of the CEQA determination is on file with the Secretary to the SFMTA Board of Directors, and is incorporated herein by reference; now, therefore, be it

RESOLVED, That the San Francisco Municipal Transportation Agency Board of Directors authorizes the Director of Transportation to execute Contract No. SFMTA-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit (Wabtec) to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for a contract amount not to exceed \$15,527,933, and a term of two years and six months; and be it further

RESOLVED, That the San Francisco Municipal Transportation Agency Board of Directors commends this matter to the Board of Supervisors for its approval of Contract No. SFMTA-2025-28-LOC.

I certify that the foregoing resolution was adopted by the San Francisco Municipal Transportation Agency Board of Directors at its meeting of May 6, 2025.



Secretary to the Board of Directors
San Francisco Municipal Transportation Agency



Daniel Lurie, Mayor

Janet Tarlov, Chair
Stephanie Cajina, Vice Chair
Mike Chen, Director
Alfonso Felder, Director

Steve Heminger, Director
Dominica Henderson, Director
Fiona Hinze, Director

Julie Kirschbaum, Director of Transportation

May 2, 2025

**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-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit for \$15,527,933

Honorable Members of the Board of Supervisors:

The San Francisco Municipal Transportation Agency (SFMTA) requests that the San Francisco Board of Supervisors authorize the Director of Transportation to execute Contract No. SFMTA-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit (Wabtec or Contractor) to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for a contract amount not to exceed \$15,527,933, and a term of two years and six months.

BACKGROUND

On September 30, 2014, the City entered into contract No. SFMTA-2013-19 with Siemens Mobility Inc. (Siemens Contract) to provide LRV4 light rail vehicles. Wabtec is the brakes manufacturer subcontractor under the Siemens Contract. The SFMTA is in the final phase of delivery for this LRV4 fleet expansion and replacement program. The Siemens' LRV4 program expanded the fleet by 68 vehicles (Phase 1) and is now replacing all 151 of the SFMTA's Breda light rail vehicles for a total fleet size of 219 LRV4 vehicles. The Siemens Contract includes a 5-year warranty for all LRV4 vehicles.

Between November 17, 2017, and August 31, 2020, SFMTA placed in service the 68 Siemens LRV4 Phase 1 vehicles. After delivery, the SFMTA identified fleet defects in the LRV4 Phase 1 brake system while those vehicles were still under warranty. It is important to note that the identified defects have not affected the safe operation of LRV4 vehicles. The brake system's design includes ample redundancy to allow for the vehicles to stop as commanded, even if certain components are defective. Nonetheless, these defects impact the SFMTA because they affect the long-term reliability and maintenance costs of the brake system. The Siemens Contract requires that fleet defects, once identified, be fixed by Siemens, with an extended warranty of 5 years added upon completion of the warranty fix for the corrected parts.

CONTRACT FOR BRAKE SYSTEM OVERHAUL

Regardless of whether fleet defects are identified, the Siemens Contract warranty provisions separately require the SFMTA to perform periodic overhauls on the brake system to maintain the brakes in a state of good repair. After 6 years in service, the Siemens Contract recommends the SFMTA, at its own expense, overhaul the brake system of the Phase 1 LRV4 vehicles, including Motor Truck (MT) and Center Truck (CT) Calipers, MT and CT Hydraulic Power Units (HPUs), and Accumulators. This overhaul is required to maintain the 5-year extension of the Siemens warranty associated with the fixed fleet defects.

In this procurement, the SFMTA will be contracting directly with Wabtec, the brake system manufacturer, to combine the warranty work – which Siemens is paying for – with the overhaul work – which is being paid for by the SFMTA. This combination saves money for the SFMTA. To perform either the warranty or the overhaul work, the brake systems will need to be removed from the vehicles and shipped to Wabtec's facility in South Carolina. By performing both in the same contract, the removal and reinstallation of the brake systems and the cross-country shipping are being performed by Wabtec under the Siemens fleet defect warranty at no additional cost to the SFMTA. In addition, the proposed contract includes replacement of upgraded warranty parts, a discount on non-warranty overhaul parts, and a new 3-year end-to-end warranty on the overhauled components, including both parts and labor. Moreover, the proposed Contract satisfies the SFMTA's obligation to maintain systems in a state of good repair per manufacturer's recommendations required by the Siemens LRV4 vehicle contract and therefore protects the continuing 5 years warranty on replaced fleet defects parts. The proposed Contract includes negotiated terms regarding a limitation on liability to the Contract amount (except for certain enumerated claims) (Contract, paragraph 5.3), and a waiver of incidental and consequential damages (Contract, paragraph 5.5). These provisions are consistent with the limitation on liability and waiver of consequential damages in the Siemens Contract, and meet the requirements of Administrative Code Section 21.23.

Sole Source to Wabtec Passenger Transport

The sole-source requirements of Administrative Code section 21.5(b) are satisfied. The brake components acquired under the contract are available from only one source: Wabtec. Wabtec is the original equipment manufacturer (OEM) of the light rail vehicle brake components and is the only party that can perform the work, including providing manufacturer-approved components. The brake parts also have design and performance features that are essential to the SFMTA and no other source satisfies the SFMTA's requirements. It is imperative that any repairs and/or modifications that are made to the brakes meet the original manufacturer's requirements and standards to ensure that the warranties will not be voided.

ALTERNATIVES CONSIDERED

Project staff considered delaying or avoiding the scheduled overhaul. This would forgo the near-term expense of performing the overhaul, but would result in increased system maintenance requirements, cars held out of service, and reduced vehicle reliability and availability. As part of the LRV4 reliability

program, project staff from SFMTA, Siemens, and Wabtec closely monitor failures and root cause and are confident that predicted failures will increase if the overhaul is not performed as scheduled. Furthermore, performing the overhaul as scheduled preserves the extended warranty being provided by Siemens (and their subcontractor Wabtec) under obligations of the Siemens Contract. Not performing the brakes overhaul in accordance with manufacturer recommendations could potentially void those warranties which are extremely valuable to the SFMTA because the vendor continues to be responsible for repairs and bears the risk of future failures, defects, and corrective actions.

STAKEHOLDER ENGAGEMENT

The Civil Service Commission approved the request for this project under request PSC 40625-23/24 on May 6, 2024. Based on feedback from unions, project management staff has agreed to consider the possibility to self-perform future overhauls in-house which are not required to maintain the warranty.

The LRV4 Brakes System Overhaul being contracted has not undergone any public outreach, however the LRV4 vehicles currently deliver the majority of SFMTA rail service and are the result of extensive stakeholder engagement with multiple groups, including vehicle operators, rail maintenance, labor representatives, the riding public, the SFMTA Citizens' Advisory Council (CAC), the SFMTA Multimodal Accessibility Advisory Committee (MAAC), the SFMTA Board, and the Board of Supervisors.

FUNDING IMPACT

Contract Cost

The total cost of this contract \$15,527,933 as shown in Table 1. This includes a \$100,000 contingency for unexpected repairs deemed necessary on individual units caused by unusual damage or unforeseen circumstances in the field. SFMTA staff completed an independent cost estimate of both parts and labor and confirms the vendor price to be fair and reasonable.

Table 1

Description	Items Per Vehicle	Price Per Item	Price Per Vehicle	Vehicles	Price
MT Caliper Parts Kit	8	\$10,374.46	\$82,995.68	68	\$5,643,706.24
CT Caliper Parts Kit	2	\$10,059.37	\$20,118.74	68	\$1,368,074.32
MT HPU	2	\$20,332.66	\$40,665.32	68	\$2,765,241.76
CT HPU	1	\$20,332.66	\$20,332.66	68	\$1,382,620.88
Accumulator TT16548	3	\$1,925.24	\$5,775.72	68	\$392,748.96
Accumulator 1-60039	3	\$1,925.24	\$5,775.72	68	\$392,748.96
<i>Parts Subtotal</i>			\$175,663.84		\$11,945,141.12
MT Caliper Labor	8	\$4,184.44	\$33,475.52	68	\$2,276,335.36
CT Caliper Labor	2	\$3,502.62	\$7,005.24	68	\$476,356.32

MT HPU Labor	2	\$3,578.92	\$7,157.84	68	\$486,733.12
CT HPU Labor	1	\$3,578.92	\$3,578.92	68	\$243,366.56
Acc' TT16548 Labor	3	\$0.00	\$0.00	68	\$0.00
Acc' 1-60039 Labor	3	\$0.00	\$0.00	68	\$0.00
<i>Labor Subtotal</i>			\$51,217.52		\$3,482,791.36
					\$15,427,932.48
Contingency					\$100,000.00
					\$15,527,932.48
Total					(rounded to \$15,527,933)

Budget and Funding Plan

The current budget and funding plan for the Project is provided in Table 2 below:

Table 2

Budget Item		Funding
Contracts/Purchase Orders		\$15,427,933
Contingency		\$100,000
Total		\$15,527,933
Fund Source		Amount
General Fund (Prop B)		\$2,949,042
SFCTA Prop L Sales Tax		\$4,965,970
Transit Sustainability Fee (TSF)		\$2,737,921
Operating Revenues		\$4,500,000
Low Carbon Fuel Standard (LCFS)		\$375,000
Total		\$15,527,933

SFMTA BOARD ACTION

On May 6, 2025, The SFMTA Board of Directors is scheduled to act on Contract No. SFMTA-2025-28-LOC, by authorizing the Director of Transportation to execute Contract No. SFMTA-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for a contract amount not to exceed \$15,527,933, and a term of two years and six months.

REQUEST FOR APPROVAL

The SFMTA respectfully requests that the Board of Supervisors authorize the Director of Transportation to execute Contract No. SFMTA-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger

Transit to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for a contract amount not to exceed \$ 15,527,933, and a term of two years and six months.

Sincerely,

A handwritten signature in black ink, appearing to read 'Julie Kirschbaum', with a long horizontal flourish extending to the right.

Julie Kirschbaum
Director of Transportation

THIS PRINT COVERS CALENDAR ITEM NO.: 12

**SAN FRANCISCO
MUNICIPAL TRANSPORTATION AGENCY**

DIVISION: Transit

BRIEF DESCRIPTION:

Authorizing the Director of Transportation to execute Contract No. SFMTA-2025-28-LOC: Phase 1 light rail vehicles (LRV4) Brake System Overhaul with Wabtec Passenger Transit (Wabtec or Contractor) to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for a contract amount not to exceed \$15,527,933, and a term of two years and six months.

SUMMARY:

- On September 30, 2014, the City entered into Contract No. SFMTA-2013-19 with Siemens Mobility Inc. (Siemens Contract) to provide light rail vehicles (LRV4s); Wabtec is the brakes manufacturer subcontractor under the Siemens Contract.
- Between November 17, 2017 and August 31, 2020, the SFMTA placed in service 68 Siemens LRV4 vehicles numbered 2001 through 2068 (commonly known as Phase 1).
- All Phase 1 LRV4 vehicles have reached, or will soon reach, the end of their 5-year warranty period. However, some parts of the brake system continue to be covered under extended warranty (beyond 5 years) due to warranty defects and pending corrections for which the original vendor, Siemens (supported by their subcontractor Wabtec), is contractually responsible. These defects have not affected the safe operation of LRV4 vehicles.
- Phase 1 LRV4 vehicles are due for an overhaul of the brake system. The SFMTA is responsible for the overhaul as part of its obligations under the Siemens Contract to maintain the brake system in a state of good repair to preserve the extended warranty.
- As part of its obligations under the Siemens Contract, Contractor will – at no additional cost to the SFMTA – remove and reinstall brake components, ship parts being overhauled to the overhaul factory, and replace defective parts under the Siemens warranty.
- On March 21, 2025, the SFMTA, under authority delegated by the Planning Department, determined that Contract No. SFMTA-2025-28-LOC is not a “project” under the California Environmental Quality Act (CEQA) pursuant to Title 14 of the California Code of Regulations Sections 15060(c) and 15378(b).

ENCLOSURES:

1. Resolution
2. Contract Agreement
3. CEQA/NEPA documents

APPROVALS:	
DIRECTOR	 _____
	DATE May 1, 2025

SECRETARY	 _____
	April 30, 2025

ASSIGNED SFMTAB CALENDAR DATE: May 6, 2025

PURPOSE

Authorizing the Director of Transportation to execute Contract No. SFMTA-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit (Wabtec) to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for a contract amount not to exceed \$15,527,933, and a term of two years and six months

STRATEGIC PLAN GOALS AND TRANSIT FIRST POLICY PRINCIPLES

This request supports the following SFMTA Strategic Plan Goals:

5. Deliver reliable and equitable transportation services.
6. Eliminate pollution and greenhouse gas emissions by increasing use of transit, walking, and bicycling.
8. Deliver quality projects on-time and on-budget.
9. Fix things before they break, and modernize systems and infrastructure.
10. Position the agency for financial success.

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

On September 30, 2014, the City entered into contract No. SFMTA-2013-19 with Siemens Mobility Inc. (Siemens Contract) to provide LRV4 light rail vehicles. Wabtec is the brakes manufacturer subcontractor under the Siemens Contract. The SFMTA is in the final phase of delivery for this LRV4 fleet expansion and replacement program. The Siemens' LRV4 program expanded the fleet by 68 vehicles (Phase 1) and is now replacing all 151 of the SFMTA's Breda light rail vehicles for a total fleet size of 219 LRV4 vehicles. The Siemens Contract includes a 5-year warranty for all LRV4 vehicles.

Between November 17, 2017, and August 31, 2020, SFMTA placed in service the 68 Siemens LRV4 Phase 1 vehicles. After delivery, the SFMTA identified fleet defects in the LRV4 Phase 1 brake system while those vehicles were still under warranty. It is important to note that the identified defects have not affected the safe operation of LRV4 vehicles. The brake system's design includes ample redundancy to allow for the vehicles to stop as commanded, even if certain components are defective. Nonetheless, these defects impact the SFMTA because they affect the long-term reliability and maintenance costs of the brake system. The Siemens Contract requires that fleet defects, once identified, be fixed by Siemens, with an extended warranty of 5 years added upon completion of the warranty fix for the corrected parts.

Regardless of whether fleet defects are identified, the Siemens Contract separately requires the SFMTA to perform periodic overhauls on the brake system to maintain the brakes in a state of good repair. After 6 years in service, the Siemens Contract recommends the SFMTA, at its own expense, overhaul the brake system of the Phase 1 LRV4 vehicles, including Motor Truck (MT) and Center Truck (CT) Calipers, MT and CT Hydraulic Power Units (HPUs), and Accumulators. This overhaul is required to maintain the 5-year extension of the Siemens warranty associated with the fixed fleet defects.

In this procurement, the SFMTA will be contracting directly with Wabtec, the brake system manufacturer, to combine the warranty work -- which Siemens is paying for -- with the overhaul work -- which is being paid for by the SFMTA. This combination saves money for the SFMTA. To perform either the warranty or the overhaul work, the brake systems will need to be removed from the vehicles and shipped to Wabtec's facility in South Carolina. By performing both in the same contract, the removal and reinstallation of the brake systems and the cross-country shipping are being performed by Wabtec under the Siemens fleet defect warranty at no additional cost to the SFMTA. In addition, the proposed contract includes replacement of upgraded warranty parts, a discount on non-warranty overhaul parts, and a new 3-year end-to-end warranty on the overhauled components, including both parts and labor. Moreover, the proposed Contract satisfies the SFMTA's obligation to maintain systems in a state of good repair per manufacturer's recommendations required by the Siemens LRV4 vehicle contract and therefore protects the continuing 5 years warranty on replaced fleet defects parts. The proposed Contract includes negotiated terms regarding a limitation on liability to the Contract amount (except for certain enumerated claims) (Contract, paragraph 5.3), and a waiver of incidental and consequential damages (Contract, paragraph 5.5). These provisions are consistent with the limitation on liability and waiver of consequential damages in the Siemens Contract, and meet the requirements of Administrative Code Section 21.23.

The sole-source requirements of Administrative Code section 21.5(b) are satisfied. The brake components acquired under the contract are available from only one source: Wabtec. Wabtec is the original equipment manufacturer (OEM) of the light rail vehicle brake components and is the only party that can perform the work, including providing manufacturer-approved components. The brake parts also have design and performance features that are essential to the SFMTA and no other source satisfies the SFMTA's requirements. It is imperative that any repairs and/or modifications that are made to the brakes meet the original manufacturer's requirements and standards to ensure that the warranties will not be voided.

STAKEHOLDER ENGAGEMENT

The Civil Service Commission approved the request for this project under request PSC 40625-23/24 on May 6, 2024. Based on feedback from unions, project management staff has agreed to consider the possibility to self-perform future overhauls in-house which are not required to maintain the warranty.

The LRV4 Brakes System Overhaul being contracted has not undergone any public outreach, however the LRV4 vehicles currently deliver the majority of SFMTA rail service and are the

result of extensive stakeholder engagement with multiple groups, including vehicle operators, rail maintenance, labor representatives, the riding public, the SFMTA Citizens' Advisory Council (CAC), the SFMTA Multimodal Accessibility Advisory Committee (MAAC), the SFMTA Board, and the Board of Supervisors.

ALTERNATIVES CONSIDERED

Project staff considered delaying or avoiding the scheduled overhaul. This would forgo the near-term expense of performing the overhaul, but would result in increased system maintenance requirements, cars held out of service, and reduced vehicle reliability and availability. As part of the LRV4 reliability program, project staff from SFMTA, Siemens, and Wabtec closely monitor failures and root cause and are confident that predicted failures will increase if the overhaul is not performed as scheduled. Furthermore, performing the overhaul as scheduled preserves the extended warranty being provided by Siemens (and their subcontractor Wabtec) under obligations of the Siemens Contract. Not performing the brakes overhaul in accordance with manufacturer recommendations could potentially void those warranties which are extremely valuable to the SFMTA because the vendor continues to be responsible for repairs and bears the risk of future failures, defects, and corrective actions.

FUNDING IMPACT

Contract Cost

The total cost of this contract \$15,527,933 as shown in Table 1. This includes a \$100,000 contingency for unexpected repairs deemed necessary on individual units caused by unusual damage or unforeseen circumstances in the field. SFMTA staff completed an independent cost estimate of both parts and labor and confirms the vendor price to be fair and reasonable.

Table 1

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<i>Parts Subtotal</i>			\$175,663.84		\$11,945,141.12
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Acc' TT16548 Labor	3	\$0.00	\$0.00	68	\$0.00

Acc' 1-60039 Labor	3	\$0.00	\$0.00	68	\$0.00
<i>Labor Subtotal</i>			\$51,217.52		\$3,482,791.36
					\$15,427,932.48
Contingency					\$100,000.00
					\$15,527,932.48
Total					(rounded to \$15,527,933)

Budget and Funding Plan

The current budget and funding plan for the Project is provided in Table 2 below:

Table 2

Budget Item		Funding
Contracts/Purchase Orders		\$15,427,933
Contingency		\$100,000.00
Total		\$15,527,933
Fund Source		Amount
General Fund (Prop B)		\$2,949,042
SFCTA Prop L Sales Tax		\$4,965,970
Transit Sustainability Fee (TSF)		\$2,737,921
Operating Revenues		\$4,500,000
Low Carbon Fuel Standard (LCFS)		\$375,000
Total		\$15,527,933

ENVIRONMENTAL REVIEW

On March 21, 2025 the SFMTA, under authority delegated by the Planning Department, determined that SFMTA Contract No. SFMTA2025-28-LOC is not a “project” under California Environmental Quality Act (CEQA) pursuant to Title 14 of the California Code of Regulations Sections 15060(c) and 15378(b).

A copy of the CEQA determination is on file with the Secretary to the SFMTA Board of Directors and is incorporated herein by reference.

OTHER APPROVALS RECEIVED OR STILL REQUIRED

The City Attorney and the Contract Compliance Office have reviewed this item.

The Contract Compliance Office has waived the Local Business Enterprise goal for this project due to the specialized nature of the work and lack of subcontracting opportunities.

The contract will require approval from the Board of Supervisors under San Francisco Charter Section 9.118, as it is over \$10,000,000.

RECOMMENDATION

Staff recommends that the SFMTA Board of Directors authorize the Director of Transportation to execute Contract No. SFMTA-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit (Wabtec) to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for a contract amount not to exceed \$15,527,933, and a term of two years and six months.

SAN FRANCISCO
MUNICIPAL TRANSPORTATION AGENCY
BOARD OF DIRECTORS

RESOLUTION No. 250506-043

WHEREAS, On September 30, 2014, the City entered into Contract No. SFMTA- No. 2013-19 with Siemens Mobility Inc. (Siemens Contract) to provide light rail vehicles (LRV4s); and,

WHEREAS, Wabtec Passenger Transit (Wabtec or Contractor) is the brakes manufacturer subcontractor under the Siemens Contract; and,

WHEREAS, Between November 17, 2017 and August 31, 2020, the SFMTA placed in service 68 Siemens LRV4 vehicles numbered 2001 through 2068 (commonly known as Phase 1); and,

WHEREAS, All Phase 1 LRV4 vehicles have reached, or will soon reach, the end of their 5-year warranty period, but some parts of the brake system continue to be covered under extended warranty (beyond 5 years) due to warranty defects and pending corrections for which the original vendor, Siemens (supported by their subcontractor Wabtec), is contractually responsible; and,

WHEREAS, Phase 1 LRV4 vehicles are due for an overhaul of the brake system; and,

WHEREAS, The SFMTA is responsible for the overhaul as part of its obligations under the Siemens Contract to maintain the brake system in a state of good repair to preserve the extended warranty; and,

WHEREAS, As part of its obligations under the Siemens Contract, Contractor will – at no additional cost to the SFMTA – remove and reinstall brake components, ship parts being overhauled to the overhaul factory, and replace defective parts under the Siemens warranty; and,

WHEREAS, Funding for this project will be provided by a mix of sources including the SFMTA's operating and capital budget; and,

WHEREAS, The Contract Compliance Office (CCO) waived the LBE goal for this Project due to the specialized nature of the work and lack of subcontracting opportunities; and,

WHEREAS, The agreement with Contractor will require approval from the Board of Supervisors pursuant to San Francisco Charter Section 9.118, as it is over \$10,000,000; and,

WHEREAS, On March 21, 2025, the SFMTA, under authority delegated by the San Francisco Planning Department determined that SFMTA Contract No. SFMTA2025-28-LOC is not a "project" under California Environmental Quality Act (CEQA) pursuant to Title 14 of the California Code of Regulations Sections 15060(c) and 15378(b), and,

WHEREAS, A copy of the CEQA determination is on file with the Secretary to the SFMTA Board of Directors, and is incorporated herein by reference; now, therefore, be it

RESOLVED, That the San Francisco Municipal Transportation Agency Board of Directors authorizes the Director of Transportation to execute Contract No. SFMTA-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit (Wabtec) to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for a contract amount not to exceed \$15,527,933, and a term of two years and six months; and be it further

RESOLVED, That the San Francisco Municipal Transportation Agency Board of Directors commends this matter to the Board of Supervisors for its approval of Contract No. SFMTA-2025-28-LOC.

I certify that the foregoing resolution was adopted by the San Francisco Municipal Transportation Agency Board of Directors at its meeting of May 6, 2025.



Secretary to the Board of Directors
San Francisco Municipal Transportation Agency



Not a "project" under CEQA pursuant to CEQA Guidelines Sections 15060(c) and 15378(b) because the action would not result in a direct or a reasonably foreseeable indirect physical change to the environment.

Jenny Delumo

Date

San Francisco Municipal Transportation Agency



San Francisco Ethics Commission

25 Van Ness Avenue, Suite 220, San Francisco, CA 94102

Phone: 415.252.3100 . Fax: 415.252.3112

ethics.commission@sfgov.org . www.sfethics.org

Received On:

File #: 250491

Bid/RFP #:

Notification of Contract Approval

SFEC Form 126(f)4

(S.F. Campaign and Governmental Conduct Code § 1.126(f)4)

A Public Document

Each City elective officer who approves a contract that has a total anticipated or actual value of \$100,000 or more must file this form with the Ethics Commission within five business days of approval by: (a) the City elective officer, (b) any board on which the City elective officer serves, or (c) the board of any state agency on which an appointee of the City elective officer serves. For more information, see: <https://sfethics.org/compliance/city-officers/contract-approval-city-officers>

1. FILING INFORMATION

TYPE OF FILING

Original

DATE OF ORIGINAL FILING (for amendment only)

AMENDMENT DESCRIPTION – Explain reason for amendment

2. CITY ELECTIVE OFFICE OR BOARD

OFFICE OR BOARD

Board of Supervisors

NAME OF CITY ELECTIVE OFFICER

Members

3. FILER'S CONTACT

NAME OF FILER'S CONTACT

Angela Calvillo

TELEPHONE NUMBER

415-554-5184

FULL DEPARTMENT NAME

Office of the Clerk of the Board

EMAIL

Board.of.Supervisors@sfgov.org

4. CONTRACTING DEPARTMENT CONTACT

NAME OF DEPARTMENTAL CONTACT

Joe Speaks

DEPARTMENT CONTACT TELEPHONE NUMBER

415-271-1791

FULL DEPARTMENT NAME

MTA Municipal Transportation Agency

DEPARTMENT CONTACT EMAIL

Joe.Speaks@SFMTA.com

5. CONTRACTOR	
NAME OF CONTRACTOR Wabtec Passenger Transport	TELEPHONE NUMBER 864-423-2543
STREET ADDRESS (including City, State and Zip Code) 130 Ridgeview Center Drive, Duncan, SC 29334	EMAIL jean-michel.loubiere@wabtec.com

6. CONTRACT		
DATE CONTRACT WAS APPROVED BY THE CITY ELECTIVE OFFICER(S)	ORIGINAL BID/RFP NUMBER	FILE NUMBER (If applicable) 250491
DESCRIPTION OF AMOUNT OF CONTRACT \$15,527,933		
NATURE OF THE CONTRACT (Please describe) 68 Light Rail vehicles will undergo an overhaul of their Braking System. The Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit is to perform the scheduled overhaul of key components of the LRV4 brake system for a contract amount not to exceed \$15,527,933 and a term of two years and six months. This overhaul is needed to ensure continued reliable operations of the brake system and to maintain warranty on the system.		

7. COMMENTS

8. CONTRACT APPROVAL	
This contract was approved by:	
<input type="checkbox"/>	THE CITY ELECTIVE OFFICER(S) IDENTIFIED ON THIS FORM
<input checked="" type="checkbox"/>	A BOARD ON WHICH THE CITY ELECTIVE OFFICER(S) SERVES Board of Supervisors
<input type="checkbox"/>	THE BOARD OF A STATE AGENCY ON WHICH AN APPOINTEE OF THE CITY ELECTIVE OFFICER(S) IDENTIFIED ON THIS FORM SITS

9. AFFILIATES AND SUBCONTRACTORS

List the names of (A) members of the contractor's board of directors; (B) the contractor's principal officers, including chief executive officer, chief financial officer, chief operating officer, or other persons with similar titles; (C) any individual or entity who has an ownership interest of 10 percent or more in the contractor; and (D) any subcontractor listed in the bid or contract.

#	LAST NAME/ENTITY/SUBCONTRACTOR	FIRST NAME	TYPE
1	Neupaver	Albert J.	Board of Directors
2	Kassling	William E.	Board of Directors
3	Babcock	Beverley	Board of Directors
4	Banks	Lee C.	Board of Directors
5	Foster	Byron	Board of Directors
6	Harty	Linda S.	Board of Directors
7	Hehir	Brian P.	Board of Directors
8	Klee	Ann R.	Board of Directors
9	Santana	Rafael	CEO
10	Theophilus	Nicole	Other Principal Officer
11	Olin	John	CFO
12	Sbrocco	Greg	COO
13	GE Corp.		Shareholder
14			
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9. AFFILIATES AND SUBCONTRACTORS

List the names of (A) members of the contractor's board of directors; (B) the contractor's principal officers, including chief executive officer, chief financial officer, chief operating officer, or other persons with similar titles; (C) any individual or entity who has an ownership interest of 10 percent or more in the contractor; and (D) any subcontractor listed in the bid or contract.

#	LAST NAME/ENTITY/SUBCONTRACTOR	FIRST NAME	TYPE
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9. AFFILIATES AND SUBCONTRACTORS

List the names of (A) members of the contractor's board of directors; (B) the contractor's principal officers, including chief executive officer, chief financial officer, chief operating officer, or other persons with similar titles; (C) any individual or entity who has an ownership interest of 10 percent or more in the contractor; and (D) any subcontractor listed in the bid or contract.

#	LAST NAME/ENTITY/SUBCONTRACTOR	FIRST NAME	TYPE
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☐ Check this box if you need to include additional names. Please submit a separate form with complete information. Select "Supplemental" for filing type.

10. VERIFICATION

I have used all reasonable diligence in preparing this statement. I have reviewed this statement and to the best of my knowledge the information I have provided here is true and complete.

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

SIGNATURE OF CITY ELECTIVE OFFICER OR BOARD SECRETARY OR CLERK	DATE SIGNED
BOS Clerk of the Board	

OFFICE OF THE MAYOR
SAN FRANCISCO



DANIEL LURIE
MAYOR

TO: Angela Calvillo, Clerk of the Board of Supervisors
FROM: Adam Thongsavat, Liaison to the Board of Supervisors
RE: [Authorize the SFMTA to Enter into a Sole Source Contract with Wabtec Passenger Transit for
Scheduled 6-Year Overhaul of the LRV4 Brake System]
DATE: May 6, 2025

Resolution authorizing the SFMTA Director of Transportation to execute Contract No. SFMTA-2025-28-LOC: Phase 1 LRV4 Brake System Overhaul with Wabtec Passenger Transit (Wabtec or Contractor) to perform the scheduled overhaul of key components of the LRV4 brake system on 68 vehicles, for a contract amount not to exceed \$15,527,933, and a term of two years and six months.

Should you have any questions, please contact Adam Thongsavat at adam.thongsavat@sfgov.org