

File No. 180011

Committee Item No. 8
Board Item No. _____

COMMITTEE/BOARD OF SUPERVISORS

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Committee: Budget & Finance Committee

Date February 15, 2018

Board of Supervisors Meeting

Date _____

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Airport Commission Resolution

Completed by: Linda Wong Date February 9, 2018

Completed by: Linda Wong Date _____

1 [Airport Professional Services Agreement Modification - Bombardier Transportation (Holdings)
2 USA, Inc.- AirTrain System Operation and Maintenance Services - Not to Exceed
\$130,299,196]

3

4 **Resolution approving Modification No. 4 to Contract No. 8838, AirTrain Operations and**
5 **Maintenance, with Bombardier Transportation (Holdings) USA, Inc., exercising the last**
6 **one-year option to commence on March 1, 2018, for a total term of March 1, 2009,**
7 **through February 28, 2019, and increasing the contract amount by \$14,854,228 for a**
8 **new total contract amount not to exceed \$130,299,196, pursuant to Charter, Section**
9 **9.118(b).**

10

11 WHEREAS, On September 16, 2008, pursuant to Resolution No. 08-0173, the Airport
12 Commission awarded the Professional Services Agreement (PSA) to Bombardier
13 Transportation (Holdings) USA, Inc., for a five year initial term with one three-year option and
14 two additional one-year options to be exercised at the discretion of the Airport Commission, at
15 an initial not to exceed amount of \$56,500,000; and

16 WHEREAS, On November 18, 2008, pursuant to Ordinance No. 266-08, the Board of
17 Supervisors approved the PSA to Bombardier Transportation (Holdings) USA, Inc., to perform
18 the maintenance and operation services of the AirTrain system in an amount not to exceed
19 \$56,500,000 with a contingency budget of \$500,000 on file with the Clerk of the Board of
20 Supervisors in File No. 080942, which is hereby declared to be a part of this Resolution as if
21 set forth fully herein; and

22 WHEREAS, On July 23, 2013, pursuant to Resolution No. 13-0156, the Airport
23 Commission approved Amendment No. 1 to the Operation and Maintenance Services for the
24 AirTrain System contract with Bombardier Transportation (Holdings) USA, Inc. to exercise the

1 three year option to renew the PSA from March 1, 2014, through February 28, 2017, for the
2 amount of \$42,200,000 for a new not to exceed contract amount of \$98,700,000; and

3 WHEREAS, On December 10, 2013, pursuant to Resolution No. 429-13, the Board of
4 Supervisors approved Modification No. 1, increasing the not to exceed amount by
5 \$42,200,000 for a new total not to exceed contract value of \$98,700,000; and

6 WHEREAS, On May 19, 2014, pursuant to Resolution No. 14-0104, the Airport
7 Commission approved Modification No. 2, increasing the not to exceed amount by \$1,848,174
8 to cover the replacement of obsolete AirTrain equipment and to provide a contingency fund for
9 the replacement of any additional equipment over the three-year contract term for a new total
10 not to exceed contract value of \$100,548,174; and

11 WHEREAS, On September 9, 2014, pursuant to Resolution No. 328-14, the Board of
12 Supervisors approved Modification No. 2, decreasing the not to exceed amount by \$4,340 for
13 a new total not to exceed contract value of \$100,543,834; and

14 WHEREAS, On November 1, 2016, pursuant to Resolution No. 16-0277, the Airport
15 Commission approved Modification No. 3, increasing the not to exceed amount by
16 \$14,901,134 to exercise the first one-year option (March 1, 2017, through February 28, 2018)
17 and cover the replacement cost of obsolete or worn out AirTrain parts and equipment for a
18 new total not to exceed contract value of \$115,444,968; and

19 WHEREAS, On November 7, 2017, pursuant to Resolution No. 17-0280, the Airport
20 Commission approved Modification No. 4 to Contract No. 8838, AirTrain Operations and
21 Maintenance, with Bombardier Transportation (Holdings) USA, Inc., exercising the last one-
22 year option (March 1, 2018, through February 28, 2019) and increasing the contract amount
23 by \$14,854,228, for a new total contract amount not to exceed \$130,299,196; and

24 WHEREAS, San Francisco Charter, Section 9.118(b) provides that the agreements
25 entered into by a department, board or commission requiring anticipated expenditures by the

1 City and County of ten million dollars, shall be subject to approval by the Board of Supervisors
2 by resolution; and

3 WHEREAS, The Modification No. 4 is on file with the Clerk of the Board of Supervisors
4 in File No. 180011, which is hereby declared to be a part of this resolution as if set forth fully
5 herein; now, therefore, be it

6 RESOLVED, That the Board of Supervisors hereby approves Modification No. 4 to
7 Contract No. 8838, AirTrain Operations and Maintenance, with Bombardier Transportation
8 (Holdings) USA, Inc., exercising the last one-year option (March 1, 2018 through February 28,
9 2019) and increasing the contract amount by \$14,854,228, for a new total contract amount not
10 to exceed \$130,299,196, copies of which are contained in Board of Supervisors' File No.
11 180011; and, be it

12 FURTHER RESOLVED, That within 30 days of Modification No. 4 being fully executed
13 by all parties, the Airport Commission shall provide a copy to the Clerk of the Board for
14 inclusion into the official file.

Item 8 File 18-0011	Department: San Francisco International Airport (Airport)
EXECUTIVE SUMMARY	
Legislative Objectives	
<ul style="list-style-type: none"> The proposed resolution would approve the fourth modification to the existing contract between the Airport and Bombardier Transportation (Holdings) USA Inc. (Bombardier) to (a) exercise the second of the two (2) one-year options to extend the contract from March 1, 2018, through February 28, 2019, in order for Bombardier to continue to provide operations and maintenance services for the AirTrain System, and (b) increase the contract not-to-exceed amount by \$14,854,228 from \$115,444,968 to \$130,299,196. 	
Key Points	
<ul style="list-style-type: none"> In March 1998, the Airport entered into a two-phase contract with Bombardier, based on a competitive Request for Proposals process, to design, construct, and install the light rail air train system (AirTrain) (Phase I) and operate and maintain the AirTrain system through February 2009 (Phase II). In December 2004, the Airport filed a lawsuit against Bombardier, which was settled in April 2008. The settlement included a provision that the Airport would approve a new five-year contract for Bombardier to operate and maintain the AirTrain system from March 2009 through February 2014. The Board of Supervisors approved the contract and exempted the contract from a competitive request for proposal process. In February 2017, the Board of Supervisors approved the third modification to the 2004 contract to exercise the first of two (2) one-year options to extend the contract from March 1, 2017, through February 28, 2018, and increase the not-to-exceed amount by \$14,901,134 from \$100,543,834 to \$115,444,968. 	
Fiscal Impact	
<ul style="list-style-type: none"> The proposed resolution would increase the existing not-to-exceed contract amount with Bombardier by \$14,854,228 from \$115,444,968 to \$130,299,196 for operations and maintenance services for the Airport's Airtrain System. The contract is funded through the Airport's annual operating fund. The operating fund has \$15,000,000 budgeted for this contract for FY2017-18. 	
Policy Consideration	
<ul style="list-style-type: none"> The Airport plans to ask for approval from the Office of Contract Administration for a new sole source maintenance and operation contract with Bombardier. 	
Recommendation	
<ul style="list-style-type: none"> 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 March 1998, the Airport entered into a two-phase contract with Bombardier Transportation (Holdings) USA Inc. (Bombardier), based on a competitive Request for Proposals process, to (a) design, construct, and install the light rail air train system (AirTrain) (Phase I) and (b) operate and maintain the AirTrain system through February 2009 (Phase II).

In December 2004, the Airport filed a lawsuit against Bombardier for contract delays and property damages, which was settled in April 2008. The settlement included a provision that allowed the Airport to recover costs if Bombardier did not meet performance incentives, and the Airport would approve a five-year contract for Bombardier to operate and maintain the AirTrain system from March 2009 through February 2014. The Board of Supervisors approved the contract in November 2008 (File 08-0942) and exempted the contract from a competitive request for proposal process because the contract was awarded as a result of a legal settlement.

The new five-year contract included one option to extend the term of the contract by three years through February 2017, which was mandatory if Bombardier met performance benchmarks, and two additional one-year options to extend the term of the contract through February 2019 at the sole discretion of the Airport. The new five-year contract was for an amount not-to-exceed \$56,500,000. Since then, the Airport has modified the contract three times.

In December 2013, the Board of Supervisors approved the first modification to the contract (File 13-0879) to exercise the option to extend the term of the contract by three years, from March 2014 through February 2017 and increase the total not-to-exceed contract amount by \$42,200,000 from \$56,500,000 to \$98,700,000.

In September 2014, the Board of Supervisors approved the second modification to the contract to increase the not-to-exceed amount by \$1,843,834 from \$98,700,000 to \$100,543,834 to replace outdated equipment and provide a contingency for equipment replacement and repair (File 14-0742).

In February 2017, the Board of Supervisors approved the third modification to the contract to exercise the first of two (2) one-year options to extend the contract from March 1, 2017, through February 28, 2018, and increase the not-to-exceed amount by \$14,901,134 from \$100,543,834 to \$115,444,968.

DETAILS OF PROPOSED LEGISLATION

The proposed resolution would approve the fourth modification to the existing contract between the Airport and Bombardier to (a) exercise the second of the two (2) one-year options to extend the contract from March 1, 2018, through February 28, 2019, in order for Bombardier to continue to provide operations and maintenance services for the AirTrain System, and (b) increase the contract not-to-exceed amount by \$14,854,228 from \$115,444,968 to \$130,299,196.

FISCAL IMPACT

The proposed resolution would increase the existing not-to-exceed contract amount with Bombardier by \$14,854,228 from \$115,444,968 to \$130,299,196 for operations and maintenance services for the Airport's Airtrain System. The breakdown of the increase is shown in Table 1 below.

Table 1: AirTrain Proposed Increased Modification

Labor	\$12,150,109
Material	2,436,531
Potential Bonuses*	145,016
Passenger Count Data Management	22,572
Contingency for Replacement of Obsolete Parts	100,000
Total	\$14,854,228

*The Airport pays Bombardier a monthly bonus if it achieves 99.8 percent on time performance, and imposes penalties if the company does not achieve this performance measure. Bombardier has never received the full budgeted bonus amount.

The Airport determined the increase in contract cost using the escalation set forth in the general requirements of the original contract using indexed changes for labor and parts and materials.

To date, the Airport has paid Bombardier a total of \$114,557,089, or \$887,879 less than the total not-to-exceed amount of \$115,444,968. There is still one month remaining on the contract.

The contract is funded through the Airport's annual operating fund. The operating fund has \$15,000,000 budgeted for this contract for FY2017-18.

POLICY CONSIDERATION

Under the proposed resolution, the contract with Bombardier to operate and maintain the AirTrain System expires on February 28, 2019. According to Ms. Cathy Widener, Airport Director of Government Affairs, there are currently no other companies that perform operations and maintenance on a Bombardier installed system due to its proprietary nature and complexity.

The Airport plans to ask for approval from the Office of Contract Administration for a new sole source maintenance and operation contract with Bombardier. After obtaining approval, Airport staff plans to begin negotiations with Bombardier for a new operations and maintenance contract. According to Ms. Widener, the Airport will perform an analysis of the operating costs on similar transit systems in different jurisdictions, as well as work with a consultant on transit systems, to negotiate a new contract with Bombardier. The Airport will also use the previous contract's value and annual escalation over the last 10 years as part of the cost determination.

The Airport expects the new contract to be finalized in September for approval by the Board of Supervisors.

RECOMMENDATION

Approve the proposed resolution

**City and County of San Francisco
Airport Commission
P.O. Box 8097
San Francisco, California 94128**

Modification No. 4

THIS MODIFICATION (this "Modification") is made as of November 7, 2017, in San Francisco, California, by and between **Bombardier Transportation (Holdings) USA Inc.** ("Contractor"), and the City and County of San Francisco, a municipal corporation ("City"), acting by and through its Airport Commission or the Commission's designated agent, hereinafter referred to as "**Commission.**"

RECITALS

WHEREAS, City and Contractor have entered into the Agreement (as defined below); and

WHEREAS, the Commission awarded this contract to Contractor on September 16, 2008, pursuant to an agreement to settle a dispute among the City and County of San Francisco, Bombardier Transportation (Holdings) USA, Inc., and Factory Mutual Insurance Company which was filed in the United States District Court for the Northern District of California, case number C 04-5307 PJH, and further pursuant to Resolution No. 08-0173; and

WHEREAS, on November 18, 2008, by Resolution No. 266-08, the Board of Supervisors approved the Agreement under San Francisco Charter Section 9.118; and

WHEREAS, Commission approved Modification No. 1 pursuant to Resolution No. 13-0156 on July 23, 2013; and

WHEREAS, on December 10, 2013, by Resolution No. 429-13, the Board of Supervisors approved the modification to the Agreement under San Francisco Charter Section 9.118; and

WHEREAS, Commission approved this Modification No. 2 pursuant to Resolution No. 14-0104 on May 19, 2014; and

WHEREAS, on September 9, 2014, by Resolution No. 328-14, the Board of Supervisors approved the modification to the Agreement under San Francisco Charter Section 9.118 but reduced the not to exceed amount by \$4,340 for a new not-to-exceed amount of \$100,543,834; and; and

WHEREAS, Commission approved this Modification No. 3 pursuant to Resolution No. 16-0277 on November 1, 2016; and

WHEREAS, on February 14, 2017, by Resolution No. 44-17, the Board of Supervisors approved the modification to the Agreement under San Francisco Charter Section 9.118 for a new not-to-exceed amount of \$115,444,968; and

WHEREAS, City and Contractor desire to modify the Agreement on the terms and conditions set forth herein to extend the contract term, increase the compensation amount, and update standard contractual clauses; and

WHEREAS, Commission approved this Modification No. 4 pursuant to Resolution No. 17-0280 on November 7, 2017; and

WHEREAS, on _____, by Resolution No. _____, the Board of Supervisors approved the modification to the Agreement under San Francisco Charter Section 9.118 for a new not-to-exceed amount of \$ _____; and

NOW, THEREFORE, Contractor and the City agree as follows:

1. Definitions. The following definitions shall apply to this Amendment:

a. Agreement. The term "Agreement" shall mean the Agreement dated September 16, 2008 between Contractor and City, as amended by the:

Modification No. 1, dated August 1, 2013;
Modification No. 2, dated May 20, 2014; and.
Modification No. 3, dated November 3, 2016.

b. Other Terms. Terms used and not defined in this Modification shall have the meanings assigned to such terms in the Agreement.

2. Section 2. Term of the Agreement is hereby amended to extend the term of the contract for one year for a new ending date of February 28, 2019.

3. Section 5. Compensation is hereby amended to increase the total compensation payable by an amount not to exceed Fourteen Million Eight Hundred Fifty Four Thousand Two Hundred Twenty Eight Dollars (\$14,854,228) for a new total not to exceed amount of One Hundred Thirty Million Two Hundred Ninety Nine Thousand One Hundred Ninety Six Dollars (\$130,299,196).

4. New Section 69. Airport Commission Rules and Regulations is hereby added to the Agreement to read as follows:

69. Airport Commission Rules and Regulations. Contractor agrees to comply with the Airport Commission's Rules and Regulations for the San Francisco International Airport as amended from time to time. A copy of the current Rules and Regulations can be found at:
<http://www.flfsfo.com/about-sfo/the-organization/rules-and-regulations>.

5. New Section 70. Federal Fair Labor Standards Act is hereby added to the Agreement to read as follows:

70. Federal Fair Labor Standards Act. This Agreement incorporates by reference the provisions of 29 USC §201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part time workers. Contractor has full responsibility to monitor compliance to the referenced statute or regulation. Contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

6. New Section 71. Occupational Safety and Health Act of 1970 is hereby added to the Agreement to read as follows:

71. Occupational Safety and Health Act of 1970. This Agreement incorporates by reference the requirements of 29 CFR §1910 with the same force and effect as if given in full text. Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. Contractor retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (29 CFR §1910). Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

7. New Section 72. Federal Nondiscrimination Requirements is hereby added to the Agreement to read as follows:

72. Federal Nondiscrimination Requirements. During the performance of this Agreement, Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as "Contractor") agrees as follows:

72.1 Compliance with Regulations. Contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts And Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this Agreement.

72.2 Nondiscrimination. Contractor, with regard to the work performed by it during the Agreement, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. Contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the Agreement covers any activity, project, or program set forth in Appendix B of 49 CFR §21.

72.3 Solicitations for Subcontracts. Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by Contractor of Contractor's obligations under this Agreement and the Nondiscrimination Acts And Authorities on the grounds of race, color, or national origin.

72.4 Information and Reports. Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Airport or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts and Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Airport or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.

72.5 Sanctions for Noncompliance. In the event of a contractor's noncompliance with the Non-discrimination provisions of this Agreement, the Airport will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:

- a. Withholding payments to the contractor under the contract until the contractor complies; and/or
- b. Cancelling, terminating, or suspending a contract, in whole or in part.

72.6 Incorporation of Provisions. Contractor will include the provisions of paragraphs 72.1 through 72.6 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. Contractor will take action with respect to any subcontract or procurement as the Airport or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, Contractor may request the Airport to enter into any litigation to protect the interests of the Airport. In addition, Contractor may request the United States to enter into the litigation to protect the interests of the United States.

72.7 Title VI List of Pertinent Nondiscrimination Acts and Authorities. During the performance of this Agreement, Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- a. Title VI of the Civil Rights Act of 1964 (42 USC §2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
- b. 49 CFR part 21 (Non-discrimination In Federally-Assisted Programs of The Department of Transportation—Effectuation of Title VI of The Civil Rights Act of 1964);
- c. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC §4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- d. Section 504 of the Rehabilitation Act of 1973, (29 USC. §794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR §27;
- e. The Age Discrimination Act of 1975, as amended, (42 USC §6101 *et seq.*), (prohibits discrimination on the basis of age);
- f. Airport and Airway Improvement Act of 1982, (49 USC §471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- g. The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- h. Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 USC §12131 – 12189) as implemented by Department of Transportation regulations at 49 CFR §37 and 38 and the Department of Justice regulations at 28 CFR, parts 35 and 36;

- i. The Federal Aviation Administration's Non-discrimination statute (49 USC §47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- j. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- k. Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 CFR at 74087 to 74100);
- l. Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC §1681 *et seq.*).

8. Effective Date. Each of the changes set forth in this Modification shall be effective on and after the date of this Modification.

9. Legal Effect. Except as expressly modified by this Modification, all of the terms and conditions of the Agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, Contractor and City have executed this Amendment as of the date first referenced above.

CITY	CONTRACTOR
AIRPORT COMMISSION CITY AND COUNTY OF SAN FRANCISCO	
By: _____ Ivar C. Satero, Airport Director	 Authorized Signature
Attest: _____	<u>JENNIFER CARMER</u> <u>Douglas V. Heitzendorfer</u> Printed Name
By _____ Jean Caramatti, Secretary Airport Commission	<u>Vice President Civil/Mechanical Eng. Mgr.</u> Title
Resolution No: _____	<u>Bombardier Transportation (Holdings) USA Inc.</u> Company Name
Adopted on: _____	City Supplier ID
Approved as to Form: Dennis J. Herrera City Attorney	<u>1501 Lebanon Church Road</u> Address
	<u>Pittsburgh, PA 15236</u> City, State, ZIP
By _____ Sallie Gibson Deputy City Attorney	<u>(412) 655-5700</u> Telephone Number
	<u>25-1579550</u> Federal Employer ID Number



San Francisco International Airport

MEMORANDUM

November 7, 2017

TO: AIRPORT COMMISSION

Hon. Larry Mazzola, President
Hon. Linda S. Crayton, Vice President
Hon. Eleanor Johns
Hon. Richard J. Guggenhime
Hon. Peter A. Stern

FROM: Airport Director

SUBJECT: Modification No. 4 to Contract No. 8838 with Bombardier Transportation (Holdings) USA, Inc.

DIRECTOR'S RECOMMENDATION: APPROVE MODIFICATION NO. 4 TO CONTRACT NO. 8838 WITH BOMBARDIER TRANSPORTATION (HOLDINGS) USA, INC. FOR AIRTRAIN OPERATIONS AND MAINTENANCE SERVICES, EXERCISING THE FINAL ONE-YEAR OPTION AND INCREASING THE CONTRACT AMOUNT BY \$14,854,228, FOR A NEW TOTAL NOT TO EXCEED CONTRACT AMOUNT OF \$130,299,196.

Executive Summary

Transmitted herewith for your approval, is a proposed resolution to authorize Modification No. 4 to Contract No. 8838, exercising the final one-year option (March 1, 2018 through February 28, 2019), and increase the contract amount by \$14,854,228.

Background

On September 16, 2008, this Commission adopted Resolution No. 08-0173, awarding Contract No. 8838, AirTrain Operations and Maintenance, to Bombardier Transportation (Holdings) USA, Inc. for a five-year contract (March 1, 2009 to February 28, 2014) with one (1) three-year option, and two (2) one-year options, in the amount of \$56,500,000, and approved a contingency budget of \$500,000 for payment of incentive bonuses and other changes during Year One of the contract. On November 18, 2008, the Board of Supervisors (BOS) passed Ordinance No. 080942, granting the Airport Commission a waiver of the competitive bidding requirements, and adopted Resolution No. 266-08 for award of the contract.

On July 23, 2013, this Commission adopted Resolution No. 13-0156, approving Modification No. 1 to exercise the three-year contract extension (March 1, 2014 through February 28, 2017), to cover a shortfall of \$3,200,000 over the initial contract term, and to increase the contract amount by \$42,200,000, for a new not to exceed total contract amount of \$98,700,000. On December 10, 2013, the BOS adopted Resolution No. 429-13, approving Modification No. 1.

THIS PRINT COVERS CALENDAR ITEM NO. 7

AIRPORT COMMISSION CITY AND COUNTY OF SAN FRANCISCO

EDWIN M. LEE
MAYOR

LARRY MAZZOLA
PRESIDENT

LINDA S. CRAYTON
VICE PRESIDENT

ELEANOR JOHNS

RICHARD J. GUGGENHIME

PETER A. STERN

IVAR C. SATERO
AIRPORT DIRECTOR

On May 19, 2014, this Commission adopted Resolution No. 14-0104, approving Modification No. 2, increasing the contract amount by \$1,848,174, for a new not to exceed contract amount of \$100,548,174. On September 9, 2014, the BOS adopted Resolution No. 328-14, approving Modification No. 2 for the AirTrain System, but reduced the not to exceed contract amount by \$4,340, for a revised not to exceed contract amount of \$100,543,834.

On November 1, 2016, this Commission adopted Resolution No. 16-0277, approving Modification No. 3, increasing the contract amount by \$14,901,134, for a new total contract amount not to exceed \$115,444,968. On February 14, 2017, the BOS adopted Resolution No. 44-17, approving Modification No. 3 for a revised not to exceed contract amount of \$115,444,968.

This Modification No. 4 is to exercise the final one-year option (March 1, 2018 through February 28, 2019) and to increase the contract amount by \$14,854,228, for a new not to exceed contract amount of \$130,299,196.

Recommendation

I recommend that the Commission approve Modification No. 4 to Contract No. 8838 with Bombardier Transportation (Holdings) USA, Inc. to exercise the final one-year option (March 1, 2018 through February 28, 2019), and to increase the contract amount by \$14,854,228, for a new total contract amount not to exceed \$130,299,196.



Ivar C. Satero
Airport Director

Prepared by: Jeff Littlefield
Chief Operating Officer

Attachment

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO
RESOLUTION NO. 17-0280

MODIFICATION NO. 4 TO CONTRACT NO. 8838 WITH BOMBARDIER TRANSPORTATION (HOLDINGS) USA, INC.

WHEREAS, on September 16, 2008, this Commission approved Resolution No. 08-0173 awarding Contract No. 8838 AirTrain Operations and Maintenance to Bombardier Transportation (Holdings) USA, Inc. for a five-year contract, with one (1) three-year option, and two (2) one-year options, in the amount of \$56,500,000, and approved a one-year contingency budget of \$500,000 for payment of incentive bonuses and other changes, subject to the Board of Supervisors (BOS) approval of the agreement and award of this contract; and

WHEREAS, on November 18, 2008, the BOS passed Ordinance No. 080942, granting the Airport Commission a waiver of the competitive bidding requirements, and adopted Resolution No. 266-08 for award of Contract No. 8838 to Bombardier Transportation (Holdings) USA, Inc. for a five-year term in the amount of \$56,500,000 and approved the contingency budget of \$500,000 for payment of incentive bonuses and other changes during Year One of the new contract; and

WHEREAS, on July 23, 2013, this Commission adopted Resolution No. 13-0156, approving Modification No. 1 to exercise the three-year contract extension (March 1, 2014 through February 28, 2017) and to increase the contract amount by \$42,200,000, including \$3,200,000 to cover the shortfall over the initial contract term; and

WHEREAS, on December 10, 2013, the BOS adopted Resolution No. 429-13, approving Modification No. 1 to the contract; and

WHEREAS, on May 19, 2014, this Commission adopted Resolution No. 14-0104, approving Modification No. 2 to Contract No. 8838, increasing the contract amount by \$1,848,174 to cover the replacement cost of obsolete or worn out AirTrain equipment, and providing funding for the replacement of any additional materials, tools and equipment that may become obsolete or worn beyond repair over the three-year contract term, for a new not to exceed total contract amount of \$100,548,174; and,

WHEREAS, on September 9, 2014, the BOS adopted Resolution No. 328-14, approving Modification No. 2, but reduced the not to exceed amount by \$4,340, for a revised not to exceed contract amount of \$100,543,834; and

WHEREAS, on November 1, 2016, this Commission adopted Resolution No. 16-0277, approving Modification No. 3, increasing the contract amount by \$14,901,134, for a new total contract amount not to exceed \$115,444,968; and

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

RESOLUTION NO. 17-1280

WHEREAS, on February 14, 2017, the BOS adopted Resolution No. 44-17, approving Modification No. 3 to the contract; and

WHEREAS, Staff proposes to exercise the final one-year option (March 1, 2018 through February 28, 2019) and to increase the contract amount by \$14,854,228; and

WHEREAS, funding for this project will be provided from the Airport's Operating funds; now, therefore, be it

RESOLVED, that this Commission hereby approves Modification No. 4 to Contract No. 8838, AirTrain Operations and Maintenance, with Bombardier Transportation (Holdings) USA, Inc., exercising the final one-year option (March 1, 2018 through February 28, 2019) and increasing the contract amount by \$14,854,228, for a new total contract amount not to exceed \$130,299,196; and, be it further

RESOLVED, that the Airport Director is authorized to take the necessary steps to obtain BOS approval of Modification No. 4 pursuant to San Francisco Charter Section 9.118(b).

I hereby certify that the foregoing resolution was adopted by the Airport Commission

NOV 7 2017

at its meeting of

Jan Lamatti
Secretary

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

RESOLUTION NO. 08-0173

AWARD CONTRACT NO. 8838, AIRTRAIN OPERATIONS AND MAINTENANCE, TO BOMBARDIER TRANSPORTATION (HOLDINGS) USA, INC., IN THE AMOUNT OF \$56,500,000 FOR A FIVE-YEAR TERM.

WHEREAS, on April 8, 2008, City and County of San Francisco, Bombardier Transportation (Holdings) USA, Inc. (Bombardier), and Factory Mutual Insurance Company agreed to settle their disputes which were part of a lawsuit filed in the United States District Court for the Northern District of California, case number C 04-5307 PJH by providing for, among other things, cost recovery of damages suffered by the Airport as a result of the accident of August 4, 2002 during testing of the AirTrain system prior to opening (the Agreement); and,

WHEREAS, one of the terms of the Agreement provides the Airport with full cost recovery of its remaining damages stemming from the accident through negotiating a favorable contract with Bombardier for an initial five (5) year fixed term at \$11,300,000 for the first year, escalated thereafter for the life of the contract, based on the economic price adjustment formula utilized in the original 5703.A – AirTrain System, Phase II (O&M) contract; and,

WHEREAS, an automatic renewal of an additional three-year fixed term will be awarded to Bombardier, pending their meeting certain performance criteria as contained in the new contract; and,

WHEREAS, the Commission will have the discretion to exercise two (2) one-year options following the expiration of the three-year fixed period, with training requirements of Airport-designated personnel, which provides the opportunity for the Airport to transition O&M services from Bombardier to the Airport; and,

WHEREAS, as a result of the proprietary nature of the AirTrain automated train control system, following the transition to Airport Staff of the O&M services, the Airport will continue to contract with Bombardier as the sole-source provider of technical support and parts supply for a majority of the systems of AirTrain; and,

WHEREAS, Airport Staff has also negotiated new contract terms which provide for an increased focus on passenger service and system reliability, as well as negotiated, value-added services at no additional cost; and

WHEREAS, PGH Wong Engineering Inc., an independent firm, recently performed an analysis of the contract terms and conditions, and concluded that this agreement provides significant cost incentives which allow the Airport to fully recover its damages, and that the sole source award is in the best interest of SFO and provides the Airport with critical advantages and risk mitigations which cannot be provided by other contractors; and,

WHEREAS, funding for this contract will be provided from the Airport's Operating budget; and,

WHEREAS, Airport Staff, with the assistance of the City Attorney, has assisted in the negotiations and preparation of Contract #8838; and,

WHEREAS, the HRC has determined that Bombardier Transportation is in compliance and responsive to Chapter 14B and its LBE requirements; and,

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

08-0173

RESOLUTION NO. _____

WHEREAS, the San Francisco Administrative Code requires Board of Supervisors approval of all settlements of litigation, and award of non-construction contracts in excess of \$10M; now, therefore be it

RESOLVED, that the Commission hereby awards Contract 8838, AirTrain Operations and Maintenance, to Bombardier Transportation (Holdings) USA, Inc., for a five-year contract in the amount of \$56,500,000, and approves a contingency budget of \$500,000 for payment of incentive bonuses and other changes during Year 1 of the new contract, all subject to Board of Supervisors approval of the Agreement and award of this contract; and, be it further

RESOLVED, that the City Attorney's Office, the Commission Secretary, and the Airport Director, are authorized to take such other actions as are appropriate to implement this award of contract, including seeking the award of this contract by the San Francisco Board of Supervisors.

I hereby certify that the foregoing resolution was adopted by the Airport Commission

at its meeting of _____

SEP 16 2008

Jean Caronatt
Secretary

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

RESOLUTION NO 13-0156

APPROVE MODIFICATION NO. 1 TO CONTRACT NO. 8838 WITH BOMBARDIER TRANSPORTATION (HOLDINGS) USA, INC. FOR AIRTRAIN OPERATIONS AND MAINTENANCE SERVICES IN THE AMOUNT OF \$42,200,000. TO: 1) EXERCISE THE THREE-YEAR CONTRACT EXTENSION BEGINNING MARCH 1, 2014 THROUGH FEBRUARY 28, 2017, AND 2) REQUEST APPROVAL TO FUND THE BUDGET SHORTFALL FROM ESCALATION AND BONUS ADJUSTMENTS FOR THE INITIAL FIVE-YEAR TERM FOR A REVISED NOT TO EXCEED TOTAL CONTRACT AMOUNT OF \$98,700,000.

WHEREAS, on September 16, 2008, this Commission approved Resolution No. 08-0173 awarding Contract No. 8838 AirTrain Operations and Maintenance to Bombardier Transportation (Holdings) USA, Inc. for a five-year contract, with one (1) 3-year option, and two (2) 1-year options, in the amount of \$56,500,000 and approved a one-year contingency budget of \$500,000 for payment of incentive bonuses and other changes, all subject to Board of Supervisors (BOS) approval of the agreement and award of this contract; and

WHEREAS, on November 18, 2008, the BOS of the City and County of San Francisco passed Ordinance No. 080942 in which the BOS granted the Airport Commission a waiver of the competitive bidding requirements found in Administrative Code Chapter 21; and

WHEREAS, in accordance with Ordinance No. 080942, the BOS granted the award of Contract No. 8838 to Bombardier Transportation (Holdings) USA, Inc. for a five-year term in the amount of \$56,500,000 and approved the contingency budget of \$500,000 for payment of incentive bonuses and other changes during Year One of the new contract; and

WHEREAS, the originally approved \$56,500,000 to fund the initial five-year term did not include funding for labor and material escalation and bonuses beyond Year One of the contract, resulting in a shortfall of \$3,200,000 over the initial five (5) year term; and

WHEREAS, the contract includes a renewal of an additional three-year contract extension dependent on the contractor meeting a set of pre-defined performance standards. Based on the contractor's performance to date the contractor will meet these standards; and

WHEREAS, funding for this project will be provided from the Airport's operating budget; and

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

RESOLUTION NO. 13-0156

WHEREAS, the Human Rights Commission has determined that Bombardier Transportation (Holdings) USA, Inc. is in compliance and responsive to Chapter 14B and its LBE requirements; and

WHEREAS, the San Francisco Administrative Code requires Board of Supervisors approval of all non-construction contracts in excess of \$10M; now, therefore, be it

RESOLVED, that this Commission hereby approves Modification No. 1 to Contract No. 8838, AirTrain Operations and Maintenance, with Bombardier Transportation (Holdings) USA, Inc., in the amount of \$42,200,000, to: 1) exercise the three-year contract extension beginning March 1, 2014 through February 28, 2017 in the amount of \$39,000,000; and 2) request approval to fund the budget shortfall from escalation and bonus adjustments for the initial five-year term in the amount of \$3,200,000, for a revised not to exceed total contract amount of \$98,700,000; and, be it further

RESOLVED, that the Airport Director is authorized to take the necessary steps to obtain Board of Supervisors' approval of the contract modification pursuant to San Francisco Charter Section 9.118(b).

Page 2 of 2

*I hereby certify that the foregoing resolution was adopted by the Airport Commission
at its meeting of _____*

JUL 23 2013

Jean Cammatti
Secretary

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

RESOLUTION NO. 14-0104

MODIFICATION NO. 2 TO CONTRACT NO. 8838 WITH BOMBARDIER TRANSPORTATION (HOLDINGS) USA, INC.

WHEREAS, on September 16, 2008, this Commission adopted Resolution No. 08-0173, awarding Contract No. 8838 AirTrain Operations and Maintenance to Bombardier Transportation (Holdings) USA, Inc. for a five-year contract, with one (1) three-year option, and two (2) one-year options, in the amount of \$56,500,000 for the initial five-year term, and approved a one-year contingency budget of \$500,000 for payment of incentive bonuses and other changes, all subject to Board of Supervisors (BOS) approval of the agreement and award of this contract; and

WHEREAS, on November 18, 2008, the BOS of the City and County of San Francisco, passed Ordinance No. 080942, in which the BOS granted the Airport Commission a waiver of the competitive bidding requirements found in Administrative Code Chapter 21; and

WHEREAS, in accordance with Ordinance No. 080942, the BOS granted the award of Contract No. 8838 to Bombardier Transportation (Holdings) USA, Inc. for a five-year term in the amount of \$56,500,000, and approved the contingency budget of \$500,000 for payment of incentive bonuses and other changes during Year One of the new contract; and

WHEREAS, the originally approved \$56,500,000 to fund the initial five-year term did not include funding for labor and material escalation and bonuses beyond Year One of the contract, resulting in a shortfall of \$3,200,000 over the initial five (5) year term; and

WHEREAS, on July 23, 2013, this Commission adopted Resolution No. 13-0156, which approved Modification No. 1 for a three year contract extension (March 1, 2014 through February 28, 2017) to Contract No. 8838, in the amount of \$42,200,000, all subject to BOS approval of the modification; and

WHEREAS, on December 10, 2013, the BOS adopted Resolution No. 429-13, which approved Modification No. 1 to the contract; and

WHEREAS, Staff proposes to modify this contract to provide for the replacement cost of obsolete or worn out AirTrain equipment and to provide a contingency fund for the replacement of any additional materials, tools and equipment that may become obsolete or worn beyond repair; and

WHEREAS, funding for this contract will be provided from the Airport's Capital funds; now, therefore, be it

RESOLVED, that this Commission hereby approves Modification No. 2 to Contract No. 8838, AirTrain Operations and Maintenance, with Bombardier Transportation (Holdings) USA, Inc., to cover the replacement cost of obsolete or worn out AirTrain equipment and to provide a contingency fund for the replacement of any additional materials, tools and equipment that may become obsolete or worn beyond repair over the three-year contract term, in an amount not to exceed \$1,848,174, for a new not to exceed total contract amount of \$100,548,174; and, be it further

RESOLVED, that the Airport Director is authorized to take the necessary steps to obtain BOS approval of Modification No. 2 pursuant to San Francisco Charter Section 9.118(b).

I hereby certify that the foregoing resolution was adopted by the Airport Commission

at its meeting of

MAY 19 2014

Jean Caru Matti
Secretary

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

RESOLUTION NO. 14-0104

MODIFICATION NO. 2 TO CONTRACT NO. 8838 WITH BOMBARDIER TRANSPORTATION (HOLDINGS) USA, INC.

WHEREAS, on September 16, 2008, this Commission adopted Resolution No. 08-0173, awarding Contract No. 8838 AirTrain Operations and Maintenance to Bombardier Transportation (Holdings) USA, Inc. for a five-year contract, with one (1) three-year option, and two (2) one-year options, in the amount of \$56,500,000 for the initial five-year term, and approved a one-year contingency budget of \$500,000 for payment of incentive bonuses and other changes, all subject to Board of Supervisors (BOS) approval of the agreement and award of this contract; and

WHEREAS, on November 18, 2008, the BOS of the City and County of San Francisco, passed Ordinance No. 080942, in which the BOS granted the Airport Commission a waiver of the competitive bidding requirements found in Administrative Code Chapter 21; and

WHEREAS, in accordance with Ordinance No. 080942, the BOS granted the award of Contract No. 8838 to Bombardier Transportation (Holdings) USA, Inc. for a five-year term in the amount of \$56,500,000, and approved the contingency budget of \$500,000 for payment of incentive bonuses and other changes during Year One of the new contract; and

WHEREAS, the originally approved \$56,500,000 to fund the initial five-year term did not include funding for labor and material escalation and bonuses beyond Year One of the contract, resulting in a shortfall of \$3,200,000 over the initial five (5) year term; and

WHEREAS, on July 23, 2013, this Commission adopted Resolution No. 13-0156, which approved Modification No. 1 for a three year contract extension (March 1, 2014 through February 28, 2017) to Contract No. 8838, in the amount of \$42,200,000, all subject to BOS approval of the modification; and

WHEREAS, on December 10, 2013, the BOS adopted Resolution No. 429-13, which approved Modification No. 1 to the contract; and

WHEREAS, Staff proposes to modify this contract to provide for the replacement cost of obsolete or worn out AirTrain equipment and to provide a contingency fund for the replacement of any additional materials, tools and equipment that may become obsolete or worn beyond repair; and

WHEREAS, funding for this contract will be provided from the Airport's Capital funds; now, therefore, be it

RESOLVED, that this Commission hereby approves Modification No. 2 to Contract No. 8838, AirTrain Operations and Maintenance, with Bombardier Transportation (Holdings) USA, Inc., to cover the replacement cost of obsolete or worn out AirTrain equipment and to provide a contingency fund for the replacement of any additional materials, tools and equipment that may become obsolete or worn beyond repair over the three-year contract term, in an amount not to exceed \$1,848,174, for a new not to exceed total contract amount of \$100,548,174; and, be it further

RESOLVED, that the Airport Director is authorized to take the necessary steps to obtain BOS approval of Modification No. 2 pursuant to San Francisco Charter Section 9.118(b).

I hereby certify that the foregoing resolution was adopted by the Airport Commission

at its meeting of

MAY 19 2014

Secretary

Jean Carmatti

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

RESOLUTION NO. 16-0277

APPROVE MODIFICATION NO. 3 TO CONTRACT NO. 8838 WITH BOMBARDIER TRANSPORTATION (HOLDINGS) USA, INC. FOR AIRTRAIN OPERATIONS AND MAINTENANCE SERVICES

WHEREAS, on September 16, 2008, this Commission approved Resolution No. 08-0173 awarding Contract No. 8838 AirTrain Operations and Maintenance (O&M) to Bombardier Transportation (Holdings) USA, Inc. (BT USA) for a five-year contract, with one (1) three-year option, and two (2) one-year options, in the amount of \$56,500,000 and approved a one-year contingency budget of \$500,000 for payment of incentive bonuses and other changes, subject to the Board of Supervisors (BOS) approval of the agreement and award of this contract; and

WHEREAS, on November 18, 2008, the BOS passed Ordinance No. 080942, which granted the Airport Commission a waiver of the competitive bidding requirements, adopted Resolution No. 266-08 for award of Contract No. 8838 to BT USA for a five-year term in the amount of \$56,500,000, and approved the contingency budget of \$500,000 for payment of incentive bonuses and other changes during Year One of the new contract; and

WHEREAS, the originally approved \$56,500,000 to fund the initial five-year term did not include funding for labor and material escalation and bonuses beyond year one of the contract, resulting in a shortfall of \$3,200,000 over the initial five-year term; and

WHEREAS, on July 23, 2013, this Commission adopted Resolution No. 13-0156, which approved Modification No. 1 for a three-year contract extension (March 1, 2014 through February 28, 2017) to Contract No. 8838, to BT USA, for AirTrain O&M, in the amount \$42,200,000; and

WHEREAS, on December 10, 2013, the BOS adopted Resolution No. 429-13, which approved Modification No. 1 to the contract; and

AIRPORT COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

RESOLUTION NO 16-0277

WHEREAS, on May 19, 2014 this Commission adopted Resolution No. 14-0104, which approved Modification No. 2 to Contract No. 8838, AirTrain O&M, with BT USA, increasing the not to exceed amount by \$1,848,174 to cover the replacement cost of obsolete or worn out AirTrain equipment and to provide funding for the replacement of any additional materials, tools and equipment that may become obsolete or worn beyond repair over the three-year contract term, for a revised not to exceed total contract amount of \$100,548,174; and

WHEREAS, on September 19, 2014, the BOS adopted Resolution No. 328-14, which approved Modification No. 2 for the AirTrain System but reduced the not to exceed amount by \$4,340, for a revised not to exceed amount of \$100,543,834; and

WHEREAS, Staff proposes to further modify this contract to exercise the first of two (2) one-year options (March 1, 2017 through February 28, 2018) and to provide additional funding for the replacement cost of obsolete or worn out AirTrain parts and equipment; and

WHEREAS, funding for this project will be provided from both the Airport's Operating and Capital funds; now, therefore, be it

RESOLVED, that this Commission hereby approves Modification No. 3 to Contract No. 8838, AirTrain Operations and Maintenance, with Bombardier Transportation (Holdings) USA, Inc., in an amount not to exceed \$14,901,134, to exercise the first one-year option (March 1, 2017 through February 28, 2018) and cover the replacement cost of obsolete or worn out AirTrain parts and equipment for a new total contract amount not to exceed \$115,444,968; and, be it further

RESOLVED, that the Airport Director is authorized to take the necessary steps to obtain BOS approval of Modification No. 3 pursuant to San Francisco Charter Section 9.118(b).

Page 2 of 2

I hereby certify that the foregoing resolution was adopted by the Airport Commission

== NOV 01 2016

at its meeting of

Secretary

City and County of San Francisco
Airport Commission
P.O. Box 8097
San Francisco, California 94128

Agreement between the City and County of San Francisco and
Bombardier Transportation (Holdings) USA Inc.

Contract No. 8838

This Agreement is made this 16th day of September, 2008, in the City and County of San Francisco, State of California, by and between: Bombardier Transportation (Holdings) USA Inc., 1501 Lebanon Church Road, Pittsburgh, PA 15236, hereinafter referred to as "Contractor," and the City and County of San Francisco, a municipal corporation, hereinafter referred to as "City," acting by and through its Airport Commission or the Commission's designated agent, hereinafter referred to as "Commission."

Recitals

WHEREAS, Commission wishes to enter into a contract with the Contractor to provide operation and maintenance services for the AirTrain system; and,

WHEREAS, Commission is authorized to enter into all contracts which relate to matters under its jurisdiction; and

WHEREAS, Commission awarded this contract to Contractor on September 16, 2008, pursuant to an agreement to settle a dispute among the City and County of San Francisco, Bombardier Transportation (Holdings) USA, Inc., and Factory Mutual Insurance Company which was filed in the United States District Court for the Northern District of California, case number C 04-5307 PJH, and further pursuant to Resolution No. 08-0173; and

WHEREAS, Approval for said Agreement was obtained from the Board of Supervisors pursuant to Resolution ~~1~~ ^{INSERT RESOLUTION NUMBER} on ~~1~~ ^{INSERT DATE}; and
Ordinance No. 266-08 on November 25, 2008

WHEREAS, Contractor represents and warrants that it is qualified to perform the services required by City as set forth under this Contract;

Now, THEREFORE, the parties agree as follows:

1. Certification of Funds; Budget and Fiscal Provisions; Termination in the Event of Non-Appropriation

A. 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, 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.

- B. 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.
- C. The City has no obligation to make appropriations for this Agreement in lieu of appropriations for new or other agreements. The City budget decisions are subject to the discretion of the Mayor and the Board of Supervisors. The 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.

2. Term of the Agreement

- A. Subject to Section 1, the term of this Agreement shall begin upon the Airport's provision of a notice to proceed and shall continue for a period of five (5) years beginning March 1, 2009, unless terminated sooner as provided in Article 21, Termination for Convenience of this Agreement.
- B. At the end of the initial five (5)-year term, as identified above, the Airport will extend the contract for an additional three (3)-year term, provided the Contractor meets all contractual obligations under the Contract and the following performance criteria measured ninety (90) days prior to the end of the current contract term: (i) averaged system availability rating of ninety-nine and one-half percent (99.5%) or higher for the prior twelve (12) month period, (ii) verification that all Airport owned spares, tools and equipment, as identified in "Appendix E – Spares, Tools, and Equipment" and as amended from time to time during the active term of the Contract, is accounted for and in good working condition, (iii) training certifications are up-to-date for appropriate Contractor's staff, and (iv) the preventative maintenance program meets or exceeds the requirements as stated in "Appendix A, Section B.5 – Adherence to Maintenance Schedule."
- C. If the Contractor fails to meet the above criteria, the Airport shall have the option, at its sole discretion, to either extend, modify or terminate the Contract by giving written notice thereof to the Contractor at least ninety (90) days prior to the end of the original or extended term.
- D. Further, at the end of the three (3) year term the Airport reserves the right to extend the contract for two (2) additional option years. The Airport also reserves the right to re-negotiate the contract terms, by reducing in whole or in part the Contractor's scope of services. The Airport will provide the Contractor with written notice of intent to extend and/or re-negotiate the contract terms at least one-hundred and eighty (180) days prior to the start of each option year.
- E. The prices to be paid for each yearly extension shall be those included in the Contractor's Contract Price Proposal, for this Agreement, escalated according to Section 4.1 - Economic Price Adjustment of the General Conditions attached hereto, or as amended by any change orders.

3. Effective Date of Agreement

This Agreement shall become effective when the Controller has certified to the availability of funds and the Contractor has been notified in writing.

4. Services Contractor Agrees to Perform

The Contractor agrees to perform the services provided for in the General Requirements and Appendix A, Services to be Provided by the Contractor attached hereto and incorporated by reference as though fully set forth herein.

5. Compensation

- A. Compensation shall be made in accordance with the terms and conditions set forth in Article 4.3 of the General Requirements. In no event shall the amount of this Agreement exceed Fifty-six Million Five Hundred Thousand Dollars (\$56,500,000), except as modified pursuant to the terms of this Agreement. The breakdown of costs associated with this Agreement appears in Appendix B, "Calculation of Charges/Determination of Monthly Payments," attached hereto and incorporated by reference as though fully set forth herein.
- B. No charges shall be incurred under this Agreement nor shall any payments become due to the Contractor until reports, services, or both, required under this Agreement are received from Contractor and approved by the AirTrain Manager as being in accordance with this Agreement. The City may withhold payment to Contractor in any instance in which Contractor has failed or refused to satisfy any material obligation provided for under this Agreement.
- C. The Controller is not authorized to pay invoices submitted by the Contractor prior to the Contractor's submission of HRC Progress Payment Form. If the Progress Payment Form is not submitted with the Contractor's invoice, the Controller will notify the department, the Director of HRC and the Contractor of the omission. If the Contractor's failure to provide HRC Progress Payment Form is not explained to the Controller's satisfaction, the Controller will withhold twenty percent (20%) of the payment due pursuant to that invoice until the HRC Progress Payment Form is provided.
- D. Following the City's payment of an invoice, the Contractor has ten (10) days to file an affidavit using the HRC Payment Affidavit verifying that all subcontractors have been paid and specifying the amount.

6. Guaranteed Maximum Costs

- A. The City's obligation hereunder shall not at any time exceed the amount certified by the Controller for the purpose and period stated in such certification.
- B. Except as may be provided by laws governing emergency procedures, officers and employees of the City are not authorized to request, and the City is not required to reimburse the Contractor for, Commodities or Services beyond the agreed upon contract scope unless the changed scope is authorized by amendment and approved as required by law.

- C. Officers and employees of the City are not authorized to offer or promise, nor is the City required to honor, any offered or promised additional funding in excess of the maximum amount of funding for which the contract is certified without certification of the additional amount by the Controller.
- D. The Controller is not authorized to make payments on any contract for which funds have not been certified as available in the budget or by supplemental appropriation.

7. Payment; Invoice Format

- A. Invoices furnished by the Contractor under this Agreement must be in a form acceptable to the Controller, and must include a unique invoice number. All amounts paid by the City to the Contractor shall be subject to audit by the City.
- B. Payment shall be made by the City to the Contractor at the address specified in the section entitled "Notices to the Parties."

8. Submitting False Claims; Monetary Penalties

Pursuant to San Francisco Administrative Code §21.35, any contractor, subcontractor or consultant who submits a false claim shall be liable to the City for three (3) times the amount of damages which the City sustains because of the false claim. A contractor, subcontractor, or consultant who submits a false claim shall also be liable to the City for the costs, including attorneys' fees, of a civil action brought to recover any of those penalties or damages, and may be liable to the City for a civil penalty of up to Ten Thousand Dollars (\$10,000) for each false claim. A contractor, subcontractor, or consultant will be deemed to have submitted a false claim to the City if the contractor, subcontractor or consultant: (i) knowingly presents or causes to be presented to an officer or employee of the City a false claim or request for payment or approval; (ii) knowingly makes, uses, or causes to be made or used a false record or statement to get a false claim paid or approved by the City; (iii) conspires to defraud the City by getting a false claim allowed or paid by the City; (iv) knowingly makes, uses, or causes to be made or used a false record or statement to conceal, avoid, or decrease an obligation to pay or transmit money or property to the City; or (v) is a beneficiary of an inadvertent submission of a false claim to the City, subsequently discovers the falsity of the claim, and fails to disclose the false claim to the City within a reasonable time after discovery of the false claim.

9. Disallowance - Left blank by agreement of the Parties. No state or federal funds involved.

10. Taxes

- A. Payment of any taxes, including possessory interest taxes and California sales and use taxes, levied upon or as a result of this Agreement, or the services delivered pursuant hereto, shall be the obligation of the Contractor.
- B. The Contractor recognizes and understands that this Agreement may create a "possessory interest" for property tax purposes. Generally, such a possessory interest is not created unless the Agreement entitles the Contractor to possession, occupancy, or use of City property for private gain. If such a possessory interest is created, then the following shall apply:

- 1) The Contractor, on behalf of itself and any permitted successors and assigns, recognizes and understands that the Contractor, and any permitted successors and assigns, may be subject to real property tax assessments on the possessory interest;
- 2) The Contractor, on behalf of itself and any permitted successors and assigns, recognizes and understands that the creation, extension, renewal, or assignment of this Agreement may result in a "change in ownership" for purposes of real property taxes, and therefore may result in a revaluation of any possessory interest created by this Agreement. The Contractor accordingly agrees on behalf of itself and its permitted successors and assigns to report on behalf of the City to the County Assessor the information required by Revenue and Taxation Code section 480.5, as amended from time to time, and any successor provision.
- 3) The Contractor, on behalf of itself and any permitted successors and assigns, recognizes and understands that other events also may cause a change of ownership of the possessory interest and result in the revaluation of the possessory interest. (See, e.g., Rev. & Tax. Code section 64, as amended from time to time). The Contractor accordingly agrees on behalf of itself and its permitted successors and assigns to report any change in ownership to the County Assessor, the State Board of Equalization or other public agency as required by law.
- 4) The 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.

11. Payment Does Not Imply Acceptance of Work

The granting of any payment by the City, or the receipt thereof by the Contractor, shall in no way lessen the liability of the Contractor to replace unsatisfactory work, equipment, or materials, although the unsatisfactory character of such work, equipment or materials may not have been apparent or detected at the time such payment was made. Materials, equipment, components, or workmanship that does not conform to the requirements of this Agreement may be rejected by the City and in such case must be replaced by the Contractor without delay.

12. Qualified Personnel

Work under this Agreement shall be performed only by competent personnel under the supervision of and in the employment of the Contractor. The Contractor will comply with the City's reasonable requests regarding assignment of personnel, but all personnel, including those assigned at the City's request, must be supervised by the Contractor. The Contractor shall commit adequate resources to complete the project within the project schedule specified in this Agreement.

13. Responsibility for Equipment

- A. The City shall not be responsible for any damage to persons or property as a result of the use, misuse, or failure of any equipment used by the Contractor, or by any of its employees, even though such equipment be furnished, rented, or loaned to the Contractor by the City.
- B. The acceptance or use of such equipment by the Contractor or any of its employees shall be construed to mean that the Contractor accepts full responsibility for and agrees to exonerate, indemnify, defend and save harmless the City from and against any and all claims for any damage

or injury of any type arising from the use, misuse or failure of such equipment, whether such damage be to the Contractor, its employees, City employees or third parties, or to property belonging to any of the above.

- C. The Contractor shall be totally responsible for the design and installation of all temporary structures such as shoring that may be required to perform work under this Contract. The Contractor shall also perform its work under this Contract so as not to load or overload any structural, electrical or HVAC System in any way which might endanger its present or future integrity or capacity.
- D. Subject to the Limitation of Liability set forth in Article 17 herein, the Contractor shall be totally responsible for the risk of loss or damage to any property owned by the Commission, its tenants or other third parties arising out of the careless or negligent acts or omissions of the Contractor's officers, agents, employees, or subcontractors. The Contractor shall forthwith repair, replace, and make good any such loss or damage without cost to the Commission or, at the option of the Commission, the Contractor shall reimburse the Commission for the reasonable cost of such repairs and replacements which the Commission elects, in its sole discretion, to perform.
- E. Subject to the limitation of liability set forth in article 17 herein, the Contractor shall be totally responsible for the risk of (i) all claims made by third persons or all fines or penalties assessed by courts or governmental agencies or other entities against the Contractor or the Commission, on account of injuries (including wrongful death), losses and damages, and (ii) all liability of any kind whatsoever, arising or alleged to arise out of or in connection with the willful misconduct or negligent performance of this contract by the Contractor or out of or in connection with the Contractor's operations or presence at or in the vicinity of the Commission's premises (including claims against the Contractor or the Commission for the payment of workers' compensation) whether such fines or penalties are made or assessed and whether such claims for injuries, damages, losses are sustained and liability for them imposed at any time both before and after the completion of the services provided herein.

14. Independent Contractor; Payment of Taxes and Other Expenses

A. Independent Contractor

- 1) The Contractor or any agent or employee of the Contractor shall be deemed at all times to be an independent contractor and is wholly responsible for the manner in which it performs the services and work requested by the City under this Agreement. The Contractor or any agent or employee of the 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. The Contractor or any agent or employee of the Contractor is liable for the acts and omissions of itself, its employees, and its agents. The 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 the Contractor's performing services and work, or any agent or employee of the Contractor providing same. Nothing in this Agreement shall be construed as creating an employment or agency relationship between the City and the Contractor or any agent or employee of the Contractor.

- 2) Any terms in this Agreement referring to direction from the City shall be construed as providing for direction as to policy and the result of the Contractor's work only, and not as to the means by which such a result is obtained. The City does not retain the right to control the means or the method by which the Contractor performs work under this Agreement.

B. Payment of Taxes and Other Expenses.

- 1) 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 the 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 the Contractor which can be applied against this liability). The City shall then forward those amounts to the relevant taxing authority.
- 2) Should a relevant taxing authority determine a liability for past services performed by the Contractor for the City, upon notification of such fact by the City, the Contractor shall promptly remit such amount due or arrange with the City to have the amount due withheld from future payments to the Contractor under this Agreement (again, offsetting any amounts already paid by the Contractor which can be applied as a credit against such liability).
- 3) A determination of employment status pursuant to the preceding two paragraphs shall be solely for the purposes of the particular tax in question, and for all other purposes of this Agreement, the Contractor shall not be considered an employee of City. Notwithstanding the foregoing, should any court, arbitrator, or administrative authority determine that the Contractor is an employee for any other purpose, then the Contractor agrees to a reduction in the City's financial liability so that the City's total expenses under this Agreement are not greater than they would have been had the court, arbitrator, or administrative authority determined that the Contractor was not an employee.

15. Insurance

- A. Without in any way limiting the Contractor's liability pursuant to the "Indemnification" section of this Agreement, the Contractor must maintain in force, during the full term of the Agreement, insurance in the following amounts and coverages:
 - 1) Workers' Compensation, in statutory amounts, with Employers' Liability Limits not less than \$1,000,000 each accident, injury, or illness; and
 - 2) Commercial General Liability Insurance with limits not less than \$2,000,000 each occurrence Combined Single Limit for Bodily Injury and Property Damage, including Contractual Liability, Personal Injury, Products and Completed Operations; and
 - 3) Commercial Automobile Liability Insurance with limits not less than \$1,000,000 (\$2,000,000 if used on Airfield) each occurrence Combined Single Limit for Bodily Injury and Property Damage, including Owned, Non-Owned and Hired auto coverage, as applicable.
- B. Commercial General Liability and Commercial Automobile Liability Insurance policies must provide the following:

- 1) Name as Additional Insured the City and County of San Francisco, its Officers, Agents, and Employees.
- 2) 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 insurance applies separately to each insured against whom claim is made or suit is brought.

C. All policies shall provide thirty (30) days' advance written notice to City of reduction or nonrenewal of coverages or cancellation of coverages for any reason. Notices shall be sent to the following address:

Lee Mitchell
SFO AirTrain Manager
AirTrain Administration
San Francisco International Airport
P.O. Box 8097
San Francisco, CA 94128

Email: lee.mitchell@flysfo.com

D. Should any of the required insurance be provided under a claims-made form, the Contractor shall maintain such coverage continuously throughout the term of this Agreement and, without lapse, for a period of three (3) years beyond the expiration of this Agreement, to the effect that, should occurrences during the contract term give rise to claims made after expiration of the Agreement, such claims shall be covered by such claims-made policies.

E. 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.

F. 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.

G. Before commencing any operations under this Agreement, the Contractor shall do the following: (i) furnish to the City certificates of insurance and additional insured policy endorsements 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, and (ii) furnish complete copies of policies promptly upon City request. Failure to maintain insurance shall constitute a material breach of this Agreement.

H. Approval of the insurance by the City shall not relieve or decrease the liability of the Contractor hereunder.

- I. If a subcontractor will be used to complete any portion of this agreement, the Contractor shall ensure that the subcontractor shall provide all necessary insurance and shall name the City and County of San Francisco, its officers, agents and employees and the Contractor listed as additional insureds.
- J. If the Contractor is unable to continue to provide the required insurance coverage as outlined in Article 15.A of this Agreement at the expiration of the initial five (5) year term, the Contractor agrees to pay to the City and County of San Francisco Four Hundred Thousand Dollars (\$400,000) in annual funding for the purchase of insurance coverage as outlined in Section 15.A of this agreement. Payment to the City and County of San Francisco shall be prior to the expiration date of the initial five (5) year term of the agreement. Said funding will be used toward the purchase of insurance as outlined in Section 15 of this agreement, with any required amount over \$400,000 to be the responsibility of the City. The City will refund to Contractor any part of the \$400,000 that is not required to fund the insurance. The City will reserve the right to procure the insurance or delegate the procurement responsibility to the Contractor. The City will reserve the right to modify the insurance requirement(s) outlined in Section 15 of this agreement in consultation with Contractor in the event the Contractor annual funding contribution of Four Hundred Thousand Dollars (\$400,000) is inadequate to procure historical limits and coverage.

16. Indemnification

- A. The Contractor shall indemnify and save harmless the 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 the Contractor or loss of or damage to property, to the extent arising from the Contractor's negligent performance of this Agreement, including, but not limited to, the Contractor's use of facilities or equipment provided by the City or others. The foregoing indemnity shall include, without limitation, reasonable fees of attorneys, consultants and experts and related costs and the City's costs of investigating any claims against the City.
- B. In addition to the Contractor's obligation to indemnify the City, the Contractor specifically acknowledges and agrees that it has an immediate and independent obligation to defend the City from any claim arising from the Contractor's negligent performance of this Agreement and 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 the Contractor by the City and continues at all times thereafter.
- C. The 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 in consequence of the use by the City, or any of its officers or agents, of articles or services to be supplied by the Contractor in the performance of this Agreement.

17. Incidental and Consequential Damages & Limitation of Contractor's Liability

- A. The Contractor shall be responsible for incidental and/or consequential damages resulting in whole or in part from the Contractor's performance of services under this Agreement. However, the Contractor will not be liable for any claim for incidental and/or consequential damages from

the Airport, Airport tenants, and/or AirTrain passengers for loss of opportunities, revenues, and/or profits. The Contractor's liability for incidental and/or consequential damages will be limited, in the aggregate, to One Million Dollars (\$1,000,000). The Contractor agrees that it will be responsible for any claim initiated by the Airport for costs incurred to operate bus services resulting from a loss of use of the AirTrain for any single incident exceeding four (4) hours to the extent arising from the Contractor's performance of this Agreement and that such claim is not subject to the One Million Dollar (\$1,000,000) cap on incidental and/or consequential damages. Further, except claims for personal injury, including wrongful death, and the costs of repair or replacement of damaged property of third parties, and costs of repair or replacement of damaged property of the Airport resulting from the gross negligence, recklessness or intentional misconduct of the Contractor, the Contractor's liability under this agreement will be limited, in the aggregate, to Ten Million Dollars (\$10,000,000).

B. To the extent of a failure caused from the Contractor's performance of services under this Agreement that renders the system unavailable for revenue service for more than fifteen (15) consecutive days, the Airport may suspend payment to the Contractor. The Airport shall resume payment to the Contractor once the system is returned to revenue service; however, the Airport shall not be responsible for reimbursing any cost or expense whatsoever to the Contractor during the time that the system was unavailable. Any moneys withheld pursuant to this paragraph are subject to the Ten Million Dollar (\$10,000,000) cap on the Contractor's liability identified in Section 17.A. above.

18. Liability of City

CITY'S PAYMENT OBLIGATIONS UNDER THIS AGREEMENT SHALL BE LIMITED TO THE PAYMENT OF THE COMPENSATION PROVIDED FOR IN SECTION 5 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.

19. Liquidated Damages - Left blank by agreement of the Parties.

20. Default; Remedies

A. Each of the following shall constitute an event of default ("Event of Default") under this Agreement:

- 1) The Contractor fails or refuses to perform or observe any term, covenant, or condition contained in any of the following Sections of this Agreement: 8, 10, 15, 24, 30, 37, 53, 55, 57, or 58.
- 2) The Contractor fails or refuses to perform or observe any other term, covenant, or condition contained in this Agreement, and such default continues for a period of ten (10) days after written notice thereof from the City to the Contractor.

- 3) The 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 the Contractor or of any substantial part of the Contractor's property or (v) takes action for the purpose of any of the foregoing.
- 4) A court or government authority enters an order (i) appointing a custodian, receiver, trustee or other officer with similar powers with respect to the Contractor or with respect to any substantial part of the Contractor's property, (ii) constituting an order for relief or approving 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 or (iii) ordering the dissolution, winding-up or liquidation of the Contractor.

B. The Contractor shall first be given an opportunity to cure any Event of Default. The Contractor shall have ten (10) days in which to cure the Event of Default or propose a plan for cure if a ten (10) day period is not a reasonable time to cure. If the Contractor fails to cure the Event of Default or if the City is not satisfied with the Contractor's proposed plan for curing the 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, if the Contractor is unable to cure the Event of Default as set forth above, the City shall have the right (but no obligation) to cure (or cause to be cured) any Event of Default; the 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 the Contractor under this Agreement or any other agreement between the City and the Contractor all damages, losses, costs or expenses incurred by the City as a result of such Event of Default and any liquidated damages due from the Contractor pursuant to the terms of this Agreement or any other agreement.

C. 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.

21. Termination for Convenience

- A. 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 the Contractor at least thirty (30) days written notice of termination. The notice shall specify the date on which termination shall become effective.
- B. Upon receipt of the notice, the Contractor shall commence and perform, with diligence, all actions necessary on the part of the Contractor to effect the termination of this Agreement on the date specified by the City and to minimize the liability of the 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 shall include, without limitation:

- 1) Halting the performance of all services and other work under this Agreement on the date(s) and in the manner specified by the City.
- 2) Not placing any further orders or subcontracts for materials, services, equipment, or other items.
- 3) Terminating all existing orders and subcontracts.
- 4) At the City's direction, assigning to the City any or all of the Contractor's right, title, and interest under the orders and subcontracts terminated. Upon such assignment, the City 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.
- 5) Subject to the City's approval, settling all outstanding liabilities and all claims arising out of the termination of orders and subcontracts.
- 6) Completing performance of any services or work that the City designates to be completed prior to the date of termination specified by the City.
- 7) Taking such action as may be necessary, or as the City may direct, for the protection and preservation of any property related to this Agreement which is in the possession of the Contractor and in which the City has or may acquire an interest.

C. Within thirty (30) days after the specified termination date, the Contractor shall submit to the City an invoice, which shall set forth each of the following as a separate line item:

- 1) The reasonable cost to the Contractor, including profit as set forth in subsection 2) below, for all services and other work the City directed the Contractor to perform prior to the specified termination date, for which services or work the City has not already tendered payment. Reasonable costs may include a reasonable allowance for actual overhead, not to exceed a total of ten percent (10%) of Contractor's direct costs for services or other work. Any overhead allowance shall be separately itemized. The Contractor may also recover the reasonable cost of preparing the invoice.
- 2) A reasonable allowance for profit on the cost of the services and other work described in the immediately preceding subsection 1), provided that the Contractor can establish, to the satisfaction of the City, that the Contractor would have made a profit had all services and other work under this Agreement been completed, and provided further, that the profit allowed shall in no event exceed ten percent (10%) of such cost.
- 3) The reasonable cost to the Contractor of handling material or equipment returned to the vendor, delivered to the City or otherwise disposed of as directed by the City.
- 4) A deduction for the cost of materials to be retained by the Contractor, amounts realized from the sale of materials and not otherwise recovered by or credited to the City, and any other appropriate credits to the City against the cost of the services or other work.

D. In no event shall the City be liable for costs incurred by the Contractor or any of its subcontractors after the termination date specified by the City, except for those costs specifically

enumerated and described in the immediately preceding subsection C, which shall also include post-termination employee salaries and post-termination administrative expenses and overhead, in accordance with but not exceeding those amounts required to be paid by the Contractor to its employees, as per the Contractor's Collective Bargaining Agreement and the Contractor's employee severance program. Such non-recoverable costs include, but are not limited to, 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 such subsection C.

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

F. The City's payment obligation under this Section shall survive termination of this Agreement.

22. Rights and Duties upon Termination or Expiration

A. This Section and the following Sections of this Agreement shall survive termination or expiration of this Agreement: 8 through 11, 13 through 18, 24, 26, 27, 28, 48, through 52, 56, and 57.

B. Subject to the immediately preceding subsection A, upon termination of this Agreement prior to expiration of the term specified in Section 2, this Agreement shall terminate and be of no further force or effect. The 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 work, 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. This subsection shall survive termination of this Agreement.

23. Conflict of Interest

Through its execution of this Agreement, the Contractor acknowledges that it is familiar with the provision of Section 15.103 of the City's Charter, Article III, Chapter 2 of the City's Campaign and Governmental Conduct Code, and Section 87100 et seq. and Section 1090 et seq. of the Government Code of the State of California, and certifies that it does not know of any facts which constitutes a violation of said provisions and agrees that it will immediately notify the City if it becomes aware of any such fact during the term of this Agreement.

24. Proprietary or Confidential Information

The Parties hereto understand and agree that, in the performance of the work or services under this Agreement or in contemplation thereof, one Party may have access to private or confidential information which may be owned or controlled by the other Party and that such information may contain proprietary or confidential details, the disclosure of which to third parties may be damaging to

the owner of the information. The Parties therefore agree that all information disclosed by one Party to the other shall be held in confidence and used only in performance of the Agreement. The Parties shall exercise the same reasonable standard of care to protect such information as they would use to protect their own proprietary data.

25. Notices to the Parties

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

To City: Lee Mitchell
SFO AirTrain Manager
AirTrain Administration
San Francisco International Airport
P.O. Box 8097
San Francisco, CA 94128
FAX: (650) 821-7664
Email: lee.mitchell@flysfo.com

To Contractor: Lee LayPort
SYSTEMS – General Manager Western Region
Bombardier Transportation (Holdings) USA Inc.
P.O. Box 281317
San Francisco, CA 94128-7343
FAX: (650) 821-7371
Email: lee.layport@us.transport.bombardier.com

Any notice of default must be sent by registered mail.

26. Ownership of Results

- A. Any drawings, plans, specifications, blueprints, studies, reports, memoranda, computation sheets, computer files and media or other documents ("Information") prepared by the Contractor or its subcontractors in connection with services to be performed under this Agreement, shall become the property of and will be transmitted to the City. However, it is understood that the Contractor retains the right in the intellectual property contained in the Information and may use the Information for any purpose whatsoever, whether related to this Agreement or otherwise. It is also understood that any and all proprietary information of the Contractor, as defined under the Base Contract, shall be included in the escrow agreement previously agreed upon between the City and the Contractor for a period of twenty (20) years from the date of execution of such escrow agreement.
- B. The Commission shall have the non-exclusive right to use or permit the use of the Information only for the sole purpose of operating and maintaining the System, without additional compensation. The obligations of confidentiality set forth in Article 24.A above shall apply to the Commission's use of these materials.
- C. Proprietary software for products, components, subsystems and other items shall be protected and restricted as provided herein. All "proprietary" Software shall be provided to a Trustee under a

Trust Agreement entered into by the Commission, the Contractor, and the Trustee. The basic terms of said Trust Agreement shall be as follows:

- 1) The Trustee shall be a trust company qualified to do business in California or a bank authorized to engage in a trust business in California. The bank or trust company shall be mutually acceptable to both the Commission and the Contractor.
- 2) All proprietary Software shall be placed with the Trustee for safekeeping.
- 3) If the Contract is terminated for default in accordance with the General Conditions herein, the Trustee, upon receipt of written notice from the Commission shall turn over to the Commission all proprietary software in its possession, and which has not already been deposited into escrow under the original Trust Agreement, within a sixty (60)-day period from the date of receipt of such notice.
- 4) At such time the proprietary Software is turned over to the Commission by the Trustee, the Commission shall have the right and license to use said Software without restrictions for the System and any future re-supply, expansion, or extension of the System. However, the Commission may not sell said proprietary Software or allow any party to use same for any other project without the Contractor's written consent. The Contractor shall continue to have the full and complete right to use any and all duplicates or other originals of said Software in any manner it chooses and without restriction.
- 5) The Trust Agreement shall automatically terminate after twenty (20) years and all such proprietary Software shall be turned over to the Commission. Upon termination of the Trust Agreement, the Commission shall have the right and license to utilize the proprietary Software for its own use only for the Automated Rail Transit (ART) and its expansion but not for the purposes of building another separate ART. However, title to any designs shall remain with the Contractor.

D. Subject to the provisions regarding the use of the materials stated in paragraph 26.C above, all materials to become part of the System including but not limited to, spare parts, tools, equipment, expendables, and consumables inventory shall be and become the property of the Commission upon delivery or upon being especially adapted for use in or as part of the System, whichever may first occur.

E. The Contractor shall promptly furnish to the Commission such bills of sale and other instruments as may be required by it, properly executed, acknowledged and delivered, assuring to it title to such materials, free of encumbrances and shall mark or otherwise identify all such materials as the property of the Commission.

27. Copyright of Original Works

If, in connection with services performed under this Agreement, the Contractor or its subcontractors create artwork, copy, posters, billboards, photographs, videotapes, audiotapes, systems designs, software, reports, diagrams, surveys, blueprints, source codes or any other original works of authorship ("Works"), such Works shall not be considered works for hire as it is defined under Title 17 of the United States Code, rather such Works shall be considered instruments of service of the

Contractor and the Contractor shall grant to the City a non-exclusive, royalty-free license to use the Contractor's Works. It is expressly agreed that any such use of the Contractor's Works by the City shall be limited to the sole purpose of operating and maintaining the System. All copyrights in these Works shall remain with the Contractor.

28. Audit and Inspection of Records

The Contractor agrees to maintain and make available to the City, during regular business hours, accurate books, and accounting records relating in any way to its work under this Agreement. The Contractor will permit 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. The Contractor shall maintain such data and records in an accessible location and condition for a period of not less than five (5) 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 conferred upon the City by this Section.

29. Subcontracting

The Contractor is prohibited from subcontracting this Agreement or any part of it unless such subcontracting is first approved by the City in writing. Neither party shall, on the basis of this Agreement, contract on behalf of or in the name of the other party. An agreement made in violation of this provision shall confer no rights on any party and shall be null and void.

30. Assignment

The services to be performed by the Contractor are personal in character and neither this Agreement nor any duties or obligations hereunder may be assigned or delegated by the Contractor unless first approved by the City by written instrument executed and approved in the same manner as this Agreement.

31. 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.

32. Earned Income Credit (EIC) Forms

- A.** Administrative Code section 120 requires that employers provide their employees with IRS Form W-5 (The Earned Income Credit Advance Payment Certificate) and the IRS EIC Schedule, as set forth below. Employers can locate these forms at the IRS Office, on the Internet, or anywhere that Federal Tax Forms can be found.
- B.** The Contractor shall provide EIC Forms to each Eligible Employee at each of the following times: (i) within thirty (30) days following the date on which this Agreement becomes effective (unless Contractor has already provided such EIC Forms at least once during the calendar year in

which such effective date falls); (ii) promptly after any Eligible Employee is hired by the Contractor; and (iii) annually between January 1 and January 31 of each calendar year during the term of this Agreement.

- C. Failure to comply with any requirement contained in subparagraph A of this Section shall constitute a material breach by the Contractor of the terms of this Agreement. If, within thirty (30) days after the Contractor receives written notice of such a breach, the Contractor fails to cure such breach or, if such breach cannot reasonably be cured within such period of thirty (30) days, the Contractor fails to commence efforts to cure within such period or thereafter fails to diligently pursue such cure to completion, the City may pursue any rights or remedies available under this Agreement or under applicable law.
- D. Any Subcontract entered into by the Contractor shall require the subcontractor to comply, as to the subcontractor's Eligible Employees, with each of the terms of this section.
- E. Capitalized terms used in this Section and not defined in this Agreement shall have the meanings assigned to such terms in Section 12O of the San Francisco Administrative Code.

33. Local Business Enterprise Utilization; Liquidated Damages

A. The LBE Ordinance

The Contractor, shall comply with all the requirements of the Local Business Enterprise and Non-Discrimination in Contracting Ordinance set forth in Chapter 14B of the San Francisco Administrative Code as it now exists or as it may be amended in the future (collectively the "LBE Ordinance"), provided such amendments do not materially increase the Contractor's obligations or liabilities, or materially diminish the Contractor's rights, under this Agreement. Such provisions of the LBE Ordinance are incorporated by reference and made a part of this Agreement as though fully set forth in this section. The Contractor's willful failure to comply with any applicable provisions of the LBE Ordinance is a material breach of the Contractor's obligations under this Agreement and shall entitle the City, subject to any applicable notice and cure provisions set forth in this Agreement, to exercise any of the remedies provided for under this Agreement, under the LBE Ordinance or otherwise available at law or in equity, which remedies shall be cumulative unless this Agreement expressly provides that any remedy is exclusive. In addition, the Contractor shall comply fully with all other applicable local, state and federal laws prohibiting discrimination and requiring equal opportunity in contracting, including subcontracting.

B. Compliance and Enforcement

1) Enforcement

- a) If the Contractor willfully fails to comply with any of the provisions of the LBE Ordinance, the rules and regulations implementing the LBE Ordinance, or the provisions of this Agreement pertaining to LBE participation, the Contractor shall be liable for liquidated damages in an amount equal to the Contractor's net profit on this Agreement, or ten percent (10%) of the total amount of this Agreement, or One Thousand Dollars (\$1,000), whichever is greatest. The Director of the City's Human Rights Commission or any other public official authorized to enforce the LBE Ordinance (separately and

collectively, the "Director of HRC") may also impose other sanctions against the Contractor authorized in the LBE Ordinance, including declaring the Contractor to be irresponsible and ineligible to contract with the City for a period of up to five (5) years or revocation of the Contractor's LBE certification. The Director of HRC will determine the sanctions to be imposed, including the amount of liquidated damages, after investigation pursuant to Administrative Code §14B.17.

- b) By entering into this Agreement, the Contractor acknowledges and agrees that any liquidated damages assessed by the Director of the HRC shall be payable to the City upon demand. The Contractor further acknowledges and agrees that any liquidated damages assessed may be withheld from any monies due to the Contractor on any contract with the City.
- c) The Contractor agrees to maintain records necessary for monitoring its compliance with the LBE Ordinance for a period of three (3) years following termination or expiration of this Agreement, and shall make such records available for audit and inspection by the Director of HRC or the Controller upon request.

2) Subcontracting Goals

- a) The LBE subcontracting participation goal for this contract is five percent (5%). The Contractor shall fulfill the subcontracting commitment made in its bid or proposal. Each invoice submitted to the City for payment shall include the information required in the HRC Progress Payment Form and the HRC Payment Affidavit. Failure to provide the HRC Progress Payment Form and the HRC Payment Affidavit with each invoice submitted by the Contractor shall entitle the City to withhold twenty percent (20%) of the amount of that invoice until the HRC Payment Form and the HRC Subcontractor Payment Affidavit are provided by the Contractor.
- b) The Contractor shall not participate in any back contracting to the Contractor or lower-tier subcontractors, as defined in the LBE Ordinance, for any purpose inconsistent with the provisions of the LBE Ordinance, its implementing rules and regulations, or this Section.

3) Subcontract Language Requirements

- a) The Contractor shall incorporate the LBE Ordinance into each subcontract made in the fulfillment of the Contractor's obligations under this Agreement and require each subcontractor to agree and comply with provisions of the ordinance applicable to subcontractors.
- b) The Contractor shall include in all subcontracts with LBEs made in fulfillment of the Contractor's obligations under this Agreement, a provision requiring the Contractor to compensate any LBE subcontractor for damages for breach of contract or liquidated damages equal to five percent (5%) of the subcontract amount, whichever is greater, if the Contractor does not fulfill its commitment to use the LBE subcontractor as specified in the bid or proposal, unless the Contractor received advance approval from the Director of HRC and contract awarding authority to substitute subcontractors or to otherwise

modify the commitments in the bid or proposal. Such provisions shall also state that it is enforceable in a court of competent jurisdiction.

- c) Subcontracts shall require the subcontractor to maintain records necessary for monitoring its compliance with the LBE Ordinance for a period of three (3) years following termination of this contract and to make such records available for audit and inspection by the Director of HRC or the Controller upon request.

4) Payment of Subcontractors

- a) The Contractor shall pay its subcontractors within three (3) working days after receiving payment from the City unless the Contractor notifies the Director of HRC in writing within ten (10) working days prior to receiving payment from the City that there is a bona fide dispute between the Contractor and its subcontractor and the Director waives the three-day payment requirement, in which case the Contractor may withhold the disputed amount but shall pay the undisputed amount.
- b) The Contractor further agrees, within ten (10) working days following receipt of payment from the City, to file the HRC Payment Affidavit with the Controller, under penalty of perjury, that the Contractor has paid all subcontractors. The affidavit shall provide the names and addresses of all subcontractors and the amount paid to each. Failure to provide such affidavit may subject the Contractor to enforcement procedure under Administrative Code §14B.17.

34. Nondiscrimination; Penalties

A. Contractor Shall Not Discriminate

In the performance of this Agreement, the Contractor agrees not to discriminate against any employee, City and County employee working with such Contractor or subcontractor, applicant for employment with such Contractor or subcontractor, or against any person seeking accommodations, advantages, facilities, privileges, services, or membership in all business, social, or other establishments or organizations, on the basis of the fact or perception of a person's race, color, creed, religion, national origin, ancestry, age, height, weight, sex, sexual orientation, gender identity, domestic partner status, marital status, disability or Acquired Immune Deficiency Syndrome or HIV status (AIDS/HIV status), or association with members of such protected classes, or in retaliation for opposition to discrimination against such classes.

B. Subcontracts

The Contractor shall incorporate by reference in all subcontracts the provisions of §§12B.2 (a), 12B.2(c)-(k), and 12C.3 of the San Francisco Administrative Code (copies of which are available from the City) and shall require all subcontractors to comply with such provisions. The Contractor's failure to comply with the obligations in this subsection shall constitute a material breach of this Agreement.

C. Nondiscrimination in Benefits

The 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 bereavement leave, family medical leave, health benefits, membership or membership discounts, moving expenses, pension and retirement benefits or travel benefits, as well as any benefits other than the benefits specified above, between employees with domestic partners and employees with spouses, and/or between the domestic partners and spouses of such employees, where the domestic partnership has been registered with a governmental entity pursuant to state or local law authorizing such registration, subject to the conditions set forth in §12B.2(b) of the San Francisco Administrative Code.

D. Condition to Contract

As a condition to this Agreement, the Contractor shall execute the "Chapter 12B Declaration: Nondiscrimination in Contracts and Benefits" form (form HRC-12B-101) with supporting documentation and secure the approval of the form by the San Francisco Human Rights Commission.

E. Incorporation of Administrative Code Provisions by Reference

The provisions of Chapters 12B and 12C of the San Francisco Administrative Code are incorporated in this Section by reference and made a part of this Agreement as though fully set forth herein. The Contractor shall comply fully with and be bound by all of the provisions that apply to this Agreement under such Chapters, including but not limited to the remedies provided in such Chapters. Without limiting the foregoing, the Contractor understands that pursuant to §§12B.2 (h) and 12C.3 (g) of the San Francisco Administrative Code, a penalty of Fifty Dollars (\$50) for each person for each calendar day during which such person was discriminated against in violation of the provisions of this Agreement may be assessed against the Contractor and/or deducted from any payments due the Contractor.

35. MacBride Principles—Northern Ireland

Pursuant to San Francisco Administrative Code §12F.5, the City and County of San Francisco urges companies doing business in Northern Ireland to move towards resolving employment inequities, and encourages such companies to abide by the MacBride Principles. The City and County of San Francisco urges San Francisco companies to do business with corporations that abide by the MacBride Principles. By signing below, the person executing this agreement on behalf of the Contractor acknowledges and agrees that he or she has read and understood this section.

36. Tropical Hardwood and Virgin Redwood Ban

Pursuant to §804(b) of the San Francisco Environment Code, the City and County of San Francisco urges Contractors not to import, purchase, obtain, or use for any purpose, any tropical hardwood, tropical hardwood wood product, virgin redwood or virgin redwood wood product.

37. Drug-Free Workplace Policy

The Contractor acknowledges that pursuant to the Federal Drug-Free Workplace Act of 1989, the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is

prohibited on City premises. The Contractor agrees that any violation of this prohibition by the Contractor, its employees, agents or assigns will be deemed a material breach of this Agreement.

38. Resource Conservation

Chapter 5 of the San Francisco Environment Code ("Resource Conservation") is incorporated herein by reference. Failure by the Contractor to comply with any of the applicable requirements of Chapter 5 will be deemed a material breach of contract.

39. Compliance with Americans with Disabilities Act

The 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 the disabled public. The Contractor shall provide the services specified in this Agreement in a manner that complies with the ADA and any and all other applicable federal, state and local disability rights legislation. The Contractor agrees not to discriminate against disabled persons in the provision of services, benefits or activities provided under this Agreement and further agree that any violation of this prohibition on the part of the Contractor, its employees, agents, or assigns will constitute a material breach of this Agreement.

40. Sunshine Ordinance

In accordance with San Francisco Administrative Code §67.24(e), contracts, contractors' bids, responses to solicitations and all other records of communications between the City and persons or firms seeking contracts, shall be open to inspection immediately after a contract has been awarded. Nothing in this provision requires the disclosure of a private person or organization's net worth or other proprietary financial data submitted for qualification for a contract or other benefit until and unless that person or organization is awarded the contract or benefit. Information provided which is covered by this paragraph will be made available to the public upon request.

41. Public Access to Meetings and Records

If the Contractor receives a cumulative total per year of at least Two Hundred Fifty Thousand Dollars (\$250,000) in City funds or City-administered funds and is a non-profit organization as defined in Chapter 12L of the San Francisco Administrative Code, the Contractor shall comply with and be bound by all the applicable provisions of that Chapter. By executing this Agreement, the Contractor agrees to open its meetings and records to the public in the manner set forth in §§12L.4 and 12L.5 of the Administrative Code. The Contractor further agrees to make-good faith efforts to promote community membership on its Board of Directors in the manner set forth in §12L.6 of the Administrative Code. The Contractor acknowledges that its material failure to comply with any of the provisions of this paragraph shall constitute a material breach of this Agreement. The Contractor further acknowledges that such material breach of the Agreement shall be grounds for the City to terminate and/or not renew the Agreement, partially or in its entirety.

42. Limitations on Contributions

Through execution of this Agreement, the Contractor acknowledges that it is familiar with section 1.126 of the City's Campaign and Governmental Conduct Code, which prohibits any person who contracts with 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, or for a grant, loan or loan guarantee, from making any campaign contribution to (i) an individual holding a City elective office if the contract must be approved by the individual, a board on which that individual serves, or a board on which an appointee of that individual serves, (ii) a candidate for the office held by such individual, or (iii) a committee controlled by such individual, at any time from the commencement of negotiations for the contract until the later of either the termination of negotiations for such contract or six (6) months after the date the contract is approved. The Contractor acknowledges that the foregoing restriction applies only if the contract or a combination or series of contracts approved by the same individual or board in a fiscal year have a total anticipated or actual value of Fifty Thousand Dollars (\$50,000) or more. The Contractor further acknowledges that 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 twenty (20) percent in the Contractor; any subcontractor listed in the bid or contract; and any committee that is sponsored or controlled by the Contractor. Additionally, the Contractor acknowledges that the Contractor must inform each of the persons described in the preceding sentence of the prohibitions contained in Section 1.126.

43. Requiring Minimum Compensation for Covered Employees - This section omitted pursuant to San Francisco Administrative Code Chapter 12P, section 12P.2(e)(4), exempting contracts entered into pursuant to a settlement of a legal proceeding.
44. Requiring Health Benefits for Covered Employees - This section omitted pursuant to San Francisco Administrative Code Chapter 12Q, section 12Q.2.4(b)(3), exempting contracts entered into pursuant to a settlement of a legal proceeding.
45. First Source Hiring Program

A. Incorporation of Administrative Code Provisions by Reference

The provisions of Chapter 83 of the San Francisco Administrative Code are incorporated in this Section by reference and made a part of this Agreement as though fully set forth herein. The Contractor shall comply fully with, and be bound by, all of the provisions that apply to this Agreement under such Chapter, including but not limited to the remedies provided therein. Capitalized terms used in this Section and not defined in this Agreement shall have the meanings assigned to such terms in Chapter 83.

B. First Source Hiring Agreement

As an essential term of, and consideration for, any contract or property contract with the City, not exempted by the FSHA, the Contractor shall enter into a first source hiring agreement ("agreement") with the City, on or before the effective date of the contract or property contract. Contractors shall also enter into an agreement with the City for any other work that it performs in the City. Such agreement shall:

- 1) Set appropriate hiring and retention goals for entry level positions. The employer shall agree to achieve these hiring and retention goals, or, if unable to achieve these goals, to establish good faith efforts as to its attempts to do so, as set forth in the agreement. The agreement shall take into consideration the employer's participation in existing job training, referral, and/or brokerage programs. Within the discretion of the FSHA, subject to appropriate modifications, participation in such programs may be certified as meeting the requirements of

this Chapter. Failure either to achieve the specified goal or to establish good faith efforts will constitute noncompliance and will subject the employer to the provisions of Section 83.10 of this Chapter.

- 2) Set first source interviewing, recruitment and hiring requirements, which will provide the San Francisco Workforce Development System with the first opportunity to provide qualified economically disadvantaged individuals for consideration for employment for entry level positions. Employers shall consider all applications of qualified economically disadvantaged individuals referred by the System for employment; provided however, if the employer utilizes nondiscriminatory screening criteria, the employer shall have the sole discretion to interview and/or hire individuals referred or certified by the San Francisco Workforce Development System as being qualified economically disadvantaged individuals. The duration of the first source interviewing requirement shall be determined by the FSHA and shall be set forth in each agreement, but shall not exceed ten (10) days. During that period, the employer may publicize the entry level positions in accordance with the agreement. A need for urgent or temporary hires must be evaluated, and appropriate provisions for such a situation must be made in the agreement.
- 3) Set appropriate requirements for providing notification of available entry level positions to the San Francisco Workforce Development System so that the System may train and refer an adequate pool of qualified economically disadvantaged individuals to participating employers. Notification should include such information as employment needs by occupational title, skills, and/or experience required, the hours required, wage scale and duration of employment, identification of entry level and training positions, identification of English language proficiency requirements, or absence thereof, and the projected schedule and procedures for hiring for each occupation. Employers should provide both long-term job need projections and notice before initiating the interviewing and hiring process. These notification requirements will take into consideration any need to protect the employer's proprietary information.
- 4) Set appropriate record keeping and monitoring requirements. The First Source Hiring Administration shall develop easy-to-use forms and record keeping requirements for documenting compliance with the agreement. To the greatest extent possible, these requirements shall utilize the employer's existing record keeping systems, be nonduplicative, and facilitate a coordinated flow of information and referrals.
- 5) Establish guidelines for employer good faith efforts to comply with the first source hiring requirements of this Chapter. The FSHA will work with City departments to develop employer good faith effort requirements appropriate to the types of contracts and property contracts handled by each department. Employers shall appoint a liaison for dealing with the development and implementation of the employer's agreement. In the event that the FSHA finds that the employer under a City contract or property contract has taken actions primarily for the purpose of circumventing the requirements of this Chapter, that employer shall be subject to the sanctions set forth in Section 83.10 of this Chapter.
- 6) Set the term of the requirements.
- 7) Set appropriate enforcement and sanctioning standards consistent with this Chapter.

- 8) Set forth the City's obligations to develop training programs, job applicant referrals, technical assistance, and information systems that assist the employer in complying with this Chapter.
- 9) Require the developer to include notice of the requirements of this Chapter in leases, subleases, and other occupancy contracts.

C. Hiring Decisions

The Contractor shall make the final determination of whether an Economically Disadvantaged Individual referred by the System is "qualified" for the position.

D. Exceptions

Upon application by the Employer, the First Source Hiring Administration may grant an exception to any or all of the requirements of Chapter 83 in any situation where it concludes that compliance with this Chapter would cause economic hardship.

E. Liquidated Damages

The Contractor agrees:

- 1) To be liable to the City for liquidated damages as provided in this section;
- 2) To be subject to the procedures governing enforcement of breaches of contracts based on violations of contract provisions required by this Chapter as set forth in this section;
- 3) That the Contractor's commitment to comply with this Chapter is a material element of the City's consideration for this contract; that the failure of the Contractor to comply with the contract provisions required by this Chapter will cause harm to the City and the public which is significant and substantial but extremely difficult to quantify; that the harm to the City includes not only the financial cost of funding public assistance programs but also the insidious but impossible to quantify harm that this community and its families suffer as a result of unemployment; and that the assessment of liquidated damages of up to Five Thousand Dollars (\$5,000) for every notice of a new hire for an entry level position improperly withheld by the Contractor from the first source hiring process, as determined by the FSHA during its first investigation of a Contractor, does not exceed a fair estimate of the financial and other damages that the City suffers as a result of the Contractor's failure to comply with its first source referral contractual obligations.
- 4) That the continued failure by a Contractor to comply with its first source referral contractual obligations will cause further significant and substantial harm to the City and the public, and that a second assessment of liquidated damages of up to Ten Thousand Dollars (\$10,000) for each entry level position improperly withheld from the FSHA, from the time of the conclusion of the first investigation forward, does not exceed the financial and other damages that the City suffers as a result of the Contractor's continued failure to comply with its first source referral contractual obligations;

- 5) That in addition to the cost of investigating alleged violations under this Section, the computation of liquidated damages for purposes of this section is based on the following data:
 - a) The average length of stay on public assistance in San Francisco's County Adult Assistance Program is approximately 41 months at an average monthly grant of Three Hundred Forty-eight Dollars (\$348) per month, totaling approximately Fourteen Thousand Three Hundred Seventy-nine Dollars (\$14,379); and
 - b) In 2004, the retention rate of adults placed in employment programs funded under the Workforce Investment Act for at least the first six (6) months of employment was 84.4%. Since qualified individuals under the First Source program face far fewer barriers to employment than their counterparts in programs funded by the Workforce Investment Act, it is reasonable to conclude that the average length of employment for an individual whom the First Source Program refers to an employer and who is hired in an entry level position is at least one (1) year; therefore, liquidated damages that total Five Thousand Dollars (\$5,000) for first violations and Ten Thousand Dollars (\$10,000) for subsequent violations as determined by FSHA constitute a fair, reasonable, and conservative attempt to quantify the harm caused to the City by the failure of a Contractor to comply with its first source referral contractual obligations.
- 6) That the failure of Contractors to comply with this Chapter, except property contractors, may be subject to the debarment and monetary penalties set forth in Sections 6.80 et seq. of the San Francisco Administrative Code, as well as any other remedies available under the contract or at law; and
- 7) That in the event the City is the prevailing party in a civil action to recover liquidated damages for breach of a contract provision required by this Chapter, the Contractor will be liable for the City's costs and reasonable attorneys fees.
- 8) Violation of the requirements of Chapter 83 is subject to an assessment of liquidated damages in the amount of Five Thousand Dollars (\$5,000) for every new hire for an Entry Level Position improperly withheld from the first source hiring process. The assessment of liquidated damages and the evaluation of any defenses or mitigating factors shall be made by the FSHA.

F. Subcontracts

Any subcontract entered into by the Contractor shall require the subcontractor to comply with the requirements of Chapter 83 and shall contain contractual obligations substantially the same as those set forth in this Section.

46. Prohibition on Political Activity with City Funds

In accordance with San Francisco Administrative Code Chapter 12.G, the Contractor may not participate in, support, or attempt to influence any political campaign for a candidate or for a ballot measure (collectively, "Political Activity") in the performance of the services provided under this Agreement. The Contractor agrees to comply with San Francisco Administrative Code Chapter 12.G and any implementing rules and regulations promulgated by the City's Controller. The terms and

provisions of Chapter 12.G are incorporated herein by this reference. In the event the Contractor violates the provisions of this section, the City may, in addition to any other rights or remedies available hereunder, (i) terminate this Agreement, and (ii) prohibit the Contractor from bidding on or receiving any new City contract for a period of two (2) years. The Controller will not consider Contractor's use of profit as a violation of this section.

47. Preservative-treated Wood Containing Arsenic

The Contractor may not purchase preservative-treated wood products containing arsenic in the performance of this Agreement unless an exemption from the requirements of Chapter 13 of the San Francisco Environment Code is obtained from the Department of the Environment under Section 1304 of the Code. The term "preservative-treated wood containing arsenic" shall mean wood treated with a preservative that contains arsenic, elemental arsenic, or an arsenic copper combination, including, but not limited to, chromated copper arsenate preservative, ammoniacal copper zinc arsenate preservative, or ammoniacal copper arsenate preservative. The Contractor may purchase preservative-treated wood products on the list of environmentally preferable alternatives prepared and adopted by the Department of the Environment. This provision does not preclude the Contractor from purchasing preservative-treated wood containing arsenic for saltwater immersion. The term "saltwater immersion" shall mean a pressure-treated wood that is used for construction purposes or facilities that are partially or totally immersed in saltwater.

48. Modification of Agreement

This Agreement may not be modified, nor may compliance with any of its terms be waived, except by written instrument executed and approved in the same manner as this Agreement. The Contractor shall cooperate with the Department to submit to the Director of HRC any amendment, modification, supplement, or change order that would result in a cumulative increase of the original amount of this Agreement by more than twenty percent (20%) (HRC Contract Modification Form).

49. Administrative Remedy for Agreement Interpretation

Should any question arise as to the meaning and intent of this Agreement, the question shall, prior to any other action or resort to any other legal remedy, be referred to Purchasing who shall decide the true meaning and intent of the Agreement.

50. 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.

51. Construction

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

52. Entire Agreement

This contract sets forth the entire Agreement between the parties, and supersedes all other oral or written provisions. This contract may be modified only as provided in Section 48.

53. Compliance with Laws

The Contractor shall keep itself fully informed of the City's Charter, codes, ordinances, 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 anything contained herein to the contrary, if a change in any local codes, ordinances, regulations or applicable state or federal laws, including any changes in law related to the oversight of the California Department of Occupational Safety and Health ("DOSH"), which cause an increase to the Contractor's scope of services or an increase in the Contractor's costs to perform its services, the Contractor may seek equitable adjustment from the City and if agreed to by the City, any such equitable adjustment shall be treated as a change order under this Agreement.

54. Services Provided by Attorneys

Any services to be provided by a law firm or attorney must be reviewed and approved in writing in advance by the City Attorney. No invoices for services provided by law firms or attorneys, including, without limitation, as subcontractors of Contractor, will be paid unless the provider received advance written approval from the City Attorney.

55. Supervision of Minors - Left Blank by Agreement of the Parties – Contract Does Not Involve Supervision of Minors.

56. 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 (i) the validity of other provisions of this Agreement shall not be affected or impaired thereby, and (ii) 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.

57. Protection of Private Information

The Contractor has read and agrees to the terms set forth in San Francisco Administrative Code Sections 12M.2, "Nondisclosure of Private Information," and 12M.3, "Enforcement" of Administrative Code Chapter 12M, "Protection of Private Information," which are incorporated herein as if fully set forth. The Contractor agrees that any failure of the Contractor to comply with the requirements of Section 12M.2 of this Chapter shall be a material breach of the Contract. In such an event, in addition to any other remedies available to it under equity or law, the City may terminate the Contract, bring a false claim action against the Contractor pursuant to Chapter 6 or Chapter 21 of the Administrative Code, or debar the Contractor.

58. Graffiti Removal

- A. Graffiti is detrimental to the health, safety, and welfare of the community in that it promotes a perception in the community that the laws protecting public and private property can be disregarded with impunity. This perception fosters a sense of disrespect of the law that results in an increase in crime; degrades the community and leads to urban blight; is detrimental to property values, business opportunities and the enjoyment of life; is inconsistent with the City's property maintenance goals and aesthetic standards; and results in additional graffiti and in other properties becoming the target of graffiti unless it is quickly removed from public and private property. Graffiti results in visual pollution and is a public nuisance. Graffiti must be abated as quickly as possible to avoid detrimental impacts on the City and County and its residents, and to prevent the further spread of graffiti.
- B. The Contractor shall remove all graffiti from any real property owned or leased by the Contractor in the City and County of San Francisco within forty eight (48) hours of the earlier of Contractor's (i) discovery or notification of the graffiti or (ii) receipt of notification of the graffiti from the Department of Public Works. This section is not intended to require a Contractor to breach any lease or other agreement that it may have concerning its use of the real property. The term "graffiti" means any inscription, word, figure, marking or design that is affixed, marked, etched, scratched, drawn or painted on any building, structure, fixture or other improvement, whether permanent or temporary, including by way of example only and without limitation, signs, banners, billboards and fencing surrounding construction sites, whether public or private, without the consent of the owner of the property or the owner's authorized agent, and which is visible from the public right-of-way. "Graffiti" shall not include: (iii) any sign or banner that is authorized by, and in compliance with, the applicable requirements of the San Francisco Public Works Code, the San Francisco Planning Code or the San Francisco Building Code; or (iv) any mural or other painting or marking on the property that is protected as a work of fine art under the California Art Preservation Act (California Civil Code Sections 987 et seq.) or as a work of visual art under the Federal Visual Artists Rights Act of 1990 (17 U.S.C. §§ 101 et seq.).
- C. Any failure of the Contractor to comply with this section of this Agreement shall constitute an Event of Default of this Agreement.

59. Food Service Waste Reduction Requirements

Effective June 1, 2007, the Contractor agrees to comply fully with and be bound by all of the provisions of the Food Service Waste Reduction Ordinance, as set forth in San Francisco Environment Code Chapter 16, including the remedies provided, and implementing guidelines and rules. The provisions of Chapter 16 are incorporated herein by reference and made a part of this Agreement as though fully set forth. This provision is a material term of this Agreement. By entering into this Agreement, the Contractor agrees that if it breaches this provision, the City will suffer actual damages that will be impractical or extremely difficult to determine; further, the Contractor agrees that the sum of One Hundred Dollars (\$100) liquidated damages for the first breach, Two Hundred Dollars (\$200) liquidated damages for the second breach in the same year, and Five Hundred Dollars (\$500) liquidated damages for subsequent breaches in the same year is reasonable estimate of the damage that the City will incur based on the violation, established in light of the circumstances existing at the time this Agreement was made. Such amount shall not be considered a penalty, but rather agreed monetary damages sustained by the City because of the Contractor's failure to comply with this provision.

60. Slavery Era Disclosure - Left Blank by Agreement of the Parties – Contract Not for Insurance or Applicable Financial Services or Textiles.

61. Dispute Resolution Procedure

- A. Any disputes arising under this Agreement shall first be dealt with between members of the Contractor's and the City's senior management. If the dispute is not resolved, the Contractor and the City agree to submit themselves to non-binding mediation. The Parties may then choose to arbitrate or litigate any unresolved dispute. Rules for arbitration shall be those set forth under the guidelines of the American Arbitration Association. Venue for arbitration or litigation shall be California.
- B. Either Party shall have sixty (60) days from the date of discovery that a claim exists to begin the dispute resolution procedure as against the other Party. This sixty (60) day time frame may be increased upon mutual agreement of the Parties.
- C. If the Contractor has a claim against the City, within sixty (60) days (or within an additional time frame, as mutually agreed upon by the Parties) the Contractor shall submit to the City a formal claim and all arguments, justifications, cost or estimates and detailed documentation supporting its position. The Contractor shall submit the claim justification in the following format:
 - 1) Cover letter and certification that the claim is made in good faith;
 - 2) Summary of the claim, including:
 - a) Underlying facts;
 - b) Entitlement;
 - c) Calculations;
 - d) Contract provisions supporting relief, if applicable;
 - 3) List of documents relating to the claim;
 - 4) Chronology of events and correspondence;
 - 5) Analysis of claim merit;
 - 6) Analysis of claim cost; and
 - 7) Any attachments required to support the claim.
- D. If the City has a claim against the Contractor, within sixty (60) days (or within an additional time frame, as mutually agreed upon by the Parties) the City shall submit to the Contractor a written notification of the claim, including a detailed description of the claim and all relevant supporting documentation.
- E. The Parties agree that any claims not raised in a timely manner by written notice, as set forth above, and not first dealt with between the Parties' senior management, may not be asserted in any Government Code Claim, subsequent litigation, or legal action.

62. Airport Intellectual Property

Pursuant to Resolution No. 01-0118, adopted by the Airport Commission on April 18, 2001, the Airport Commission affirmed that it will not tolerate the unauthorized use of its intellectual property, including the SFO logo, CADD designs, and copyrighted publications. All proposers, bidders, contractors, tenants, permittees, and others doing business with or at the Airport (including subcontractors and subtenants) may not use the Airport intellectual property, or any intellectual property confusingly similar to the Airport intellectual property, with the Airport Director's prior consent.

63. Labor Peace / Card Check Rule

Without limiting the generality of other provisions herein requiring the Contractor to comply with all Airport Rules, the Contractor shall comply with the Airport's Labor Peace / Card Check Rule, adopted on February 1, 2000, pursuant to Airport Commission Resolution No. 00-0049 (the "Labor Peace / Card Check Rule"). Capitalized terms not defined in this provision are defined in the Labor Peace/Card Check Rule. To comply with the Labor Peace/Card Check Rule, the Contractor shall, among other actions: (i) Enter into a Labor Peace/Card Check Rule Agreement with any Labor Organization which requests such an agreement and which has registered with the Airport Director or his / her designee, within thirty (30) days after Labor Peace/Card Check Rule Agreement has been requested; (ii) Not less than thirty (30) days prior to the modification of this Agreement, the Contractor shall provide notice by mail to any Labor Organization or federation of labor organizations which have registered with the Airport Director or his / her designee (registered labor organization"), that the Contractor is seeking to modify or extend this Agreement; (iii) Upon issuing any request for proposals, invitations to bid, or similar notice, or in any event not less than thirty (30) days prior to entering into any Subcontract, the Contractor shall provide notice to all registered Labor Organizations that the Contractor is seeking to enter into such Subcontract; and (iv) the Contractor shall include in any subcontract with a Subcontractor performing services pursuant to any covered Contract, a provision requiring the Subcontractor performing services pursuant to any covered Contract, a provision requiring the Subcontractor to comply with the requirements of the Labor Peace/Card Check Rule. If Airport Director determines that the Contractor violated the Labor Peace/Card Check Rule, the Airport Director shall have the option to terminate this Agreement, in addition to exercising all other remedies available to him / her.

64. Force Majeure

Neither Party under this Agreement shall be liable to the other for any failure, delay or interruption of the performance of its obligations hereunder due to causes or conditions beyond the control of that Party, including, without limitation, acts of God, explosions, fire and other accidents, including those resulting from seismic activity. The Contractor shall have the ability to request an equitable adjustment for both time and cost as it relates to an event of force majeure and the City's approval of such equitable adjustment shall not be unreasonably withheld.

65. Warranty

- A. The Contractor represents and warrants that it is and will be at all times fully qualified and capable of performing every phase of the work and shall complete the work in accordance with the terms of the Contract Documents. The Contractor warrants that all work and related services shall be performed in accordance with generally accepted professional standards of good and

sound transit industry practices and all requirements of the Contract Documents. Subject to the last sentence of this paragraph, the Contractor warrants that the work, including but not limited to each item of materials and equipment incorporated therein, shall be new, shall be of suitable grade of its respective kind for its intended use, shall be free from defects in design, engineering, materials, construction and workmanship, and shall conform in all respects with all applicable requirements of federal, state and local laws, licenses, and permits, the Drawings and Specifications and all descriptions set forth therein, applicable construction codes and standards, and all other requirements of the Contract Documents. Notwithstanding the foregoing, the Contractor shall not be responsible for the negligence of others in the specification of specific equipment, materials, design parameters, means, or methods of construction where that it is shown and expressly required by the Contract Documents.

B. The Contractor further warrants that operation and maintenance methods and procedures employed on the AirTrain shall have in the past proven to be suitable for the results expected. If the Contractor proposes to use an unproven and untried (i) operation or maintenance method or procedure or, (ii) part, material or component, the Commission must be advised of that fact, in advance and in writing. The Commission may permit experimentation, but it may require special guarantees of the Contractor to cover the work produced by the new and untried method or the part, material or component. Any Commission approved experimentation that requires special guarantees by the Contractor will be incorporated into the Contract by a Contract modification.

The Contractor shall provide all of the labor, parts, materials and components which are required to repair or replace any work which does not satisfy the quality of work warranty described above and shall replace and install any parts, materials or components which do not comply with the Contractor's warranty for a period of one (1) year after the repair or replacement is completed at no cost to the Commission. In the event that the Contractor is no longer performing Operation & Maintenance (O&M) of the system within the warranty period, the Airport must demonstrate that equipment has been maintained in accordance with the Contractor's written procedures as provided to the Airport.

66. Contract Documents

The Contract Documents which comprise the entire agreement between the Commission and the Contractor concerning the Work consist of the following documents, including all changes, addenda, and modifications thereto:

- A. Agreement between the City and County of San Francisco and Bombardier Transportation (Holdings) USA Inc.; Contract 8838
- B. General Requirements
- C. Appendix A – Services to be Provided by the Contractor
- D. Appendix B – Calculation of Charges/Determination of Monthly Payments
- E. Appendix C – Incident Grace Period Table
- F. Appendix D – K Factor Table

G. Appendix E – Spare Parts, Tools and Equipment List

H. Appendix F – Base Contract Price Breakdown

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

CITY
AIRPORT COMMISSION
CITY AND COUNTY OF
SAN FRANCISCO

By: John E. Martin
John E. Martin, Airport Director

Attest:

Jean Caramatti

Jean Caramatti, Secretary
Airport Commission

Resolution No: 08-0173

Adopted on: September 16, 2008

Approved as to Form:

Dennis J. Herrera
City Attorney

By: John E. Martin
Deputy City Attorney

CONTRACTOR

By signing this Agreement, I certify that I have read and understood paragraph 35, the City's statement urging companies doing business in Northern Ireland to move towards resolving employment inequities, encouraging compliance with the MacBride Principles, and urging San Francisco companies to do business with corporations that abide by the MacBride Principles.

Edward A. Gordon
Authorized Signature

Edward A. Gordon

Printed Name

Vice President

Title

Michael E. Fetcko
Authorized Signature

Michael E. Fetcko

Printed Name

Vice President

Title

Bombardier Transportation (Holdings) USA Inc.
Company Name

40554

City Vendor Number

1501 Lebanon Church Road

Address

Pittsburgh, PA 15236

City, State, ZIP

(412) 655-5700

Telephone Number

25-1579550

Federal Employer ID Number

GENERAL REQUIREMENTS

1.0 INTRODUCTION

- 1.1 Upon the Airport's Notice-to-Proceed with this Contract, the Contractor shall operate and maintain the AirTrain system, including the Operating System, fixed facilities as installed under contract 5703.A, Wayside equipment and all related equipment provided by the Airport. The Contractor shall maintain the AirTrain in accordance with the requirements as set forth in the Operations and Maintenance Provisions outlined in this contract and in conformance with, but not limited to, the following documents developed under contract 5703.A: System Operations Plan, System Operations Manuals, Maintenance Plan, Maintenance Manuals, Rule Book, and the System Assurance Monitoring Plan.
- 1.2 The Airport agrees to pay to the Contractor and the Contractor agrees to accept from the Airport in full consideration for the performance by the Contractor of all its duties and obligations listed in this Contract, the lump sum fixed-price as set forth in Article 5 of the Agreement and in annual amounts as set forth in Section 4.0, Payment of these General Requirements, and as set forth in Appendix F, Base Contract Price Breakdown attached hereto and incorporated by reference as though fully set forth herein.
- 1.3 The Contractor shall not charge and the Airport shall not be required to make any payments to the Contractor for any work performed or costs incurred that are not provided as a part of this Contract.
- 1.4 All policy decisions regarding AirTrain operations shall rest with the Airport's Representatives. Such matters as the hours and/or levels of service to be offered, public media information, and interfacing with the public at large shall be the responsibility of the Airport or its Representatives. When officially notified by the Airport's Representatives of a decision regarding the above matters, or any other matter that classifies as a policy decision, the Contractor shall immediately take all appropriate steps to comply with the decision.

2.0 STATEMENT OF WORK

The Services to be performed under this contract are outlined in Appendix A, Services to be provided by the Contractor, to this Agreement. The Contractor shall provide all labor, equipment, and materials to perform the services in compliance with the provisions contained therein.

3.0 CONTRACT TERMS

The contract shall begin upon the Airport's provision of a notice to proceed and shall continue for a period of five (5) years beginning March 1, 2009, unless terminated sooner as provided in Article 21, Termination for Convenience of the Agreement.

3.1 OPTION TO EXTEND CONTRACT

- 3.1.1 At the end of the initial five (5)-year term, as identified above, the Airport will extend the contract for an additional three (3)-year term, provided the Contractor meets all contractual obligations under the Contract and the following performance criteria measured ninety (90)

days prior to the end of the current contract term: (i) averaged system availability rating of ninety-nine and one-half percent (99.5%) or higher for the prior twelve (12) month period, (ii) verification that all Airport owned spares, tools and equipment, as identified in "Appendix E – Spares, Tools, and Equipment" and as amended from time to time during the active term of the Contract, is accounted for and in good working condition, (iii) training certifications are up-to-date for appropriate Contractor's staff, and (iv) the preventative maintenance program meets or exceeds the requirements as stated in "Appendix A, Section B.5 – Adherence to Maintenance Schedule."

- 3.1.2 If the Contractor fails to meet the above criteria, the Airport shall have the option, at its sole discretion, to either extend, modify or terminate the Contract by giving written notice thereof to the Contractor at least ninety (90) days prior to the end of the original or extended term.
- 3.1.3 Further, at the end of the three (3) year term the Airport reserves the right to extend the contract for two (2) additional option years. The Airport also reserves the right to re-negotiate the contract terms, by reducing in whole or in part the Contractor's scope of services. The Airport will provide the Contractor with written notice of intent to extend and/or re-negotiate the contract terms at least one-hundred and eighty (180) days prior to the start of each option year.
- 3.1.4 The prices to be paid for each yearly extension shall be those included in the Contractor's Contract Price Proposal, as stated in Appendix F, Base Contract Price Breakdown attached hereto and incorporated by reference as though fully set forth herein, for this Agreement, escalated according to Section 4.1 - Economic Price Adjustment of these General Requirements, or as amended by any certified change orders.

4.0 PAYMENT

All payments shall be made according to the lump sum fixed annual prices submitted by the Contractor for this Agreement on Form A, Summary of Fixed Prices for the Base Contract, attached hereto and incorporated by reference as though fully set forth herein, or as may be adjusted with the procedures specified in Section 5.0 below; subject to economic price adjustment specified in Section 4.1 below. In addition, any additional compensation as provided by Section 7.0 below shall be paid in accordance with that specified in Sections 7.3 and 7.5 below.

4.1 ECONOMIC PRICE ADJUSTMENT

The lump sum annual fixed bid prices for each year of this contract shall be adjusted for inflation at the beginning of each contract year and then shall not be further adjusted for inflation throughout each year. The lump sum annual fixed bid prices shall be adjusted in accordance with the following procedures.

- 4.1.1 Labor Prices - All labor prices quoted in the Contractor's Contract Price Proposal, as stated on Form A of Appendix F, Base Contract Price Breakdown attached hereto and incorporated by reference as though fully set forth herein, for this Agreement shall be increased annually according to an index defined as a blended ratio of Electrician and Stationary Engineers burdened wage data one (1) month prior to the beginning of each contract year (starting Year 2) to the same blended ratio as of March, 2009 (the blended Base Wage Rate). Methodology is as follows:

- 4.1.1.1 Assume Electrician to Stationary Engineer ratio as shown in original Bid Data from Contract 5703.A and CDRL 27B. The number of positions classified as electricians is twenty-seven (27), and the number of stationary engineers is twenty-two (22). Administrative office staff is excluded from the calculations.
- 4.1.1.2 Using IBEW-Local 6 (for Electrician component) and IUOE-Local 39 (for Stationary Engineers component) latest burdened wage data as of March, 2009, the blended Base Wage Rate is calculated based on the 27:22 ratio of the two wages. This Base Wage rate will be used as divisor for the calculation of the Labor price increase.
- 4.1.1.3 Using IBEW-Local 6 (for Electrician component) and IUOE-Local 39 (for Stationary Engineers component) burdened wage data one (1) month prior to the beginning of each contract year the Current Blended Wage Rate is calculated based on the 27:22 ratio of the two wages. This Current Blended Wage rate will be used as dividend for the calculation of the Labor price increase
- 4.1.1.4 The Labor price quoted in the Contractor's Contract Price Proposal, as stated on Form A of Appendix F, Base Contract Price Breakdown attached hereto and incorporated by reference as though fully set forth herein, for this Agreement will be multiplied by the ratio of Current Blended Wage rate divided by Base Wage rate to determine the new escalated Labor Price for the new contract year.
- 4.1.1.5 In the case where the Contractor's San Francisco Airport Site decertifies the existing union and no new union contract exists, the escalated Labor Price from the prior contract year will be escalated using the Employment Cost Index for Total Compensation, Private Industry, Professional and Related, called CIU 201 0000 120000i, as published by the U.S. Bureau of Labor Statistics, one (1) month prior to the beginning of the new contract year divided by the same index CIU 201 0000 120000i thirteen (13) months prior to the beginning of the new contract year.
- 4.1.1.6 All Contractor's Supervisors and Field Engineers shall be paid at a rate which is not less than five percent (5%) more than the highest hourly wage rate paid to the IUOE-Local 6 Lead Technician classification, including shift differential. The Contractor shall provide Airport with certified payroll documentation substantiating the wage rate increase. The Airport shall adjust the lump sum annual fixed bid prices accordingly.

- 4.1.2 Parts and Materials - This portion of Contractor's Price Proposal, as stated on Form A of Appendix F, Base Contract Price Breakdown attached hereto and incorporated by reference as though fully set forth herein, for this Agreement shall be adjusted at the beginning of each contract year (starting Year 2) according to the ratio of the Producer Price Index for General Purpose Machinery and Equipment WPU114, as published by the U.S. Bureau of Labor Statistics, for the month of September prior to the beginning of the new Contract Year to the same index for the month of September 2008.
 - 4.1.2.1 In the event that any of the above indices are discontinued or become obsolete, the Parties shall negotiate new indices for this Agreement.
- 4.1.3 The lump sum fixed price for this Agreement to train Airport personnel shall be according to the Contractor's price proposal as stated on Form T of Appendix F, Base Contract Price Breakdown attached hereto and incorporated by reference as though fully set forth herein, for this Agreement and shall be adjusted in accordance with the ratio of the Consumer Price Index (CPI) for San Francisco,

as published by the U.S. Bureau of Labor Statistics, for the month of August of the last year of the contract term.

- 4.1.4 Where an index has not yet been published, such as for a date in the future, the index shall be estimated by use of a linear regression analysis for the most recent five (5) years of index values. In the event that one of the above indices ceases to be published, the Airport and the Contractor shall negotiate and agree on another index to be used in place of the discontinued index. Any such new index shall be comparable to the index which it replaces. Foreign (non-U.S.) indices and/or any corrections for trading of currency shall be prohibited.
- 4.1.5 The cumulative amount of Economic Price Adjustment for the above prices shall not exceed six percent (6%) per year. In the event that such Economic Price Adjustment would exceed this six percent (6%) ceiling, the Airport and the Contractor shall enter into a negotiation to either revise the ceiling, or reduce the Scope of Work, or both, to account for the variance above the ceiling. This six percent (6%) ceiling shall be prorated monthly for any partial year.

4.2 PAYMENTS

The Contractor shall be paid twice a month in accordance with the calculations and conditions specified in Appendix B, Calculation of Charges/Determination of Monthly Payments, except that any payments for work performed as provided under Section 7.0 below shall be paid in accordance with the procedures specified in Sections 7.3 and 7.5 below.

4.3 INVOICES

- 4.3.1 The Contractor shall submit to the Airport two (2) invoices covering the preceding month for the services performed under this Contract. Invoices will be scheduled on the first (1st) and fifteenth (15th) of each month and will be submitted within fifteen (15) working days of the respective scheduled invoice date. The invoice covering the first two weeks of the month (scheduled on the fifteenth (15th) of the month) will only include fifty percent (50%) of the monthly base contract value and fifty percent (50%) of the escalation value. All additions and subtractions to the monthly payment shall be made to the invoice scheduled on the first (1st) of each month. The invoice scheduled on the first (1st) of each month shall be transmitted with a cover letter and a System Monthly Summary Report as outlined on Appendix A, Services to be provided by the Contractor in Section A.2.7 System Reports and Records; the format of Contractor's invoice shall be subject to the Airport's Representative's favorable review.
- 4.3.2 The System Monthly Summary Report shall include but not be limited to the following:
 - 4.3.2.1 Operations with incremental incidents greater than three (3), five (5), and fifteen (15) minutes.
 - 4.3.2.2 Incidents greater than 15 minutes in length require an explanation that includes the summary and the corrective action taken to limit further occurrences.
 - 4.3.2.3 Preventive Maintenance outline that indicates services performed that month.
 - 4.3.2.4 Corrective Action Report that tracks the most common component failures and a plan to mitigate such problems

4.3.2.5 System Enhancements

4.3.2.6 CPUC reportable incidents and/or accidents.

4.3.2.7 Injuries or lost days

4.3.2.8 Training (monthly)

4.3.2.9 Training (year-to-date)

4.3.2.10 Changes or alterations to bulletins, Rule Book, or standard practices

4.3.2.11 Returned Materials Report (RMR)

4.3.2.12 System Availability Report

4.3.2.13 Monthly Punchlist Summary

4.3.2.14 HRC Progress Payment Form and HRC Payment Affidavit

4.3.2.15 Any other information as required by the Airport that can be reasonably provided by the Contractor.

4.3.3 No later than forty-five (45) days after the receipt of a complete undisputed invoice which contains all information needed by the Airport in connection therewith, the Airport will pay to the Contractor by check or electronic payment, the amount so favorably reviewed. No favorable review or payment shall, at any time, preclude the Airport from showing that such favorable review or payment was incorrect, or from recovering any money paid in excess of that lawfully due hereunder.

4.3.4 The payment request may be reviewed by the Airport's Representative for the purpose of determining that the payment request is correct, and may be rejected, revised or accepted by same.

4.3.5 If it is determined that the monthly invoice or a portion thereof is not suitable for payment, the Airport's Representative will return it to the Contractor as soon as practicable, outlining the reason(s) for the denial. If the Contractor cannot remedy the disputed amount prior to invoice submittal date, the Airport will process the undisputed amount. The disputed amount will be handled through a dispute resolution process.

4.3.6 In no event shall the Airport be liable for interest or charges arising out of or relating to the date the Airport issues any payment, except that the Airport will pay interest at the legal rate, as set forth in section 685.010(a) of the California Code of Civil Procedure, as that section may be amended from time to time, on any improperly withheld amounts commencing no earlier than ninety (90) days after the date the Airport should have made such payments. Under no circumstances shall the legal rate of interest paid by the Airport exceed ten (10) percent per annum. The payment of interest under this provision is the limit of the Airport's liability with respect to any claim for interest on the improperly withheld amounts.

The Airport may agree, however, to mitigate the effect to the Contractor of delay in payment that was wrongfully withheld in a reasonable fashion.

4.3.7 The Airport's Representative may withhold payments from any invoice for the following items:

- 4.3.7.1 The cost of replacing defective parts or work paid to other parties.
- 4.3.7.2 The cost of licenses, fees, or permits the Contractor has failed to obtain and or pay for.
- 4.3.7.3 The cost to repair damages to first or third party work that the Contractor has failed to repair.

4.3.8 Execution of this Contract by the Contractor shall constitute a waiver by the Contractor to claim any right of payment of interest upon any such above retained funds except as provided for in Section 4.3.6 above.

4.4 FINAL PAYMENT

4.4.1 The Airport shall make final payment upon the Contractor's satisfactory completion of the following:

- 4.4.1.1 The inventory of all AirTrain spare parts, expendables, consumables, and equipment, and property has been audited by the Airport or its Representatives and verified to be correct.
- 4.4.1.2 The inventory of furniture, fixtures, maintenance tools, and equipment is shown to be replenished and in serviceable condition.
- 4.4.1.3 All repairs, scheduled maintenance and scheduled overhauls due prior to the end of the contract term have been completed and are documented in the Site Information Management System (SIMS).
- 4.4.1.4 The System Operations Plan, Maintenance Plan, Operations & Maintenance (O&M) Management Plan, Operations Manuals, Maintenance Manuals, Rule Books, Drawings, Field Change Notices and any other procedures, plans and/or manuals used in the operation and maintenance of the AirTrain have been updated and the specified number of copies of these documents are supplied.
- 4.4.1.5 All AirTrain O&M records or databases, to include all relevant databases related to the operation of the system, are current, and have been provided to the Airport's Representative.
- 4.4.1.6 Acceptable completion of all Airport personnel training, if option has been exercised.
- 4.4.1.7 Also, the final monthly payment cannot be made until all sales tax reports, properly certified, have been filed with the Airport.
- 4.4.1.8 The Contractor and each assignee under an assignment in effect at time of final payment shall execute and deliver at time of final payment and as a condition precedent to final payment, a Release of Claims document discharging the Airport, its officers, agents, and employees of and from liabilities, obligations, and claims arising under the Contract.
- 4.4.1.9 The demobilization of all offices, administrative functions, and Contractor-owned equipment has been accomplished to the Airport Representative's satisfaction and written notice has been provided to the Contractor.

4.4.2 At the time of final payment, there shall be deducted all damages and all other charges properly chargeable to the Contractor under the terms of this Agreement. The balance, if any, shall be paid to the Contractor provided that prior to delivery to the Contractor of the final payment, the Contractor shall furnish the Airport proof in documentary form that all claims, liens, or other obligations incurred by the Contractor and all its subcontractors in connection with the performance of the Services of this Contract have been properly paid and settled.

4.4.3 In the event there are, at the time of the final payment, any outstanding claims against the Contractor or its subcontractors or for any other reason the Contractor is not able to give a proper affidavit that liens or other obligations have been properly paid and settled, the Airport may, at their sole discretion, waive the requirement of the said affidavit, provided the Contractor provides the Airport with an irrevocable letter of credit. In any event, when final settlement is made, it should be further understood by the Contractor that the Airport may withhold from payment any funds that may be required by law or as determined by this Contract and final payment will not be made until all conditions have been met. At the time of delivery to the Contractor of the final payment, the Contractor shall execute and give to the Airport a Final Receipt for the same.

4.4.4 Said Final Payment shall not be the Airport's exclusive means to cover the costs of the aforesaid conditions. The Airport shall retain all rights and remedies provided by the Operation and Maintenance Performance Bond and as provided by these Operations and Maintenance Provisions and law to cover deficiencies in the above.

5.0 CONTRACT MODIFICATIONS

5.1 The Contract Documents may be amended or modified only by a written contract modification or change order to be issued in accordance with the provisions of these Contract Documents. The Contract Documents may not be modified or supplemented orally or by implication. To be effective, any modification to the Contract Documents must be in writing and must be signed by and certified by the Airport or its Representatives.

5.2 Proposed contract changes or modifications shall be by competitive bid, negotiated agreement, or in the case of an emergency by force account. All contract changes and modifications shall be in accordance with laws and regulations applicable thereto. For subcontracted bids or negotiated agreements, the Commission and the Contractor shall negotiate an overhead and profit rate that shall not exceed a total of eighteen percent (18%) of the direct costs. For force account changes, the Commission and the Contractor shall negotiate an overhead and profit rate that shall not exceed eighteen percent (18%) of the direct costs. For subcontracted force account work, the total overhead and profit rate of the subcontractor and the Contractor shall not exceed ten percent (10%).

5.3 The Airport may order or the Contractor may request, pursuant to a written Change Request Form, increases or decreases in the level of scope, service and/or performance outlined in this contract. In the event of such changes, the Contractor shall comply with such order(s) and perform all operations and maintenance services in accordance with the provisions of this Contract and the order(s) of the Airport. As a result of such changes, the lump sum annual fixed price associated with this Agreement may be adjusted. There shall be no adjustment in the lump sum annual fixed price for such changes which may result from any Contractor-initiated changes in System Design or Contractor's errors or omissions, unless the Airport agrees to pay for such changes.

5.4 For Contractor initiated change order requests, the Contractor shall submit a completed Change Request Form, including a complete breakdown of itemized materials, labor, equipment, taxes,

overhead and profit, and subcontract work, to the Airport's Representative. The Airport's Representative shall respond in writing to the Contractor's request for change within fifteen (15) working days. Upon favorable review, the Airport's Representative will issue a Change Order and a contract modification directing the Contractor to proceed with work.

5.5 The Commission reserves the right to furnish any or all such materials for change order work as it deems advisable. The Contractor shall have no claims for costs or any overhead and profit on such materials.

5.6 Overhead Defined

The following constitutes charges that may be included in overhead for Change Orders, so long as they are not also included as direct costs:

- 5.6.1 Drawings: Field drawings, shop drawings, etc., including submissions of drawings.
- 5.6.2 Routine field inspection of work proposed.
- 5.6.3 General administration and preparation of change orders.
- 5.6.4 Computer services.
- 5.6.5 Home office expenses.
- 5.6.6 Insurance and Bond premiums.
- 5.6.7 Final cleanup.
- 5.6.8 Other incidental work.
- 5.6.9 Direct labor costs shall include labor burden for payroll taxes and fringe benefits and shall not be included in the overhead.
- 5.6.10 The following limits shall apply for overhead and profit: allow (10%) ten percent for subcontracted work and purchases from Vendors; allow (18%) eighteen percent for profit and overhead for work performed by the Contractor's personnel.

5.7 Negotiated or Directed Changes: The Contractor shall within thirty (30) days after receipt of a written direction or mutual determination to proceed with changes, provide the Airport's Representative with a binding cost proposal including the detailed cost for all labor, equipment, and material associated with each change.

5.7.1 The Airport Representative shall review the cost proposal for completeness and shall request, in writing within five (5) working days, any additional information, or documentation. The Contractor shall submit the additional information, or documentation within five (5) working days of receipt of such requests. When the binding cost proposal is submitted to the satisfaction of the Airport Representative or its designee, the Airport Representative shall negotiate each change within thirty (30) days. In the event the Airport and the Contractor fail to agree to any material element of a change, such as scope of work, design, or costs, the Airport may direct the Contractor to proceed with the Work on a force account basis until a mutual negotiation can be reached. In the event a mutual negotiated settlement cannot be

reached, the Contractor shall submit a claim in accordance with applicable provisions of the Contract Documents.

- 5.7.2 The price and other terms negotiated for each change will be documented in a change order and modification to the Contract. Payments for changes will be in accordance with the terms and conditions as outlined in Sections 4.2 and 4.3 above.
- 5.7.3 The Airport shall have no liability for any type of special, incidental, or consequential damages and the Contractor shall not request and Commission shall not pay such damages or cost in any Change Order.

5.8 Force-account Changes

- 5.8.1 If it is impracticable due to the nature of the Work, or for any other reason, to define a fixed price in advance, the Change Order may fix a maximum price which shall under no circumstances be exceeded, and such extra work shall be paid for at actual necessary cost as determined by the Airport's Representative.
- 5.8.2 Whenever any Force-Account work is in progress, the Contractor shall report to Airport's Representative in writing and in detail, the amount and cost of labor, equipment, and material used, and any other expense incurred at the beginning of each work day, and no claim for compensation for Force-Account work will be allowed unless so reported.
- 5.8.3 No payment for Force-Account work shall be made until the Contractor submits original invoices substantiating labor, materials, equipment, and all other charges.
- 5.8.4 The Airport shall have the right to audit all records in possession of the Contractor relating to activities covered by any Change Order, including force account work.

5.9 Payment shall be made as follows:

Payments for authorized Change Order work shall be included with the invoice scheduled on the first (1st) of each month and subject to the terms and conditions as outlined in Sections 4.2 and 4.3 above.

6.0 SYSTEM AVAILABILITY

6.1 SYSTEM SERVICE AVAILABILITY

- 6.1.1 System Service Availability shall be calculated in accordance with Section B.2 of Appendix B attached hereto and incorporated herein. For any calendar month of the contract, the minimum System Service Availability shall be 99.50% for which the Contractor's compensation will not be reduced or increased. For System Service Availability below 99.50% or above 99.79%, the Contractor's Average Monthly Payment for the month shall be decreased or increased in accordance with the Payment Factors cited in Section B.2 of Appendix B attached hereto and incorporated herein.
- 6.1.2 Should the System Service Availability fall below 98.00% for a period of three (3) consecutive months, the Airport shall have the right to terminate the Contract for default.

6.2 DOWNTIME EVENT LIMITS

In addition to the System Service Availability requirements of Section 6.1 above, AirTrain shall not exceed the System Downtime limits during each calendar month as provided in Section B.4 of Appendix B attached hereto and incorporated herein. Percent deductions per downtime event shall be applied to the Contractor's average monthly payment as provided in Section B.1 of Appendix B attached hereto and incorporated herein.

6.3 CORRECTIVE ACTION

- 6.3.1 For any calendar month during the contract term in which minimum System Service Availability of 99.50% is not met, or performance records indicate it will not be met, or if System Downtime Events exceed the limits specified in Section B.4 of Appendix B attached hereto and incorporated herein, the Contractor shall provide the Airport's Representative with a Corrective Action Plan to resolve the problem(s) within one (1) month of such review.
- 6.3.2 For any three (3) months within a six (6) month period during the contract term in which minimum System Service Availability of 99.50% is not met, or performance records indicate it will not be met, or if System Downtime Events exceed the limits specified in Section B.4 of Appendix B attached hereto and incorporated herein, the Contractor shall, at its own expense, promptly undertake a complete review and analyses and provide the Airport's Representative with a Corrective Action Plan to resolve the problem(s) within one (1) month of such review.
- 6.3.3 The Corrective Action Plan shall be subject to review by the Airport's Representative. Any corrections required to mitigate the problems shall be made by the Contractor at no additional cost to the Airport. Immediately after a favorable review of the corrective action(s) plan by the Airport's Representative, the Contractor shall take the necessary action(s) to mitigate the problem. A Preliminary Failure Analysis and Correction Report shall be issued by the Contractor to the Airport's Representative when the corrective program is initiated and a Final Failure Analysis and Correction Report shall be issued when the success of the corrective action can be substantiated.
- 6.3.4 In the Failure Analysis and Correction Report, equipment failures shall be classified as either relevant, non-relevant, or safety critical as follows:
 - 6.3.4.1 Relevant failures shall be any failure or degradation of performance of a part or component, which causes the equipment characteristics to deviate beyond the nominal ranges of the original specifications.
 - 6.3.4.2 Non-relevant failures shall be any failure caused by a condition external to the equipment.
 - 6.3.4.3 Safety Critical failures shall be any failure that has the potential of causing physical or bodily damage.
- 6.3.5 The Failure Analysis and Correction Report shall address the detailed diagnosis of each failure and shall identify corrective actions, failed components, and failure mode. All failure analyses shall address the subjects of dependent, independent, intermittent, multiple or pattern failures.
 - 6.3.5.1 Dependent failure: A failure caused by the failure of an associated item (dependent failures are not necessarily present when simultaneous failures occur).

- 6.3.5.2 Independent failure: A failure which occurs without being caused by the failure of other parts of the equipment under test, test equipment, instrumentation, or the facility.
- 6.3.5.3 Intermittent failure: The momentary cessation of equipment operation.
- 6.3.5.4 Multiple failures: The simultaneous occurrence of two or more independent failures (when two or more failed parts are found during trouble shooting which cannot be shown to be interdependent, multiple failures are presumed to have occurred).
- 6.3.5.5 Pattern failures: The occurrence of two or more failures of the same part in identical or equivalent application which are caused by the same basic failure mechanism.

6.4 ALTERNATE SYSTEM SERVICE AVAILABILITY REPORT

If the Airport or its Representative believe that the System Service Availability reports do not accurately measure what is occurring, the Airport may hire a mutually agreed to third party to obtain the operating and failure data and prepare a System Service Availability report. The report prepared by the third party shall take precedence over the Contractor prepared report for the previous three (3) months and shall be paid for by the Contractor if the report finds lower performance in terms of System Service Availability and downtime events than the Contractor's report.

7.0 REPAIR AND REPLACEMENT OF PARTS, COMPONENTS, OR MATERIALS

7.1 REPAIRS AND REPLACEMENT

The Contractor shall promptly repair or replace all damaged parts, components, or materials, regardless of the cause of such damage. The Airport shall reimburse the Contractor for the cost of such repairs and replacements where the need for the repairs or replacements did not result from or was not caused by, in whole or in part, the careless or negligent acts or omissions of the Contractor's officers, agents, employees, suppliers or subcontractors but were solely caused by parties other than the Contractor. There shall be no separate reimbursement for repairs or replacements for any of the maintenance services specified in Section A.4 of Appendix A to these General Requirements.

7.2 REPAIR OR REPLACEMENT OF MATERIALS

Where it is necessary for the Contractor to repair or replace any materials, parts or components during this Contract and the Airport is responsible for the extra costs thereof under Section 7.1 above, the Contractor shall immediately notify the Airport of the condition and shortly thereafter submit to the Airport, or its Representatives, for review, a description of the damage and a detailed price for the work to include: the name(s) of the item(s), the identifying number(s) thereof, if any, the quantity needed, the name(s) of the proposed supplier(s) and the proposed purchase price(s) if supplied to the Contractor, and the price that the Contractor intends to bill the Airport for the Work. Repair or replacement of materials, parts, or components shall not commence until the Airport or its representative has been notified and has directed the Contractor to proceed.

7.3 COMPENSATION FOR REPAIR AND REPLACEMENT

In determining the cost of compensable repair and replacement work covered by Section 7.1 above, the cost of repairs or replacements that arise out of normal wear and tear and which would in any event require repair or replacement as part of the Contractor's maintenance and operations obligations specified in Appendix A

shall be excluded. The Contractor's compensation for any extra work covered under Section 7.1 above shall be determined on the basis of the following:

7.3.1 Labor: Labor shall be compensated on the basis of actual net direct cost of Contractor's labor plus labor burden, overhead and profit as follows:

7.3.1.1 Labor Burden shall be the Contractor's actual costs for workers compensation and liability insurance, payroll taxes, social security and employees fringe benefits (including employer paid health insurance) substantiated on the basis of payrolls and accounting data.

7.3.1.2 Overhead and Profit shall be provided as a total of the actual net direct labor cost and labor burden.

7.3.2 Direct Material Supplies, Installed Equipment: Materials, supplies, parts and components shall be compensated on the basis of the Contractor's actual net direct cost.

7.3.3 Equipment: Equipment shall be compensated on the basis of the Contractor's actual net cost of owned and/or rented equipment to be determined as follows:

7.3.3.1 Owned equipment operating costs shall be determined using accepted local industry standards.

7.3.3.2 Rental equipment operating costs shall be determined using rates and/or invoices for equipment rental, fuel/maintenance; delivery, removal, and other direct expenses provided the costs can be substantiated as representative of the prevailing rates for the metropolitan San Francisco area.

7.3.4 Subcontract Costs: Subcontract work shall be compensated on the basis of the Contractor's actual net cost provided that the cost of the subcontractor is determined in a manner which limits specific items of cost to those requirements identified in subparagraphs above.

7.3.5 Profit:

7.3.5.1 Overhead and Profit on self performed work shall be eighteen percent (18%), unless a pre-negotiated price has been reached prior to such work.

7.3.5.2 Overhead and profit for the purchase of material and equipment or equipment rentals for the Commission by the Contractor shall be eighteen percent (18%).

7.3.5.3 Overhead and profit for labor and material supplied through a subcontractor shall be ten percent (10%). However, the Airport's representative shall have the authority to agree to a lump sum price on behalf of the Airport as compensation for compensable repair and replacement Work in lieu of the method of determining such payment described above.

7.4 AIRPORT ACCESS TO RECORDS

The Airport or its Representatives shall have access, at the Contractor's principal local place of business and during normal business hours, to all records and documents of the Contractor directly relating to labor and materials used in the performance of repair and replacement work for which the Contractor has been

compensated or is to be compensated on any basis other than the lump sum fixed prices specified in Section 4.0 above. Such records and documents shall include but not be limited to time tickets, payroll records and related reports provided to unions, vendor's invoices, cancelled checks and published price lists of the Contractor relating to any amounts for which the Contractor has been compensated, or claims it should be compensated, by the Airport. If certain materials manufactured by the Contractor do not appear on a published price list, the Contractor may be required to display evidence that the charges to the Airport are comparable to those that are being given to other most preferred customers of the Contractor. For the purpose of this paragraph, the Contractor shall not be obligated to retain such records and documents for a period longer than three years following the date of the Contractor's invoice to the Airport for such repair and replacement work.

7.5 PAYMENT PROCEDURES

Whenever any extra work is performed by the Contractor under this Section 7.0 and said work is to be compensated as specified in Section 7.3 above, except for any agreed upon lump sum amount, the Contractor shall, as a condition precedent to payment for such service, furnish to the Airport or its Representative at the end of each day, a copy of the daily time slips showing (i) the name and number of each person employed thereon; and (ii) a brief description of the nature of the work performed and (iii) a list of material used. Item (iii) shall be supplemented by the Contractor at a later date with a statement indicating from whom materials were purchased and the amount paid. Such daily time slips are for the purpose of enabling the Airport to determine the accuracy of the amounts claimed by the Contractor and whether or not the Contractor is entitled to additional compensation.

8.0 EMERGENCY AND ACCIDENT REPORTING

- 8.1 Contractor Responsibility for Emergencies:** The Contractor shall become familiar with emergency planning for all reasonably foreseeable emergency situations. The Contractor shall include procedures to deal with personnel injuries, intoxication, fire, smoke, power outages, and similar situations. However, the Contractor shall not include any additional personnel for emergency procedures without the prior written approval of the Airport or its Representatives. Emergency procedures shall include communications to passengers and the provision for emergency exits from vehicle and the elevated Guideway.
- 8.2 Passenger Safety:** Procedures shall be established to ensure passenger safety during emergencies.
- 8.3 Employee Safety:** Procedures shall be established to ensure safety of all employees associated with the AirTrain (including the employees of any subcontractors/sub-consultants utilized by the Contractor). The Contractor shall have primary responsibility for employee safety.
- 8.4 California Public Utilities Airport:** The Contractor shall use California Public Utilities Airport (CPUC) General Order (GO) 164 as the guideline for accident and incident reporting. Additionally, the Contractor shall establish an accident investigation procedure in compliance with CPUC GO 164.
- 8.5 Timing of Reporting:** The Contractor shall immediately report to the Airport's Representative, by telephone, any death, injury, or damage to property that occurs in connection with the Services provided by this contract. Additionally, the Contractor shall report in writing to the Airport's Representatives all accidents and safety incidents within four (4) hours of their occurrence whenever such incidents result in injuries or property damage.

8.6 **Reporting Requirements.** The report shall give full details and statements of witnesses. It shall include a complete description of the accident or safety incident, including an explanation of what occurred, the probable cause and the actions taken by all parties and proposed follow-on action to minimize reoccurrence of the accident or incident. The Contractor shall also make available its employees to be interviewed by investigators of the accident or incident and to testify in any legal proceedings.

9.0 **ACCESS**

The Contractor shall provide the Airport or its Representatives reasonable and controlled access to all parts of the AirTrain at any time, with the exception of the document and server control room. The Airport will endeavor to provide the Contractor with as much advance notice as possible prior to the beginning of any tour.

END OF DOCUMENT

APPENDIX A SERVICES TO BE PROVIDED BY CONTRACTOR

A1.0 GENERAL

A1.1 The Contractor shall provide, train, and supervise all operations and maintenance personnel and provide all spare parts, material, equipment, and services required to accomplish the tasks specified herein, to assure that the entire AirTrain system provides safe and reliable service for passengers. The scope of services shall include the entire AirTrain system, which includes the Operating System, Fixed Facilities and all Guideway Equipment, including guideway seismic joints installed under contract 5703.A. However, the Contractor's obligation for major repairs to any seismic joint, due to normal wear and tear, will be capped at Ten Thousand Dollars (\$10,000) per occurrence. The Airport will be responsible for any repairs to the following: emergency walkways, hand rails, station barrier walls, running beams and guideway superstructure, which is comprised of support columns, tub, and deck.

A1.2 During the term of this contract, the Contractor shall be obligated as set forth herein to assure the operation and maintenance of the AirTrain system is in conformance with the Airport-provided System Operations Plan, Rule Book, System Operations Manuals, Maintenance Plan, Maintenance Manuals, and the System Assurance Monitoring Plan. The Contractor shall assign a qualified and experienced person as the Operations and Maintenance Director, who shall be directly employed by the Contractor, to be responsible for overseeing and directing the operation and maintenance services. The Operations and Maintenance Director or an authorized representative shall be available on site at all times.

A1.3 The Contractor shall directly operate and maintain the AirTrain system with its own personnel. The Contractor will not be required to provide security personnel. The Contractor shall perform the operation and maintenance duties set forth herein, including but not limited to the following: training all staff as required, certifying/recertifying central control operators, certifying/recertifying recovery and maintenance technicians, scheduling and operating trains, initiating and supervising train movement, developing and implementing emergency procedures, recovery and removal of disabled trains from service, data collection, data analysis, reporting, service availability monitoring, performing preventive and corrective maintenance on all system components, and replacement of system parts and components and/or other duties as set forth by Airport Representatives.

A2.0 OPERATIONS AND MAINTENANCE ADMINISTRATION AND MANAGEMENT

A2.0.1 The Contractor shall provide the required personnel, supplies and materials necessary to perform, and shall perform the administration and management of all operations and maintenance requirements of the AirTrain system. Operations and maintenance administration and management includes, but is not limited to, operations and maintenance of all system related parts and components, management of payroll and

benefits administration, training of staff, purchasing and inventory control, and record keeping.

A2.0.2 The Contractor shall utilize the Microsoft Windows-based Site Information Management System (SIMS) provided by the Airport as part of this contract. SIMS can provide management and control of the following: Preventative Maintenance Inspections, Purchasing, Inventory Control, System Performance, Training, and Shift Status. The Contractor shall ensure an adequate supply of materials, parts and equipment are in stock at all times to operate and maintain the AirTrain. The Contractor shall maintain up-to-date inventory records, which shall include quantities of all material, parts and equipment in stock and their respective reorder points.

A2.1 OPERATIONS AND MAINTENANCE REQUIREMENTS

The Contractor shall maintain the AirTrain system in accordance with all the requirements and specifications set forth in this section. The Airport's Representative and the Contractor may, from time to time and by mutual consent, make changes to any requirements and/or specifications herein. Any changes made shall not be considered a change in the scope of Services or entitle the Contractor to any additional compensation under this Contract, except by a written change order. The Parties may make such changes by the execution of an amendment to this Contract by the Airport's Representative and the Contractor's Representative, as defined in Section 5.0 – Contract Modifications of the General Requirements, without the need for formal legislative approval by the City.

A2.2 AUTHORIZED PERSONNEL FOR CONTRACT

A2.2.1 **Personnel Qualifications Warranty** – The Contractor has, along with each of the Contractor's subcontractors/sub-consultants at any tier and any employees that will perform the Services, the necessary knowledge, skills, experience, qualifications, rights and resources to perform the Services in accordance with this Contract, and has successfully performed the Services or services that are substantially equivalent to the Services for others.

A2.2.2 **Staffing Levels** - The Contractor shall determine, in accordance with the operating requirements and this Contract, the necessary staffing levels and experience and provide all the labor necessary to meet the System Availability requirements as well as all other parts of this Contract.

A2.2.3 **Position Reassignment** – If the Contractor fails to meet minimum system availability for three (3) consecutive months and the failure is attributed to lack of experience, the Airport's Representative, in consultation with the Contractor, shall have the right to direct changes to the allocation of skills/qualifications among the operations and maintenance staff as it sees fit to improve system availability.

A2.2.4 **Airport's Right to Reject Contractor Personnel** – The Airport or its Representatives reserves the right, upon reasonable cause, to determine that any person supplied by the Contractor is not capable or fit to perform his or her assigned responsibilities concerning

this Contract, and the Services to be provided under it. The Airport or its Representatives may immediately request the removal from the Airport any employee of Contractor within five (5) business days after the employee first reports to work and will pay the documented out-of-pocket cost the Contractor incurs for the Services performed by the employee during those five (5) business days. The City reserves the right to request, at any time and for any reason, that specific employees of the Contractor be removed from, and not be assigned by the Contractor, to work on this contract, and the Contractor acknowledges, understands and agrees that the Contractor will comply with any such request by the Airport's Representative in the following manner: as to any security violation, or any other violation that requires immediate removal, the Contractor will remove employee immediately. For all other matters that are not security-related, the Contractor shall investigate the situation and report findings and propose a course of action to the Airport's Representative within five (5) business days.

- A2.2.5 **System Expansion** - In addition to the above, the Airport anticipates implementing a program to possibly expand the AirTrain at some future date. The Airport may provide a Contract Modification for increased staffing levels to support the expanded system.
- A2.2.6 **Wage Rates** - Wage rates for all personnel/employees employed by the Contractor or its subcontractors/sub-consultants at any tier under this Contract shall comply with all federal, state, and local laws applicable to wage rates.

A2.3 SAFETY AND SECURITY

- A2.3.1 The Contractor is responsible for the health and safety of its employees, agents, subcontractors, and other persons who perform work under this Contract and for the protection and preservation of the AirTrain and its passengers. The Contractor shall take all necessary and reasonable precautions and actions to protect all such persons and property. The Contractor shall employ at the site an experienced Safety and System Security Supervisor, authorized to represent and act for the Contractor in matters pertaining to the Safety and System Security of its employees and AirTrain passengers, and shall inform the Airport's Representative in writing of the identity of such Supervisor. The Airport's Representative shall have the right to consult with the Contractor and mutually determine to accept or reject any Safety and System Security Supervisor selected by the Contractor, and the Airport's Representative's acceptance shall be required prior to employment of any such person. The Safety and System Security Supervisor's duties shall include, but not be limited to, the following:
 - A2.3.1.1 Ensure compliance with all the applicable laws, regulations, ordinances, rules or orders of any public authority having jurisdiction relating to safety of persons or property.
 - A2.3.1.2 Implement all safety and system security practices, procedures and programs customarily provided by contractors performing work of a similar nature.
 - A2.3.1.3 Ensure compliance with the requirements specified in the AirTrain System Safety Program Plan.

- A2.3.1.4 Act as the Contractor's Representative during audits performed by the CPUC.
- A2.3.1.5 Other such duties as may be deemed prudent by the Airport's Representative.
- A2.3.2 The Contractor shall operate and maintain the AirTrain in accordance with the Airport-accepted System Safety Program Plan and all safety procedures provided in the Operations and Maintenance Manuals and Rule Book provided by the Airport.
- A2.3.3 The Contractor shall provide security in accordance with the System Security Plan provided by the Airport. The Contractor's duties shall include but not be limited to:
 - A2.3.3.1 Providing a secure environment for AirTrain passengers and employees
 - A2.3.3.2 Monitoring the CCTV system and emergency telephone system
 - A2.3.3.3 Responding to emergency incidents and providing notification regarding criminal incidents and/or suspicious behavior or activity
 - A2.3.3.4 Securing all "locked and controlled" aspects of the AirTrain from unauthorized persons

A2.4 TRAINING OF CONTRACTOR'S PERSONNEL

- A2.4.1 The Contractor shall employ and train all operation and maintenance personnel required for the performance of this Contract. In addition to the training of the initial personnel staff, the Contractor shall train replacement personnel as needed to meet staffing requirements.
- A2.4.2 The Contractor shall develop and implement a training and testing program in which personnel within specific job classifications are trained and tested initially, and periodically retested, for proficiency within the applicable job classification. The Contractor shall provide, to the City for approval, the proposed training, and testing schedule within one hundred twenty (120) days of the execution of this Contract. With concurrence by the Airport's Representative, certain job classifications may be exempted from such testing or retesting.
- A2.4.3 The Contractor shall provide all instructors, literature, and equipment necessary to train personnel. The City shall provide the Contractor with the facilities to conduct the training and testing program. The Contractor shall provide sufficient classroom and on-the-job training (confirmed by competency testing) to ensure staff competence in the operation and maintenance of the AirTrain. Training activities may take place on actual AirTrain equipment as appropriate, without disruption to passenger service.
- A2.4.4 The formal training program will be conducted on a regular basis to develop the skills of new personnel and to refresh and expand the skills of experienced personnel. The

training program shall include periodic testing of personnel to confirm competency, and shall provide for certification and periodic recertification of designated critical skills.

A2.4.5 The Contractor shall designate a Training Supervisor who will manage and administer the training program. A written master list of all classes including but not limited to class title, technicians name, and grade will be updated and distributed to Airport's Representative on a semi-annual basis.

A2.4.6 Operational Readiness Testing

A2.4.6.1 **Duty to Conduct:** In addition to the above training, during the term of this Contract, including any renewal terms, the Contractor shall conduct operational readiness testing with the Contractor's own testing program and in accordance with the terms of the Contract.

A2.4.6.2 **Object of Readiness Testing:** The objective of these readiness-testing requirements is to assure that a high level of readiness testing is maintained throughout the Contract term, including any renewal term. The emergency procedures described in National Fire Protection Association (NFPA) 130 and 70E shall be used as a guide for these requirements.

A2.4.6.3 **Frequency of Readiness Testing:** Except for the annual system-wide readiness drill explained below, the readiness tests described in this clause shall be performed every three (3) months, throughout the entire term of the Contract including any renewal term.

A2.4.6.4 **Central Control Operations Personnel** – Based on the Contractor training and certifications schedule the Central Control Operators shall be given operational readiness tests to verify their knowledge of the proper failure management responses. For the Central Control Operators, these readiness tests shall be independent of the Central Control Console. As part of these tests, the Contractor will create test situations, to which the person being tested must respond. The results of each test shall be quantified, and a test score recorded. All Central Control Operators' test results (pass/fail) shall be provided to Airport's Representative for their files, and entered in the individual's permanent employment file. Where tests indicate a lack of proficiency on the part of the person tested, that person shall be provided with additional training and instruction. If after two consecutive failed tests the employee will be placed on a ninety (90) day supervised probation period. Employee will be retested after the ninety (90) day period. If the employee fails this test he or she shall be removed from that position.

A2.4.6.5 **Recovery Operations Personnel** - For other Operations Personnel who do not operate Central Control, the tests shall take the form of interviews/performance tests, in which the employee's knowledge of proper operational procedures, including recovery and troubleshooting activities, is determined in a real-time interactive situation. Where tests indicate a lack of proficiency on the part of the person tested, that person shall be provided

with additional training and instruction. If after two consecutive failed tests the employee will be placed on a ninety (90) day supervised probation period. Employee will be retested after the ninety (90) day period. If the employee fails this test he or she shall be removed from that position.

A2.4.6.6 **Maintenance Personnel** - All Maintenance Personnel whose duties involve responding to failure situations affecting passenger service shall be given operational readiness tests to verify their knowledge of the proper failure management and/or emergency responses. These tests shall take the form of interviews/ performance tests, in which the employee's knowledge of proper operational procedures is determined in a real-time interactive situation. These tests shall include all aspects of failure and emergency response, including communications, physical response to different locations throughout the AirTrain system, proper diagnosis/response procedures, and proper deployment of equipment. Where tests indicate a lack of proficiency on the part of the person tested, that person shall be provided with additional training and instruction. If after two consecutive failed tests the employee will be placed on a ninety (90) day supervised probation period. Employee will be retested after the ninety (90) day period. If the employee fails this test he or she shall be removed from that position.

A2.4.6.7 **Test Results** - The results of each test shall be quantified, and a test score recorded. All maintenance personnel test scores shall be provided to Airport's Representative for review, and entered in the individual's permanent employment file.

A2.4.7 **System-wide Readiness Drill**

A2.4.7.1 A system-wide readiness drill shall be conducted annually. A drill committee composed of Airport's Representative and at least two (2) Contractor Representatives, one of whom shall lead the committee and organize the drill, shall jointly plan this drill in advance. The objective of the readiness drill shall be to simulate a significant outage of the AirTrain that, if it were to occur in the real world, would necessitate response by not only Contractor's personnel, but also Airport's operations, maintenance, security and life safety personnel. Plans for the readiness drill shall include minimizing impacts on Airport and AirTrain passengers. The Contractor shall make every effort possible to comply with these requirements without adding any additional cost. If the Contractor incurs additional cost as a result of these drills, the Contractor will provide the Airport's Representative with advance written notice of such cost.

A2.4.7.2 During the drill, all responses by the Contractor and any Airport-personnel shall be as realistic as possible, given drill conditions. Insofar as possible, all Airport-wide communications and physical response plans for dealing with an outage of the AirTrain shall be tested. If provided, backup transportation modes shall be activated.

A2.4.7.3 As part of the readiness drill, drill observers provided by the Contractor shall be stationed to monitor and evaluate the responses of the various drill participants. The observations and conclusions of these observers shall be written down and presented for evaluation by the drill committee. The drill committee shall be responsible for preparing a drill report, which shall present the results of the drill, identify any areas of deficiency, and recommend any new/revised training and testing procedures for the ensuing year to rectify noted areas of inadequate response.

A2.4.8 Authorizations

A2.4.8.1 The Contractor must authorize, in writing, all technicians working in the Central Control Room. Authorization may be withdrawn for failure to follow Standard Operating Procedures (SOP), or for a lack of proficiency and knowledge.

A2.4.8.2 The Contractor will ensure that all operations technicians employed in operating the AirTrain have security clearances.

A2.4.9 Appearances

The Contractor shall furnish each employee with appropriate uniforms approved by the Airport, which shall be worn by all employees at all times while on duty. The uniforms shall have proper identification thereon of the name of the Contractor as well as the SFO Airport logo. Partial uniforms (coveralls and smocks) shall be allowed in the AirTrain maintenance facility as long as the maintenance technician will not be utilized on any part of the system for recovery purposes. The Contractor will ensure that all Operations and Maintenance technicians, including Central Control Operators, have clean neatly presentable uniforms at all times and will replace said uniforms as required at no cost to the Airport.

A2.4.10 Supervision

The Contractor shall provide a Shift Supervisor or Field Service Engineer that is fully qualified for supervisory duty to oversee AirTrain operations on-site twenty-four (24) hours per day, seven (7) days per week. The Shift Supervisor will supervise all AirTrain operations and maintenance technicians, support personnel, and all subcontractor personnel (employed by the Contractor); ensuring properly trained personnel are assigned to all operations and maintenance tasks. The Shift Supervisor will ensure that technicians assigned to recovery duties are strategically placed around the system to ensure optimum response time to support the AirTrain. Where coverage will be compromised by an unforeseen absence, the Contractor will make every reasonable effort to provide supervisory replacement.

A2.4.11 No Conflict Obligation

The Contractor, its subcontractors/sub-consultants at any tier and any employees are prohibited from engaging in any business or transaction or professional activity or

incurring any obligation of any nature that is in conflict with the proper discharge of their respective duties under or pursuant to the Contract.

A2.4.12 Alcohol and Drug Detection and Deterrence

The Contractor must have a drug and alcohol program that conforms with the current System Safety Program Plan (SSPP) and compliant with DOT regulation 49 CFR Part 655.

A2.4.13 Federal Drug-Free Workplace Act

The Contractor acknowledges that, pursuant to the Federal Drug-Free Workplace act of 1988, the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited for it, its subcontractors/sub-consultants at any tier and any employees providing Services of this Contract. The Contractor agrees that any violation of this prohibition by the Contractor, its employees, subcontractors, agents, or assigns shall be deemed a material breach of the Contract.

A2.5 OPTION TO TRAIN AIRPORT PERSONNEL

The Airport shall have an option for the Contractor to train Airport personnel at the prices provided in the Contractor's Bid on Form T, Option to Train Airport Personnel found in Appendix F of this Contract, attached hereto and incorporated by reference as though fully set forth herein. At such time that the Airport may exercise said option, which shall be at least ninety (90) calendar days prior to the end of the contract term, or any notification to terminate contract, the Contractor shall provide training for Airport personnel to operate and maintain the AirTrain. Staff numbers and positions, hiring procedures, and training procedures will be in accordance with the Contractor's Staffing Plan included in the System Operation Plan, as modified by mutual agreement during the period of this Contract. The Contractor shall provide all on site- instruction, instructors, literature, training aids, equipment, travel, and subsistence necessary to train Airport personnel. Travel and subsistence shall be only applicable to Contractor personnel and excludes Airport personnel being trained. All literature, training aids and equipment necessary to train Airport personnel shall be turned over to the Airport at the termination of this Contract. The Contractor shall provide sufficient classroom and on-the-job training for operations and maintenance (including inventory control) Airport personnel in the operation and maintenance of the AirTrain. Training on the actual system equipment and/or the spare equipment will be permitted; however, such use shall not interfere with operations of the AirTrain. The training shall provide at least ninety (90) calendar days of on-the-job training for all Airport operations and maintenance personnel. Airport personnel will be required to pass the testing program appropriate to their positions and other Airport training prior to assuming those positions on a full time basis. The Contractor shall administer such tests and retrain Airport personnel as needed. If during the ninety (90) calendar days, any Airport personnel fail to obtain the required level of expertise, the Contractor shall provide additional training or train an alternate person. The training shall be scheduled and carried out to assure the Airport that within ninety (90) days of the start of training there will be a sufficient quantity of Airport

personnel trained to operate and maintain the AirTrain completely without the Contractor's personnel.

A2.6

INVENTORY CONTROL

The Contractor shall provide all aspects of inventory control, and all activities required to maintain an adequate supply of materials, supplies, and equipment to operate and maintain the AirTrain, including such functions as purchasing and disbursement, expediting, receiving, cataloging, storage, and requisition control. The Contractor shall utilize the Site Information Management System (SIMS), provided to the Contractor by the Airport, to maintain a computerized inventory of all equipment, parts, consumables, sources, prices, required quantities, and reorder points. This system will also provide a means to track orders, returned materials, and shipments prior to receipt. This system shall be utilized in the optional training of Section A2.5 above and turned over to the Airport immediately upon termination of this Contract. The Contractor shall also develop and successfully implement programs to minimize waste, theft, breakage, and misuse of equipment, parts, and consumables.

A2.7

SYSTEM REPORTS AND RECORDS

A2.7.1 During the term of the contract, Monthly Management Reports recording the performance of the AirTrain shall be prepared by the Contractor and submitted to the Airport's Representative. In addition, the Contractor shall keep detailed operations and maintenance records and inventory data to permit the Airport's Representative to ascertain the Contractor's compliance with the requirements of the contract and shall furnish copies of such documents upon request. All such reports and records shall be in accordance with the Airport-reviewed Operations and Maintenance Plans and Manuals provided by the Contractor, or as otherwise reasonably required by the Airport. The operations and maintenance records shall include a daily summary of all interruptions to normal service explaining the duration and cause of such interruptions. A running log of revisions that have been made to the AirTrain System shall be developed and maintained. The procedures and forms for such recordkeeping shall be reviewed by the Airport's Representative. All records and data, and management information systems used to develop and maintain them, shall be the property of the Airport. All such documents shall be dated and signed by appropriate Contractor personnel. All Correspondence under this Contract shall be serialized in accordance with the Airport's Representative's instructions.

A2.7.2

The monthly management reports shall be submitted to the Airport's Representative with the end of the month invoice. At a minimum, the monthly reports shall include the following:

A2.7.2.1. A summary of incremental incidents greater than three (3), five (5), and fifteen (15) minutes. Incidents greater than fifteen (15) minutes in length require an explanation that includes the

summary and the corrective action taken to limit further occurrences.

A2.7.2.2 Preventive Maintenance outline that indicates services performed that month, including a list of behind schedule PM inspections, if any.

A2.7.2.3 Corrective Action Report that tracks the most common component failures and a plan to mitigate such problems

A2.7.2.4 System Enhancements

A2.7.2.5 Injuries or lost days

A2.7.2.6 CPUC reportable accidents and/or incidents

A2.7.2.7 Training (monthly)

A2.7.2.8 Training (year-to-date)

A2.7.2.9 Changes or alterations to bulletins, Rule Book, or standard practices

A2.7.2.10 Returned Materials Report (RMR)

A2.7.2.11 System Availability Report

A2.7.2.12 Monthly Punchlist Summary

A2.7.3 The Contractor shall provide an annual report which identifies system modifications, enhancements, redesigns, and/or replacements of any AirTrain components that may be desirable due to technological advancements. At a minimum this report shall contain the following:

A2.7.3.1 Description of component to be replaced

A2.7.3.2 Reason for replacement

A2.7.3.3 Description of new components

A2.7.3.4 Advantages for replacement

A2.7.3.5 Cost to replace the component

A2.7.3.6 Time required to complete replacement

A2.7.4 The Contractor shall provide a continuity of operations plan that describes how the Contractor will minimize the impact of an event, such as pandemic

influenza, that results in employee absenteeism of 30-50%, disruption of parts delivery and vendor services. This plan is due within one hundred twenty (120) days of contract execution. The Contractor shall review plan annually and make any necessary changes.

A2.8 CONTRACTORS PERFORMANCE

A2.8.1 The Contractor shall perform all of its obligations and functions under this Contract in accordance with the requirements and standards contained in this Contract in a professional and businesslike manner. The Contractor shall use its best efforts to coordinate its activities with the various users of the Airport and to perform its activities so as not to annoy, disturb, endanger, unreasonably interfere with or delay the operations or activities of any tenants or occupants of the premises, or be offensive to others at the Airport.

A2.8.2 The Contractor shall employ at the site an experienced O&M Director authorized to represent and act for the Contractor in matters pertaining to its operations and activities at the Airport and shall keep the Airport's Representative informed in writing of the identity of such Director. The O&M Director shall be in charge of and have overall responsibility for the Work to be performed by the Contractor under this Contract and such Director shall devote his/her time exclusively to his/her responsibilities in connection with this work. The Airport's Representative shall have the right in its sole discretion to accept or reject any Director selected by the Contractor, and the Airport's Representative's acceptance shall be required prior to employment of any Director for this Contract. The Contractor's Director shall be available for periodic tours or inspections of the premises to be made with the Airport's Representative

A2.8.3 The Contractor, in order to comply with the Airport's and FAA's security requirements, shall within thirty (30) days of hiring an employee submit to the Airport's Representative (and maintain a record of) proof that the employee has been fingerprinted and any and all background checks presently or hereinafter required by the Airport and FAA.

A2.8.4 The Contractor shall instruct its personnel that no gratuities shall be solicited or accepted for any reason whatsoever from passengers, tenants, customers or other persons using the AirTrain. The Contractor shall be responsible for insuring that all articles found by its employees are turned in to the Airport's Lost and Found department or its agent in charge of such articles.

A2.8.5 The Contractor shall not do or keep anything at the Site which will in any way conflict with any law, ordinance, rule or regulation which may now or hereafter be enacted or promulgated by any governing public authority or create a safety hazard at the Airport; or create a nuisance; or in any way obstruct or interfere with the rights of other users of the Airport, except as

reasonably required in the performance of its obligations and functions hereunder; or commit or allow to be committed any waste upon the site or use or allow the Site to be used for any improper, immoral, unlawful or objectionable purposes; or place any loads upon the floor, walls or ceiling which endanger the structure; or obstruct the sidewalk or passageways or stairways in front of, within, or adjacent to the Site, except as reasonably required in the performance of its obligations and functions hereunder. Any violation of the provisions in this paragraph will be deemed by the Airport to be a default under this Contract and shall entitle the Airport to all remedies created herein or provided by law.

- A2.8.6 The Contractor shall keep all of the Airport's tools and equipment utilized in the performance of this Contract inventoried, in good and safe condition, and in working order and be responsible for loss and/or damage.
- A2.8.7 The Contractor shall require all prospective employees to show proof of citizenship or proof from the United States Immigration Authority that they have entry permits, work permits, and are legal aliens.

A2.9 OBLIGATIONS OF THE AIRPORT

- A2.9.1 The Airport will provide job related office space, work shop space and storage space for parts, supplies, tools, and equipment at no cost to the Contractor. The space the Airport will provide will be the AirTrain Maintenance and Storage Facility.
- A2.9.2 The Airport will make a reasonable effort to coordinate the operations and activities of the airline carriers and others who utilize the Airport in order to minimize, to the extent practical, interferences with performance by the Contractor.
- A2.9.3 The Airport will furnish each of the Contractor's qualified employees with an identification badge, at no cost to Contractor or its qualified employees, which will display their picture, name and other critical information desired by the Airport.
- A2.9.4 The Airport will provide employee parking permits and job-related vehicle parking permits at no cost to the Contractor or its employees.
- A2.9.5 The Airport will pay the costs of the following utilities used in the operations and maintenance of the AirTrain: electric power, natural gas, potable water, telephone land line, and sanitary sewage.
- A2.9.6 The Airport will provide for pick-up of solid waste, generated in the operation and maintenance of the AirTrain, from a common pick-up point. However, the Airport shall not be responsible for the abatement, collection, disposition, or handling of hazardous waste materials generated by the Contractor's operation herein.

A2.9.7 The Airport shall provide sufficient tools and inventory for the operation and maintenance. The contractor shall perform an inventory of all tools and parts within the first two-month period of operation and will be responsible for maintaining the same inventory levels through the remainder of the contract.

A2.9.8 The Airport shall provide the Contractor and its designee's access to the AirTrain site for an approximate two-month period prior to the contract start date for the purposes of familiarization, orientation, and pre-operational readiness preparation.

A2.10 SYSTEM DESIGN AND CONFIGURATION

A2.10.1 **Contractor Responsibility for Configuration Management:** The Contractor shall maintain the AirTrain in the same design and configuration as it was accepted. Any Contractor proposed changes to the system design and configuration shall require submission of the requested change, including design review data and drawings, to the Airport's Representative for its review and comment. No changes shall be made by the Contractor, except where safety is involved or as required to maintain service, without the prior written concurrence of the Airport's Representative. The Contractor shall be responsible for maintaining strict configuration control of all aspects of the design, fabrication, installation, and maintenance of the AirTrain. Configuration Management shall, as a minimum, cover the following subjects:

A2.10.1.1 **Document Organization and Control** - The Contractor's responsibility as part of the Configuration Management shall be to establish a system to identify, organize, and track all documents developed throughout the duration of the Contract. The Contractor shall serialize all correspondence and transmittals, and establish a computerized logging system for incoming/outgoing correspondence showing action requirements and action taken. Drawings, specifications, subcontract documents, reports, estimates, studies, reviews, and computer files, etc., shall be tracked by this logging system. Tracking Logs for correspondence or document control shall be provided on electronic media and/or reproducible hard copies when requested by the Airport's Representative.

A2.10.1.2 **Configuration Control** - The Contractor shall be responsible for and maintain strict control of the configuration of all system components, procedures, documents, including the AirTrain Operations Plan, Maintenance Plan, O&M Management Plan, Operations Manuals, Maintenance Manuals, SOP's, Rule Book, and any other plans, manuals, or drawings that pertain solely to the equipment related to this Contract.

A2.10.2 Once configuration for an element of the AirTrain is established, the Contractor, without proper Configuration Management, shall not change the configuration of all such elements. Once configuration changes are accepted, formal Change Configuration Documentation shall be circulated in accordance with a distribution list, which includes the Airport's Representative, developed for that purposes.

A2.10.3 The Contractor's Configuration Control shall ensure that:

- A2.10.3.1 Invalid and/or obsolete documents are promptly removed from all points of issue or use;
- A2.10.3.2 Any obsolete documents retained for legal and/or knowledge preservation purposes are suitably identified; and
- A2.10.3.3 All equipment is maintained to current configuration.

A2.10.4 **Configuration Control Records:** The Contractor shall maintain configuration control records of all items and the actual incorporation points of any changes (by date, lot, unit, or other specific identification). A document titled Configuration Data, which defines the current configuration, shall accompany each significant item shipped to the work site. The Airport's Representative shall have access to all configuration control records related to the AirTrain.

A.2.11 DRAWINGS AND DOCUMENTS

Throughout the contract period the Contractor shall continuously update all As-built Documents, Operations Plan and Manuals, Maintenance Plan and Manuals, O&M Management Plan and the Rule Book as any changes or improvements are implemented. The Contractor shall provide the Airport's Representative with a copy of all updates no later than thirty (30) days from document change.

A3.0 OPERATIONS REQUIREMENTS

The Contractor shall provide all required labor, materials, and services required to operate the AirTrain as specified herein.

A3.1 GENERAL

A3.1.1 The Contractor shall furnish all personnel required to operate the AirTrain during the term of Contract. The Contractor's personnel shall operate the AirTrain in accordance with the Airport-reviewed System Operations Plan and System Operations Manuals provided to the Contractor. Updates to these documents shall be made by the Contractor in accordance with sections A2.10 and A2.11 above at no additional cost to the Airport and,

when concurred by the Airport, shall become the basis for AirTrain operations.

- A3.1.2 Normal hours of operation and the level of service for the AirTrain will be as provided by the Airport's Representative. On occasion, special events may necessitate extending or reducing System operations beyond the normal operating hours or altering the mode of operation. The Contractor shall provide these extensions in service at no additional cost to the Airport provided that they do not exceed sixty (60) consecutive days of duration.
- A3.1.3 The Contractor shall, in conjunction with the City and County of San Francisco Fire Department at SFO, be responsible to conduct and carry out any and all passenger evacuations and respond to any emergencies associated with the AirTrain.
- A3.1.4 All policy decisions regarding the System's operation and interface with the public shall rest with the Airport's Representative as provided in Section 1.0 of the General Requirements herein.

A3.2 QUALITY ASSURANCE PROGRAM

The Contractor shall organize and conduct the Operations and Maintenance of the AirTrain in accordance with strict attention and adherence to Quality Control. This section defines aspects of a Quality Assurance Program Plan that is considered an essential requirement for this Contract. Only upon the Airport Representatives favorable approval shall the Contractor deviate from using equipment and parts which are not OEM. Any Engineering tests that alter equipment or functionality of any part of the system shall require favorable approval from the Airport Representatives.

- A3.2.1 **Quality Assurance Program** - The Contractor shall, within one hundred twenty (120) days of the execution of this Contract by the Contractor, submit for the Airport's Representative's acceptance, a "Quality Assurance Program Plan," which shall include the Contractor's quality system procedures, outline the structure of the documentation used in the quality system, and address the quality issues discussed in this section. The Contractor may utilize a proven in-house Quality Assurance Program Plan; so long as it meets the objective outlined in this section, and is accepted by the Airport's Representative.
- A3.2.2 **Responsibility for Lower Tier Performance** - The Contractor shall be responsible for all quality control of its services, including services performed by any of its subcontractors/sub-consultants.
- A3.2.3 **Airport's Right of Audit** - The Airport or its Representatives shall have the right to audit and inspect the Contractor's and its subcontractors' quality systems. Such audits may be conducted on a random or routine basis and may include an audit of the Contractor's inspection and test records. Additionally, the Airport, through its designated representatives, shall have

the right to witness any tests or inspections and shall have access to all test data, including test procedures, test specifications, and test results. Further, the Airport shall have the right to conduct independent tests or inspection at the Airport's expense on any material or equipment to be used to perform services under this Contract. The objective of all audits, inspections, or tests conducted by the Airport is to ensure that all Contractor performed services are accomplished in compliance with the Contract.

A3.2.4 **Airport's Right of Rejection** - The Airport or its Representatives shall have the right to reject and the Contractor shall replace at Contractor's cost, any construction, production or installation or portion thereof, which has not been accomplished or documented as accomplished in accordance with the accepted Quality Assurance Program Plan.

A3.3 SYSTEM ASSURANCE MONITORING

A3.3.1 During the term of this contract, using the existing Site Information Management System (SIMS), the Contractor shall develop a program of operational data collection and analysis. This data will be used to prove the actual performance of the AirTrain and to verify System Service Availability requirements specified in Section 6.0 of the General Requirements herein are met. The Contractor shall submit to the Airport's Representative monthly System Assurance Monitoring Reports that include this data for review, commencing at the end of the first month of the contract.

A3.3.2 If, as a result of the System Assurance Monitoring, the Contractor determines that modifications, or redesign and/or replacement of any AirTrain components are necessary or desirable, the proposed method of accomplishing such modification, redesign and/or replacement shall be submitted to the Airport's Representative in accordance with the procedures specified in Section 5.0 and/or Section 7.0, of the General Requirements. The costs for such modifications, redesigns and/or replacements if so required to meet the System Service Availability requirements specified in Section 6 of the General Requirements, shall be performed at no cost to the Airport. Otherwise, the costs for such modifications, redesigns and/or replacements shall be performed at a mutually agreed upon price between the Airport and the Contractor. The Contractor, unless safety related, shall not disable any portion of the AirTrain for such purposes without prior written approval from Airport's Representative.

A3.4 SPECIAL SERVICES

A3.4.1 The Contractor shall provide the following special services in the operation of the AirTrain upon the request of the Airport at no additional cost to the Airport:

- A3.4.1.1 Adjust operating schedules for special events. For such requests the Airport will endeavor to give the Contractor at least seven (7) days advance notice.
- A3.4.1.2 Accommodate tours of the AirTrain.
- A3.4.1.3 Conduct demonstrations of certain features and provide system safety training of the AirTrain.
- A3.4.1.4 Install Airport-provided Audio and Visual updates to all vehicles and station PA equipment as required. The Airport will endeavor to give the Contractor at least seven (7) days advance notice.

A4.0 MAINTENANCE REQUIREMENTS

The Contractor shall provide all supervision, labor, materials, supplies, parts, and components necessary to maintain the AirTrain as specified herein on a continuous basis throughout the term of this contract.

A4.1 GENERAL

- A4.1.1 The Contractor shall maintain the AirTrain in accordance with the requirements and specifications set forth in this section. The Airport's Representatives and the Contractor may, from time to time, by mutual consent, make changes to any requirements and/or specifications. Any changes made shall not be considered a change in the scope of services or entitle the Contractor to any additional compensation under this Contract, except by a written change order. The Parties may make such changes by the execution of an amendment to this Contract by the Airport's Representative and the Contractor's Representative, without the need for formal legislative approval by the City.
- A4.1.2 The maintenance services under this Contract shall include but not be limited to furnishing all labor, tools, equipment, parts and materials necessary to accomplish the inspection, cleaning, adjustment, preventative maintenance, lubrication, repair, testing, replacement of all parts and equipment including all audio and visual equipment, supplying the spare parts and equipment, consumables, and expendables, and repair of spare equipment for the AirTrain.
- A4.1.3 Maintenance shall be scheduled by the Contractor in such a way that the interference with, or effect upon, the operation of the AirTrain is minimized. To minimize operational impact, maintenance of certain equipment and fixed facilities may necessarily have to be carried out at night or in off-peak periods. Maintenance practices or procedures which may compromise or degrade system operations, in the sole opinion of the

Airport, shall be approved by the Airport's Representative in advance of their initiation.

- A4.1.4 Whenever vehicles stall, restoration of service to the schedule operating mode for that time shall be given priority by the Contractor. Restoration of service and/or recovery of stalled vehicles shall be accomplished in accordance with the accepted Emergency Procedures, Operations Plan, Operations Manuals, and Rule Book.
- A4.1.5 Movements of vehicles under manual control shall be accomplished only by qualified Contractor personnel, and only under the rules and procedures specified in the manuals and the Rule Book.

A4.2 MAINTENANCE DUTIES

- A4.2.1 The Contractor shall perform preventive maintenance in accordance with the requirements and specifications set forth below. All preventive maintenance tasks shall be performed as scheduled by and documented in the Site Information Management System (SIMS) data base.
- A4.2.2 Procedures for performing preventive maintenance tasks shall also be documented and any changes to these procedures require prior mutual agreement between the Airport's Representative and the Contractor.
- A4.2.3 On the fifteenth (15th) day of each month, the Contractor shall provide the Airport's Representative with a written automated monthly preventive maintenance report listing all the equipment receiving preventive maintenance during the previous month. The report shall include information regarding the preventive maintenance tasks, the due date for each task, and the date the task was actually performed.
- A4.2.4 At the termination of the contract, the Contractor shall deliver to the Airport all manuals, drawings, computer programs, procedures, records, tools, equipment, and testing devices owned by the Airport which the Contractor has used to maintain the AirTrain.
- A4.2.5 Subsystem Maintenance
 - A4.2.5.1 For each of the AirTrain subsystems, the following types of maintenance shall be performed.
 - A4.2.5.1.1 Routine Maintenance - Activities required to provide a clean and aesthetically pleasing system for public use, as well as routine inspections and tests designed to identify any unusual or abnormal equipment conditions. Routine maintenance activities shall be performed as necessary to meet system requirements or as scheduled by SIMS.

A4.2.5.1.2 Scheduled Maintenance - Activities required to keep the AirTrain operating at prescribed levels of safety and reliability which are performed on a recurring basis at specified intervals. Scheduled maintenance activities shall be performed and executed as scheduled by SIMS.

A4.2.5.1.3 Non-Scheduled Maintenance - Includes any corrective measure or repair necessitated by an inspection, a failure, or unusual circumstances adversely affecting the normal AirTrain operations. Non-scheduled maintenance may be required as a result of unsatisfactory conditions discovered during an inspection or because of an operational failure. Non-scheduled maintenance activities shall be performed on a priority basis as necessary to meet required System Service Availability.

A4.2.5.1.4 Ordinary Wear/Tear - Any corrective measure or repair that may be required because of ordinary wear and tear, except for, re-painting, re-upholstering, and re-flooring of AirTrain vehicles.

A4.2.5.1.5 Other Maintenance - Updating maintenance manuals, maintenance testing as required and maintenance of tools, equipment, and furniture.

A4.2.5.2 System equipment and subsystems to be maintained shall include, but not be limited to:

A4.2.5.2.1 Vehicles and all on-board equipment - The Contractor shall clean, inspect, service, and maintain the entire AirTrain fleet of thirty-eight (38) vehicles plus one (1) Maintenance Recovery Vehicle. These inspections shall be performed as required by the SIMS data base and shall include, but not be limited to: wheels, vehicle frame, structural members, vehicle body, seats, windows, panels, doors, suspension equipment, propulsion and braking equipment, vehicle control equipment, accessory equipment, door mechanisms, graphics, and air conditioning equipment. Any variance from the preventive maintenance schedule shall require prior written approval by Airport's Representative. At no time will there be a variance permitted from performing the scheduled vehicle bi-daily maintenance inspections.

A4.2.5.2.2 Bi-Daily Maintenance - All vehicles shall be inspected and cleaned every forty-eight (48) hours (unless the vehicle is undergoing a more extensive maintenance inspection at the time). Cleaning shall consist of interior windows, walls, and carpet. Inspection shall include but not be limited to;

Inspection of all under car equipment; (such as, guide tires, bogies; power collection system, cables and connectors, mechanical and pneumatic brake systems, etc..), Inspection of on-board equipment; (such as, air conditioning systems, vehicle lighting, graphic displays, emergency phones, PA system, indicator lamps, etc. . .). At the end of each Bi-Daily inspection and before the vehicle is added back into the system for passenger service, a departures check will be performed on the test track to ensure the vehicle is safe and ready for passenger service.

A4.2.5.2.3 Additional Mileage Based Vehicle Maintenance -
All vehicles shall be serviced, inspected and repaired (as required) at each of the following mileage intervals; 6,500, 19,500, 39,000, 78,000, 250,000 and 500,000 and in accordance with the task descriptions as set forth in the Site Information Management System (SIMS) to include but not be limited to the following: hub and differentials, air compressor, traction motors, on-board batteries, mechanical and pneumatic brake systems, Automatic couplers, power collection system, guide tires, running tires, cables and connectors, pneumatic suspension system, air control systems, vehicle doors, communication systems, etc.

A4.2.5.3 Power distribution equipment - The Contractor shall clean, inspect, service and maintain all power distribution equipment except the equipment (e.g. primary feeders, primary switchgear) associated with the high voltage (i.e., 12.5 kV) input from the Airport electrical distribution system. The Contractor's activities shall include but not be limited to the following: substation facilities, secondary switchgear, ground fault detection, metering equipment, circuit breakers, low voltage transformers, power rails, grounding, lightning and surge protection equipment, and the alignment and adjustment of the power distribution rails on the guideway.

A4.2.5.4 Command, Control, and Communications equipment - The Contractor shall clean, and inspect, service and maintain the Central Control equipment and facility, all Automatic Train Control (ATC) equipment, communications equipment, displays, and data processing equipment. Routine tests shall be conducted on any equipment where safety margins used for design of the Automatic Train Protection system (ATP) may vary with use and/or time, such as brake response and performance, stopping distances, interlocks, detection device, and vehicle-door sensitive edges.

A4.2.5.5 Guideway Equipment - The Contractor shall regularly align, adjust and otherwise clean, inspect, service, and maintain the following: emergency walkways, hand rails, station barrier walls, running beams, guide beams, power rail, guideway switches and all other guideway related equipment including guideway seismic joints installed under Contract 5703.A. However, the Contractor's obligation for major repairs to any seismic joint, due to normal wear and tear, will be capped at Ten Thousand Dollars (\$10,000) per occurrence. The Airport will be responsible for any repairs to the following: emergency walkways, hand rails, station barrier walls, running beams and guideway superstructure, which is comprised of support columns, tub, and deck.

Also, the Contractor shall remove debris from the guideway, clean oil, and dirt from the power rail, and paint the guideway equipment as required to prevent corrosion. Concrete surfaces shall not be painted but shall be kept clean. Painting of any concrete or masonry surfaces shall require favorable review by the Airport's Representative.

A4.2.5.6 Station Platform Equipment - The Contractor shall clean, inspect, service and maintain all Contractor provided station equipment, including station interiors, all electrical, electronic, and mechanical, and communications equipment. Also, the Contractor shall clean, inspect, service and maintain all passenger controls and displays located at the stations.

A4.2.5.7 Maintenance & Storage Facility and Equipment - The Contractor shall clean and inspect the Maintenance and Storage Facility and clean, inspect, service and maintain all electrical, electronic, and mechanical equipment used for operating and maintaining the AirTrain.

A4.2.6 Overhaul or Replacement of Major Components

A4.2.6.1 The Contractor shall provide the Airport in September of each contract year, a list of the following components: drive axle planetary gears, bogie pivot rings, and vehicle air compressors that will require either an overhaul or replacement in the upcoming calendar year. The list will include the Contractor's justification, definition of work-scope, estimate of time required, and a fixed cost proposal. The Airport shall compensate the Contractor for overhauls or replacements to the abovementioned components only. Any cost associated with the overhaul or replacement of these components shall be limited to the Contractor's actual cost for either the overhaul or

replacement of the component and shall not include labor cost to remove or replace such components and shall be subject to all the covenants, terms, and conditions of this contract. Under no circumstances will the Contractor perform any major overhaul tasks to, or the replacement of, these components without formal written approval from the Airport.

A4.2.6.2 The Contractor will be responsible for overhauls and/or replacement to all other system components including vehicle traction motors.

A4.2.6.3 In the event a requested overhaul or replacement of such components is rejected by the Airport and subsequently a failure of such an item occurs, downtime resulting from the failure will be excluded from the availability calculation and the Contractor will not be deemed in violation of this contract.

A4.2.7 Obsolescence

The Contractor will advise the Airport in a timely fashion of any component, spare part, or subsystem of the AirTrain that has been confirmed to be obsolete and cannot be acquired or remanufactured. The Contractor will make every possible effort to replace such items with items that are equal in quality and function at no cost to the Airport. In cases where such items cannot be replaced with an equivalent item and the only choice is to upgrade or enhance the item, the Contractor will provide the Airport with justification for such an upgrade or enhancement along with a fixed cost proposal and estimate of time required to replace such items. The Airport's Representative may agree to pay for or share the cost of such upgrades or enhancements with the Contractor. In the event that the Airport chooses not to pay for or share the cost of such upgrades or enhancements, and subsequently a malfunction occurs which would not have occurred if the item had been replaced with the Contractor's specified item, any downtime resulting from such an occurrence will not be included as part of the system availability calculations, nor will the Contractor be deemed in violation of this contract. Additionally, the Contractor will not be deemed in violation of this contract if Contractor elects to proceed with such upgrades or enhancements.

A4.2.8 Upgrades and Enhancements

A4.2.8.1 In September of each contract year, the Contractor shall submit for Airport's approval a proposal which identifies system modifications, enhancements, redesigns, and/or replacement of any AirTrain components that are desirable due to technological advancements. The proposal will include Contractor's justification for the work, the work-scope

definition, estimate of time required and a fixed cost proposal for performing each task. Any upgrades or enhancements performed by the Contractor will be subject to the covenants, terms, and conditions of this contract.

A4.2.8.2 Under no circumstances will the Contractor perform any of the proposed upgrades or enhancements without formal written approval from the Airport.

A4.2.9 Cleaning and Janitorial Services

A4.2.9.1 The Contractor shall provide janitorial services for the following facilities: all parts of the guideway, the station barrier walls including the glass and the aluminum cladding, the Maintenance and Storage Facility, Central Control Room and Administrative Offices, Power Distribution Substations, and Station Equipment rooms. Damage to surfaces of fixed facilities, vehicles, and equipment shall be remedied by repair or touch-up to its prior condition. If such removal or janitorial services are not performed in a timely manner, the Airport may perform such services and deduct the cost thereof from the Contractor's monthly payment. Station facilities, other than the barrier wall, will be maintained by others.

A4.2.9.2 The Contractor shall be responsible for cleaning of the AirTrain equipment as specified in the Maintenance Plan but shall, at a minimum, include the following:

A4.2.9.2.1 Graffiti and any vandalism shall be repaired or remedied within twenty-four (24) hours from the time of discovery, or on any notice from the Airport.

A4.2.9.2.2 All vehicles shall be kept free of litter and cleaned daily, including cleaning of floors, trash removal, and interior window cleaning, and giving special attention to clean any unsanitary and/or unusual soiled conditions.

A4.2.9.2.3 All toilet and washroom facilities for AirTrain personnel shall be fully cleaned and sanitized daily, including washing of all fixtures and floors.

A4.2.9.2.4 Vehicle exteriors and interiors shall be washed monthly or more frequently as special conditions may require.

A4.2.9.2.5 The Central Control Facility, all administrative offices and the Maintenance & Storage Facility shall be cleaned daily according to the same standards as for

professional office buildings. Other AirTrain facilities shall be cleaned on an as-required basis.

A4.2.9.2.6 All guideways shall be kept free of litter and cleaned on a routine basis to maintain an aesthetically pleasing appearance. Deposits of foreign materials from the operations or maintenance of the system onto the guideways, vehicles, and/or equipment shall be removed in a timely manner.

A4.2.9.2.7 All station barrier walls including the glass and the aluminum cladding, skylights and exterior glass panels at the International Terminal on both A and G sides adjacent to platform, and Garages A and G west side glass panels. The contractor shall provide training as necessary and all escorting duties as needed.

A4.2.10 Spare Parts and Equipment, Expendables, and Consumables

In performing this Contract, the Contractor shall maintain an inventory of spare parts, tools, and equipment at the same level as provided in the attached Appendix E; "Spare Parts, Tools and Equipment List. The contractor shall perform an inventory of all spare parts, tools, and equipment within the first two (2)-month period of operations to confirm that everything listed in Appendix E; "Spare Parts, Tools, & Equipment List" is accounted for. The Contractor will be responsible for maintaining the same inventory levels through the remainder of this contract. Additional items shall be added to this inventory based on the Contractor's experience or the item's long lead order time to assure that the inventory is maintained as a one-year supply and sufficient to meet the System Service Availability requirements. Whenever an item of spare parts, equipment, expendables, or consumables is used by the Contractor in the performance of services under this Contract, such item of spare parts, equipment, expendables, or consumable shall be repaired or replaced by the Contractor as part of this contract, and the repaired or replaced item placed into inventory. All spare parts, equipment, expendables, and consumables shall normally be kept in the Maintenance and Storage Facility or other Airport-accepted on-Airport location. If at any time it is found that the original inventory of these materials is insufficient, then sufficient additional inventory shall be provided at no cost to the Airport. The same level of inventory shall exist upon the termination of the contract.

A4.2.11 Maintenance Tools and Equipment

A4.2.11.1 The Contractor shall be permitted to use the inventory of tools, maintenance equipment, test equipment, and facilities provided under this Contract. Such items shall be maintained in good order and repaired or replaced by the Contractor as necessary to maintain the inventory. Records of this inventory shall be

kept. Upon the termination or expiration of this contract the complete inventory of the tools, maintenance equipment and test equipment shall exist or be replenished by the Contractor, including any replacement of and/or repair in good condition any tools, maintenance equipment and test equipment.

A4.2.11.2 If at any time during the contract the required inventory of tools, maintenance equipment, and test equipment is found to be deficient for performing the services required by this contract, the Contractor shall provide the deficient items at no cost to the Airport.

A5.0 OPERATIONAL RADIO SYSTEM UPGRADE REQUIREMENTS

The Contractor shall provide all required labor, materials, equipment, and services required to implement an Operational Radio System (ORS) upgrade that meets the specification as outlined below. The installation of this ORS upgrade shall commence no later than forty (40) months from notice to proceed of this Contract and shall be complete within ninety (90) days from start of installation.

A5.1 BACKGROUND

A5.1.1 The San Francisco APM Flexiblok system is designed so that the lead vehicle transmits alarms for its consist when the consist is traveling between stations. Alarms from trailing vehicles in the consist are only transmitted when the consist comes into a station (with the exception of critical alarms such as smoke alarms. These alarms are transmitted via the train line to the lead vehicle.)

A5.1.2 When a call is requested from the lead car of a consist, the identification (ID) of the lead car and the two-way call request are transmitted regardless of the location of the consist in the system. When a call is requested from a trailing car of a consist, the ID of the consist is transmitted, but the designation of the individual car within the consist will not be known. When a call is requested from a trailing car of a consist, the ID of the trailing car will become evident when the consist enters a station. The time between stations is typically less than one (1) minute and approximately three (3) minutes for the segment to the West Field Road.

A5.2 SCOPE OF WORK

A5.2.1 The Contractor shall provide at a minimum the following as part of this Project:

A5.2.1.1 One (1) new central ORC PC updated to the latest Windows operating system

A5.2.1.2 Software upgrades for all associated equipment

- A5.2.1.3 Changes to existing cabling and software on thirty-eight (38) vehicles
- A5.2.1.4 Changes to existing cabling and software at the Central Control Facility
- A5.2.1.5 Testing and commissioning of the system
- A5.2.1.6 Schematic and BOM drawing updates
- A5.2.1.7 User and Owner manual updates
- A5.2.1.8 Two (2) – one-day training classes for an overview of the system for up to twenty-five personnel each
- A5.2.1.9 One (1) – two-day training classes for details on the system for up to five (5) personnel
- A5.2.1.10 All training is to be conducted within the same week

A5.2.2 TWO-WAY CALL REQUEST REROUTING

The Contractor shall upgrade the two-way call request rerouting function which will allow data for two-way call requests to be routed through the existing CitiFlo-650 system instead of through the ORS. This change will allow a Central Control Operator to be notified if any vehicles have call requests while a two-way call is active with any other vehicle. The ORC shall continue to transmit other alarms such as:

- A5.2.2.1 Smoke alarm
- A5.2.2.2 ATO failure
- A5.2.2.3 ATO communication failure
- A5.2.2.4 Fire extinguisher removal
- A5.2.2.5 Unscheduled Door
- A5.2.2.6 Other necessary alarms

A5.2.3 PA TO TRAIN SELECTION ENHANCEMENT

An additional feature will be added by the Contractor to allow the Central Control Operator to control the public address (PA) announcements sent to vehicles such that they will be able to select any of the following:

A5.2.3.1 Any individual vehicle or combination of vehicles

A5.2.3.2 Any consist or combination of consists

A5.2.3.3 All vehicles on the Red Line

A5.2.3.4 All vehicles on the Blue Line

A5.2.4 FIRST IN FIRST OUT (FIFO) ALARM CLEARING AT CENTRAL ORS

Alarms accumulated at central ORS currently have to be cleared manually every couple of months. The Contractor shall make changes that will keep alarms only from the last thirty (30) days, and will delete alarms from beyond the thirty (30) days.

A5.2.5 PAUSE AND REINSTATEMENT OF REPEATING MESSAGE AFTER TWO-WAY CALL

The Contractor shall ensure that if a repeating message is being generated from Central Control, a two-way conversation will truncate the repeating message. When the two-way conversation is complete, the repeating message will automatically reactivate.

END OF DOCUMENT

APPENDIX B
CALCULATION OF CHARGES/ DETERMINATION OF MONTHLY PAYMENTS

B.1 MONTHLY PAYMENTS

For performance of the Services specified in Appendix A, Services to be Provided by Contractor, of this Agreement, the Contractor shall be paid twice a month in two bi-monthly payments adding up to one-twelfth (1/12) of the lump sum annual fixed bid price for each contract year and adjusted as specified in Section 4.1 of the General Requirements. Invoices will be scheduled on the first (1st) and fifteenth (15th) of each month. All additions and subtractions to the monthly payment shall be made to the invoice scheduled on the first (1st) of each month. The invoice covering the first two weeks of the month (scheduled on the fifteenth (15th) of the month) will only include fifty percent (50%) of the monthly base contract value and fifty percent (50%) of the escalation value. The remainder, including various change orders, availability bonuses, deductions, etc. will be determined at the end of the month. The Payments for any partial month shall be prorated for the number of days in the month that the AirTrain is actually operated according to the System Operations Plan. The two (2) bi-monthly Payments shall be increased or decreased as provided in Sections B.2, B.3, B.4, B.5, and B.6 herein. Invoices shall be prepared and submitted and payments made in accordance Section 4.3 of the General Requirements. The total reduction of payment due to exceeding B.4 System Down-Time Event Penalties, B.5 Adherence to Maintenance Schedule, and B.6 Adherence to Established Emergency Operating Procedures, shall be limited to five percent (5%) of the average monthly invoice.

B.2 SYSTEM SERVICE AVAILABILITY PAYMENT FACTORS

B.2.1 For any calendar month of this Contract that the AirTrain does not achieve a System Service Availability of ninety-nine and one-half percent (99.50%) to ninety-nine and seventy-nine one hundredths percent (99.79%), as specified and calculated in accordance with Section B.3 below, a Payment Factor shall be applied to the Contractor's Average Monthly Payment for that month. Increases shall be incentives for improved service whereas decreases shall be liquidated damages for not providing the required service, recognizing that demand for services during such times may have been denied or delayed and cannot be made up. Service Availability shall be calculated to two (2) decimal places and then multiplied by the appropriate payment factor from the table below. The Payment Factors shall be as follows:

<u>SYSTEM SERVICE AVAILABILITY</u>	<u>PAYMENT FACTOR</u>
99.90 and above	1.020
99.80 to 99.89	1.010
99.50 to 99.79	1.000
99.40 to 99.49	0.990
99.30 to 99.39	0.980
99.20 to 99.29	0.970
99.10 to 99.19	0.960
99.00 to 99.09	0.950
98.90 to 98.99	0.940
98.80 to 98.89	0.930
98.70 to 98.79	0.920
98.60 to 98.69	0.910

98.50 to 98.59	0.900
98.40 to 98.49	0.890
98.30 to 98.39	0.880
98.20 to 98.29	0.870
98.10 to 98.19	0.860
98.00 to 98.09	0.850
97.90 to 97.99	0.840
97.80 to 97.89	0.830
97.70 to 97.79	0.820
97.60 to 97.69	0.810
97.50 to 97.59	0.800
95.00 to 97.49	0.750
94.99 and below	0.700

B.2.2 The Airport will provide a computer based system referred to as the "Site Information Management System (SIMS) to gather, analyze, process, and calculate the System Service Availability on a daily basis. This automated process may also include the collection of other data related to service quality but may not be a factor of System Service Availability.

B.2.3 All amounts in excess of the Contractor's Average Monthly Payment for any contract month, as calculated by applying a payment factor of either a 1.01 or 1.02, are considered an "Incentive Payment." This incentive payment is intended to encourage and reward site personnel. This incentive payment shall be split 50/50 between Contractor and all site employees. The fifty percent (50%) employee distribution shall be equally divided amongst all site employees and be distributed by the Contractor on a quarterly schedule. For purposes of this section, the "Incentive Payment" for a quarter equals the total performance incentives for the quarter minus the total performance penalties for the quarter. If the quarterly net incentive payment is a negative number (i.e., the quarter's aggregate performance penalties exceed the quarter's aggregate incentives), the Contractor shall absorb the deficit and shall not reduce any employee's pay. Each quarterly distribution shall be made no later than one (1) month after the end of each quarter. The Contractor shall furnish to the Airport's Representative, within fifteen (15) days after the date of such distributions, a record of distributions made to all employees.

B.3 SYSTEM SERVICE AVAILABILITY CALCULATIONS

B.3.1 GENERAL

B.3.1.1 This Section provides the requirements for calculating the availability of service that must be provided by the Contractor. System Service Availability is a measure of the total quantity and quality of transportation service actually operated compared with that scheduled to be operated over a given time period. System Service Availability (A) is defined as the product of Service Mode Availability (A_m), Fleet Availability (A_f), and Station Platform Availability (A_s), each of which is determined for the same specific service mode and time period calculated independently for each line.

B.3.1.2 The units of hours used to calculate Service Availabilities shall be taken from actual measurements measured in hours, minutes, and seconds. Accuracy of ATC-based data for such calculations shall be to the rounded thousandth of an hour. Service

availability measurements shall be automatically taken and recorded by the ATC management system.

B.3.2 SERVICE MODE AVAILABILITY

B.3.2.1 The system service operating modes are defined in the System Operating Plan. Loop service for each line shall normally be provided. Reduced service modes for either line shall receive full credit when scheduled; otherwise, they and the use of any failure management modes will receive partial system service availability credit as determined by the appropriate K factor, Appendix D, K Factor Table attached hereto and incorporated by reference as though fully set forth herein, for each mode.

B.3.2.2 Service Mode Availability for each line and for each time period for a specific operating mode is defined as:

B.3.2.2.1 $A_m = \frac{\text{Scheduled Mode Operating Hours} - \text{Mode Downtime Hours}}{\text{for the Specific Line}}$

Scheduled Mode Operating Hours

Where:

B.3.2.2.1.1 Scheduled Mode Operating Hours - Is the total time, in hours, that the Line is scheduled to provide passenger service in the specific operating mode.

B.3.2.2.1.2 Mode Downtime Hours - Is the total time, in hours, of all Downtime Events occurring while the Line is scheduled to provide service in the specific operating mode.

B.3.2.2.1.3 Mode Downtime Event - Is an event in which one or more Line- or System related problems cause an interruption of the normal service provided by the desired mode. When such an interruption occurs, downtime for the event shall include all the time from the beginning of the interruption until all trains stopped on the guideway are restarted and normal operation in the scheduled mode is restored. Stoppages resulting from causes listed below as exclusions shall not be counted as Downtime Events. Downtime events of a duration which is less than one Minimum Operational Headway shall not be counted in the calculation of Service Mode Availability, but shall be counted for Downtime Limits (B.4 System Down Time Event Penalties) purposes.

B.3.2.2.1.4 Exclusions - All incidents shall be reviewed by the Airport Representative and any exclusion to said incident will be provided on a case to case basis. The following events are not attributable to the Line or System itself and are not Downtime Events. Delays due to these

exclusions are not to be used in determining Service Mode Availability, and shall result in the entire period affected by them being deleted from consideration in calculating Service Mode Availability, but not from data collection and storage. All data collection means shall include all periods of time; exclusions shall be determined subsequently upon review by the Contractor and Airport.

B.3.2.2.1.4.1 The time period to transition from one scheduled operating mode to another scheduled operating mode or adjusting scheduled fleet size, shall not exceed one scheduled headway in duration.

B.3.2.2.1.4.2 Passenger-induced interruptions or delays.

B.3.2.2.1.4.3 Interruptions caused by intrusions of unauthorized persons or of animate or inanimate objects into non-public areas of the System.

B.3.2.2.1.4.4 Interruptions caused by non-System induced loss of service, e.g., loss of utility service, electrical power provided outside the nominal range, vehicle diversion resulting from intended security provisions, force majeure, and acts or omissions of the Airport or its agents or contractors.

B.3.2.2.1.4.5 Periods when the Fixed Facilities are not available, unless their unavailability is attributable to the Contractor or its vehicles/subsystems.

B.3.2.2.1.4.6 Operational delays induced as part of ATC system to regulate train operations, maintain schedules and for anti-bunching; where such delays do not exceed the Operational Headway.

B.3.2.2.1.4.7 The Airports Representative shall have the final determination on the exclusion.

B.3.2.2.1.4.8 The Airport's Representative will review incidents that require lock-out tag-out with the Contractor on a case-by-case basis to determine potential time exclusions.

B.3.3 FLEET AVAILABILITY

B.3.3.1 The Fleet Availability for each line for each time period during which a specific service mode is provided accounts for fleet reliability and the ability to provide the scheduled line capacity at the scheduled operations headway and is defined as:

B.3.3.1.1 $A_f = \underline{\text{Actual Car Hours for the Specific Line}}$

Scheduled Car Hours

Where:

B.3.3.1.1.1 Actual Car Hours - Is the cumulative car hours actually operated on the line in trains not exceeding the train size scheduled for the specific service mode period. This is calculated as the product of the actual number of fully functional cars provided in the specific operating mode and the time, in hours, during which that mode and those cars operate, minus all car downtime.

B.3.3.1.1.2 Fully Functional Cars - Is the actual number of cars shall not exceed the scheduled number for the line, either in the aggregate or in any vehicle/train. A car with a Priority I or II malfunction, as defined in Appendix C, Incident Grace Period Table, attached hereto and incorporated by reference as though fully set forth herein, shall not be counted as fully functional.

B.3.3.1.1.3 Scheduled Car Hours - Is the product of the scheduled number of cars in the scheduled-size trains required for operation for the specific operating mode and the time, in hours, scheduled for that mode.

B.3.3.1.1.4 Car Downtime Event - Is an event in which the scheduled service of a car, or vehicle if no separate cars are furnished, is interrupted or the car is not fully functional, for duration equal to or greater than twice the Minimum Operational Headway.

B.3.4 STATION PLATFORM AVAILABILITY

B.3.4.1 The Station Platform Availability for each line for each time period during which a specific service mode is provided is defined as:

B.3.4.1.1 $A_s = \underline{\text{Actual Platform Hours for the Specific Line}}$

Scheduled Platform Hours

Where:

B.3.4.1.1.1 Actual Platform Hours - Is the cumulative platform hours actually operated on the line during the specific service mode period not counting any platform downtime. This is calculated as the product of the actual number of station platforms in service and the time, in hours, of that mode, minus all platform downtime. The

platform shall be prorated for the number of platform barrier doors provided and failure of a door set shall be counted as partial downtime of that platform.

B.3.4.1.1.2 Station Platform Downtime - Is whenever any failure of station, wayside, or other System equipment or of ATC station stopping-related software renders a platform not usable for longer than one (1) minute, that platform shall be considered out of service. All time from the start of that failure to when the platform is again fully functional shall be counted in the downtime. The actual number of station platforms shall not exceed that scheduled, either in the aggregate or at any station.

B.3.4.1.1.3 Exclusions - The Airport Representative shall have the final determination on whether an exclusion will be provided for any system event. If a station platform is not served because the guideway leading to it is blocked, it shall not be included in A_s , but the event shall be counted as a downtime for the calculation of Service Mode Availability. The duration of time a station platform is closed due to conditions listed in section B.3.2.2.1.4 above, or the closing of a station or platform for anything other than System problems shall also be excluded. At an end station with two platforms, if only one is required for service the failure of one platform shall be excluded if the switchover occurs within one (1) minute and no train is affected by the failed platform.

B.3.4.1.1.4 Scheduled Platform Hours - Is the product of the scheduled number of station platforms required to be operable and the time, in hours, for the specific operating mode.

B.3.5 LINE SERVICE AVAILABILITY DETERMINATION

B.3.5.1 As long as the line remains in the operating mode scheduled for a period, A_m , A_f , and A_s shall be calculated as indicated above. If a Downtime Event occurs and service is not restored to that scheduled line, but rather a lesser service mode is operated for failure management, then A_f and A_s shall be defined according to the requirements for that lesser mode of service over that period. To determine A_m , the entire time period for operating such an unscheduled lesser level of service shall be counted as partial Mode Downtime by multiplying A_m for the lesser service mode by the appropriate "K" factor. For example, for the single-tracking mode, the K factor shall be the ratio of the average single-tracking headway to the average scheduled headway of the normal service mode that was interrupted. The K factor for any other lesser service mode provided by the Contractor shall be determined as a ratio of the quantity of service delivered by the lesser service mode to that of the scheduled normal service mode. These factors shall be proposed by the Contractor for the review of the Airport.

B.3.5.2 Downtime for an event shall be counted either with regard to the System, or the Fleet, or the Station Platform consistent with that portion of the System which is disrupted and shall not result in either double- or triple-counting of downtime. Where it may be possible to count a downtime event in more than one area (i.e., mode, or fleet, or platform), it shall be counted in that area which best measures the quantity of service which is not available.

B.3.5.3 Each time period is defined by the actual operating mode provided. The Line Service Availability for any calendar time period is the sum of the Line Service Availabilities multiplied by their respective hours of service of all included service periods divided by the sum of all scheduled service hours for the specific line for that calendar period. System Service Availability for that calendar period shall be the average of the Line Service Availability calculated in accordance with section B.3 herein.

B.4 SYSTEM DOWN TIME EVENT PENALTIES

Additional deductions in the payments shall be made for exceeding the downtime limits defined in the table below. A Downtime Event shall be defined as the total time in which a system-related problem causes an interruption in the normally scheduled service mode. Time for such events shall be measured from the beginning of the interruption until all trains stopped on the guideway are restarted, and normal operation in the scheduled mode is restored. These downtime events shall be prorated by the ratio of the number of days in the respective month to thirty (30) days. The following deductions shall be applied to the Average Monthly Payment for each downtime event in excess of the specified limit.

Downtime Event Limits	Number of Events Allowed Per Month	Percent Deduction for each Event Beyond the Allowed Amount (%)
Greater than ten (10) minutes and less than or equal to fifteen (15) minutes	10	0.050
Greater than fifteen (15) minutes and less than or equal to thirty (30) minutes	2	0.100
Greater than thirty (30) minutes and less than or equal to forty-five (45) minutes.	1	0.200
For incidents greater than forty-five (45) minutes, the downtime event will be calculated as follows:	0	(Incident length in minutes / 45) * .200 * Average Monthly Payment
AirTrain bus back-up plan is initiated.	0	0.200

B.4.1 Operation Objectives; Evaluation Criteria; Excusable Delays: The Contractor must operate the AirTrain system with the object of moving the maximum number of people with a minimum number of Delays. The AirTrain Manager will evaluate the Contractor's performance based upon minutes of delays per month. A delay of any part of the AirTrain system shall constitute a delay of the entire system for the purposes of evaluating the Contractor's performance. The AirTrain Manager at his or her sole discretion shall have the

right to excuse the Contractor from being charged with delays that he or she determines are beyond the Contractor's ability to control.

B.4.2 Margin of Unacceptable Delays; Corrective Actions: For any monthly operating period during which the number of delays exceed the allowable minimums category, the Contractor and Airport's Representative will convene to determine the cause of the excessive delays and develop a plan to reduce or eliminate the causes.

B.5 ADHERENCE TO MAINTENANCE SCHEDULE

B.5.1 Objectives

To provide required fleet availability and limit Downtime Events, as well as to maximize the useful life of system equipment, the Contractor shall strictly adhere to the Preventive Maintenance (PM) schedule as required by this Contract.

B.5.1.1 Time and Mileage Components of Maintenance - In accordance with the Section entitled "Maintenance Requirements" above, maintenance activities are to be completed at the defined time and mileage intervals.

B.5.1.2 Adherence to Maintenance Schedules Penalties - If the Contractor is behind on more than fifteen (15) scheduled preventative maintenance inspections, as indicated by the Site Information Management System (SIMS), on the last day of any contract month, the Contractor has sixty (60) days to catch up. If more than ten (10) scheduled maintenance inspections are still behind schedule after this sixty (60) day grace period, the average monthly payment will be reduced by 0.025% for every maintenance inspection that is behind schedule until the Contractor is back on schedule. On the occasion that preventative maintenance inspections fall behind due to special or unforeseen circumstances, the Airport's Representative may relieve the Contractor of any penalties related to overdue PMs.

B.5.2 Correction of Unsatisfactory Maintenance Schedule Performance - If for any monthly operating period more than three (3) PM activities fall behind or one (1) PM activity has fallen behind for three (3) consecutive months, the Contractor and Airport's representative will convene to determine the cause of the missed inspections. The Contractor shall immediately undertake corrective actions to remedy the failures and correct the preventive maintenance deficiencies.

B.6 ADHERENCE TO ESTABLISHED EMERGENCY OPERATING PROCEDURES

B.6.1 To provide a safe and secure system for our passengers, the Contractor shall strictly adhere to the AirTrain Operating System Emergency Procedures and Rule Book. If during any contract month the Contractor fails to follow any of these established procedures during a system downtime event, the average monthly payment will be reduced by 0.025% per each occurrence of the bulleted items below. On the occasion that a procedure cannot be followed due to unforeseen circumstances, the Airport's Representative may forgive the Contractor for said violation. The Airport's Representative will have the final decision on whether a penalty applies for each occurrence. The Central Operator shall acknowledge alarm notification within three (3) minutes and begin to rectify problem.

- B.6.2 Provide audio announcements to passengers in vehicle and on stations within five (5) minutes of any system delay.
- B.6.3 Manage system delay notifications to vehicles/ stations for the following: Short delay message for incidents under ten (10) minutes, Long delay message for incidents over ten (10) minutes and, when directed by the Airport, proper activation of the AirTrain bus back-up messages.
- B.6.4 The Central Operator to begin established "Unscheduled Vehicle Door/Door Block Failure" procedure within one (1) minute of notification of such an alarm.
- B.6.5 Any incident where trains are stopped outside of stations shall receive an immediate audio message within three (3) minutes notifying passengers to "remain on board - recovery tech is on the way." A recovery tech must respond to each train within ten (10) minutes
- B.6.6 Within one (1) minute of notification of a probable system delay, the Central Operator shall initialize "Station Spacing."
- B.6.7 Ensure all trains are clear of passengers prior to routing train into any storage location.
- B.6.8 The Central Operator must answer all calls received from either vehicle or station emergency phones.
- B.6.9 Provide incident notification to AirTrain Administration within seven (7) minutes of alarm notification.
- B.6.10 Within twenty-four (24) hours of any downtime event exceeding fifteen (15) minutes the Contractor shall provide AirTrain Administration with a preliminary report outlining basic details of the event, excluding weekends and Holidays.

END OF DOCUMENT

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
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FLEET	BATTERY CHARGER FAILURE	BASE	BLUE	3600	20-DEC-02
FLEET	BATTERY CHARGER FAILURE	BASE	RED	3600	20-DEC-02
FLEET	BATTERY CHARGER FAILURE	OFFPEAK	BLUE	3600	20-DEC-02
FLEET	BATTERY CHARGER FAILURE	OFFPEAK	RED	3600	20-DEC-02
FLEET	BATTERY CHARGER FAILURE	PEAK	BLUE	3600	20-DEC-02
FLEET	BATTERY CHARGER FAILURE	PEAK	RED	3600	20-DEC-02
FLEET	BOTH HVAC UNITS FAILED	BASE	BLUE	3600	20-DEC-02
FLEET	BOTH HVAC UNITS FAILED	BASE	RED	3600	20-DEC-02
FLEET	BOTH HVAC UNITS FAILED	OFFPEAK	BLUE	3600	20-DEC-02
FLEET	BOTH HVAC UNITS FAILED	OFFPEAK	RED	3600	20-DEC-02
FLEET	BOTH HVAC UNITS FAILED	PEAK	BLUE	3600	20-DEC-02
FLEET	BOTH HVAC UNITS FAILED	PEAK	RED	3600	20-DEC-02
FLEET	DOORS FAILED TO CLOSE	BASE	BLUE	188	20-DEC-02
FLEET	DOORS FAILED TO CLOSE	BASE	RED	146	20-DEC-02
FLEET	DOORS FAILED TO CLOSE	OFFPEAK	BLUE	188	20-DEC-02
FLEET	DOORS FAILED TO CLOSE	OFFPEAK	RED	146	20-DEC-02
FLEET	DOORS FAILED TO CLOSE	PEAK	BLUE	188	20-DEC-02
FLEET	DOORS FAILED TO CLOSE	PEAK	RED	146	20-DEC-02
FLEET	DOORS FAILED TO OPEN	BASE	BLUE	188	20-DEC-02
FLEET	DOORS FAILED TO OPEN	BASE	RED	146	20-DEC-02
FLEET	DOORS FAILED TO OPEN	OFFPEAK	BLUE	188	20-DEC-02
FLEET	DOORS FAILED TO OPEN	OFFPEAK	RED	146	20-DEC-02
FLEET	DOORS FAILED TO OPEN	PEAK	BLUE	188	20-DEC-02
FLEET	DOORS FAILED TO OPEN	PEAK	RED	146	20-DEC-02
FLEET	GRAPHIC SIGN FAILURE	BASE	BLUE	3600	20-DEC-02
FLEET	GRAPHIC SIGN FAILURE	BASE	RED	3600	20-DEC-02
FLEET	GRAPHIC SIGN FAILURE	OFFPEAK	BLUE	3600	20-DEC-02
FLEET	GRAPHIC SIGN FAILURE	OFFPEAK	RED	3600	20-DEC-02
FLEET	GRAPHIC SIGN FAILURE	PEAK	BLUE	3600	20-DEC-02
FLEET	GRAPHIC SIGN FAILURE	PEAK	RED	3600	20-DEC-02
FLEET	LOST TRAIN-COMM FAIL	BASE	BLUE	188	28-APR-03
FLEET	LOST TRAIN-COMM FAIL	BASE	RED	146	28-APR-03
FLEET	LOST TRAIN-COMM FAIL	OFFPEAK	BLUE	188	28-APR-03

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DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
FLEET	LOST TRAIN-COMM FAIL	OFFPEAK	RED	146	28-APR-03
FLEET	LOST TRAIN-COMM FAIL	PEAK	BLUE	188	28-APR-03
FLEET	LOST TRAIN-COMM FAIL	PEAK	RED	146	28-APR-03
FLEET	LOW BATTERY VOLTAGE	BASE	BLUE	3600	20-DEC-02
FLEET	LOW BATTERY VOLTAGE	BASE	RED	3600	20-DEC-02
FLEET	LOW BATTERY VOLTAGE	OFFPEAK	BLUE	3600	20-DEC-02
FLEET	LOW BATTERY VOLTAGE	OFFPEAK	RED	3600	20-DEC-02
FLEET	LOW BATTERY VOLTAGE	PEAK	BLUE	3600	20-DEC-02
FLEET	LOW BATTERY VOLTAGE	PEAK	RED	3600	20-DEC-02
FLEET	LOW MAIN AIR RESERVOIR	BASE	BLUE	3600	20-DEC-02
FLEET	LOW MAIN AIR RESERVOIR	BASE	RED	3600	20-DEC-02
FLEET	LOW MAIN AIR RESERVOIR	OFFPEAK	BLUE	3600	20-DEC-02
FLEET	LOW MAIN AIR RESERVOIR	OFFPEAK	RED	3600	20-DEC-02
FLEET	LOW MAIN AIR RESERVOIR	PEAK	BLUE	3600	20-DEC-02
FLEET	LOW MAIN AIR RESERVOIR	PEAK	RED	3600	20-DEC-02
FLEET	LOW TIRE PRESSURE	BASE	BLUE	3600	20-DEC-02
FLEET	LOW TIRE PRESSURE	BASE	RED	3600	20-DEC-02
FLEET	LOW TIRE PRESSURE	OFFPEAK	BLUE	3600	20-DEC-02
FLEET	LOW TIRE PRESSURE	OFFPEAK	RED	3600	20-DEC-02
FLEET	LOW TIRE PRESSURE	PEAK	BLUE	3600	20-DEC-02
FLEET	LOW TIRE PRESSURE	PEAK	RED	3600	20-DEC-02
FLEET	NO RESPONSE TO POLL	BASE	BLUE	188	20-DEC-02
FLEET	NO RESPONSE TO POLL	BASE	RED	146	20-DEC-02
FLEET	NO RESPONSE TO POLL	OFFPEAK	BLUE	188	20-DEC-02
FLEET	NO RESPONSE TO POLL	OFFPEAK	RED	146	20-DEC-02
FLEET	NO RESPONSE TO POLL	PEAK	BLUE	188	20-DEC-02
FLEET	NO RESPONSE TO POLL	PEAK	RED	146	20-DEC-02
FLEET	TRAIN LATE ARRIVAL	BASE	BLUE	188	29-JAN-03
FLEET	TRAIN LATE ARRIVAL	BASE	RED	146	29-JAN-03
FLEET	TRAIN LATE ARRIVAL	OFFPEAK	BLUE	188	29-JAN-03
FLEET	TRAIN LATE ARRIVAL	OFFPEAK	RED	146	29-JAN-03
FLEET	TRAIN LATE ARRIVAL	PEAK	BLUE	188	29-JAN-03
FLEET	TRAIN LATE ARRIVAL	PEAK	RED	146	29-JAN-03
FLEET	TRAIN NO DEPARTURE	BASE	BLUE	188	29-JAN-03

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INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
FLEET	TRAIN NO DEPARTURE	BASE	RED	146	29-JAN-03
FLEET	TRAIN NO DEPARTURE	OFFPEAK	BLUE	188	29-JAN-03
FLEET	TRAIN NO DEPARTURE	OFFPEAK	RED	146	29-JAN-03
FLEET	TRAIN NO DEPARTURE	PEAK	BLUE	188	29-JAN-03
FLEET	TRAIN NO DEPARTURE	PEAK	RED	146	29-JAN-03
FLEET	UNSCHEDULED STOP	BASE	BLUE	80	27-MAY-03
FLEET	UNSCHEDULED STOP	BASE	RED	80	27-MAY-03
FLEET	UNSCHEDULED STOP	OFFPEAK	BLUE	80	27-MAY-03
FLEET	UNSCHEDULED STOP	OFFPEAK	RED	80	27-MAY-03
FLEET	UNSCHEDULED STOP	PEAK	BLUE	80	27-MAY-03
FLEET	UNSCHEDULED STOP	PEAK	RED	80	27-MAY-03
MODE	SYSTEM STOP	BASE	BLUE	94	20-DEC-02
MODE	SYSTEM STOP	BASE	RED	73	20-DEC-02
MODE	SYSTEM STOP	OFFPEAK	BLUE	94	20-DEC-02
MODE	SYSTEM STOP	OFFPEAK	RED	73	20-DEC-02
MODE	SYSTEM STOP	PEAK	BLUE	94	20-DEC-02
MODE	SYSTEM STOP	PEAK	RED	73	20-DEC-02
MODE	VEHICLE IN MANUAL MODE	BASE	BLUE	180	30-MAY-03
MODE	VEHICLE IN MANUAL MODE	BASE	RED	95	30-MAY-03
MODE	VEHICLE IN MANUAL MODE	OFFPEAK	BLUE	180	30-MAY-03
MODE	VEHICLE IN MANUAL MODE	OFFPEAK	RED	95	30-MAY-03
MODE	VEHICLE IN MANUAL MODE	PEAK	BLUE	180	30-MAY-03
MODE	VEHICLE IN MANUAL MODE	PEAK	RED	95	30-MAY-03
STATION	DOOR CUTOUT LFTB1D1	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D1	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D1	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D1	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D1	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D1	PEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D2	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D2	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D2	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D2	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D2	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB1D2	PEAK	RED	60	26-DEC-02

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
STATION	DOOR CUTOUT LFTB2D1	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D1	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D1	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D1	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D1	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D1	PEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D2	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D2	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D2	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D2	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D2	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB2D2	PEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D1	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D1	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D1	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D1	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D1	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D1	PEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D2	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D2	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D2	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D2	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D2	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT LFTB3D2	PEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D1	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D1	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D1	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D1	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D1	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D1	PEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D2	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D2	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D2	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D2	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D2	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB1D2	PEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D1	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D1	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D1	OFFPEAK	BLUE	60	26-DEC-02

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
STATION	DOOR CUTOUT RGTB2D1	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D1	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D1	PEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D2	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D2	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D2	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D2	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D2	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB2D2	PEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D1	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D1	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D1	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D1	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D1	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D1	PEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D2	BASE	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D2	BASE	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D2	OFFPEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D2	OFFPEAK	RED	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D2	PEAK	BLUE	60	26-DEC-02
STATION	DOOR CUTOUT RGTB3D2	PEAK	RED	60	26-DEC-02
STATION	DOOR FAIL TO OPN LFTB1D1	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB1D1	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB1D1	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB1D1	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB1D1	PEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB1D1	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB1D2	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB1D2	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB1D2	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB1D2	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB1D2	PEAK	BLUE	5	23-APR-03

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
	LFTB1D2				
STATION	DOOR FAIL TO OPN LFTB1D2	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D1	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D1	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D1	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D1	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D1	PEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D1	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D2	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D2	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D2	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D2	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D2	PEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB2D2	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB3D1	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB3D1	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB3D1	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB3D1	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB3D1	PEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB3D1	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB3D2	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN	BASE	RED	5	23-APR-03

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
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	LFTB3D2				
STATION	DOOR FAIL TO OPN LFTB3D2	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB3D2	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB3D2	PEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN LFTB3D2	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D1	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D1	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D1	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D1	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D1	PEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D1	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D2	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D2	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D2	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D2	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D2	PEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB1D2	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB2D1	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB2D1	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB2D1	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB2D1	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN	PEAK	BLUE	5	23-APR-03

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
	RGTB2D1				
STATION	DOOR FAIL TO OPN RGTB2D1	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB2D2	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB2D2	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB2D2	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB2D2	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB2D2	PEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB2D2	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D1	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D1	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D1	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D1	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D1	PEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D1	PEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D2	BASE	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D2	BASE	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D2	OFFPEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D2	OFFPEAK	RED	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D2	PEAK	BLUE	5	23-APR-03
STATION	DOOR FAIL TO OPN RGTB3D2	PEAK	RED	5	23-APR-03
STATION	INACCURATE STATION STOP	BASE	BLUE	5	04-JUN-03
STATION	INACCURATE STATION	BASE	RED	5	04-JUN-03

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
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	STOP				
STATION	INACCURATE STATION STOP	OFFPEAK	BLUE	5	04-JUN-03
STATION	INACCURATE STATION STOP	OFFPEAK	RED	5	04-JUN-03
STATION	INACCURATE STATION STOP	PEAK	BLUE	5	04-JUN-03
STATION	INACCURATE STATION STOP	PEAK	RED	5	04-JUN-03
STATION	PLC NOT HLTHY LFTB1DI	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1DI	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D2	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D2	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D2	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB1D2	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	PEAK	BLUE	60	28-APR-03

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
STATION	PLC NOT HLTHY LFTB2D1	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB2D2	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY LFTB3D2	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	BASE	BLUE	60	28-APR-03

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
STATION	PLC NOT HLTHY RGTB1D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D2	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D2	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D2	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB1D2	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	OFFPEAK	RED	60	28-APR-03

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED
STATION	PLC NOT HLTHY RGTB2D2	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB2D2	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D1	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	BASE	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	BASE	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	OFFPEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	OFFPEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	PEAK	BLUE	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	PEAK	RED	60	28-APR-03
STATION	PLC NOT HLTHY RGTB3D2	PEAK	RED	60	28-APR-03
STATION	STATION RUN THRU REQUEST	BASE	BLUE	60	23-JAN-03
STATION	STATION RUN THRU REQUEST	BASE	RED	60	23-JAN-03
STATION	STATION RUN THRU REQUEST	OFFPEAK	BLUE	60	23-JAN-03
STATION	STATION RUN THRU REQUEST	OFFPEAK	RED	60	23-JAN-03
STATION	STATION RUN THRU REQUEST	PEAK	BLUE	60	23-JAN-03
STATION	STATION RUN THRU REQUEST	PEAK	RED	60	23-JAN-03

APPENDIX C
INCIDENT GRACE PERIOD TABLE

DOWNTIME TYPE	EVENT NAME	PERIOD TYPE	SERVICE LINE	GRACE PERIOD	LAST MODIFIED

END OF DOCUMENT

APPENDIX D
K FACTOR TABLE

SERVICE LINE	SCHEDULED MODE	MODE	PERIOD TYPE	K FACTOR
BLUE	1 Normal Operation	3 Blue Line Only	PEAK	.71
BLUE	1 Normal Operation	4 Blue Line Using RCC Platform No. 3	PEAK	.98
BLUE	1 Normal Operation	5 Extension Outbound (Right) Guideway Bypass	BASE	.4
BLUE	1 Normal Operation	5 Extension Outbound (Right) Guideway Bypass	OFFPEAK	.8
BLUE	1 Normal Operation	5 Extension Outbound (Right) Guideway Bypass	PEAK	.28
BLUE	1 Normal Operation	6 Extension Inbound (Left) Guideway Short Bypass	PEAK	.71
BLUE	1 Normal Operation	7 Extension Inbound (Left) Guideway Long Bypass	BASE	.4
BLUE	1 Normal Operation	7 Extension Inbound (Left) Guideway Long Bypass	OFFPEAK	.8
BLUE	1 Normal Operation	Extension Inbound (Left) Guideway Long Bypass	PEAK	.28
BLUE	1 Normal Operation	8 Green Line with Blue Extension	BASE	.57
BLUE	1 Normal Operation	8 Green Line with Blue Extension	PEAK	.4
BLUE	1 Normal Operation	10 Blue Line Pinched Loop at South Garage	PEAK	.7
BLUE	1 Normal Operation	11 Outbound (Right) Guideway Shuttle	BASE	.39
BLUE	1 Normal Operation	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.78
BLUE	1 Normal Operation	11 Outbound (Right) Guideway Shuttle	PEAK	.27
BLUE	1 Normal Operation	12 Inbound (Left) Guideway Shuttle	BASE	.34
BLUE	1 Normal Operation	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.68
BLUE	1 Normal Operation	12 Inbound (Left) Guideway Shuttle	PEAK	.24
BLUE	10 Blue Line Pinched Loop at South Garage	5 Extension Outbound (Right) Guideway Bypass	BASE	.4
BLUE	10 Blue Line Pinched Loop at South Garage	5 Extension Outbound (Right) Guideway Bypass	OFFPEAK	.8
BLUE	10 Blue Line Pinched Loop at South Garage	5 Extension Outbound (Right) Guideway Bypass	PEAK	.58
BLUE	10 Blue Line Pinched Loop at South Garage	7 Extension Inbound (Left) Guideway Long Bypass	BASE	.4
BLUE	10 Blue Line Pinched Loop at South Garage	Garage 7 Extension Inbound (Left) Guideway Long Bypass	OFFPEAK	.8
BLUE	10 Blue Line Pinched Loop at South Garage	Garage 7 Extension Inbound (Left) Guideway Long Bypass	PEAK	.58
BLUE	10 Blue Line Pinched Loop at South Garage	8 Green Line with Blue Extension	BASE	.57
BLUE	10 Blue Line Pinched Loop at South Garage	8 Green Line with Blue Extension	PEAK	.7

APPENDIX D
K FACTOR TABLE

SERVICE LINE	SCHEDULED MODE	MODE	PERIOD TYPE	K FACTOR
BLUE	10 Blue Line Pinched Loop at South Garage	11 Outbound (Right) Guideway Shuttle	BASE	.39
BLUE	10 Blue Line Pinched Loop at South Garage	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.78
BLUE	10 Blue Line Pinched Loop at South Garage	11 Outbound (Right) Guideway Shuttle	PEAK	.57
BLUE	10 Blue Line Pinched Loop at South Garage	12 Inbound (Left) Guideway Shuttle	BASE	.34
BLUE	10 Blue Line Pinched Loop at South Garage	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.68
BLUE	10 Blue Line Pinched Loop at South Garage	12 Inbound (Left) Guideway Shuttle	PEAK	.54
BLUE	11 Outbound (Right) Guideway Shuttle	12 Inbound (Left) Guideway Shuttle	BASE	.95
BLUE	11 Outbound (Right) Guideway Shuttle	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.9
BLUE	11 Outbound (Right) Guideway Shuttle	12 Inbound (Left) Guideway Shuttle	PEAK	.97
BLUE	13 Long Turnback	3 Blue Line Only	PEAK	.71
BLUE	13 Long Turnback	4 Blue Line Using RCC Platform No. 3	PEAK	.98
BLUE	13 Long Turnback	5 Extension Outbound (Right) Guideway Bypass	BASE	.4
BLUE	13 Long Turnback	5 Extension Outbound (Right) Guideway Bypass	OFFPEAK	.8
BLUE	13 Long Turnback	5 Extension Outbound (Right) Guideway Bypass	PEAK	.28
BLUE	13 Long Turnback	6 Extension Inbound (Left) Guideway Short Bypass	PEAK	.71
BLUE	13 Long Turnback	7 Extension Inbound (Left) Guideway Long Bypass	BASE	.4
BLUE	13 Long Turnback	7 Extension Inbound (Left) Guideway Long Bypass	OFFPEAK	.8
BLUE	13 Long Turnback	7 Extension Inbound (Left) Guideway Long Bypass	PEAK	.28
BLUE	13 Long Turnback	8 Green Line with Blue Extension	BASE	.57
BLUE	13 Long Turnback	8 Green Line with Blue Extension	PEAK	.4
BLUE	13 Long	10 Blue Line Pinched Loop at South	PEAK	.7

APPENDIX D
K FACTOR TABLE

SERVICE LINE	SCHEDULED MODE	MODE	PERIOD TYPE	K FACTOR
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	Turnback	Garage		
BLUE	13 Long Turnback	11 Outbound (Right) Guideway Shuttle	BASE	.39
BLUE	13 Long Turnback	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.78
BLUE	13 Long Turnback	11 Outbound (Right) Guideway Shuttle	PEAK	.27
BLUE	13 Long Turnback	12 Inbound (Left) Guideway Shuttle	BASE	.34
BLUE	13 Long Turnback	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.68
BLUE	13 Long Turnback	12 Inbound (Left) Guideway Shuttle	PEAK	.24
BLUE	2 Normal with Service Alternate	3 Blue Line Only	PEAK	.71
BLUE	2 Normal with Service Alternate	4 Blue Line Using RCC Platform No. 3	PEAK	.98
BLUE	2 Normal with Service Alternate	5 Extension Outbound (Right) Guideway Bypass	BASE	.4
BLUE	2 Normal with Service Alternate	5 Extension Outbound (Right) Guideway Bypass	OFFPEAK	.8
BLUE	2 Normal with Service Alternate	5 Extension Outbound (Right) Guideway Bypass	PEAK	.28
BLUE	2 Normal with Service Alternate	6 Extension Inbound (Left) Guideway Short Bypass	PEAK	.71
BLUE	2 Normal with Service Alternate	7 Extension Inbound (Left) Guideway Long Bypass	BASE	.4
BLUE	2 Normal with Service Alternate	7 Extension Inbound (Left) Guideway Long Bypass	OFFPEAK	.8
BLUE	2 Normal with Service Alternate	7 Extension Inbound (Left) Guideway Long Bypass	PEAK	.28
BLUE	2 Normal with Service Alternate	8 Green Line with Blue Extension	BASE	.57
BLUE	2 Normal with Service Alternate	8 Green Line with Blue Extension	PEAK	.4
BLUE	2 Normal with Service Alternate	9 Blue Line Pinched Loop at North Garage	PEAK	.7
BLUE	2 Normal with Service Alternate	10 Blue Line Pinched Loop at South Garage	PEAK	.7
BLUE	2 Normal with Service Alternate	11 Outbound (Right) Guideway Shuttle	BASE	.39
BLUE	2 Normal with Service Alternate	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.78
BLUE	2 Normal with Service Alternate	11 Outbound (Right) Guideway Shuttle	PEAK	.27
BLUE	2 Normal with Service Alternate	12 Inbound (Left) Guideway Shuttle	BASE	.34

APPENDIX D
K FACTOR TABLE

SERVICE LINE	SCHEDULED MODE	MODE	PERIOD TYPE	K FACTOR
BLUE	2 Normal with Service Alternate	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.68
BLUE	2 Normal with Service Alternate	12 Inbound (Left) Guideway Shuttle	PEAK	.24
BLUE	3 Blue Line Only	5 Extension Outbound (Right) Guideway Bypass	BASE	.4
BLUE	3 Blue Line Only	5 Extension Outbound (Right) Guideway Bypass	OFFPEAK	.8
BLUE	3 Blue Line Only	5 Extension Outbound (Right) Guideway Bypass	PEAK	.57
BLUE	3 Blue Line Only	7 Extension Inbound (Left) Guideway Long Bypass	BASE	.4
BLUE	3 Blue Line Only	7 Extension Inbound (Left) Guideway Long Bypass	OFFPEAK	.8
BLUE	3 Blue Line Only	7 Extension Inbound (Left) Guideway Long Bypass	PEAK	.57
BLUE	3 Blue Line Only	8 Green Line with Blue Extension	BASE	.57
BLUE	3 Blue Line Only	8 Green Line with Blue Extension	PEAK	.69
BLUE	3 Blue Line Only	10 Blue Line Pinched Loop at South Garage	PEAK	.99
BLUE	3 Blue Line Only	11 Outbound (Right) Guideway Shuttle	BASE	.39
BLUE	3 Blue Line Only	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.78
BLUE	3 Blue Line Only	11 Outbound (Right) Guideway Shuttle	PEAK	.56
BLUE	3 Blue Line Only	12 Inbound (Left) Guideway Shuttle	BASE	.34
BLUE	3 Blue Line Only	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.68
BLUE	3 Blue Line Only	12 Inbound (Left) Guideway Shuttle	PEAK	.53
BLUE	4 Blue Line Using RCC Platform No. 3	3 Blue Line Only	PEAK	.73
BLUE	4 Blue Line Using RCC Platform No. 3	5 Extension Outbound (Right) Guideway Bypass	BASE	.4
BLUE	4 Blue Line Using RCC Platform No. 3	5 Extension Outbound (Right) Guideway Bypass	OFFPEAK	.8
BLUE	4 Blue Line Using RCC Platform No. 3	5 Extension Outbound (Right) Guideway Bypass	PEAK	.3
BLUE	4 Blue Line Using RCC Platform No. 3	6 Extension Inbound (Left) Guideway Short Bypass	PEAK	.73
BLUE	4 Blue Line Using RCC Platform No. 3	7 Extension Inbound (Left) Guideway Long Bypass	BASE	.4
BLUE	4 Blue Line Using RCC Platform No. 3	7 Extension Inbound (Left) Guideway Long Bypass	OFFPEAK	.8
BLUE	4 Blue Line Using RCC Platform No. 3	7 Extension Inbound (Left) Guideway Long Bypass	PEAK	.3

APPENDIX D
K FACTOR TABLE

SERVICE LINE	SCHEDULED MODE	MODE	PERIOD TYPE	K FACTOR
BLUE	RCC Platform No. 3	Long Bypass		
BLUE	4 Blue Line Using RCC Platform No. 3	8 Green Line with Blue Extension	BASE	.57
BLUE	4 Blue Line Using RCC Platform No. 3	8 Green Line with Blue Extension	PEAK	.42
BLUE	4 Blue Line Using RCC Platform No. 3	9 Blue Line Pinched Loop at North Garage	PEAK	.7
BLUE	4 Blue Line Using RCC Platform No. 3	10 Blue Line Pinched Loop at South Garage	PEAK	.72
BLUE	4 Blue Line Using RCC Platform No. 3	11 Outbound (Right) Guideway Shuttle	BASE	.39
BLUE	4 Blue Line Using RCC Platform No. 3	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.78
BLUE	4 Blue Line Using RCC Platform No. 3	11 Outbound (Right) Guideway Shuttle	PEAK	.29
BLUE	4 Blue Line Using RCC Platform No. 3	12 Inbound (Left) Guideway Shuttle	BASE	.34
BLUE	4 Blue Line Using RCC Platform No. 3	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.68
BLUE	4 Blue Line Using RCC Platform No. 3	12 Inbound (Left) Guideway Shuttle	PEAK	.26
BLUE	5 Extension Outbound (Right)Guideway Bypass	11 Outbound (Right) Guideway Shuttle	BASE	.99
BLUE	5 Extension Outbound (Right)Guideway Bypass	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.98
BLUE	5 Extension Outbound (Right)Guideway Bypass	11 Outbound (Right) Guideway Shuttle	PEAK	.99
BLUE	5 Extension Outbound (Right)Guideway Bypass	12 Inbound (Left) Guideway Shuttle	BASE	.94
BLUE	5 Extension Outbound (Right)Guideway Bypass	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.88
BLUE	5 Extension Outbound (Right)Guideway Bypass	12 Inbound (Left) Guideway Shuttle	PEAK	.96
BLUE	6 Extension Inbound (Left)Guideway Short	5 Extension Outbound (Right) Guideway Bypass	BASE	.4

APPENDIX D
K FACTOR TABLE

SERVICE LINE	SCHEDULED MODE	MODE	PERIOD TYPE	K FACTOR
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	Bypass			
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	5 Extension Outbound (Right) Guideway Bypass	OFFPEAK	.8
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	5 Extension Outbound (Right) Guideway Bypass	PEAK	.57
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	7 Extension Inbound (Left) Guideway Long Bypass	BASE	.4
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	7 Extension Inbound (Left) Guideway Long Bypass	OFFPEAK	.8
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	7 Extension Inbound (Left) Guideway Long Bypass	PEAK	.57
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	8 Green Line with Blue Extension	BASE	.57
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	8 Green Line with Blue Extension	PEAK	.69
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	10 Blue Line Pinched Loop at South Garage	PEAK	.99
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	11 Outbound (Right) Guideway Shuttle	BASE	.39
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.78
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	11 Outbound (Right) Guideway Shuttle	PEAK	.56
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	12 Inbound (Left) Guideway Shuttle	BASE	.34
BLUE	6 Extension Inbound (Left) Guideway Short Bypass	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.68
BLUE	6 Extension Inbound	12 Inbound (Left) Guideway Shuttle	PEAK	.53

APPENDIX D
K FACTOR TABLE

SERVICE LINE	SCHEDULED MODE	MODE	PERIOD TYPE	K FACTOR
	(Left) Guideway Short Bypass			
BLUE	7 Extension Inbound (Left) Guideway Long Bypass	11 Outbound (Right) Guideway Shuttle	BASE	.99
BLUE	7 Extension Inbound (Left) Guideway Long Bypass	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.98
BLUE	7 Extension Inbound (Left) Guideway Long Bypass	11 Outbound (Right) Guideway Shuttle	PEAK	.99
BLUE	7 Extension Inbound (Left) Guideway Long Bypass	12 Inbound (Left) Guideway Shuttle	BASE	.94
BLUE	7 Extension Inbound (Left) Guideway Long Bypass	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.88
BLUE	7 Extension Inbound (Left) Guideway Long Bypass	12 Inbound (Left) Guideway Shuttle	PEAK	.96
BLUE	8 Green Line with Blue Extension	5 Extension Outbound (Right) Guideway Bypass	BASE	.83
BLUE	8 Green Line with Blue Extension	5 Extension Outbound (Right) Guideway Bypass	OFFPEAK	.8
BLUE	BLUE 8 Green Line with Blue Extension	5 Extension Outbound (Right) Guideway Bypass	PEAK	.88
BLUE	8 Green Line with Blue Extension	7 Extension Inbound (Left) Guideway Long Bypass	BASE	.83
BLUE	8 Green Line with Blue Extension	7 Extension Inbound (Left) Guideway Long Bypass	OFFPEAK	.8
BLUE	8 Green Line with Blue Extension	7 Extension Inbound (Left) Guideway Long Bypass	PEAK	.88
BLUE	8 Green Line with Blue Extension	11 Outbound (Right) Guideway Shuttle	BASE	.82
BLUE	8 Green Line with Blue Extension	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.78
BLUE	8 Green Line with Blue Extension	11 Outbound (Right) Guideway Shuttle	PEAK	.87
BLUE	8 Green Line with Blue Extension	12 Inbound (Left) Guideway Shuttle	BASE	.77
BLUE	8 Green Line with	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.68

APPENDIX D
K FACTOR TABLE

SERVICE LINE	SCHEDULED MODE	MODE	PERIOD TYPE	K FACTOR
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	Blue Extension			
BLUE	8 Green Line with Blue Extension	12 Inbound (Left) Guideway Shuttle	PEAK	.84
BLUE	9 Blue Line Pinched Loop at North Garage	5 Extension Outbound (Right) Guideway Bypass	BASE	.4
BLUE	9 Blue Line Pinched Loop at North Garage	5 Extension Outbound (Right) Guideway Bypass	OFFPEAK	.8
BLUE	9 Blue Line Pinched Loop at North Garage	5 Extension Outbound (Right) Guideway Bypass	PEAK	.58
BLUE	9 Blue Line Pinched Loop at North Garage	7 Extension Inbound (Left) Guideway Long Bypass	BASE	.4
BLUE	9 Blue Line Pinched Loop at North Garage	7 Extension Inbound (Left) Guideway Long Bypass	OFFPEAK	.8
BLUE	9 Blue Line Pinched Loop at North Garage	7 Extension Inbound (Left) Guideway Long Bypass	PEAK	.58
BLUE	9 Blue Line Pinched Loop at North Garage	8 Green Line with Blue Extension	BASE	.57
BLUE	9 Blue Line Pinched Loop at North Garage	8 Green Line with Blue Extension	PEAK	.7
BLUE	9 Blue Line Pinched Loop at North Garage	11 Outbound (Right) Guideway Shuttle	BASE	.39
BLUE	9 Blue Line Pinched Loop at North Garage	11 Outbound (Right) Guideway Shuttle	OFFPEAK	.78
BLUE	9 Blue Line Pinched Loop at North Garage	11 Outbound (Right) Guideway Shuttle	PEAK	.57
BLUE	9 Blue Line Pinched Loop at North Garage	12 Inbound (Left) Guideway Shuttle	BASE	.34
BLUE	9 Blue Line Pinched Loop at North Garage	12 Inbound (Left) Guideway Shuttle	OFFPEAK	.68
BLUE	9 Blue Line Pinched Loop at North Garage	12 Inbound (Left) Guideway Shuttle	PEAK	.54
RED	1 Normal Operation	3 Blue Line Only	PEAK	.67
RED	1 Normal Operation	8 Green Line with Blue Extension	PEAK	.75
RED	10 Blue Line Pinched Loop at South Garage	3 Blue Line Only	PEAK	.67
RED	10 Blue Line Pinched Loop at South Garage	8 Green Line with Blue Extension	PEAK	.75
RED	11 Outbound (Right) Guideway Shuttle	3 Blue Line Only	PEAK	.67
RED	11 Outbound	8 Green Line with Blue Extension	PEAK	.75

APPENDIX D
K FACTOR TABLE

SERVICE LINE	SCHEDULED MODE	MODE	PERIOD TYPE	K FACTOR
	(Right)Guideway Shuttle			
RED	12 Inbound (Left) Guideway Shuttle	3 Blue Line Only	PEAK	.67
RED	12 Inbound (Left) Guideway Shuttle	8 Green Line with Blue Extension	PEAK	.75
RED	13 Long Turnback	3 Blue Line Only	PEAK	.67
RED	13 Long Turnback	8 Green Line with Blue Extension	PEAK	.75
RED	2 Normal with Service Alternate	3 Blue Line Only	PEAK	.67
RED	2 Normal with Service Alternate	8 Green Line with Blue Extension	PEAK	.75
RED	4 Blue Line Using RCC Platform No. 3	3 Blue Line Only	PEAK	.67
RED	4 Blue Line Using RCC Platform No. 3	8 Green Line with Blue Extension	PEAK	.75
RED	5 Extension Outbound (Right)Guideway Bypass	3 Blue Line Only	PEAK	.67
RED	5 Extension Outbound (Right)Guideway Bypass	8 Green Line with Blue Extension	PEAK	.75
RED	6 Extension Inbound (Left)Guideway Short Bypass	3 Blue Line Only	PEAK	.67
RED	6 Extension Inbound (Left)Guideway Short Bypass	8 Green Line with Blue Extension	PEAK	.75
RED	7 Extension Inbound (Left)Guideway Long Bypass	3 Blue Line Only	PEAK	.67
RED	7 Extension Inbound (Left)Guideway Long Bypass	8 Green Line with Blue Extension	PEAK	.75
RED	8 Green Line with Blue Extension	3 Blue Line Only	PEAK	.92
RED	9 Blue Line Pinched Loop at North Garage	3 Blue Line Only	PEAK	.67

APPENDIX D
K FACTOR TABLE

SERVICE LINE	SCHEDULED MODE	MODE	PERIOD TYPE	K FACTOR
RED	9 Blue Line Pinched Loop at North Garage	8 Green Line with Blue Extension	PEAK	.75

END OF DOCUMENT

APPENDIX E

Spare Parts		
Part No	Description	Qty
0899363G01	CONTACT ASSEMBLY	8
1018J06G03	REVERSER TYPE XR-148 ELECTRO-PNEUMATIC	2
1074F75G07	BRAKE AIR COMPRESSOR 60HZ	2
1074F75H44	MOTOR	2
1252A46H04	RESISTOR 392 OHMS .250W 1% NA60	1
1252A46H15	RESISTOR 511 OHMS .250W 1% NA60	2
1252A55H29	RESISTOR 301K OHMS .250W 1% NA60	2
1252A80H21	RESISTOR 1.62K OHMS .750W 1% NA70	4
1253A04H01	RESISTOR 1 OHM 50W 1%	4
1253A44H05	TRANSISTOR 2N3715	4
1253A44H15	TRANSISTOR 2N6306	2
1502F63G05	GUIDE WHEEL ASSEMBLY	8
1502F97G10	WHEEL ASSEMBLY	2
18D9633H01	STD.CONTACT .62 LG COPPER EXTRUSION	8
1913F14G02	MODIFIED MOUNTING BRACKET	6
1913F14G03	MODIFIED MOUNTING BRACKET	12
1913F14G05	MODIFIED MOUNTING BRACKET	12
1913F14H01	MTG BRACKET 1) SIGNAL RAIL	4
1913F14H05	Shim	12
1913F14H06	MTG BRACKET 1) LOCK PIN	4
1999E63G02	DRAFTGEAR	1
1999E63H01	ELECTRICAL COUPLER HEAD ASSEMBLY	1
1999E63H02	MECHANICAL COUPLER HEAD ASSEMBLY	1
1999E63H03	CLAMP ASSEMBLY	2
1A96918G01	STD. UMC CONTRACTOR SHUNT AT ASSEMBLY	6
1A96920G01	STD. UMC CONTACTOR INTERLOCK FINGER	10
1A97462792	FUSE 5A 125V FAST-BLOWN PIG-TAIL	6
1A97462792	FUSE 5A 125V FAST BL	6
1A97462793	THERMAL PAD SCR 2.44X 4.25	1
1A97462794	THERMAL PAD SCR .81X	2
1A97462794	THERMAL PAD SCR .81X 3.64	1
1A97462799	FUSE 500 VOLT 100 AMP	2
1A97462801	FUSE 600VAC 3A DUAL ELEM UL	4
1A97462801	FUSE 600VAC 3A DUAL ELEM UL	2
1A97462802	CAP MET FOIL 70UF 280VAC	1
1A97462804	SCR MODULE 90A 800V	2
1A97462804	SCR MODULE 90A 800V	1
1A97599H04	STATIC RAM CARD 24MB	1
1A97601H01	SECOND SERIAL PORT CABLE & KIT	1
1B37424H09	DIODE ASSEMBLY 25A 200 PRV DA-180	2
1B38681G03	DIODE ASSEMBLY	4
1B38681G04	DIODE ASSEMBLY	4

APPENDIX E

Spare Parts		
PartNo	Description	Qty
1B38995G01	SHOE ASSEMBLY	3000
1B38996G01	SHOE HOLDER POWER SUB ASSEMBLY	16
1B38997G01	SHOE HOLDER ATO SUB-ASSEMBLY	64
1B39166G01	2 SLOT VME J2 BACKPLANE ASSEMBLY	1
1B39166G01	2 SLOT VME J2 BACKPLANE ASSEMBLY	1
1B39673H01	SENTRONIC VALVE	4
1B39824G02	RESISTOR ASSEMBLY	3
1B39825G02	CAPACITOR ASSEMBLY	2
1B39836G01	ATO SHOE HOLDER SUPPORT ASSEMBLY	16
1B39837G01	POWER SHOE HOLDER SUPPORT ASSEMBLY	12
1B40194G03	RESISTOR ASSEMBLY	2
1B40194G04	RESISTOR ASSEMBLY	2
1B40194G05	RESISTOR ASSEMBLY	3
1B40194G06	DIODE ASSEMBLY	2
1B40194G07	VOLTAGE REGULATOR ASSEMBLY	2
1B40194G10	RESISTOR ASSEMBLY	2
1B40194G11	RESISTOR ASSEMBLY	2
1B40194G13	DIODE ASSEMBLY	2
1B40488G01	COLLECTOR CABLE ASSEMBLY	8
1B40488G02	COLLECTOR CABLE ASSEMBLY	8
1B40488G03	COLLECTOR CABLE ASSEMBLY	8
1B40488G04	COLLECTOR CABLE ASSEMBLY	8
1B40811G06	COLLECTOR CABLE	32
1B40820G01	SFAA VEHICLE DYNAMIC GRAPHICS ASSEMBLY	0
1B40820G02	SFAA VEHICLE DYNAMIC GRAPHICS ASSEMBLY	0
1B40820G03	SFAA VEHICLE DYNAMIC GRAPHICS ASSEMBLY	0
1B40820G04	SFAA VEHICLE DYNAMIC GRAPHICS ASSEMBLY	0
1B41300H01	Trip shaft kit	2
1B41300H02	Upper stud assembly	3
1B41300H03	Lower stud assembly	3
1B41300H04	Elect. Operated Mechanism	3
1B41300H05	Shunt Trip Assembly	3
1B41300H06	Shunt Release Assembly	3
1B41300H07	Anti-Pump Relay	3
1B41300H08	Spring Charge Motor Kit	3
1B41300H09	Bussman Type FNQ-R Fuse, 2A, 600V	6
1B41300H10	Rating Plug, Digitrip T_10 Series, 800AS/600RP	4
1B41300H11	Rating Plug, Digitrip T_10 Series, 800AS/800RP	1
1B41300H12	Rating Plug, Digitrip T_10 Series, 1600AS/1200RP	1
1B41300H13	Rating Plug, Digitrip T_10 Series, 1600AS/1600RP	1
1B41300H14	Fuse, class J, fast Acting, 3A, 600V	6
1B41300H15	Bussman Type FRS Fuse, 20A, 600V	6

APPENDIX E

Spare Parts		
Part No.	Description	Qty
1B41300H16	Digitrip, 510 LSI	1
1B41300H17	Digitrip, 510 LS	1
1B41300H18	Bussman Type FNQ Fuse, 10A, 500V	2
1B41300H19	Bussman Type FNQ Fuse, 6A, 500V	6
1B41300H20	Fuse, 1A Class J	10
1B41301H01	Temperature Monitor	1
1B41301H02	Thermostat	2
1B41301H03	Heater	6
1B41302H01	Cutler Hammer Control Relay, 120VAC Coil, 2NO-2NC	6
1B41302H02	Time Mark Voltage Sensing Relay	6
1B41302H03	Cutler Hammer Molded Case Circuit breaker, 3 Pole, 600V, 600A	2
1B41302H04	Cutler Hammer Motor Operator, 120 VAC	2
1B41302H05	Cutler Hammer Molded Case Circuit breaker, 1 Pole, 15A	2
1B41302H06	Gould Time Delay Fuse, 600V, 1A	15
1B41303H01	C-H 240 VAC Relay	1
1B41303H02	C-H 240 VAC Reversing Contactor	1
1B41303H03	ITI Voltage Transformer 600V/120V	2
1B41303H04	Bussman Type FNQ-R Fuse, 2A, 600V	6
1B41303H05	ITI VT, 50 VA, 600/120	3
1B41303H06	Ohmite Resistor, 1000 Ohm, 175W	2
1B41303H07	Honeywell Thermostat, 40-80 Degree F	1
1B41303H08	Space Heater, 250-375W / 125V-95W	1
1B41303H09	CSM Customer Supplied Material (Vital Relays)	1
1B41303H10	15A/1P Circuit Breaker	3
1B41303H11	10A/2P Circuit Breaker	1
1B41303H12	25A/1P Circuit Breaker	1
1B41303H13	15A/2P Circuit Breaker	1
1B41303H14	Timemark 3 PH Monitor, 50 VAC PH-N	1
1B41303H15	C-H E22 2 POS Switch, Rotate 90 Degree	2
1B41303H16	Breaker Control SW	2
1B41303H17	C-H D15 Relay, 120 VAC	4
1B41303H18	Agastst On-Delay Timer 120V	1
1B41303H19	GE Voltage Relay	1
1B41303H20	Timemark 3 Phase Power Monitor	2
1B41303H21	Timemark Current Unbalance Relay	2
1B41303H22	Basler Reverse Power Relay	2
1B41303H23	Ind Lt, 22MM Resistor Type, 120 VAC/DC	3
1B41303H24	Bussman Type FNQ Fuse, 6A, 500V	6
1B41303H25	Class J Fuse, 3A, 600V	6
1B41303H26	Lightning Secondary Arresters, 3P, 650 V	4
1B41303H27	Bussmann Type LPJ Fuse, 1A, 600V	12
1B41303H28	Square D Circuit Monitor	1

APPENDIX E

Spare Parts		
Part No	Description	Qty
1B41303H29	DSII Breaker Cell SW 3-NO, 3-NC	3
1B41303H30	Bussmann Type FRS-R Fuse, 20AA, 600V	4
1B41303H31	CPT, .56KV, 600/120-240V with Fuse Puller	1
1B41303H32	Bussman Type FNQ Fuse, 10A, 500V	4
1B41303H33	C-H breaker 150A/3P 100KAIC	1
1B41303H34	C-H breaker 100A/3P 100KAIC	1
1B41303H35	C-H breaker 30A/3P 100KAIC	1
1B41303H36	C-H breaker 200A/3P 100KAIC	1
1B41303H37	Crompton Voltage Relay, 120 VAC	3
1B41303H38	3PH Current Transformer, 1000/5A	2
1B41303H39	Contact Block for D15 Relay, 4-NO	2
1B41303H40	C-H D15 Relay, 4 N-O, 120 VAC	3
1B41303H41	GFR Relay, 1-12 A, Electric Reset	1
1B41303H42	GFR Sensor 1-12 A, 5.5 Dia	1
1B41303H43	Agastat Timer (64GFS)	1
1B41303H44	Contact Block for D15 Relay	1
1B41303H45	D15 Relay On/Off Delay Timer Module, 0.1-30 S	1
1B41303H46	DSII-516	1
1B41303H47	DSII-508	1
1B41304H01	Agastat Time Delay Relay	3
1B41304H02	Breaker GHC 1 Pole 15 A	4
1B41304H03	Breaker GHC 1 Pole 30 A	2
1B41304H04	Cap Trip Device 120 VAC	4
1B41304H05	Diode 400V PRV 40A	4
1B41304H06	Relay MG-6 125V DC, Open EL Rst	2
1B41304H07	Thermostat, Fixed 110 F/43.3	1
1B41304H08	S-D Relay 2120V/60Hz, DPDT, 12 Pin	3
1B41304H09	CT 600:5 C100	3
1B41304H10	Fuse 15.5 KV 0.5 E	6
1B41304H11	Pull Fuse 3 Pole 30 A	1
1B41304H12	Fuse 6 A Control	8
1B41304H13	MOC, 9-P, 5A-4B Conn Only	3
1B41304H14	Arrester, 9KV Station Class	6
1B41304H15	Voltage Xfrm, VIZ-11, 7200-120V	3
1B41304H16	36W Breaker Ramp Assy	1
1B41304H17	Rail Clamp, VCP-W	2
1B41304H18	Test Jumper, Ten Conductor VCP	1
1B41304H19	E22 Bulb Removal Tool	5
1B41304H20	Breaker 150 VCP-W 500 1200 A	3
1B41304H21	Snubber - 5 or 15 KV 1200A Main	2
1B41305H01	125 VDC/120VAC Spring Charging Motor	1
1B41305H02	125 VDC/120VAC Spring Release Coil	1

APPENDIX E

Spare Parts		
PartNo	Description	Qty
1B41305H03	120VAC Anti-Pump Y Relay	1
1B41305H04	Motor Cut-off Switch	1
1B41305H05	Position Switch	1
1B41305H06	Auxiliary Switch	1
1B41305H07	Fastener Kit	1
1B41305H08	Rectifier Assy	1
1B41305H09	1200A Push Rod Assy	1
1B41305H10	1200A Primary Contact Assy	6
1B41306H01	BKR CONT SW 24 1C, 1T Non-Pull	2
1B41306H02	E22 Contact Block 1NC	2
1B41306H03	IND LT E22 Green 48V	3
1B41306H04	IND LT E22 Red 48V	3
1B41306H05	REL LOR-24, 125VDC, 4A/4B, 2-ST	2
1B41306H06	Resistor 4020Ohm 5W	3
1B41306H07	Switch W2, 2Pos, 8 Poles	2
1B41306H08	Switch W2, 2Pos, 8 Poles	1
1B41306H09	BE1-27/59, 1PH, 55-160VAC, 125 V	1
1B41320H02	FUSE 500 VOLT 50 AMP	2
1B41320H04	SCR 3 PHASE BRIDGE 1200V 110A	1
1B41320H05	THERMAL PAD SCR 3.70X 1.34	1
1B41320H06	FUSE SUBMIN .1A	6
1B41320H12	CAP 3700UF 450VDC	1
1B41320H12	CAP 3700UF 450VDC	1
1B41320H13	IGBT DUAL 600V 150A	2
1B41320H15	FUSE 2-12A 125V PICO AX.LEAD	6
1B41320H15	FUSE 2-12A 125V PICO AX.LEAD	4
1B41320H18	PWB ASSY TRANSIENT SUPPRESSOR	1
1B41320H18	PWB ASSY TRANSIENT SUPPRESSOR	1
1B41320H19	PWB ASSY RECTIFIER DRIVE	1
1B41320H20	PWB ASSY POWER SUPPLY	1
1B41320H20	PWB ASSY POWER SUPPLY	1
1B41320H21	PWB ASSY UPS INTFC	1
1B41320H21	PWB ASSY UPS INTFC	1
1B41320H22	PWB ASSY SBS DRIVE	1
1B41320H22	PWB ASSY SBS DRIVE	1
1B41320H23	PWB ASSY POWER BOARD	1
1B41320H24	PWB ASSY PWR BOOSTER	1
1B41320H25	PWB ASSY DISPLAY BOARD	1
1B41320H25	PWB ASSY DISPLAY BOARD	1
1B41320H26	FUSE 500 VOLT 150AMP	2
1B41320H31	IGBT DUAL 600V 400A	1
1B41320H32	PWB ASSY INV. DRIVE	1

APPENDIX E

Spare Parts		Qty
Part No	Description	Qty
1B41320H33	PWB ASSY	1
1B41320H34	FUSE 70A 600V	3
1B41320H35	PWB ASSY RECTIFIER DRIVE	1
1C40468H04	CAM .63) 7.00 DIA	1
1C40483G15	RESISTOR TUBE RIBFLEX 7.5 OHMS	4
1C40540G01	AIR COMPRESSOR - GENL ASSEMBLY	0
1C40570G04	SWITCH & REPLACEMENT PARTS	1
1C40570H02	REPLACEMENT BLOCK	2
1C40570H04	REPLACEMENT HEAD	2
1C40811H77	RELAY	8
1C40811H02	MOTOR & GEAR HOUSING ASS'Y	2
1C40811H07	SWITCHLEVER	16
1C40811H19	SWITCH SNAP ACTION	8
1C40811H20	BUMPER	24
1C40811H23	RES ADJ 100W 10% 5 OHMS	10
1C40811H27	RING RET EXT	30
1C40811H28	RES ADJ 100W 10% 10 OHMS	10
1C40811H29	RES ADJ 100W 10% 20 OHMS	10
1C40811H50	PIN ROLL .125X1.25	50
1C40811H63	VARISTOR ASS'Y	8
1C40811H64	RECTIFIER ASS'Y	8
1C40811H98	MOTOR & GEAR HOUSING ASS'Y	2
1C41229H01	CONTACT SWITCH 1)	2
1C41229H02	CONTACT SWITCH 1)	2
1C41229H03	CONTACT BLOCK 1)	4
1C41448H01	SWITCH - PRESSURE WAVE	8
1C41537H01	TRANSFORMER (CURRENT)	2
1C41706G01	LOGIC CRADLE FAN ASS'Y	0
1C41710H01	EL BREAKER 2 POLE	2
1C41773G07	ANTENNA INSTALLATION	2
1C41821H01	PRESSURE REGULATOR	3
1C41830H01	AD-9 AIR DRYER	2
1C41830H03	DESICCANT CARTIDGE	19
1C41830H05	PURGE VALVE MAINTENANCE KIT	38
1C41830H06	24 VOLT HEATER & THERMOSTAT ASS'Y	2
1C42642G01	DIODE ASSEMBLY	2
1C42642G02	DIODE ASSEMBLY	4
1C42875H02	MOUNTING RAIL 1)	1
1C43432H01	VIDEO DRIVER BOARD 1)	1
1C44327H01	TRANSFORMER ENCAPSULATED	2
1C44610G01	PC BOARD FLEXIBLOK VEHICLE DIG IN ASSY	2
1C44610G02	PC BOARD FLEXIBLOK VEHICLE DIG IN ASSY	2

APPENDIX E

Spare Parts		
Part No	Description	Qty
1C44610G03	PC BOARD FLEXIBLOK VEHICLE DIG IN ASSY	2
1C44612G01	PC BOARD FLEXIBLOK REGION ATP CPU ASSY	2
1C44612G02	PC BOARD FLEXIBLOK REGION ATP CPU ASSY	2
1C44613G01	PC BOARD FLEXIBLOK REG SER COMM ASSY	2
1C44615G01	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44615G01	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	1
1C44615G02	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44615G03	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44615G08	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44615G08	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	1
1C44615G09	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44615G10	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44633G01	FLEXIBLOK WAYSIDE COMM PROCESSOR ASSY	2
1C44676G01	MANUAL ENABLE SWITCH PLATE ASSEMBLY	1
1C44701G01	PC BOARD FLEXIBLOK VEHICLE ATP CPU ASSY	2
1C44701G02	PC BOARD FLEXIBLOK VEHICLE ATP CPU ASSY	2
1C44702G01	PC BOARD FLEXIBLOK VEH SER COM PRCSR ASSY	2
1C44810G01	WIPER MOTOR ASSEMBLY	2
1C44955G01	LIGHT PANEL ASSEMBLY	2
1C45405H06	TEMPERATURE SENSOR	4
1C45770G01	FLEXIBLOK REGION SOURCE DIG OUT PC BOARD	2
1C45770G01	PC BOARD FLEXIBLOK REGION SOURCE DIG OUT	1
1C45770G02	FLEXIBLOK REGION SOURCE DIG OUT PC BOARD	2
1C45770G03	FLEXIBLOK REGION SOURCE DIG OUT PC BOARD	2
1C45770G04	FLEXIBLOK REGION SOURCE DIG OUT PC BOARD	2
1C45771G01	FLEXIBLOK REGION SINK DIG OUT PC BOARD	2
1C45771G01	PC BOARD FLEXIBLOK REGION SINK DIG OUT	1
1C45771G02	FLEXIBLOK REGION SINK DIG OUT PC BOARD	2
1C45771G03	FLEXIBLOK REGION SINK DIG OUT PC BOARD	2
1C45771G04	FLEXIBLOK REGION SINK DIG OUT PC BOARD	2
1C45928G01	ROUTER MODULE ASSEMBLY	1
1C45928G02	ROUTER MODULE ASSEMBLY	1
1C46071G01	ALARM SWITCH ASSEMBLY	3
1C46122G01	NORMING POINT READER ASSEMBLY	1
1C46718G01	TRAIN REGISTRY 68040 CPU	1
1C46718G02	TRAIN REGISTRY 68040 CPU	1
1C46719G01	TRAIN REGISTRY SER COMM PRCSR	1
1C46720G01	TRAIN REGISTRY WAYSIDE COMM PRCSR	1
1C46831G01	FIBER OPTIC RACK ASSEMBLY	1
1D62645H01	MTG BRACKET FIBERGLASS MOLD	80
1D62645H02	MTG BRACKET FIBERGLASS MOLD - HIGH STR	16
1D62751H04	Knuckle	1

APPENDIX E

Spare Parts		
Part No	Description	QTY
1D63190G09	VARISTOR SUPPRESSION DEVICE	2
2007E21G01	TRAIN REGISTRY CABINET	1
2007E43G01	REGION ATP VME CRADLE ASSY	1
203P516G01	PC BOARD BATTERY CHARGER & PULSE	2
203P521G02	PC BOARD BATTERY CHARGER AND PHASE	2
2125F98G02	RESISTOR ASSEMBLY	8
2127F15G03	GENL ASSEMBLY DUAL OUTPUT P-SIGNAL GEN	2
2127F15G04	GENL ASSEMBLY DUAL OUTPUT P-SIGNAL GEN	0
21D7111G01	CONTACT ASSEMBLY	8
2256F54G03	HIGH SPEED RAMP ASS'Y LEFT HANF (LEXAN)	2
2256F54G04	HIGH SPEED RAMP ASS'Y RIGHT HAND (LEXAN)	2
2257F71G03	Center Assembly, pivot beam	1
225P735G01	PC BOARD PROP. MONITOR PANEL LED ASSY	2
2263D94G01	BRUSH HOLDER ASSEMBLY	8
2263D99G01	CAPACITOR MOUNTING ANGLE AND ASSEMBLY	2
2263D99G02	CAPACITOR ASSEMBLY	4
2267D80G01	LEAF SPRING ASSEMBLY	2
226P152G02	PC BOARD DYNAMIC BRAKE GATE ASSEMBLY	2
226P174G02	PC BOARD 1 PHASE 60 HZ BATTERY CHGR ASSY	2
226P256G01	PC BOARD P SIG & BRK SIG GEN PWR ASSY	2
226P336G01	PC BOARD BATTERY CHARGER MONITOR ASSY	2
226P344G01	PC BOARD MANUAL CONTROLLER 15V	2
226P400G01	PC BOARD DOOR RECEIVER/DRIVER ASSEMBLY	3
2271D28G01	PINION SHROUD ASSEMBLY	1
2271D28H02	SHROUD 16.87 X 5.30) .062 THK STL	1
227D847H01	TRANSFORMER	2
22A8997G04	STATIONARY PART	0
24D3488H01	STD ARC HORN 1.375) .063 X 1.75 CU	6
2525F21G02	VEHICLE AIR PIPING	0
2528F96G03	GEN ASS'Y TRANS MOTOR D.C. 1460-P3	3
2531B84G02	LIGHTNING ARRESTOR ASSEMBLY	2
2531F06G01	POWER & SIGNAL RAIL MOUNTING THRU SWITCH	0
2532B34G01	RIGHT HAND BALL SOCKET ASSEMBLY	2
2532B34G02	LEFT HAND BALL SOCKET ASSEMBLY	2
2534B39H01	ADJUSTABLE PRESSURE SWITCH #604G1	2
2534B39H02	ADJUSTABLE PRESSURE SWITCH #604G11	6
2534B78H02	MANUAL VALVE FULL PORT	2
2534B78H03	MANUAL VALVE FULL PORT	2
2535F20G01	BATTERY BOX ASSEMBLY	0
2536B52H03	HUBODOMETER SIZE 10 X 22.5 MICHELIN	2
2537B93G01	RESISTOR ASSEMBLY	2
2538B14H01	WINDOW GLAZING RBR EXTRN 160.00+/-2.00)	32

APPENDIX E

Spare Parts		
Part No	Description	Qty
2538B23G01	RESISTOR ASSEMBLY	3
2538B23G02	RESISTOR ASSEMBLY	2
2539B87H01	DUST SHIELD FR .06 THK HALF HARD AL SHT	2
2559A61H06	GROMMET .50 ID .06 PNL	20
2559B24G01	TEMPERATURE SENSOR	2
2560B11G01	DRIVE SHAFT ASSEMBLY	2
2560B16H02	EXTINGUISHER (FIRE)	4
267P636G01	PC BOARD DUAL P. SIGNAL GENERATOR ASSY	2
267P680G01	PC BOARD TRANSMITTER ASSEMBLY	3
267P858G02	PC BOARDPOWER SUPPLY ASSEMBLY	2
267P926G01	PC BOARD OVERVOLTAGE CIRCUIT ASSEMBLY	2
2682F59G01	TOP DOOR TRACK R/H	0
2682F59G02	TOP DOOR TRACK L/H	0
2682F59H03	CAP RETAINER .125 THK STL	50
2687F29G01	CURRENT COLLECTOR ASSY (R/HAND)	8
2687F29G02	CURRENT COLLECTOR ASSY (L/HAND)	8
2688F16G03	I.D. RECEIVE ANTENNA ASSEMBLY	2
2688F16G04	I.D. TRANSMIT ANTENNA ASSEMBLY	2
2688F17G01	TYPE XMA-559 MANUAL CONTROLLER	3
268P052G01	PC BOARD BRUSH DETECTOR	2
268P060G01	PC BOARD ATC CRADLE MOTHERBOARD ASSEMBLY	1
2698A54H03	MAGNETIC HALL EFFECT SENSOR	5
2973A52G03	DIODE ASSEMBLY	3
2973A52G04	DIODE ASSY	2
3437C83G02	RADIUS ROD ASSEMBLY	2
3437C85H03	TIRE 10R-22.5 TRANSTEEL RADIAL	304
3437C97G01	SWITCH BOARD ASSEMBLY	0
3911C41H03	PRESSURE RELIEF	4
3925A65H01	RELIEF VALVE	4
3925A66H04	AIR CHECK VALVE	4
3925A67H03	VALVE QUICK RELEASE	12
3925A67H04	REBUILD KIT QUICK RELEASE VALVE	12
3925A67H05	SEALING RING QUICK RELEASE VALVE	12
3925A67H06	DIAPHRAGM QUICK RELEASE VALVE	12
3925A67H07	INSERT QUICK RELEASE VALVE	12
3925A86H02	RELAY VALVE	4
3925A87H01	VALVE PRESSURE HOLDING	2
3926A37H01	TRANSFORMER SIGNAL OR PULSE	3
3926A72H01	RESISTOR 10 OHMS 11W 5% TYPE 99	2
3926A89H01	TRANSFORMER SIGNAL OR PULSE	3
3927A03H21	CAPACITOR 1.0 UF 100 V +-5%	2
3927A06H41	RESISTOR 120 1/4W 5% RC07	4

APPENDIX E

Spare Parts		
Part No	Description	Qty
3927A06H67	RESISTOR 1.5K 1/4W 5% RC07	2
3927A08H56	RESISTOR 510 OHMS 1W 5% TYPE RC 32	2
3927A22H01	TRANSFORMER	2
3930A47H04	TRANSFORMER POWER	4
3968C17H04	PUSHBUTTON (S.P.D.T.) CAT#OT1C1A	2
3968C50G02	ARMATURE ASSEMBLY	0
3972C53G01	GATE LEAD PANEL	4
3972C86H01	RIM (PAINTED)	8
3973C13H01	CHOKE	2
3973C14H01	TRANSFORMER 575/36/36	2
3973C86H12	KEYSWITCH	2
3973C86H13	PUSHBUTTON	2
3A62819H01	DISK DRIVE	1
3A63290H29	PIN COTTER .125 X 1.00 LG ZINC YEL CRMT	200
3A63290H31	PIN COTTER .125 X 1.50 LG ZINC YEL CRMT	100
3A63407G01	CAPACITOR W/MTG BRACKETS (660 VOLT)	4
3A63565H03	CAPACITOR 50UF 370VA	1
3A63565H03	CAPACITOR 50UF 370VA	1
3A63565H04	FUSE 1/2A 500VAC TIM	2
3A63565H04	FUSE 1/2A 500VAC TIME DELAY	2
3A63565H05	FUSE 2A 500VAC TIME DELAY	2
3A63565H05	FUSE 2A 500VAC TIME DELAY	2
3A63565H06	FAN MAJOR 115VAC 50/	1
3A63565H06	FAN MAJOR 115VAC 50/60HZ	1
3A63565H11	THERMAL PAD MOD 3.70X 1.89	2
3A63565H11	THERMAL PAD MOD 3.70X 1.89	2
3A63565H13	IGBT DUAL 600V 300A	1
3A63921H67	RESISTOR 1.5K OHM 2W +/-5% TOL	4
3A63921H67	RESISTOR 1.5K OHM 2W +/-5% TOL	1
3A64787G01	WIRELIST-TRAIN REGISTRY CABINET	1
3A64788G01	WIRELIST-TRAIN REGISTRY CABINET-A4 CRADLE	1
3D15179G01	LEVELING VALVE ASSEMBLY	4
3D15257G01	GATE CONTROL TRANSFORMER	2
3D15323H01	LEVELING VALVE	8
3D15403G01	Hard Ground Assy	6
3D15632G01	SPEED SENSOR ASSEMBLY	4
3D15632G02	SPEED SENSOR ASSEMBLY	2
3D15698G02	SWAY BAR ASSEMBLY	2
3D15968H01	Controller Model 7K	1
3D51640G03	PANEL ASSEMBLY	1
3D52075H02	MOTOR OPERATOR 120 VAC	2
3D99578G01	SWITCH HYDRAULIC UNIT	0

APPENDIX E

Spare Parts		
Part No	Description	Qty
3D99727G01	HYDRAULIC POWER UNIT	1
3D99727H02	GEAR PUMP	2
3D99727H12	LEVEL GAGE (LHA)	1
3D99727H20	MOTOR 2HP 230/460 3PH. W/MTO	1
3D99914G01	LOW SPEED RAMP ASSEMBLY	1
404P102H74	TRANSFORMER	2
404P104H31	RESISTOR .20 OHM 10 WATT	2
404P111H54	CAPACITOR 52000 MFD-30 WVDC	3
404P112H92	POWER SUPPLY 85-264VAC QUAD OUT 350W	2
404P112H92	POWER SUPPLY 85-264VAC QUAD OUT 350W	1
404P112H93	POWER SUPPLY 24VDC IA 120VAC IN	2
404P115H06	L.E.D. (RED)	100
404P115H19	DIODE SPECIAL 100A 300V RECTIFIER	2
404P115H38	LED RED	10
404P117H95	RELAY 1300 OHM 16-24VDC 6FB STD.	2
404P117H96	RELAY GEN PURP 24DC 2A 6PDT 430 ohm	2
404P127H96	MODEM L/HAUL 1300 NM WFT-12 STAND ALONE	1
404P135H26	RESISTOR ADJUSTABLE 12 WATT WIRE WOUND	2
404P135H27	RESISTOR ADJUSTABLE 12 WATT WIRE WOUND	2
404P155H10	CAPACITOR	4
404P157H63	RESISTOR 50 WATT 33.2 OHM 1%	8
404P157H72	RESISTOR 1K OHMS 10.0W 1% RH10	2
404P157H90	RESISTOR 2W 1.5K OHM CARBON FILM	10
404P175H44	CLAMP KIT W/RETAINER 50 PIN	8
404P175H44	CLAMP KIT W/RETAINER 50 PIN	8
404P175H45	CLAMP KIT W/RETAINER 9 PIN	4
404P175H45	CLAMP KIT W/RETAINER 9 PIN	4
404P228H06	RESISTOR 2.2K OHMS 1W 5% RG1/2	14
404P290H13	1/2" Auto Aris, Vari-Focal CCTV Camera Lens	4
404P290H15	Video Switcher Controller Keyboard	1
404P290H18	20" Color Monitor	1
404P290H39	9832VI/O Quad Video I/O	1
404P290H40	9832VDA Quad Video Decoder	1
404P290H41	9832VEA Quad Video Encoder	1
404P290H42	9832RF Fiber Repeater	1
404P290H43	9832FT Fiber Transceiver	1
404P290H44	9832PS3 Power Supply	2
404P290H45	9832PS7 Power Supply	2
404P291H09	CONVERTER RS232 TO RS485	2
404P291H09	RS-422 / RS-485 Converter with Enclosure and 9VDC Supply	1
404P305H05	STRAIGHT SWIVEL	100
404P313H01	HOSE -04	200

APPENDIX E

Spare Parts		
PartNo	Description	Qty
404P313H02	HOSE .31 ID X .61 OD	1000
404P313H03	HOSE -08	500
404P313H05	HOSE -12	100
404P313H12	TEFLON HOSE	100
404P313H13	HOSE	200
404P313H14	TEFLON HOSE	100
404P313H15	TEFLON HOSE	100
404P332H03	SWITCH MOMENTARY ACTION	1
404P335H48	SWITCH	1
404P335H49	SWITCH	1
404P336H05	ROTARY SWITCH	2
404P341H04	TERMINAL BLOCK UKK-5-DIO	3
404P341H04	TERMINAL BLOCK UKK 5-DIO	2
404P348H09	BLOCK CONTACT-N.O.	2
404P348H10	STD CONTACT BLOCK	2
404P356H17	RELAY RP 1-1/2 PCB	2
404P356H17	RELAY RP 1-1/2 PCB	1
404P356H19	RELAY EJECTOR	1
404P356H19	RELAY EJECTOR	1
404P357H02	LIGHT INDICATOR	11
404P357H04	LAMP	20
404P357H55	LED 12VDC RED	2
404P357H56	LED 12VDC GREEN	2
404P357H57	LED 12VDC AMBER	2
404P360H21	LED GREEN 24/28V	4
404P360H22	LED YELLOW 24/28V	4
404P360H38	LAMP INDICATOR LED MF YELLOW 24V	8
404P360H40	LAMP INDICATOR LED MF GREEN 24V	4
404P394H01	MOUSE INTELLIPOINT VERSION 2.0 COMBO	1
404P394H29	COMPUTER COMPONENT - KEYBOARD	1
404P394H45	LAPTOP TERMINAL 133 MHZ PENTIUM	1
404P394H71	MONITOR 22" DIAMOND PRO 2060 DESKTOP	1
404P394H72	17 PAGE PER MINUTE LASERJET PRINTER	1
404P402H03	SPRING	8
404P405H07	SPEAKER	4
404P405H09	SPEAKER	2
404P405H14	SPEAKER	2
404P405H22	SPEAKER 2.5	2
404P419H03	LAMP FLUORESCENT	90
404P419H11	LAMP FLUORESCENT 32 WATT 48 LG	100
404P419H14	LAMP FLUORESCENT 25 WATT 36.00 IN LG	20
404P427H05	FUSE 25 AMP	10

APPENDIX E

Spare Parts		
Part No	Description	Qty
404P437H34	SPRING CONTACT (14-16 AWG)	100
404P437H34	SPRING CONTACT (14-16 AWG)	84
404P437H51	RELAY 9-30 VDC ADJ. TIMER 125 OHM	2
404P437H56	RELAY O.A. BIASED 400 OHM 6FB	4
404P437H56	RELAY O.A. BIASED 400 OHM 6FB	1
404P437H64	RELAY O.A. BIASED 1000/250 OHM	1
404P437H96	VITAL RELAY 12-14 VDC 800 OHM	6
404P437H97	RELAY TIME DELAY 24 VDC 11 PIN INTERVALON	4
404P437H98	COUPLER PARTS CENTER PLATE	2
404P438H09	DIODE	4
404P439H74	RESISTOR 2 WATTS 50 OHM N-MALE	2
404P443H02	RELAY SOCKET 8 PIN	2
404P443H07	RELAY SOCKET	2
404P443H12	RELAY	3
404P443H16	RELAY	2
404P443H57	SPRING HOLD DOWN	40
404P443H67	RELAY SOCKET	3
404P443H92	RELAY 48 VDC 10 AMP 2 POLE	2
404P449H06	Spring, Contract SST	8
404P478H03	PRESS CONTROL 0/100 PSI W/0-10V OUTPUT	4
404P480H03	CONTACTOR	3
404P480H33	CONTACTOR	2
404P480H35	CONTACTOR INTERLOCK	2
404P485H28	4" Waterproof PA Speaker with 70 Volt / 4 Watt Transformer	10
404P488H22	BREAKER 2 POLE 4 AMP 240 VAC	4
404P488H22	BREAKER 2 POLE 4 AMP 240 VAC	20
404P488H32	CIRCUIT BREAKER GFI DIN MOUNTED	2
404P488H37	CIRCUIT BREAKER	2
404P491H27	AUDIO MATCHING TRANSFORMER	1
404P498H10	SWITCH PRESSURE	2
404P500H07	AMPLIFIER 6 WATT AUDIO POWER	1
404P500H09	MICROPHONE PREAMPLIFIER MODULE	1
404P500H10	1/8 DIN LCD GREEN BACKLIT DISPLAY	4
404P501H07	LINE AMPLIFIER ASSY W/LONWORKS CONNECTOR	1
404P501H08	LINE AMPLIFIER ASSY W/LONWORKS CONNECTOR	1
404P501H12	PA Amplifier 2 Channel x 100 Watt	1
404P502H34	FUSE 2.0 AMP 250 VOLTS 5X20 MM	10
404P502H35	FUSE 4 AMP 250V 5X20 MM	12
404P502H35	FUSE 4 AMP 250V 5X20 MM	3
404P502H36	FUSE 6.3 AMP 250 V 5X20 MM	6
404P502H36	FUSE 6.3 AMP 250 V 5X20 MM	2
404P506H02	SWITCH TOGGLE	4

APPENDIX E

Spare Parts		
Part No	Description	Qty
404P506H05	SWITCH	2
404P506H11	TOGGLE SWITCH SPST 6A/250V	1
404P506H38	SWITCH TURN POSITION KEY	2
404P513H03	POTENTIOMETER	2
404P513H11	POTENTIOMETER	2
404P513H16	POTENTIOMETER 8 OHM	2
404P513H16	POTENTIOMETER 8 OHM	1
404P513H34	POTENTIOMETER 5K 2W PLASTIC W/LKG BSHG	1
404P532H02	SWITCH 2 PORT KVM	1
404P532H58	SWITCH KEY OPERATED 6 POLES	2
404P532H76	SWITCH ROTARY 45 DEG DETENT W/KNOB	1
404P532H82	SWITCH ROTATIONAL 3 POS LEAD-TRAIL	2
404P533H11	GROOVE PIN .125 DIA .875 LG STL	100
404P538H47	SPRING	12
404P538H57	SPRING .480 OD 1.50 FREE .045 WIRE	50
404P538H74	CONTACT SPRING AWG 18-20	8
404P538H74	CONTACT SPRING AWG 18-20	4
404P546H01	BEARING CUP	40
404P546H02	BEARING CONE	40
404P546H03	BEARING CUP	40
404P546H04	BEARING CONE	40
404P547H04	SEAL	50
404P547H07	SEAL	50
404P547H46	TORQUE SEAL ORANGE	50
404P548H01	KEYED WASHER	8
404P549H01	GREASE CAP	8
404P551H01	CASTLE NUT	8
404P551H06	WHEEL STUD .500-20 1.31 LG	40
404P551H07	WHEEL NUT .500-20 NYLON RINGLOCK	40
404P554H22	FUSE	8
404P564H05	Bearing	4
404P567H14	SENSOR TIRE MONITOR KIT	8
404P585H14	FUSE 1.0 AMP 600 V 4 C 500 V DC	15
404P594H01	VARISTOR	8
404P594H24	VARISTOR 127 VDC	4
404P595H08	AB BREAKER 15 AMP	11
404P595H09	AB BREAKER 20 AMP	4
404P595H80	BREAKER MAGNETIC HYDRAULIC 5.0 AMPS	2
404P595H84	BREAKER 1 POLE 277 VAC 15A	4
404P595H87	BREAKER 1 POLE 277 VAC 30A	2
404P595H90	BREAKER 1 POLE 277 VAC 70A	2
404P598H04	POTENTIOMETER 10K OHM 3 WATTS	1

APPENDIX E

Spare Parts		
Part No	Description	Qty
404P598H05	POTENTIOMETER 1K OHM 3 WATTS	1
404P600H35	WASHER .382 ID .750 OD .032 T SST	100
404P611H50	CAPACITOR 20 UF 370VAC	2
404P617H48	BREAKER 40A 227 VAC 1 POLE	2
404P630H15	RELAY 24VDC	2
404P630H22	RELAY 24VDC 2 DPDT 10 AMP	4
404P630H25	RELAY MODULE UMK22-REL12/21-21	1
404P649H02	FILTER	4
404P649H28	FAN 24 VDC BALLBEARING 35CFM	2
404P649H40	FAN TRAY ASSEMBLY 115VAC 192CMH X3 FANS	1
404P649H40	FAN TRAY ASSEMBLY 115VAC 192CMH X3 FANS	1
404P650H16	BUMPER 1.00 DIA .69 LONG RUBBER	16
404P659H01	RELAY LIGHTING	10
404P660H01	BALLAST SINGLE LAMP	8
404P660H02	BALLAST DOUBLE LAMP	8
404P661H01	LAMP SOCKET FLOURESCENT SIDE INSERT	8
404P663H06	RF SWITCH 4-POS N-M CABLE HARNESS	2
404P681H30	FLANGE BEARING .502 I.D. .691 O.D. .75 LG	1
404P682H01	CONTROL RELAY	2
404P682H02	CONTROL RELAY	2
404P682H21	RELAY GERMAN SIGNAL (6NO/2NC)	20
404P682H22	RELAY GERMAN SIGNAL (4NO/4NC)	4
404P682H23	HEAVY DUTY DC CONTROL RELAY	2
404P683H08	THYRISTOR 200V 70A	3
404P690H01	End, Right Hand Rod	1
404P690H02	End, Left Hand Rod	1
404P690H03	End, Right Hand Rod	1
404P690H04	End, Left Hand Rod	1
404P694H06	INDICATING LIGHT	4
404P694H12	PUSHBUTTON FLUSH 2-NO 2-NC WHITE	2
404P694H13	PUSHBUTTON FLUSH 2-NO 2-NC BLUE	2
404P697H36	BATTERY GEL CELL 97 AMP HR 12V	2
404P699H01	SOLENOID VALVE	2
404P700H01	DOUBLE CHECK VALVE	2
404P701H09	LOW POWER LINE FILTER 3A	2
404P703H07	TOGGLE SWITCH	2
404P703H55	SWITCH TOGGLE	2
404P703H67	SWITCH TOGGLE	1
404P703H72	SWITCH SUB MINIATURE PUSHBUTTON	2
404P708H54	115 VAC Power Supply	1
404P708H65	POWER SUPPLY	1
404P709H11	TRANSMITTER CARTRIDGE	2

APPENDIX E

Spare Parts		
Part No	Description	Qty
404P709H60	DIGITAL VOICE ANNOUNCEMENT UNIT	1
404P709H74	RADIO EQUIPMENT MDR 18-32 VDC	1
404P709H75	RADIO EQUIPMENT BDR RACK MOUNT	1
404P709H78	N-CONNECTOR, EPOXY SEAL	1
404P709H79	2-4 GHZ, EPOXY SEAL	4
404P709H80	2-4 GHZ, EPOXY SEAL	2
404P709H81	2-4 GHZ, EPOXY SEAL	1
404P709H83	POWER DIVIDER, 1-4 GHZ	2
404P709H85	DIRECTIONAL COUPLER	1
404P709H90	DOUBLE RF HYBRID	1
404P732H10	ANTENNA 902-928 MALE TAG READER	2
404P747H18	SWITCH ASSY W/CONNECTOR MS3112E-12-8P	1
404P747H23	FDDI BYPASS SWITCH SC-SC-DB9 RACK-2M	2
404P747H25	SWITCH FDDI BYPASS SC-SC-MDIN RACK-2M	1
404P765H10	RESISTOR MTG HDW 210-1000	2
404P765H11	RESISTOR MTG HDW 210-12 WATT	2
404P810H03	VALVE PRESSURE RELIEF	2
404P810H04	SOLENOID VALVE	2
404P810H05	SOLENOID VALVE	2
404P810H06	SOLENOID VALVE	2
404P810H22	VALVE 1/4 3 WAY DIRECT ACTING	2
404P810H24	VALVE REPAIR KIT FOR 404P810H22	4
404P813H18	FILTER	4
404P813H19	CHECK VALVE .38-14 NPTF DRY SEAL	2
404P820H22	FILTER ELEMENT (10B)	4
404P829109	MONITOR 37 INCH SVGA	1
404P829118	OTR-150 Optical Transceiver	1
404P829126	HARD DISK DRIVE 2.5 GBYTES	1
404P829128	250 WATT COMPUTER POWER SUPPLY	2
404P837H01	SONALERT 10-48 VDC 4500 HZ	1
404P837H02	SONALERT 10-48 VDC 1900 HZ	1
404P837H03	SONALERT	1
404P840H01	PRESSURE GAUGE	1
404P840H11	PRESSURE GAGE 0-160PSI BK MOUNT	4
404P840H12	PRESSURE GAGE 0-300PSI BK MOUNT	4
404P840H13	PRESSURE GAGE 0-60PSI BACK CONN.	2
404P903H44	CONTACT BLOCK SPST N.O.	2
404P930H02	BELT	4
404P931H07	FLTR MEDIA 12.88 X 13.88 X .75 THK FOAM	8
404P949H07	BOOT	8
404P949H08	SHOCK ABSORBER 1.38 BORE .63 ROD	8
404P963H30	POWER SUPPLY 12 VDC	1

APPENDIX E

Spare Parts		
Part No	Description	Qty
404P963H32	POWER SUPPLY 115 VAC PLUG-IN	1
404P963H36	POWER SUPPLY 115VAC - 9VDC PLUG-IN	1
404P968H10	HAND PUMP SINGLE PISTON	1
404P988H85	SWITCH TYPE UK5-MTK-P/P	2
404P988H89	TERMINAL BLOCK FUSED W/LED 15-30V	4
404P988H89	TERMINAL BLOCK FUSED W/LED 15-30V	5
404P988H97	FUSE PLUG 5-15V AC/DC W/LIGHT	10
404P988H98	FUSE PLUG 15-30V AC/DC W/LIGHT	8
404P996H02	VALVE IN-LINE CHECK	2
404P996H03	CHECK VALVE	2
404P996H06	TOGGLE VALVE .25 M/.25 M .125 ORIFICE	4
404P996H08	Valve, Bleeder	1
4077B45H02	D C AMMETER 1)	2
4077B76G02	SWITCH ASS'Y	2
4078B16H01	VOLTMETER	1
4078B51H01	THYRISTOR	4
4078B74G01	STD. INTERLOCK MOVING PART ASSEMBLY	8
4078B89H01	SWITCH TEMPERATURE LEVEL	1
409P033H98	TRANSPOUNDER INTERROGATOR - VEH 10 CHAR	2
409P034H04	REDUNDANT MODBUS PLUS OPTION ADAPTER	3
409P034H07	MODULE I/O BASE	2
409P034H37	MODICON PLC COMPACT CONTROLLER 984-120	2
409P034H43	DEP 218 INPUT MODULE 115 VAC	4
409P034H45	SERIAL ADAPTER LONTALK SLTA-10	1
409P071H02	Digital Sound Processor	1
409P084H04	CBX SLA16 Subscriber Line Analog Module	1
409P084H04	CBX PSUI Power Supply Unit.	1
409P084H05	CCF Operator Display Telephone	1
409P084H05	MSF Office Telephone	1
409P084H06	Wall Mount Telephone	1
409P084H07	Passenger Station Emergency Telephone	1
409P084H08	Blue Light Telephone with AE700 Surface Mount Enclosure	1
409P119H52	POWER SUPPLY RACK MOUNTABLE	2
409P119H91	POWER SUPPLY ASSEMBLY (#S10833)	1
409P129H23	AIR CONDITIONER MOISTURE INDICATOR	6
409P176H05	SMOKE ALARM RELAY BASE	4
409P177H28	AUDIO AMPLIFIER UNIT	1
409P177H34	BEAM POWERED TRANSPORTATION TAG	2
409P177H34	BEAM POWERED TRANSPORTATION TAG	4
409P177H35	TRANSPOUNDER INTERROGATOR - WAYSIDE	2
409P180100	RS232 TO RS485 OPTICAL ISOLATED MODEM	1
409P180102	3 PCI 2 CPU 8 ISA SLOT BACKPLANE	1

APPENDIX E

Spare Parts		
Part No	Description	Qty
409P180H98	DISPLAY TERMINAL TOUCH SCREEN	2
409P188I03	8.4 GBYTE HARD DISK DRIVE	1
409P188I10	120MBYTE REMOVABLE DISK DRIVE	1
409P188H26	RESISTOR TERMINATOR CAPS BNC 50 OHM	2
409P188H26	RESISTOR TERMINATOR CAPS BNC 50 OHM	2
409P188H27	TRANSCEIVE CONNEX MINI BNC	2
409P188H27	TRANSCEIVE CONNEX MINI BNC	2
409P189H01	CONTROLLER 1.5 K	1
409P189H02	POWER SUPPLY 120 VAC 24 VDC	3
409P189H03	EEPROM CARD 8 K BYTE	2
409P189H04	SUBRACK PRIMARY	1
409P189H05	SUBRACK SECONDARY	1
409P189H06	CABLE BUS EXTENSION	1
409P189H08	OUTPUT MODULE 8 PT RELAY	4
409P189H11	INPUT MODULE 16 POINT 24 VDC	2
409P189H20	CONTROLLER MOMENTUM PROCESSOR	3
409P191H05	RECEIVER 62.5 MULTIMODE 10 DB BUDGET	1
409P191H06	TRANSMITTER 62.5 MULTIMODE 10 DB BUDGET	1
409P191H11	FIBER OPTIC/RF CONVERTER BASE UNIT	1
409P191H25	FIBER OPTIC SYSTEM	2
409P196H43	MODEL 857 10 SLOT CARDFILE W BACK PLANE	1
409P196H70	1/3" CCD Color CCTV Camera (120VAC)	4
409P197H24	PCI GRAPHICS CARD	1
409P197H25	DIGI 8 PORT SERIAL BOARD	1
409P197H75	144 MBYTE STATIC RAM DISK DRIVE	1
409P197H80	40X CD ROM DRIVE	1
409P198H24	COMPUTER COMPONENTS	1
409P199I43	Digital to Analog Audio Converter	1
409P199H39	ETHERNET LAN 12 PORT HUB	1
409P199H52	SEC SERIAL PORT/PS2 MOUSE CABLE & KIT	1
409P199H62	CONTROL MODULE - CPM 6400	1
409P199H63	POWER SUPPLY FOR MATRIX SWITCH RACK	1
409P199H65	8-PORT I/O MODULE (RS-232) - CPM 6400	1
409P199H93	SUPERSTACK II SWITCH 2200	1
409P199H99	56 KBPS INTERNAL FAXMODEM	1
409P210H17	HIGH RESOLUTION VIDEO CONVERTER	1
409P210H18	VIDEO MONITOR - 20	1
409P210H19	KEYBOARD VIDEO CONTROLLER	1
409P210H20	TIME LAPSE VIDEO RECORDER	1
409P219H12	RING SEAL	4
409P236H10	RELAY	2
409P236H13	TERMINAL BLOCK TYPE UKK5	10

APPENDIX E

Spare Parts		
Part No	Description	Qty
409P237H05	LOWER PLATE	2
409P237H06	UPPER PLATE	2
409P237H11	COUPLER PARTS RUBBER BUFFER	4
409P237H16	DUST CAP	2
409P237H17	ROLL PIN 8 X 45	4
409P237H19	RUBBER BUMPERS	2
409P241H01	GASKET COUPLER	4
409P241H02	GASKET COUPLER	4
409P241H05	PIN CENTER	2
409P241H06	NUT CENTER PIN	2
409P241H07	RING RUBBER	4
409P241H09	BUSHING UPPER CENTER	2
409P241H10	BUSHING LOWER CENTER	2
409P248H75	PC BOARD 10 SLOT VME J1 BACKPLANE	1
409P248H75	PC BOARD 10 SLOT VME J1 BACKPLANE	2
409P248H76	PC BOARD 7 SLOT VME J1 BACKPLANE	1
409P248H77	PC BOARD 5 SLOT VME J1 BACKPLANE	1
409P248H79	PC BOARD 2200 DAS PCI FIBER FDDI ADAPTER	1
409P248H88	48 Power Supply and Ringing Generator (48V/25Hz)	1
409P249101	12-Port Analog Voice Interface Card (12LVOI-P)	1
409P249102	High Quality Audio / Public Address Interface Card (HQAUD-M)	1
409P249102	High Quality Audio / Public Address Interface Card (HQAUD-S)	1
409P249103	4-Wire E&M Interface Card	1
409P249104	BORA Common Logic Module	1
409P249105	RS 422 Interface Card	1
409P249106	RS-485 interface Card	1
409P249107	RS 232 Interface Card	1
409P249110	12-Port Analog Voice Interface Card (12LVOI-T)	1
409P250H94	FILTER ASSEMBLY	35
409P262H24	PA Ambient Noise Sensing Controller	1
409P276H13	WIPER BLADE ASSEMBLY (31.5)	4
409P301H01	Hi-Tech Spare Parts Kit Includes: 1 Complete Dynamic Message S	1
409P302H61	MOTOR, 2HP, 480V, 1800RPM, 56C	1
409P302H62	BEARING CARBON GRAPHITE, 1.5"	1
409P302H63	BEARING - 4 BOLT FLANGE, 1"	6
409P302H64	1" BORE, #1610 TAPER LOCK BUSHING	2
409P302H65	FUSE AJT30	2
409P302H66	FUSE GGM-4	2
409P302H67	FUSE FRN-R-5	1
409P302H68	RECEIVER EYE IR-M12-15M	1
409P302H69	MANUAL AMO/TIMER ISG-N34-115V	1
409P302H70	TRANSMITTER EYE IT M12 35M	1

APPENDIX E

Spare Parts		
PartNo	Description	Qty
4166A87H01	RELAY TYPE B	3
4227B27G01	CONTACT STUD ASSEMBLY	32
4227B59G01	CAM SHUNT	8
4567B03H07	CAPACITOR 1 UF 660 VAC	6
4675C15G04	BRAKE TRANSFORMER	0
4677C95G09	VARISTOR ASSEMBLY	4
4677C95G28	VARISTOR SUPPRESSION DEVICE	3
4678C64G01	TRANSFORMER & POTENTIOMETER PANEL ASSY	2
4680C29G04	AAR RACK ASSEMBLY	0
4680C65H01	AIRSIDE SPRING	8
4682C17G02	BRUSH HOLDER PIN	32
4722A43H02	BOLT .500-13 X 1.25 HEX HD STL	100
4766A18G02	VARISTOR ASSEMBLY	6
4766A18G05	VARISTOR ASSEMBLY	4
4766A18G08	VARISTOR ASSEMBLY	6
4766A40G06	DIODE ASSEMBLY	4
4766A40G11	DIODE ASSEMBLY	2
4766A40G12	DIODE ASSEMBLY	2
4766A40G13	DIODE ASSEMBLY	8
4766A40G16	DIODE ASSEMBLY	3
4766A40G18	DIODE ASSEMBLY	4
4767A67G01	LIGHTNING ARRESTER	14
4767A86H12	BALL VALVE	2
4767A86H15	Valve, Check	1
4767A90G01	STD. CONTACT INTERLOCK FINGER	8
4768A05H11	CRITICAL RELAY 4 FORM C 24V	4
4768A30H01	TRANSFORMER	4
4776A87H01	FUSE BLOCK #3519 0-60 AMPS 600V	4
4778A79G01	STD. FINGER INTERLOCK	10
4893B70H02	GAUGE	3
4894B90H01	SPRING .0747 THK SST	16
4896B59H01	SWIVEL STEM 3.50) .375 DIA STL	16
4896B60H01	SPACER .505) .375 DIA 1/2 HARD BRS	8
4898B19G06	LIGHTNING ARRESTER ASSEMBLY	8
4898B19G07	LIGHTNING ARRESTER ASSEMBLY	8
4898B51G02	PINNED POWER RAIL INSTALLATION	0
4898B51G04	PINNED SIGNAL RAIL INSTALLATION	0
4899B59H01	PIN 3.50) .375 DIA	100
4899B64H01	EXTENSION SPRING	12
4899B65H03	ALIGNMENT PLATE 1.75 X .75) .125 THK	40
4D02279G02	TRANZORB ASSEMBLY	2
5574C12H06	Cylinder Hydraulic	1

APPENDIX E

Spare Parts		
Part No	Description	Qty
5574C31G03	GUIDE TIRE ASSEMBLY	0
5574C31H03	TIRE	16
5574C40G01	DOOR SLIDE ASSEMBLY L.H.	2
5574C41G01	DOOR SLIDE ASSEMBLY R.H.	2
5574C95H04	Ramp	7
5574C95H05	Ramp	6
5575C64H02	SWITCH SNAP ACTION ROLLER	2
5578B62G01	BRUSH HOLDER ASSEMBLY	16
5579B40H01	FAN DC BRUSHLESS	6
5580B05G01	RESISTOR ASSY 11 K 1 W	2
5580B05G02	DIODE ASSY IN5399	2
5582B88H01	BEARING	64
5585B41H05	ADJUSTING PLUNGER ASSY 16 DEGREE ANGLE	8
5585B41H05	ADJUSTING PLUNGER ASSY 16 DEGREE ANGLE	16
5585B78H01	CHANNEL 5.00 X 1.92) .062 THK SST	20
5585B79H01	ARM 11.00) .375 DIA STL	64
5585B85H01	KEEPER 9.50) .188 X 1.00 CF STL	20
5585B93H01	BRUSH HOLDER PLUG 2.00) .625 X 1.50 BR	16
5586B24H02	SWIVEL STEM 4.25) .375 DIA STL	50
5586B62H02	CYLINDER HIGH PRESSURE	2
5586B62H03	GASKET	2
5586B62H04	CYLINDER LOW PRESSURE	2
5586B62H05	GASKET	2
5586B62H06	CAP SUCTION VALVE	2
5586B62H08	SEAL O-RING CAP	4
5586B62H09	SEAL FELT PLUNGER TO SLEEVE	4
5586B62H10	SEAL O-RING PLUNGER TO SLEEVE	4
5586B62H16	HEAD LOW PRESSURE CYLINDER	2
5586B62H17	GASKET LOW PRESSURE CYLINDER	2
5586B62H18	VALVE ASSEMBLY DISCHARGE	4
5586B62H20	VALVE ASSEMBLY SUCTION	4
5586B62H26	SEAL O-RING CAP	4
5586B62H27	SEAL FELT PLUNGER TO SLEEVE	8
5586B62H28	SEAL O-RING PLUNGER TO SLEEVE	4
5586B62H33	HEAD HIGH PRESSURE CYLINDER	2
5586B62H34	GASKET HIGH PRESSURE CYLINDER	2
5586B62H35	VALVE ASSEMBLY DISCHARGE	4
5586B62H37	VALVE ASSEMBLY SUCTION	4
5586B62H42	ELEMENT AIR CLEANER	38
5586B62H53	SPRING	2
5586B62H54	VALVE CHECK	2
5586B62H55	PIN	2

APPENDIX E

Spare Parts		
Part No	Description	Qty
5586B62H56	SEAL PIN	2
5586B62H57	RETAINER OIL RELIEF SPRING	4
5586B62H58	SPRING OIL RELIEF	4
5586B62H60	PISTON	2
5586B62H61	DIAPHRAGM	4
5586B62H66	PISTON ASSEMBLY HIGH PRESSURE	4
5586B62H70	BALL NYLON OIL RELIEF VALVE	4
5586B62H73	SLEEVE RUBBER	4
5586B62H75	SEAL OIL FRONT	2
5586B62H81	CUP BEARING	4
5586B62H83	GASKET INTERCOOLER TUBE	8
5586B62H85	VALVE ASSEMBLY SAFETY	4
5586B62H86	O-RING OIL PUMP COVER	4
5586B62H87	ROTOR OIL PUMP	2
5586B62H88	VANE OIL PUMP ROTOR	8
5586B62H89	SPRING VANE	8
5586B62H91	PIN ROLL	4
5586B62H94	PIN ROLL	4
5586B66H01	CARBON BRUSH GRADE W187	32
5587B02G01	CYLINDER AIR COMPRESSOR - HIGH PRESSURE	2
5587B02G02	CYLINDER AIR COMPRESSOR - LOW PRESSURE	2
5587B07G01	CRANKSHAFT ASSY AIR COMPRESSOR	2
5587B09G01	PISTON & CONNECTING RODS - HIGH PRESSURE	2
5587B09G02	PISTON & CONNECTING RODS - LOW PRESSURE	4
5587B11G01	INTERCOOLER AIR COMPRESSOR	2
5587B12G01	REAR RETAINER AND OIL PUMP	4
5621B15G01	HUB AND SHAFT ASSEMBLY	0
5621B16G01	BRAKE PARTS	0
5621B19G01	GENERAL ASSEMBLY DRIVE AXLE	2
5624B12H01	LEVER 1)	1
5624B19H01	MODIFIED SOCKET	8
5625B54H02	CAP EXTRUSION 90.50)	16
5625B82H01	BUMPER E.A.R. ISODAMP #C.1002.25	4
5630B48G01	MICROPHONE ASS'Y	1
570A055H31	O RING STD SIZE 210	16
577B060H33	DIODE	2
5819C58G03	FINGER ASSEMBLY	16
5824C49G01	SOLENOID VALVE	4
5827C89H04	Cylinder Hydraulic	1
5D56060H21	CAM	6
5D72149G01	PROPULSION MONITOR ASSEMBLY	0
5D72500G04	SMOKE DETECTOR ASSEMBLY (GRAPHICS)	2

APPENDIX E

Spare Parts		
Part No	Description	Qty
5D72501G02	SMOKE DETECTOR MOUNTING BRACKET	2
5D73028G01	PC BOARD R110 CONVERTER MOTHERBD ASS'Y	2
5D73062G01	PC BOARD GEALOC POWER SUPPLY ASSEMBLY	2
5D73065G01	PC BOARD MANUAL CONTROL II ASSEMBLY	2
5D73067G02	PC BOARD MANUAL CONTROL I ASSEMBLY	2
5D73091G01	PC BOARD FRANKFURT 16 SLOT P2 BACKPLANE	1
5D73122G01	PC BOARD FRANKFURT RELAY STAT IND ASS'Y	2
5D73200G01	PC BOARD GEALOC POWER SUPPLY ASSEMBLY	1
5D73201G01	PC BOARD DIGITAL INPUT PCB ASSEMBLY	1
5D73205G02	PC BOARD GROUND LOSS DETECTION ASSY	2
5D73206G01	PC BOARD AUDIO MATRIX ASSEMBLY	1
5D73220G01	PC BOARD ATCS SYNC/VITAL DRVR INTFC ASSY	2
5D73220G02	PC BOARD ATCS SYNCHRONIZER/VITAL DRIVER	2
5D73220G03	PC BOARD ATCS SYNC VITAL DRIVER	1
5D73221G01	PC BOARD MULTI PURPOSE I/O ASSEMBLY	2
5D73221G02	PC BOARD MULTI PURPOSE I/O ASSEMBLY	2
5D73222G02	PWR SUPPLY ASSY (24V IN 5V +/-12V OUT)	2
5D73299G01	PC BOARD LAS VEGAS RADIO RELAY I/O ASSY	2
5D73299G01	PC BOARD LAS VEGAS RADIO RELAY I/O ASSY	1
5D73338G01	PC BOARD DIGITAL OUTPUT ASSEMBLY	1
5D73338G02	PC BOARD DIGITAL OUTPUT ASSEMBLY	1
5D73412G01	PC BOARD RF INTERFACE ASSEMBLY	1
5D73412G02	PC BOARD RF INTERFACE ASSEMBLY	2
5D73413G01	PC BOARD 386 CPU ASSEMBLY	1
5D73449G01	PC BOARD NUMBER ONE END TERMINATION CARD	3
5D73449G02	PC BOARD NUMBER ONE END TERMINATION CARD	2
5D73452G01	PC BOARD BRAKE PROP CONTROLLER ASSY	2
5D73458G01	PC BOARD SAN FRANCISCO DOOR TX TERM ASSY	3
5D73463G01	PV BOARD SAN FRANCISCO NON-CPU M/B ASSY	1
5D73473G01	PC BOARD, DOOR TX/RX ASSEMBLY	2
5D73479G01	PC BOARD MANUAL SPEED LIMITER ASSEMBLY	2
5D74294H01	MOTOR 115 VAC 60 HZ	1
5D74330G03	FLAG ASSEMBLY TRIP STOP	1
5D74457G16	VEHICLE RADIO ASSEMBLY	0
5D74649G01	PHASE VOLTAGE RELAY GEN ASS'Y	2
5D74671G01	GUIDE WHEEL HUB ASSEMBLY	2
5D74715H01	COMPRESSOR	1
5D74715H07	VALVE-CHECK	4
5D74716H02	COIL - CONDENSER	2
5D74716H05	VALVE - RELIEF	4
5D74716H06	ISOLATOR - SHOCK MOUNT	8
5D74716H08	VALVE - SERVICE	2

APPENDIX E

Spare Parts		
PartNo	Description	Qty
5D74716H09	RECEIVER - LIQUID	4
5D74716H10	MOTOR - CONDENSER	2
5D74716H14	VALVE - PURGE	4
5D74716H20	VALVE - RECEIVER (INLET AND OUTLET)	3
5D74717H04	BLOWER (RH)	1
5D74717H08	MOUNT-SHOCK	16
5D74717H11	COIL-EVAPORATOR	2
5D74717H17	VALVE-LIQUID & MODULATING	2
5D74717H19	VALVE-EXPANSION	2
5D74717H23	THERMOSTAT-OVERHEAT	2
5D74717H24	BLOWER (LH)	1
5D76262H03	EQUALIZER VALVE 110 PSI	4
5D76263H22	VEHICLE RADIO 1)	1
5D77763G01	DIGITAL I/O INTERFACE MODULE PDISO-8	1
5D77773H05	ETHERNET EXPRESS PRO 10+	1
5D77773H06	ETHERNET EXPRESS PRO 10+	1
5D77998H27	FILTER DRIER CARTRIDGE	6
5D79410H01	DTE/TERM'D LINE DRIVER CARD	2
5D79410H02	DTE/UNTERM'D LINE DRIVER CARD	2
5D80189H01	CPU BOARD PENTIUM P5000HX SERIES	1
5D81178H01	ETHERNET PC LINK2 BD	1
5D81799G01	CENTRAL RADIO SYSTEM COMPUTER ASSEMBLY	1
60A2872G37	CAM SWITCH TYPE XCA-398	2
6157A58H04	THERMAL RELAY	2
6246D69H09	SHACKLE 7.25 X 2.75) .38 HR STL	16
6523B68H01	Magnet	4
652A103H02	DRAIN VALVE	4
652A589H03	WASHER .202) 2.375 DIA STL	50
6961C69G01	ASSEMBLY DUAL QUICK RELEASE VALVE KIT	4
6965C16H02	TRANSFORMER ENCAPSULATED	2
6967C72G02	KNUCKLE CASTING	24
6967C72G03	KNUCKLE CASTING	8
6969C55G01	PANEL ASSEMBLY	0
6971C67H02	BREAKER 3 POLE 600 VAC 15 AMP	2
6971C67H07	BREAKER 3 POLE 600 VAC 15 AMP	3
6971C68H01	BREAKER 3 POLE 600 VAC 70 AMP	3
6971C68H04	BREAKER 3 POLE 600 VAC 125 AMP	2
6972C93G01	POWER RAIL JOINT ASSEMBLY	50
6972C93G02	SIGNAL RAIL JOINT ASSEMBLY	40
6972C93G04	HALF ALIGN PLATE ASSEMBLY	20
6972C93H01	Plate, Joint	6
6972C93H02	Plate, Alignment	6

APPENDIX E

Spare Parts		
Part No	Description	Qty
6972C93H06	Plate, Joint	6
6972C94H05	POWER COVER 5 FEET BEIGE	100
6972C94H21	POWER COVER 2.50 FEET BEIGE	6
6972C95G03	ISOLATION GAP	10
6972C97G02	POWER TERMINAL	16
6972C98G02	Expansion Joint Power	6
6973C66G02	VARISTOR ASSEMBLY	4
6973C66G07	VARISTOR ASSEMBLY	4
6973C66G10	VARISTOR ASSEMBLY	4
6973C66G14	VARISTOR ASSEMBLY	2
6974C38H01	CARBON BRUSH GRADE 933	40
6976C08G05	ROLLER BEARING ASSEMBLY	6
6D56059G01	DOOR OPERATOR R.H.	4
6D56059H21	CAM	6
6D56060G01	DOOR OPERATOR L.H.	4
6D56130G01	POWER FEED ASSEMBLY	5
6D56434G01	HEADLIGHT/TAILLIGHT ASSY (CLEAR)	0
6D56434G02	HEADLIGHT/TAILLIGHT ASSY (RED)	0
6D56434H07	LAMP - HALOGEN HI/LO	16
6D56434H08	LAMP - INCANDESCENT RED	16
6D56529G01	PROGRAM SWITCH PANEL ASSEMBLY	0
6D56575G01	A/C COMPRESSOR ASSEMBLY UNIT	1
6D56575H04	SWITCH-HIGH PRESSURE	2
6D56575H05	SWITCH-LOW PRESSURE	2
6D56575H06	SWITCH-MODULATION PRESSURE	2
6D56575H15	ISOLATOR SHOCK MOUNT	12
6D56575H18	TRANSFORMER	2
6D56575H19	CIRCUIT BREAKER - COMPRESSOR	2
6D56575H20	CIRCUIT BREAKER - CONDENSER FAN	2
6D56575H21	CIRCUIT BREAKER - OVERHEAD HEATER	2
6D56575H22	CIRCUIT BREAKER - BLOWER FAN	2
6D56575H23	CONTACTOR	4
6D56575H24	RELAY BASE OVERLOAD	2
6D56575H25	OVERLOAD	6
6D56575H26	OVERLOAD	6
6D56575H27	PC BOARD CONTROL	2
6D56576G01	HVAC EVAPORATOR ASSEMBLY	1
6D56576H02	MOTOR-BLOWER 2-SPEED	2
6D56576H07	WHEEL-BLOWER (CW)	1
6D56576H08	WHEEL-BLOWER (CCW)	1
6D56576H28	HEATER ASSEMBLY	2
6D56576H34	SWITCH-AIRFLOW	4

APPENDIX E

Spare Parts		
Part No	Description	Qty
6D56576H36	SENSOR-RETURN AIR (NOT SHOWN)	4
6D56576H37	VARISTOR-SURGE SUPPRESSOR	4
6D56576H40	SWITCH FREEZE PROTECTION	2
6D56631G01	MANUAL CONTROLLER COMPARTMENT ASSEMBLY	0
6D56864G01	CENTRAL CONTROL COMPUTER ASSEMBLY	1
6D56865G01	FRONT END COMPUTER ASSEMBLY	1
6D56867G01	OPERATOR STATION COMPUTER ASSEMBLY	1
6D56868G01	GENERAL SYSTEM DISPLAY COMPUTER ASSEMBLY	1
6D56869G01	OFFICE NETWORK BRIDGE COMPUTER ASSEMBLY	1
6D57047G01	TERMINAL BLOCK ASSY - P24 DISTRIBUTION	1
6D57052G01	TERMINAL BLOCK PANEL - P24 DISTRIBUTION	1
6D57064G01	ATC2 CRADLE - ASSEMBLY	1
6D57226G01	ATO COMPUTER ASSEMBLY	1
6D57226G02	ATO COMPUTER ASSEMBLY	1
6D57228G01	INDUSTRY PACK BOARD ASSEMBLY	1
6D57252G01	POWER SUPPLY ASSEMBLY	1
6D57255G01	GRAPHICS FRONT END COMPUTER	1
6D57299G01	FIBER OPTIC TERMINAL BOX ASSEMBLY	1
6D57607H01	GEALOC FIELD POWER SUPPLY	2
6D57607H01	GEALOC FIELD POWER SUPPLY	1
6D57612G01	TERMINATION PANEL ASSEMBLY - JUMPER PNL	0
6D57695G01	TERM CARD CRADLE ASSEMBLY	0
6D57696G01	ATC2 CRADLE ASSEMBLY	0
6D57740G02	TERMINAL BLOCK ASSEMBLY	0
6D57761G01	SPEAKER/MICROPHONE PANEL ASSEMBLY	0
6D57762G01	SPEAKER/MICROPHONE INSTALLATION	0
6D57793G01	CONDENSER UNIT ASSEMBLY	1
6D57793H02	FAN-CONDENSER	2
6D57800G01	FIRE EXTINGUISHER INSTALLATION	0
6D57803H01	CPU BOARD	2
6D57803H02	CPU BOARD	2
6D57820G01	SAN FRANCISCO VEH COMMUNICATIONS CABLE 18	0
6D57825G01	VEHICLE COMMUNICATION CONTROLLER HARNESS	0
6D57827H01	DTE/TERM'D OPTO-ISOL'D LINE DRIVER BD	2
6D57827H02	DTE/UNTERM'D OPTO-ISOL'D LINE DRIVER BD	2
6D57842G01	RACKMOUNT DISPLAY COMPUTER ASSEMBLY	1
6D58053H01	CENTRAL CONTROL - PWR SUPPLY ASSY	1
6D58550G01	IONIZATION SMOKE DETECTOR (CTR LOCATION)	3
6D59447G01	LOWER DOOR GUIDE - C-100 & CX-100 VEHICLE	4
6D59447G02	LOWER DOOR GUIDE - C-100 & CX-100 VEHICLE	4
6D59563G01	DYNAMIC GRAPHICS ASSEMBLY	4
6D59669H01	SERIAL INTERFACE BOARD	1

APPENDIX E

Spare Parts		
Part No	Description	Qty
6D59669H02	SERIAL INTERFACE BOARD	1
70310CB07C	SPRING PIN .125 DIA X .750 LG SST	100
70310CB07F	SPRING PIN .125 DIA X 1.00 LG SST	40
70310CB0BA	SPRING PIN .188 DIA X 1.00 LG SST	100
70310CB0DT	SPRING PIN .250 DIA X 1.625 LG SST	300
70500CT00Y	WASHER .375 STD STL	100
70510CV10G	LOCKWASHER .138 REG STL	100
70510CV10Q	LOCKWASHER .375 REG STL	100
70510DL10S	LOCK WASHER .500 X-DUTY STL	100
73482AP00S	FUSE 60A 250V SB	10
760C217G07	SHUNT	8
795C168G01	CONTACTOR ARC CHUTE - MOLDED	4
8368D84H26	VEHICLE GLASS	8
8368D84H27	VEHICLE GLASS	2
8368D84H28	VEHICLE GLASS	4
8368D93G06	TYPE TE-359 BTRY CHGR & DOOR SPLY G/ASSY	2
8584C27G01	HYDRAULIC HOSE ASSEMBLY	1
8584C27G02	HYDRAULIC HOSE ASSEMBLY	1
8584C27G03	HYDRAULIC HOSE ASSEMBLY	1
8584C27G05	HYDRAULIC HOSE ASSEMBLY	1
8588C18H01	SWITCH 2 POS - 12 CONTACT	2
8589C64100	SPRING BRAKE CHAMBER ASS'Y	8
8589C64100	SPRING BRAKE CHAMBER ASS'Y	8
8589C64185	SEAL ADJUSTING BOLT	16
8589C64185	SEAL ADJUSTING BOLT	32
8589C64H13	SPINDLE WHEEL BEARING	1
8589C64H14	O RING	60
8589C64H62	CONE HUB BRG. OUTER	4
8589C64H63	CUP HUB BRG. OUTER	4
8589C64H64	NUT WHEEL STUD	40
8589C64H67	CUP HUB BRG. INNER	4
8589C64H68	CONE HUB BRG. INNER	4
8589C64H69	OIL SEAL HUB BRG.	8
8589C64H71	BRAKE DRUM	4
8589C64H72	CAP SCREW	40
8589C64H74	BRAKE LINING KIT	8
8589C64H77	COLLET NUT - BRAKE CHAMBER	8
8589C64H77	COLLET NUT - BRAKE CHAMBER	16
8589C64H78	RIVETS	140
8589C64H79	LININGS	16
8589C64H80	BOLT ADJUSTING	16
8589C64H80	BOLT ADJUSTING	32

APPENDIX E

Spare Parts		
Part No	Description	QTY
8589C64H86	CAP SCREW HOLD DOWN CLIP	8
8589C64H86	CAP SCREW HOLD DOWN CLIP	16
8589C64H87	SPRING - BRAKE SHOE RETURN	8
8589C64H87	SPRING - BRAKE SHOE RETURN	16
8589C64H88	BRAKE SHOE & LINING ASS'Y	8
8589C64H88	BRAKE SHOE & LINING ASS'Y	16
8589C64H90	NUT HOLD DOWN CLIP	8
8589C64H90	NUT HOLD DOWN CLIP	16
8589C64H91	CLIP HOLD DOWN	8
8589C64H91	CLIP HOLD DOWN	16
8589C64H93	WEDGE ASSEMBLY	8
8589C64H93	WEDGE ASSEMBLY	8
8589C64H94	SPIDER BRAKE	8
8589C64H94	SPIDER BRAKE	2
8591C07H01	SIGNAL COVER 5 FEET BEIGE	80
8591C07H13	SIGNAL COVER 2.50 FEET BEIGE	4
8591C09G01	SIGNAL EXPANSION JOINT ASS'Y	10
8591C12G01	SIGNAL ISOLATION JOINT	6
8592C16G03	STD. CONTACTOR 200 AMPS TYPE UMC-109A	2
8592C18G06	STD CONTACTOR AND INTERLOCKTYPE UMC-109G	2
8593C08H03	TRANSFORMER 600V/60HZ & 600V/50HZ 10VA	3
8593C21G01	CYLINDER HEAD ASSY - LOW PRESSURE	2
8593C22G01	CYLINDER HEAD ASSY - HIGH PRESSURE	2
8593C23G01	OIL PUMP COVER (WITH UNLOADERS)	2
8594C63H02	STD. FAN 24 VDC 94 CFM	3
8594C63H04	STD. FAN 12 VDC 106 CFM	3
8617A79G01	CONTACT WITH INSERT	8
8618A09G07	RESISTOR ASSEMBLY	1
8838D98H01	WHEEL HUB	2
8840D42G06	GENERAL ASSEMBLY TYPE UT-323 OVERLOAD	2
8840D61G01	RESISTOR PANEL R.H.	2
8840D61G02	RESISTOR PANEL L.H.	2
8840D61G03	RESISTOR PANEL R.H.	1
8840D61G04	RESISTOR PANEL L.H.	1
8840D97G02	INDICATOR ASSEMBLY	2
8840D97G03	PUSHBUTTON ASSEMBLY	2
8840D97G04	PUSHBUTTON ASSEMBLY	2
8840D97G05	PUSHBUTTON SWITCH ASSEMBLY	2
8840D97G07	PUSHBUTTON ASSEMBLY	2
8840D97G08	PUSHBUTTON ASSEMBLY	2
8840D97G09	PUSHBUTTON ASSEMBLY	2
8840D97G11	PUSHBUTTON ASSEMBLY	2

APPENDIX E

Spare Parts		
Part No	Description	Qty
8840D97G12	PUSHBUTTON ASSEMBLY	2
8840D97G13	PUSHBUTTON ASSEMBLY	2
8840D97G14	PUSHBUTTON ASSEMBLY	2
8840D97G32	PUSHBUTTON ASSEMBLY	2
8840D97G38	PUSHBUTTON SWITCHES & INDICATORS	2
8840D97G44	INDICATOR ASSEMBLY	2
8840D97G83	ALARM TEST PUSBUTTON ASSEMBLY	2
8840D97G84	FLUID LEVEL INDICATOR ASSEMBLY	2
8840D97G85	PUSHBUTTON ASSEMBLY	2
8844D32G01	AIR CONTROL PKG SOLENOID VALVE	2
8844D32H02	COIL, 24 VDC	4
8844D32H03	REPAIR KIT	4
	Digital Sound Card	1

APPENDIX E

Tools and Equipment			
Item	Qty	Part No.	Location
Laser printer	2		2ND FLOOR
Laser color printer	1		2ND FLOOR
IBM compatible PCs (servers)	2		2ND FLOOR
Spectrum analyzer w/noise marker	1		ALFREDO
Tic tracer	12		ALL TECHS
Frequency/Time domain reflectometer	1		AVMET V102
Traction Motor Support Cradle	1	5D79169G01	BAY 5 WALL
Dot matrix printers	2		CENTRAL
System simulator	1		CENTRAL
Soldering/desoldering stations	2		ELEC ROOM
Soldering iron	2		ELEC ROOM
Bench VAST	1		ELEC ROOM
Portable VAST	1		Supply room
Prom programmer	1		ENG OFF
Tool, Actuation, Flat Tire System	1	401P401H14	LEAD DESK
Battery soldering iron	2		LIB
End Play Measuring Tool	2	6D55567G01	Mech Room
Guidewheel Assembly Fixture	1	6D55460G01	Mech Room
Bearing Cup Driver (Upper)	1	1C44422G01	Mech Room
Bearing Cup Driver (Lower)	1	1C44423H01	Mech Room
Grease Seal Driver	1	1C44424H01	Mech Room
Grease Seal Driver (Lower)	1	1C44425H01	Mech Room
Dust Shield Driver	1	1C44418G01	Mech Room
Coupling Hub Hydraulic Removal Assy	1	3D51371G01	Toolcrib
Plate 11.00 X 23.63 X .25 Thk Alum (H01)	3	1C43246H01	Mech Room
Planetary Hub Bearing Cup Puller	1	5D56121G01	I108
Planetary Hub/brake Drum Cradle	1	1C43244G01	BAY 5 WALL
Planetary Ring Gear Lifting Tool	1	1C43137G01	V104
Dust Seal Driver	1	1B39122H01	Mech Room
Brake Adjustment Tool	1	1C43136H01	Mech Room
Cable W/Custom Deutsch Connector	1	404P723H32	LEAD DESK
6 channel chart recorder	1		mechrm cab
8 channel chart recorder	1		mechrm cab
Power supply, 40 V - (BK Model 6020, 0-60v)	1		mechrm cab
Digital thermometer	1		MRA3,
Track mapper	0		NA
IBM compatible PCs (work stations)	21		OFFICES
Portable IBM compatible PC	2		SUPS
Analog multimeter, portable, Simpson 260-p	1		ENG OFF
Ty wrap tool	3		TOOL WALL
Frequency counter	1		U127
Function generator	1		U127
Signal generator, Lizard portable Transmitter	1		LIB
Power meter w/power head	1		U127
Sound level meter	1		U127
Bench model DMM	1		U132
Hi-pot	1		U132
Power supply, 0-30 V, ELECTO IND. MODEL 3012A	1		U132
Fluke, 123 Scopemeter	1		V131
FLuke, 43B Power Analyser	1		V133
Meggar, 1000 V, AVO Model 210600	1		V102
Commutator Resurfacing Tool Assy	1	2255F39G01	V103
Hub Seal Driver	1	1B39123H01	V103
Grease Cap Driver	1	1C44419H01	V104
Bearing Nut Removal Tool	1	3D51373G01	V104
Bearing Cup Driver	1	1B39120H01	V104
Bearing Cup Driver	1	1B39121G01	V104
Pinion Yoke Removal/Installation Tool Set	1	5D74845G01	V104

APPENDIX E

Tools and Equipment			
Item	Qty	Part No.	Location
Socket 1/2" Hex Special	1	4077B16G02	V104
Special Socket 1/2")	1	4724A87H02	V104
Phase sequence indicator	1		V107
Clamp-on current meter (AC/DC) FLUKE 31	1		V107
Heat gun	2		V111
Hand-held DVM	8		V112, MRA3
Force gauge	1		V117, MRA1
Clamp-on current probe	1		V131
Power supply, 20 V, Tenma 72-6628	1		V132
Resistor decade box	1		V133
10' X 20' Flat Bed Trailer	0		NR
FLUKE 863, Graphic multimeter	1		V102
O-scope probe (provided w/ scope)	2		V102
O-scope probe (provided w/ scope)	1		V117
Capacitance decade box	1		LIB
Extender boards, propulsion	3	225P748G01	A129
Extender boards, ATO	2	409P248H90	
Extender boards, wayside	3	226P338G01	ELEC ROOM
Power Supply, B&K Precision model 1715 0-60v	1		mechrm cab
Notch Filter	1		NA
Fluke Thermal Imager, Model TI-30, s/n 89720099	1		LIB
Fluke Power Quality Analyser, Model 434, dm8910101	1		LIB
Special Coupler Tool Set	1		mechroomcab
Adhesive Back Sandpaper for Orbital Sander	1	2D709	BACK WALL
7" Grinder disc	10	3VP30	back wall
41/2" Grinder disc	20	3VX05	back wall
14" Cut-off blades	6	4A896	back wall
6' X 8' Welding Screen	1	3T970	Bay 1 bot
Drum dollies	3	3KR53	bay 5
25' Extension Cord	4	2W566	bay floor
High Pressure Steam Cleaner	1	5GH72	BOT FLOOR
Micrometer Set 0-6"	1	5C675	Library
Wheel Chucks	2	4W941	Load dock
5" Bench vise	2	1ATH0	mech room
14" Cut-off saw, Milwaukee	1	2AC06	MECH ROOM
Rechargeable Latern	3	2V837	MECH ROOM
Rechargeable Flashlight	3	2V888	mech room
8" Bench Grinder	1	4Z909	Mech room
8" Bench vise	2	5C804	Mech room
9-Speed 20" Floor drill press	1	6W281	Mech room
15" Floor Standing Band Saw	1	6Y002	Mech room
Wheel bearing packer	1	6Y907	Mech room
Heavy duty industrial workbench	6	7W087	MECH ROOM
12 ton Hydraulic press and H frame	1	7Z820	MECH ROOM
Shop Stools	6	2W175	mech room flr
12" Dial Caliper	1	5C665	MRA1
5/16" - 6" Internal Micrometer	1	5C717	MRA1
6" Dial Caliper	1	5C667	MRA1,U122
6" Digital Caliper	2	5C672	MRA1,U122
Degreaser transfer pump	1	2P683	sh floor
9" long Hex 3/8" drive ratchet	1	1AF34	shift toolbox
Metal Tool Box	2	2W019	Shop floor
Oil Waste Can	1	2W560	Shop floor
Hydraulic Lift Table	2	3KR47	Shop floor
3 Ton Gantry	1	3KR62	Shop floor
Crane Trolley	1	3TP86	shop floor
Platform Truck	2	3W077	shop floor
8' Stepladder	2	3W142	shop floor

APPENDIX E

Tools and Equipment

Item	Qty	Part No.	Location
3' Fiberglass Step Stool	6	3W332	shop floor
12' Stepladder	1	3W422	shop floor
Grease pail dolly	1	4F987	shop floor
Drum Containment Platform Ramp	1	4RF65	shop floor
Drum Containment Platform	2	4YF76	shop floor
Heavy Dity Rool Around Tool Box	2	6A575	shop floor
Oil dispenser, air operated	1	6Y820	shop floor
Grease Gun Handle Style	2	6Y826	shop floor
Grease Gun Pistol Style	2	6Y829	shop floor
12" Felxible Hose	6	6Y835	shop floor
Oil dispenser, Hand operated	1	6Y881	shop floor
Air operated grease gun	2	6Y885	shop floor
Oil drain pan	1	6Y902	shop floor
Oil drain pan	1	6Y903	shop floor
Drain pan funnel	1	6Y910	shop floor
50' Water Hose	3	1P649	SHOP FLR
9" long Hex 1/2" drive ratchet	1	3R747	shop tool box
Bins for storage cabinets	32	2W779	storeroom
Bins for storage cabinets	96	2W780	storeroom
2 3/4 Ton Pallet Jack	1	3KR84	storeroom
Plate Dolly	2	3W218	storeroom
10001b Flcor Scale	1	3W494	storeroom
Fire safety cabinet, safety yellow	2	4T196	storeroom
Sliding drawer units	2	5W885	storeroom
1 3/4" Cup Brush	5	3A203	supply shelf
1/2" Spiral Wire Brush	2	4F727	Supply shelf
1" Spiral Wire Brush	2	4F731	Supply shelf
Maintenance Free Respirators	2	4JG05	Supply shelf
Band saw blades	6	4L226	Supply shelf
Band Saw Blades	6	4L236	Supply shelf
Disposable Ear Plugs	1	4T147	Supply shelf
Dust / Mist Respirator	2	4T823	Supply shelf
8" Bench grinding wheels	4	6A091	Supply shelf
Funnel	4	6Y806	Supply shelf
Utility Knife	6	5R685	tool bxs
Tot Bag for Tools	6	4A670	Toolcrib
12" Hacksaw	2	4K799	Toolcrib wall
Carpenter Square	1	5W189	Toolcrib wall
50foot Extension Cord	2	5W576	Toolcrib wall
100' Extension Cord	2	5W577	Toolcrib wall
48" Straight Edge	2	6C233	Toolcrib wall
Combination Square 12"	2	6X996	Toolcrib wall
24" Straight Edge	2	2H406	Toolcrib wall 1
Freon Recovery System	1	1Z861	TOP SHELF
A/C Pressure Vacum Gauge Set	1	3T078	U115
Freon Leak Detector	1	3T449	U115
Hole Saw Kit	1	4L638	U118
Pneumatic Rivet Gun	1	4Z913	U118
Manual Rivet Gun Kit	2	6A644	U118
Chain Hoist 3 Ton	1	3KR22	U119
4 ton Hydraulic ram system	1	3ZC68	U119
Chain Hoist	1	4Z312	U119
3/8" 18V battery powered drill with keyless chuck, Milwaukee	2	4PD94	U121
Circular saw, 7 1/2" blade, Milwaukee	1	4Z372	U121
Circular saw blades	2	5G890	U121
Depth Gauge 0"-6"	1	5C723	U122
1/2" Electric impact wrench, Dewalt DW291	1	4JB74	U123
1/2" Hammer drill, Milwaukee	1	6Z040	U123

APPENDIX E

Tools and Equipment			
Item	Qty	Part No.	Location
8' Nylon Sling	4	1A598	U124
Shackle	6	2G796	U124
Chain Hooks	12	3X692	U124
3/8" Chain (Bucket)	1	3Z940	U124
Chain Slings	2	4X461	U124
Portable band saw stand	1	1Y335	U126
Portable variable speed band saw, Deep cut, Milwaukee	1	6Z345	U126
1/4" Die Grinder Milwaukee	1	1Y068	U128
1/2" Electric drill with keyless chuck, Milwaukee	2	4A937	U128
6 ft. Nylon sling	2	1A597	U129
10' Nylon Sling	2	6A259	U129
Electric angle grinder 41/2", Milwaukee	1	4A942	U133
Electric 2" die grinder, Milwaukee	1	4Z818	U133
Welding Helmet	1	1N782	V105
Welding Vest	2	2AG83	V105
Welding Gloves	2	4JF98	V105
Deluxe Drum Wrench	1	6A240	V108
Cable Cutter 24" Long	1	2G996	V113
8" Bench grinder stand	1	4Z154	V114
9" Suction Cups	4	6A987	V115
Air operated blow gun, regulated to 30psi	4	5X786	V116
6" Cross vise	1	6Z848	V119
Oil transfer pumps	2	1P893	V120,sh floor
Hand Stamps, Letter & Numbers	1	1F113	V121
Stencil set	1	6A231	V121
HVLP Spray Gun	1	4TH37	V125
Motor for Band Saw	1	6K639	V125
Drill Bit Set 8 Piece (9/16" -1")	1	1A050	V126
Drill Bit Set 118 Piece (1/16" -1/2")	2	1A522	V126
3/4" Dewalt Impact Gun	1	3MJ17	V128
Orbital Sander Milwaukee	1	3W786	V128
Electric angle grinder 7", sander Milwaukee	1	4Z819	V128
3/8" Electric right angle drill, Milwaukee	1	6Z037	V128
Battery charger	1	2Z556	V131
Portable Lite Stands	3	83998	back wall
18 Piece Hex Key T Handle Set	1	46288	box 4 floor
13 Piece Ball Hex Key Set	2	46754	bx 4 floor
110V Mig Welder	1	20418	I103
16 Gallon Shop Vacum	1	17703	mech room
Ignition Wrench Sets	2	43109	mech room an
3 Piece Channel Lock Set	2	45439	mra2,mrd1, 2nd
3lb Sledge Hammer	2	38311	mra4
16oz Rubber Mallet	2	45787	mra4,mrd3
16oz Claw Hammer	2	38127	mra4,tocribwa
5 Piece Pry Bar Set	2	43067	mra4,tocribwa
10" Pipe Wrench	1	30841	MRB2
Ratchet Wrench Sets (1/4"-7/8")	2	42160	mrb2
5 Piece Adjustable Wrench Set	1	44036	mrb2,mrd1,2nd
7 Piece Plier Set	2	45225	mrc2
13 Piece Vise Grip Set	1	45634	U109
3 Piece Extra Large Adjustable Wrench Set	1	44916	mrd3, tc wall
3/8" X25' Air Hose	3	16203	shop floor
3/8" X 50' Air Hose	6	16204	shop floor
3/8" X 50' Hose Reels	6	18644	shop floor
Halogen Drop Lights	6	83895	shop floor
Fluorescent Drop Lights on Reels	12	83912	shop floor
15" Hand Saw	1	36071	tool crib
18" Pipe Wrench	1	30843	tool crib wall

APPENDIX E

Tools and Equipment

Item	Qty	Part No.	Location
14 Piece Clamp Set	1	31470	tool crib wall
Oxy / Acet Cutting Torch	1	20170	tool crib,
Hand Held Vacum 3 Gallon	2	17768	tool crib, shop
Poprtble Air Compressor	1	16735	tool shed
25 Piece File Set	2	31233	U103, various
20 Piece Screwdriver Sets	2	47452	u105, bx 4
Stuby Wrench Set	2	44138	u106, mrb1
Extra Large Wrench Set (1 1/16"-11 1/2")	2	45965	u106,mrb1
Ratcheting (5/6"-1 1/2") Tap Holder	1	4064	U108
Ratcheting (0"-1 1/4") Tap Holder	1	4065	U108
58 Piece Tap and Die Set	1	52311	u108
8 Piece File Set w/Handles	2	31326	bx 4 floor
259 Piece Standard Mechanic Tool Set	4	33758	shop floor
5 Piece Hammer Set	2	38074	toolcrib wall
Offset Ratchet Wrench Sets	2	43375	mrb2
9 Piece Plier Set	2	45311	2nd shift 2a
10 Piece Vise Grip Set	1	45635	MRD2
3 Piece Folding Hex Key Set	2	46287	bx 4 floor
Offset Ratcheting Driver Set	1	YA487	BX 4 FLR
Mag Base Dial Indicator	1	GA3645	GUIDE CAB
Tire Inflator w/Gauge	4	YA258	Mech floor
3/8" 6 pt. Impact Standard Socket Set	1	212IMFY	mechroom wa
3/8" 6 pt. Impact Deep Socket Set	1	212SIMFY	mechroom wa
1/2" 6pt Impact Standard Socket Set	1	320IMY	mechroom wa
1/2" 6 pt Impact Deep Socket Set	1	320SIMY	mechroom wa
3/4" 6 pt Drive deep well impact socket set	2	420SIMY	mechroom wa
3/4" 6 pt Shallow Thin Wall Socket Set	2	422IMFSY	mechroom wa
3/4" 6 pt. Drive impact socket set	2	427IMY	mechroom wa
3/8" Drive Torque Wrench 40-200inch lb	1	QC2R200	MRA3
1/2" Drive Crows Foot Set	1	314SCO	MRB2
1/2" Spline Socket Torque Adapter	1	SRES306	MRB2
Spline Wrench Set (7/32"-1")	1	XDES608A	MRB2
Valve Stem Core Removal Tool	2	TR1170	MRC2
3" Cut Off Saw	1	AT155	MRC3
1/4" Drive Impact ratchet	2	AT200D	MRC3
1/2" Drive Impact gun	2	AT500E	MRC3
3/8" Drive Impact ratchet	2	AT700E	MRC3
3/8" Right Angle Air Drill	1	AT810	MRC3
3/8" Drive Impact gun	2	IM31	MRC3
3/8" Air Drill	1	PDR3A	MRC3
Screw Starter Flat Tip	2	SSM5A	MY CAB
Torque Multiplier	1	GA184A	PIN TOOL BX
General Purpose Puller Set	1	CJ2000SB	STORE WALL
3/4" 12 pt Standard Socket Set	2	414AHD	U100
Ratcheting Bit Set	1	CRA180PV	U101
6" Divider	1	PMF129	U102
1/4" Drive Torque Wrench 40-200inch lb	1	QC1R200	U102
Punch and Chiesel Holder	2	PPC5A	U102, MRA3
1/4" Drive Torque Wrench 10-50inch lb	2	QC1R50	U102,U107
6 Piece Long Roll Pin Set	2	PPCL60AK	U103
12 Piece Rool Pin Set	2	PPR712K	U103
Retaining Ring Plier Set	1	PRQ625	U108
Hole Punch Set	1	PGH8A	U108
3/8" Drive Torque Wrench 20-1 OOfit lb	2	QC2R100	U108,MRA3
1/2" Drive Torque Wrench 50-250ft lb	2	QC3R250	U117
3/4" Drive Torque Wrench 120-600ft lb	2	QC4R600A	U117,MRA3
Rivet Insert kit, Threadsetter Set	1	HP650	U118
Cotter Pin Pullers	4	CP3B	V103

APPENDIX E

Tools and Equipment			
Item	Qty	Part No.	Location
Safety Wire Pliers	2	WTRW6	V106
Safety Wire PLiers	2	WTRW9	V106
Thermometer	4	ACT83	V116
Bent Feeler Gauge Set	2	FB300A	V116,BX4FLR
Pneumatic Orbital Sander	1	PSF100	V118
Air Nibbler	1	AT180	V118
3/4" Drive impact gun	2	AT770	V123,MRC3
Carbon Scrapper Set	2	CSA300	
Feeler Gauge Set	2	FBL325A	BX 4 FLR
Stick Style Tire Pressure Gauges	2	GA246	V113
Screw Starter Phillips Tip	2	GA260A	BX 4 FLR
Tread Depth Gauge	2	GA599	
3/4" Drive Breaker Bar	1	L872RM	
Scrapper Set	2	PK500	
1/8"-1/2" Reamer	2	R120	PEG DRAW
1/2"-1" Reamer	2	R121	PEG DRAW
Refrigeration Wrench	2	R404	
1/2" Drive Long Handle Ratchet	2	SL832	MRA3
QC2FR75 TORQUE WRENCHES Qty 3	1		2 on U112, 1 MRA3
Sandyjet Abrasive Sand Blaster	1		3RD FLOOR
Genie Lift Truck, QTY 2	1		3RD FLOOR Bay 2
Alcatel Vacuum Pump qty2	1		back wall
12 FT extension Ladders Qty 2	1		Bay 2 bot level
Louisville Ladder /ramp	1		Bay 2 bot level
6' Fiberglass Ladder, 6JJ82	1		Bay 2 bot level
28 ' Ladder 3W140, Qty 2	1		Bay 2 bot level
MRV Fuel Tank	1		Bay 5
12' Cotterman Ladder	1		bay 5
4 ' Cotterman Ladder	1		bay 5
Microair Vacuum System	1		bay 5
Tractmax hepa Vacuum	1		bay 5
Wesco Lift Dolly, DPL-54-2222	1		Bay 5
Rolling Bin Carts	1		Bay 5
Lincoln electronic meter assy, quarts, 6WB36	1		Bay 5
Ridgid KJ-99 Jack Stands qty 2	1		bay 5
3/4 ton Wheel Dolly ATD-7227	1		Bottom Floor
Wire Spool Spindle Rack	1		bottom floor
Pipe Rack	1		bottom Floor
Yellow containment Drums 55 gallon	1		bottom Floor
Black 4 way special pallets 100ea	1		bottom floor
Yellow Battery Containment pallet	1		bottom floor
Orange Pallet Grabber	1		Bottom Floor
Carpet Loader Attachment for Forklift	1		Bottom Floor
Lift Table 2500 # capacity, qty 3 1700 ea	1		bottom floor
Yellow lift table, needs cord replacement	1		bottom floor
8 FT Loading Ramp walkway	1		bottom floor
Speed Scrub 2601 Power Floor Cleaner	1		bottom floor
Saber WINDSOR Floor Cleaner	1		bottom floor
Large Capacity Plastic Liquid storage Tank	1		bottom floor
Yellow Lift cage for Forklift	1		bottom floor
Ridgid Tristand 1/8 to 6 n460	1		Bottom Floor 2nd Isle
Yamaha 4D4600 Gas Generator	1		Bottom floor 2nd Isle Back
36" floor Fans Qty 3 used fair 400 ea	1		Bottom floor 2nd Isle back
Uline Hand Stretch wrapper Model h-88 Qty3	1		Bottom Floor 1st Isle Back
Programmable Logic Controller, plc guide switch	1		elecroom
Ridgid Battery operated Sawsall	1		elecroom
Portable Scunsi Steam machine	1		elecroom
SPECTOLINE EPROM Eraser	1		LB

APPENDIX E

Tools and Equipment			
Item	Qty	Part No.	Location
Streppel Glasfaser 110 vac	1		LIB
Dewalt Cordless rt angle drill kit, DW960	1		LIB
Ridgid cordless rt angle drill, R82233	1		LIB
Amp Crimper, 59824-1	1		LIB
AF8 VEAM CRIMPER	1		LIB
Pyle National crimping tool kit	1		LIB
Litton Veam Connector assy kit dmc2 qty 2	1		LIB
RYCOM 3111A Selective Voltmeter, QTY 2	1		LIB,T129
Tektronix P5200 HIGH VOLTAGE Probe	1		LIB
Mitoyo Caliper 505-705	1		LIB
MITOYO CALIPER 2904F	1		LIB
Dial Indicator, chicago dial	1		LIB
AMP Crimper f0026	1		LIB
AWS PSI- 8031 Indicator	1		LIB
Burndy HYTOOL M8ND Crimper	1		LIB
Fluke Current Transformer 801600a	1		LIB
Textronics probe, P6113B	1		LIB
FLUKE 850/1300 FIBER OPTIC SOURCE	1		LIB
Fluke 52 Thermometer	1		LIB
FLUKE 85 MULTIMETER(replaced with 87)	1		LIB
FLUKE 23 MULTIMETERS QTY 3(replaced with 177)	1		LIB
Sencore Capacitor inductor Analyzer lc76	1		LIB
Simpson Sound Meter System 886-2, type 2	1		LIB
NOYES MLP MULTIMODE LIGHT PACK	1		LIB
Anritzu Spectrum Analyzer mp 1550a	1		LIB
General Radio capacitor decade Box	1		LIB
Yokogawa 2786 Decade Resistance Box	1		LIB
Proto Torque Wrench, 6006a 10-80 ft	1		LIB
proto Torque Wrench, 6003 PB 10-100 ft	1		LIB
Snap-on flex head torque Wrench TQFR250	1		LIB
MONARCH RPM GUN	1		LIB
SNAP-ON TORQUE QC1R50	1		LIB
SNAP-ON TORQUE QT1R50 QTY 2	1		LIB
SNAP-ON TORQUE WRENCH, QD1R50	1		LIB
SNAP-ON TORQUE WRENCH, QC1200	1		LIB
PROTO TORQUE WRENCH 6062A	1		LIB
GRAPHTEC Thermal array Chart Recorder, WR 8000	1		LIB
Snap-on QC5R1000 Torque Wrench	1		LIB
Electro Physik Thickness Gauge, Minitest 600	1		LIB
Tire Cage	1		Loading Dock
Skidmore Wilham Calibration Tool	1		Mechroom
Kar Products Hardware storage Cabinets	1		mechroom
Bird, Digital Power Meter, model 5000ex	1		MECHROOM CAB
Battery tester 6/12/ volt	1		MECHROOM CAB
Guidewheel Assy Fixture, 6D55460G01	1		MECHROOM FLOOR
QC3R250 TORQUE WRENCH	1		MRA3
Long QCR250 TORQUE WRENCH	1		MRA3
QCR600A Torque Wrench	1		MRA3
pneumatic Caulking Gun	1		MRC4
Dayton Wet/dry Vacuum model # 1D456D	1		PDS Room
black Rolling Cart, 3 shelf Bretford	1		PDS Room
10 ft Ladder fiberglass Model # FS1510	1		PDS Room
8 FT fiberglass ladder	1		Pds Room
Green flat Hand Cart 2 x 4, qty 2	1		PDS Room, by spools.
System Drawings, 1 Pallet,	1		SF1307
Extra Metal shelving units, 1 Pallet	1		SF1415
AQUAWORKS Parts Cleaning Machines	1		shop floor
2 shop fans 24"	1		shop floor

APPENDIX E

Tools and Equipment			
Item	Qty	Part No.	Location
10' Ladder M7110-1 type 1A	1		STOREROOM
Uline Banding Cart and tools	1		Storeroom
Forklift Extensions, 8 FT, 6XX16	1		Storeroom back wall
Fire Safety Cabinets Qty 4	1		storeroom, Janitorial, BAY 5
Air Operated Calking gun 3M BP 480-85 MIX PAC	1		Storeroom back shelf
Spectroline DC-3300A Eprom/waiver Eraser	1		T126
Tektronix 314 storage Oscilloscope	1		T126
Astromed MT9500 Chart Recorder	1		T128
HP 6274B DC Power Supply	1		T128
Lambda LRA-17 Rack Power Supply	1		T128
Milwaukee Mag Drill,	1		Tool crib cage floor
Craftsman 150 psi 3 hp 4 gal air compressor	1		Tool crib cage floor
Portatorch, Lincoln	1		toolcrib floor
Dayton Battery Charge 40/2 amp	1		toolcrib floor
battery powered grease gun, Lincoln	1		toolcrib floor
48 " Straight Edge Qty 2	1		toolcrib wall
MEASURING DISTANCE WHEEL, Lufkin	1		top shelf toolcrib
BEX bluepoint BEX13 Bolt Extractor Set	1		U113
LCD Vacuum Gauges model 69070, qty 2	1		U115
Freon Leak Detector	1		U115
Hydraulic Rivet Gun	1		U118
Hole saw Kit, Westward 4wx60	1		U118
Electric Winch3VJ64	1		U119
4 TON HYDRAULIC RAM SET	1		U119
Chain Hoist 3 ton	1		U119
Vari speed Jigsaw	1		U120
6" DIAL Calipers, nsk	1		U122
Starett Micrometer model 230p, QTY 2	1		U122,,MRA1
Hilti Hammer DrillsTE6A, QTY 2	1		U125
Hilti Hammer DrillsTE15, QTY1	1		U125
Portable Variable band saw Milwaukee	1		U126
1/4" Die Grinder Milwaukee	1		U128
Greenlee Hydraulic Knockout Set 7506, 1/2 - 2"	1		U130
Hilti Hammer Drill TE 55	1		U130
David White auto level	1		U131
Tripod, David White mod 9045	1		U131
Measuring stick, David White	1		U131
PLS-5 Lazar Level	1		U131
Audio Visual VOLTAGE Detector, Salisbury	1		U132
Mag Drill, Hougen rotor broach	1		U133
LTRA -LOK self Ratcheting Lifeline & Harness, QTY	1		U134
Tie Downs 3kn70, qty 6	1		U134
Cross Needle SWR and power meter cn-103I	1		V101
Diode removal tool, 577B060H33	1		V103
Radius Rod end removal tools qty 2	1		V103
Submersible pump 5RV54	1		V119
Extech Lazer photo/contact Tachometer	1		V122
Transfer pump, 6Y881	1		V125
Dewalt Grinder 4 1/2 "	1		V128
Special Seismic tool Measuring Kits, qty 2	1		V129
Complete Mechanics tool Sets with tool box QTY 46	1		shop floor
Toyota Sitdown Forklift, Propane op.	1		1st Floor
Fluke 179 multimeter	1		JROW
OUTDOOR STORAGE SHED	1		BY CARWASH
OIL HEATER	1		CONFERENCE ROOM
Honda E2000 Portable Generator	1		shed
Carpet Loader Attachment for Forklift	1		bottom floor
Station Platform Doors, Qty 3	1		bottom floor

APPENDIX E

Tools and Equipment			
Item	Qty	Part No.	Location
EMERGENCY Platform Door, Qty 1	1		bottom floor
Interior vehicle side panels, qty 4	1		bottom floor
Vehicle gutter panels, qty 3	1		bottom floor
vehicle doors, qty 5	1		bottom floor
vehicle wheel covers, qty 3	1		bottom floor
vehicle door lever arms, qty 3	1		bottom floor
ALL Thread rods, 1 pallet	1		bottom floor
Aluminum Scarf plates, qty about 10	1		bottom floor
temporary trip stops , qty 2	1		bottom floor
6 boxes of u strut channel, beeline BFP22-120	1		bottom floor
5 CABLE TRAYS	1		bottom floor
UTICA, ts-100 Torque limit Screwdriver, mc 8554a25	1		victor
MCARR Digital torque wrench,CD2250A 5274a11	1		VICTOR
mcarr Digital torque wrench,CD280fr 5274a12	1		victor
mcarr proto Hex Bit Ball Set 7 pc	1		Victor
AMP PRO CRIMPER, 90869-1 QTY 2	1		VICTOR
AMP EXTRACTION TOOLS, 318831-1 QTY 2	1		VICTOR
Daniels SAFE T Cable tool, SCT323	1		ERIC
UNION SWITCH RELAY TEST STAND, PN150,PN25	1		ALFREDO
UNION SWITCH RELAY TEST STAND, GRS B1	1		ALFREDO
Xantrex Power Supply, model # XDL56-4P	1		JEFF
RAD Torque Machine, model RAD 550SL	1		shop floor
Micro-Ohmmeter, model# LOM-510A	1		JEFF
Vericom Brake rate Tester	1		Eric
Tyco Electronics Die Crimp# 2 for large Crimper	1		shop floor

APPENDIX F
BASE CONTRACT PRICE BREAKDOWN

F1.0 INSTRUCTIONS

- F1.1** The Contractor shall provide a price breakdown for labor and materials for first year of the Contract on Form A, Summary of Fixed Prices for the Base Contract, attached hereto and incorporated by reference as though fully set forth herein.
- F1.2** The Contractor shall provide a price for training Airport personnel as outlined in Appendix A, Section A2.5 - Option to Train Airport Personnel on Form T, Option to Train Airport Personnel, attached hereto and incorporated by reference as though fully set forth herein.
- F1.3** The Contractor shall provide these prices on Form A and Form T using the instructions included on each form. The Contractor shall complete all forms and shall not leave any field blank.
- F1.4** Prices for each Contract year shall be escalated in accordance with Section 4.0 Payment of the General Requirements.

F2.0 PRICE BREAKDOWN FORMS

- F2.1** The Price Breakdown Forms include the following:
 - F2.1.1** Form A, Summary of Fixed Prices for Base Contract
 - F2.1.2** Form T, Option to Train Airport Personnel
- F2.2** The Contractor may retype or reproduce the forms attached hereto for its convenience, but the content and basic format shall not be altered.

**FORM A
SUMMARY OF FIXED PRICES
For the
BASE CONTRACT**

The Contractor shall provide prices for all blank spaces on this form.

TOTAL PRICES	INSERT TOTAL PRICE
(a) Total Labor Cost for Contract Year 1	\$9,232,100
(b) Total Material Cost for Contract Year 1	\$2,067,900
TOTAL BASE CONTRACT PRICE*	\$11,300,000

* Amount shall be in constant US dollars (\$) as of Contract Signing.

FORM T
OPTION TO TRAIN AIRPORT PERSONNEL

The Contractor shall expand this form as necessary to provide a comprehensive breakdown. The Contractor shall provide on this form the total cost for training Airport personnel as outlined in Appendix A, Section A2.5 - Option to Train Airport Personnel.

DESCRIPTION	TOTAL PRICE
TOTAL ON-SITE TRAINING AND MATERIAL PRICE*	\$379,056

* Amount shall be in constant US dollars (\$) as of Contract Signing.

END OF DOCUMENT

**City and County of San Francisco
Airport Commission
P.O. Box 8097
San Francisco, California 94128**

First Amendment

THIS AMENDMENT (this "Amendment") is made as of August 1, 2013, in San Francisco, California, by and between **Bombardier Transportation (Holdings) USA Inc.** ("Contractor"), and the City and County of San Francisco, a municipal corporation ("City"), acting by and through its Airport Commission or the Commission's designated agent, hereinafter referred to as "**Commission**."

RECITALS

WHEREAS, City and Contractor have entered into the Agreement (as defined below); and

WHEREAS, City and Contractor desire to amend the Agreement on the terms and conditions set forth herein to exercise the three-year contract extension and provide funding for the budget shortfall from escalation and bonus adjustments for the initial contract term; and

WHEREAS, the Commission awarded this contract to Contractor on September 16, 2008, pursuant to an agreement to settle a dispute among the City and County of San Francisco, Bombardier Transportation (Holdings) USA, Inc., and Factory Mutual Insurance Company which was filed in the United States District Court for the Northern District of California, case number C 04-5307 PJH, and further pursuant to Resolution No. 08-0173; and

WHEREAS, Commission approved this Amendment 1 pursuant to Resolution No. 13-0156 on July 23, 2013; and

WHEREAS, pursuant to San Francisco Charter Section 9.118, the Board of Supervisors by its Resolution No. 266-08, adopted November 18, 2008, approved the contract to Contractor; and

WHEREAS, pursuant to San Francisco Charter Section 9.118, the Board of Supervisors by its Resolution No. 0429-13, adopted December 10, 2013, approved the amendment to the Agreement; and

WHEREAS, the Commission desires to amend the Agreement for administrative changes required by recently enacted San Francisco contracting ordinances; and

NOW, THEREFORE, Contractor and the City agree as follows:

1. Definitions. The following definitions shall apply to this Amendment:

a. Agreement. The term "Agreement" shall mean the Agreement dated September 16, 2008 between Contractor and City.

b. Other Terms. Terms used and not defined in this Amendment shall have the meanings assigned to such terms in the Agreement.

2. Section 2. Term of the Agreement is hereby amended to extend the term of the contract for an additional three year term for a new ending date of February 28, 2017.

3. **Section 5. Compensation** is hereby amended to increase the total compensation payable by an amount not to exceed \$42,200,000 for a new total not to exceed amount of \$98,700,000.

4. **New Section 8. Submitting False Claims; Monetary Penalties** is hereby replaced in its entirety to read as follows:

8. Submitting False Claims; Monetary Penalties.

Pursuant to San Francisco Administrative Code §21.35, any contractor, subcontractor or consultant who submits a false claim shall be liable to the City for the statutory penalties set forth in that section. The text of Section 21.35, along with the entire San Francisco Administrative Code is available on the web at:

http://www.amlegal.com/nxt/gateway.dll?f=templates&fn=default.htm&vid=amlegal:sanfrancisco_ca. A contractor, subcontractor or consultant will be deemed to have submitted a false claim to the City if the contractor, subcontractor or consultant: (a) knowingly presents or causes to be presented to an officer or employee of the City a false claim or request for payment or approval; (b) knowingly makes, uses, or causes to be made or used a false record or statement to get a false claim paid or approved by the City; (c) conspires to defraud the City by getting a false claim allowed or paid by the City; (d) knowingly makes, uses, or causes to be made or used a false record or statement to conceal, avoid, or decrease an obligation to pay or transmit money or property to the City; or (e) is a beneficiary of an inadvertent submission of a false claim to the City, subsequently discovers the falsity of the claim, and fails to disclose the false claim to the City within a reasonable time after discovery of the false claim.

5. **New Section 45. First Source Hiring Program** is hereby replaced in its entirety to read as follows:

45. First Source Hiring Program

a. **Application of Administrative Code Provisions by Reference.** The provisions of Chapter 83 of the San Francisco Administrative Code apply to this Agreement. Contractor shall comply fully with, and be bound by, all of the provisions that apply to this Agreement under such Chapter, including but not limited to the remedies provided therein. Capitalized terms used in this Section and not defined in this Agreement shall have the meanings assigned to such terms in Chapter 83.

b. **First Source Hiring Agreement.** As an essential term of, and consideration for, any contract or property contract with the City, not exempted by the FSHA, the Contractor shall enter into a first source hiring agreement ("agreement") with the City, on or before the effective date of the contract or property contract. Contractors shall also enter into an agreement with the City for any other work that it performs in the City. Such agreement shall:

(1) Set appropriate hiring and retention goals for entry level positions. The employer shall agree to achieve these hiring and retention goals, or, if unable to achieve these goals, to establish good faith efforts as to its attempts to do so, as set forth in the agreement. The agreement shall take into consideration the employer's participation in existing job training, referral and/or brokerage programs. Within the discretion of the FSHA, subject to appropriate modifications, participation in such programs maybe certified as meeting the requirements of this Chapter. Failure either to achieve the specified goal or to establish good faith efforts will constitute noncompliance and will subject the employer to the provisions of Section 83.10 of this Chapter.

(2) Set first source interviewing, recruitment and hiring requirements, which will provide the San Francisco Workforce Development System with the first opportunity to provide qualified economically disadvantaged individuals for consideration for employment for entry level positions. Employers shall consider all applications of qualified economically disadvantaged individuals referred by the System for employment; provided however, if the employer utilizes nondiscriminatory screening criteria, the employer shall have the sole discretion to interview and/or hire individuals referred or certified by the San Francisco Workforce Development System as being qualified economically disadvantaged individuals. The duration of the first source interviewing requirement shall be determined by the FSHA and shall be set forth in each agreement, but shall not exceed 10 days. During that period, the employer may publicize the entry level positions in accordance with the agreement. A need for urgent or temporary hires must be evaluated, and appropriate provisions for such a situation must be made in the agreement.

(3) Set appropriate requirements for providing notification of available entry level positions to the San Francisco Workforce Development System so that the System may train and refer an adequate pool of qualified economically disadvantaged individuals to participating employers. Notification should include such information as employment needs by occupational title, skills, and/or experience required, the hours required, wage scale and duration of employment, identification of entry level and training positions, identification of English language proficiency requirements, or absence thereof, and the projected schedule and procedures for hiring for each occupation. Employers should provide both long-term job need projections and notice before initiating the interviewing and hiring process. These notification requirements will take into consideration any need to protect the employer's proprietary information.

(4) Set appropriate record keeping and monitoring requirements. The First Source Hiring Administration shall develop easy-to-use forms and record keeping requirements for documenting compliance with the agreement. To the greatest extent possible, these requirements shall utilize the employer's existing record keeping systems, be nonduplicative, and facilitate a coordinated flow of information and referrals.

(5) Establish guidelines for employer good faith efforts to comply with the first source hiring requirements of this Chapter. The FSHA will work with City departments to develop employer good faith effort requirements appropriate to the types of contracts and property contracts handled by each department. Employers shall appoint a liaison for dealing with the development and implementation of the employer's agreement. In the event that the FSHA finds that the employer under a City contract or property contract has taken actions primarily for the purpose of circumventing the requirements of this Chapter, that employer shall be subject to the sanctions set forth in Section 83.10 of this Chapter.

(6) Set the term of the requirements.

(7) Set appropriate enforcement and sanctioning standards consistent with this Chapter.

(8) Set forth the City's obligations to develop training programs, job applicant referrals, technical assistance, and information systems that assist the employer in complying with this Chapter.

(9) Require the developer to include notice of the requirements of this Chapter in leases, subleases, and other occupancy contracts.

c. Hiring Decisions. Contractor shall make the final determination of whether an Economically Disadvantaged Individual referred by the System is "qualified" for the position.

d. Exceptions. Upon application by Employer, the First Source Hiring Administration may grant an exception to any or all of the requirements of Chapter 83 in any situation where it concludes that compliance with this Chapter would cause economic hardship.

e. Liquidated Damages. Contractor agrees:

(1) To be liable to the City for liquidated damages as provided in this section;

(2) To be subject to the procedures governing enforcement of breaches of contracts based on violations of contract provisions required by this Chapter as set forth in this section;

(3) That the contractor's commitment to comply with this Chapter is a material element of the City's consideration for this contract; that the failure of the contractor to comply with the contract provisions required by this Chapter will cause harm to the City and the public which is significant and substantial but extremely difficult to quantify; that the harm to the City includes not only the financial cost of funding public assistance programs but also the insidious but impossible to quantify harm that this community and its families suffer as a result of unemployment; and that the assessment of liquidated damages of up to \$5,000 for every notice of a new hire for an entry level position improperly withheld by the contractor from the first source hiring process, as determined by the FSHA during its first investigation of a contractor, does not exceed a fair estimate of the financial and other damages that the City suffers as a result of the contractor's failure to comply with its first source referral contractual obligations.

(4) That the continued failure by a contractor to comply with its first source referral contractual obligations will cause further significant and substantial harm to the City and the public, and that a second assessment of liquidated damages of up to \$10,000 for each entry level position improperly withheld from the FSHA, from the time of the conclusion of the first investigation forward, does not exceed the financial and other damages that the City suffers as a result of the contractor's continued failure to comply with its first source referral contractual obligations;

(5) That in addition to the cost of investigating alleged violations under this Section, the computation of liquidated damages for purposes of this section is based on the following data:

A. The average length of stay on public assistance in San Francisco's County Adult Assistance Program is approximately 41 months at an average monthly grant of \$348 per month, totaling approximately \$14,379; and

B. In 2004, the retention rate of adults placed in employment programs funded under the Workforce Investment Act for at least the first six months of employment was 84.4%. Since qualified individuals under the First Source program face far fewer barriers to employment than their counterparts in programs funded by the Workforce Investment Act, it is reasonable to conclude that the average length of employment for an individual whom the First Source Program refers to an employer and who is hired in an entry level position is at least one year; therefore, liquidated damages that total \$5,000 for first violations and \$10,000 for subsequent violations as determined by FSHA constitute a fair, reasonable, and conservative attempt to quantify the harm caused to the City by the failure of a contractor to comply with its first source referral contractual obligations.

(6) That the failure of contractors to comply with this Chapter, except property contractors, may be subject to the debarment and monetary penalties set forth in Sections 6.80 et seq. of the San Francisco Administrative Code, as well as any other remedies available under the contract or at law.

Violation of the requirements of Chapter 83 is subject to an assessment of liquidated damages in the amount of \$5,000 for every new hire for an Entry Level Position improperly withheld from the first source hiring process. The assessment of liquidated damages and the evaluation of any defenses or mitigating factors shall be made by the FSHA.

f. Subcontracts. Any subcontract entered into by Contractor shall require the subcontractor to comply with the requirements of Chapter 83 and shall contain contractual obligations substantially the same as those set forth in this Section.

6. New Section 63. Labor Peace / Card Check Rule is hereby replaced in its entirety to read as follows:

63. Labor Peace / Card Check Rule. Without limiting the generality of other provisions herein requiring Contractor to comply with all Airport Rules, Contractor shall comply with the Airport's Labor Peace / Card Check Rule, adopted on February 1, 2000, pursuant to Airport Commission Resolution No. 00-0049 (the "Labor Peace / Card Check Rule"). Capitalized terms not defined in this provision are defined in the Labor Peace/Card Check Rule. To comply with the Labor Peace/Card Check Rule, Contractor shall, among other actions: (a) Enter into a Labor Peace/Card Check Rule Agreement with any Labor Organization which requests such an agreement and which has registered with the Airport Director or his / her designee, within thirty (30) days after Labor Peace/Card Check Rule Agreement has been requested; (b) Not less than thirty (30) days prior to the modification of this Agreement, Contractor shall provide notice by mail to any Labor Organization or federation of labor organizations which have registered with the Airport Director or his / her designee (registered labor organization"), that Contractor is seeking to modify or extend this Agreement; (c) Upon issuing any request for proposals, invitations to bid, or similar notice, or in any event not less than thirty (30) days prior to entering into any Subcontract, Contractor shall provide notice to all registered Labor Organizations that Contractor is seeking to enter into such Subcontract; and (d) Contractor shall include in any subcontract with a Subcontractor performing services pursuant to any covered Contract, a provision requiring the Subcontractor performing services pursuant to any covered Contract, a provision requiring the Subcontractor to comply with the requirements of the Labor Peace/Card Check Rule. If Airport Director determines that Contractor violated the Labor Peace/Card Check Rule, Airport Director shall have the option to terminate this Agreement, in addition to exercising all other remedies available to him / her.

7. New Section 67. Cooperative Drafting is hereby added to the Agreement, as follows:

67. Cooperative Drafting. This Agreement has been drafted through a cooperative effort of both parties, 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.

8. New Section 68. Federal Non-Discrimination Provisions is hereby added to read as follows:

68. Federal Non-Discrimination Provisions. Contractor for itself, its personal representatives, successors in interest, and assigns, as part of the consideration hereof, does hereby covenant and agree that Contractor shall maintain and operate the Airport facilities and services in compliance with all requirements imposed pursuant to Title 49, Code of Federal Regulations, DOT, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-Assisted Programs of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act of 1964, as said regulations may be amended. Contractor, for itself, its personal representatives, successors in interest, and assigns, agrees that Contractor in its operation at and use of San Francisco International Airport, covenants that (1) no person on the grounds of race, color, national origin or sex shall be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities; (2) that in the construction of any improvements on, over, or under the Airport and the furnishing of services thereon, no person on the grounds of race, color, national origin or sex shall be excluded from participation or denied the benefits of, or otherwise be subject to discrimination, (3) that Contractor shall use all City premises in compliance with all other requirements imposed by or pursuant to Title 49, Code of Federal Regulations, DOT, Subtitle A – Office of the Secretary of Transportation, Part 21, Nondiscrimination in Federally-Assisted Programs of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations may be amended. These Regulations are incorporated as though fully set forth herein. Contractor agrees to include the above statements in any subsequent contract that it enters into with subcontractors and cause those agreements to similarly include the statements, and cause those businesses to include the statements in further agreements.

Failure by the contractor to comply with the requirements of this section is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Airport deems appropriate.

9. Effective Date. Each of the modifications set forth in Section 2 shall be effective on and after August 1, 2013.

10. Legal Effect. Except as expressly modified by this Amendment, all of the terms and conditions of the Agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, Contractor and City have executed this Amendment as of the date first referenced above.

<p>CITY AIRPORT COMMISSION CITY AND COUNTY OF SAN FRANCISCO</p>	<p>CONTRACTOR</p>
<p>By: <u>John L. Martin</u> John L. Martin, Airport Director</p>	<p><u>Johnetta Park / Douglas V. Hertzendorfer</u> Authorized Signature</p>
<p>Attest:</p>	<p><u>Johnetta Park / Douglas V. Hertzendorfer</u> Printed Name</p>
<p>By <u>Jean Caramatti</u> Jean Caramatti, Secretary Airport Commission</p>	<p><u>Secretary / Engineering Mgr.</u> Title</p>
<p>Resolution No: <u>13-0160</u></p>	<p><u>Bombardier Transportation (Holdings) USA Inc.</u> Company Name</p>
<p>Adopted on: <u>July 23, 2013</u></p>	<p><u>40554</u> City Vendor Number</p>
<p>Approved as to Form:</p>	<p><u>1501 Lebanon Church Road</u> Address</p>
<p>Dennis J. Herrera City Attorney</p>	<p><u>Pittsburgh, PA 15236</u> City, State, ZIP</p>
<p>By <u>Constance Menefee</u> Constance Menefee Deputy City Attorney</p>	<p><u>(412) 655-5700</u> Telephone Number</p>
	<p><u>25-1579550</u> Federal Employer ID Number</p>

**City and County of San Francisco
Airport Commission
P.O. Box 8097
San Francisco, California 94128**

Modification No. 2

THIS MODIFICATION (this "Modification") is made as of May 20, 2014, in San Francisco, California, by and between **Bombardier Transportation (Holdings) USA Inc.** ("Contractor"), and the City and County of San Francisco, a municipal corporation ("City"), acting by and through its Airport Commission or the Commission's designated agent, hereinafter referred to as "**Commission**."

RECITALS

WHEREAS, City and Contractor have entered into the Agreement (as defined below); and

WHEREAS, City and Contractor desire to amend the Agreement on the terms and conditions set forth herein to address the replacement of obsolete equipment; and

WHEREAS, the Commission awarded this contract to Contractor on September 16, 2008, pursuant to an agreement to settle a dispute among the City and County of San Francisco, Bombardier Transportation (Holdings) USA, Inc., and Factory Mutual Insurance Company which was filed in the United States District Court for the Northern District of California, case number C 04-5307 PJH, and further pursuant to Resolution No. 08-0173; and

WHEREAS, pursuant to San Francisco Charter Section 9.118, the Board of Supervisors by its Resolution No. 266-08, adopted November 18, 2008, approved the contract to Contractor; and

WHEREAS, Commission approved Modification No. 1 pursuant to Resolution No. 13-0156 on July 23, 2013; and

WHEREAS, pursuant to San Francisco Charter Section 9.118, the Board of Supervisors by its Resolution No. 0429-13, adopted December 10, 2013, approved the modification to the Agreement; and

WHEREAS, Commission approved this Modification No. 2 pursuant to Resolution No. 14-0104 on May 20, 2014; and

WHEREAS, pursuant to San Francisco Charter Section 9.118, the Board of Supervisors by its Resolution No. 328-14, adopted September 9, 2014, approved the modification to the Agreement but reduced the not to exceed amount by \$4,340 for a new not-to-exceed amount of \$100,543,834; and

NOW, THEREFORE, Contractor and the City agree as follows:

1. Definitions. The following definitions shall apply to this Amendment:

a. Agreement. The term "Agreement" shall mean the Agreement dated September 16, 2008 between Contractor and City, as amended by the:

Modification No. 1, dated August 1, 2013.

b. Other Terms. Terms used and not defined in this Modification shall have the meanings assigned to such terms in the Agreement.

2. Section 4. Services Contractor Agrees to Perform of the Agreement is amended to address the replacement of obsolete equipment as detailed in the New Appendix G, Tasks 1-4.

3. Section 5. Compensation is hereby amended to increase the total compensation payable by an amount not to exceed One Million Eight Hundred Forty Three Thousand Eight Hundred Thirty Four Dollars (1,843,834) for a new total not to exceed amount of One Hundred Million Five Hundred Forty Three Thousand Eight Hundred Thirty Four Dollars (100,543,834).

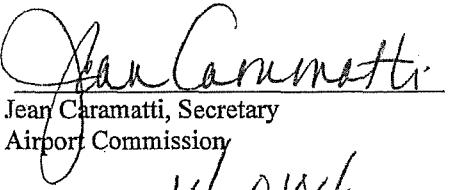
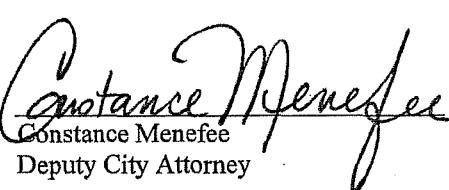
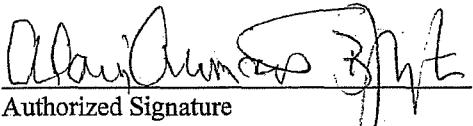
4. Appendix E. Spare Parts, Tools, and Equipment List is hereby replaced in its entirety with the new Appendix E-1.

5. New Appendix G. Appendix G is hereby added to the Agreement to address replacement of obsolete equipment covered under the contract. Performance of the Tasks in Appendix G is subject to mutually agreeable terms and conditions, which shall be established prior to the start of each task.

6. Effective Date. Each of the modifications set forth in Section 2 shall be effective on and after May 20, 2014.

7. Legal Effect. Except as expressly modified by this Modification, all of the terms and conditions of the Agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, Contractor and City have executed this Amendment as of the date first referenced above.

CITY AIRPORT COMMISSION CITY AND COUNTY OF SAN FRANCISCO By:  John L. Martin, Airport Director Attest: By  Jean Caramatti, Secretary Airport Commission Resolution No: <u>14-0104</u> Adopted on: <u>May 19, 2014</u> Approved as to Form: Dennis J. Herrera City Attorney By  Constance Menefee Deputy City Attorney	CONTRACTOR  Authorized Signature <u>Alan Aumais</u> <u>B. J. II Hampton</u> Printed Name Title <u>VP</u> <u>VP</u> Company Name <u>Bombardier Transportation (Holdings) USA Inc.</u> City Vendor Number <u>40554</u> Address <u>1501 Lebanon Church Road</u> City, State, ZIP <u>Pittsburgh, PA 15236</u> Telephone Number <u>(412) 655-5700</u> Federal Employer ID Number <u>25-1579550</u>
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Appendix G

Task 2: AirTrain UPS Replacement

General Project Scope

Contractor will replace 128 light-emitting diode (LED) signs currently used at all AirTrain stations with 46' liquid-crystal display (LCD) monitors using existing support beams and infrastructure.

The LCD sign replacements shall be fully compatible with the current RS-422 serial network. The signs shall be fully addressable and controlled by the Bombardier supplied Computer Interface Control System (CICS) already installed.

The signs shall be mounted to the existing support beams at each AirTrain station using off-the-shelf mounting hardware and in a fashion that allows for easy replacement. The signs shall operate fully on the existing signal and power wiring. Contractor shall perform over-site of all phases of the installation.

Mechanical

Contractor will replace the current double-sided LED signs with two single sided 46" LCD signs. Both signs must be identical; they must be configured with the same RS-422 address and content look-up table currently used by the Bombardier CICS in order to display identical content.

- LCD: 46"
- Resolution: 1920 X 1080
- Brightness: 700 Nits
- Weight: 35KG

Electrical Components

- RS422-to-RS232 Serial Adapter with daisy chain out and surge suppression.
- 120/240VAC Power Supply with standard 3-prong AC Plug input, IEC-320-C14.
Power consumption: -120W per display

Software Requirements

Contractor will load each unit with customizable VideoPoster-111 firmware running on Windows based software, which is required to generate the content and playlists for the retrofit signs. The playlist will be a "bit map (BMP)-trigger content lookup table". The software will allow the user to generate a playlist and specify a specific file in the playlist using a BMP-trigger. This playlist and a BMP-trigger data will be uploaded to the VideoPoster-111 via USB flash drive.

Installation

The following will be done at each display location:

- Remove existing LED sign, disconnect AC power, and remove two support tubes from bottom of 8" x 4" horizontal support arm.
- Install AC junction box to bottom of support arm
- Install Peerless SLT646 mount to each side of support arm using (4) Hillman W' Strap-toggles per mount.
- Displays will be located as high as possible off the floor.
- AC for displays will be hardwired in the AC junction box.
- Connect data cable.

Appendix G

Task 2: AirTrain UPS Replacement

- Old LED signs will be removed from each station.

Final Acceptance:

The following will be performed to verify final acceptance:

- Upon final completion of software design the contractor will provide one complete LCD sign unit to the SFO site for demonstration purposes.
- Demonstration unit must be operating on final design software.
- Demonstration unit will be connected to the sign controller to verify proper functionality.
- Demonstration unit must fully recognize and properly display both automated and operator generated text from CICS sign controller.
- Demonstration sign will operate continuously without failure for 14 days to verify software design.
- Upon completion and approval from AirTrain management of the above functions contractor will proceed with manufacturing all units.
- Once units arrive on site a quality assurance inspection will be performed prior to installation.
- After QA inspection the installation of each unit can begin. Installation process will be inspected to confirm proper mounting.
- A final test of each unit will be performed after installation to ensure communication with existing sign controller.
- Contractor to ensure any debris from project has been removed from all areas upon completion of job.

Warranty

Each unit will carry a standard warranty of 1 year on all parts from date of purchase.

Task Cost

Software Engineering and Development	\$48,000
Mechanical Design of Enclosure	\$7,500
On Site Demonstration - LCD and controller to confirm functionality	\$2,000
Complete two LCD set with controller and enclosure for Demonstration (material)	\$10,000
128 units plus 4 spares (material)	\$357,600
CA Sales Tax- 8.75% on material only	\$32,165
FCC Certification Testing	\$5,000
Installation labor and LCD mounting hardware	\$70,000
Onsite training and commissioning	\$8,000
Shipping of material to site	\$5,000
Develop Graphic Content – Illium Co.	\$25,000
Bombardier Project Management Fee (15%)	\$80,715
CA Sales tax - 8.75% on Mark-up	\$7,063
Total Task 1 Cost	\$658,043

Appendix G

Task 2: AirTrain UPS Replacement

General Project Scope

Contractor will replace 13 obsolete UPS units used to supply back-up power to vital AirTrain equipment. UPS locations and sizes are as follow:

Location	Equipment Description	Manufacturer	Model
Bldg. 679 PDS	10kVA IPM UPS	IPM	BPII-30-2020
Bldg. 679 PDS	10kVA IPM UPS	IPM	BPII-10-2020
Lot C	20kVA IPM UPS	IPM	BPII-10-2020
Bldg. 679 Control Center	20kVA IPM UPS	IPM	BPII-25-2020
Westfield Road	10kVA IPM UPS	IPM	BPII-25-2020
Int. Garage - A	10kVA IPM UPS	IPM	BPII-30-2020
Int. Terminal - A	10kVA IPM UPS	IPM	BPII-25-2020
Rental Car Center	20kVA IPM UPS	IPM	BPII-25-2020
Terminal - 1 Garage	10kVA IPM UPS	IPM	BPII-25-2020
Terminal - 2 Garage	10kVA IPM UPS	IPM	BPII-25-2020
Terminal - 3 Garage	10kVA IPM UPS	IPM	BPII-25-2020
Int. Terminal - G	10kVA IPM UPS	IPM	BPII-25-2020
Int. Garage - G	10kVA IPM UPS	IPM	BPII-25-2020

The UPS replacements shall be fully compatible with current power and network requirements. The UPS shall be able to communicate current operating and alarm conditions to the Bombardier supplied Computer Interface Control System (CICS). The UPS units shall have maintenance by-pass switches allowing complete bypass of each unit for maintenance purposes. Under a loss of input power condition, each UPS unit shall have the ability to supply power to all connected equipment for a minimum of 120 minutes.

The UPS units shall be mounted onto existing maintenance pads using standard hardware. UPS unit shall operate using existing power input voltage and existing communication wiring. Contractor shall perform oversight of all phases of the installation.

Technical Specifications

Contractor shall properly mount each UPS unit onto existing maintenance pad provided at each location. Each unit shall utilize maintenance free batteries and have adequate ventilation to keep batteries at proper operating temperatures. Each UPS units shall meet the following criteria:

- Efficiency – better than 90% at full load and 85% at half load.
- Be Field Upgradable
- Inverter/Rectifier – Transformer Free IGBT with PWM
- Audible Noise – Less than 50db
- Battery – Maintenance free with external battery cabinet
- Charging Method – ABM Technology
- Integrated maintenance bypass switch
- Comply with the following standards – IEC 6204-1, IEC 60950-1, IEC 62040-2, IEC 62040-3
- X Slot – 2 Communication Bays
- Serial Ports – 1

Appendix G

Task 2: AirTrain UPS Replacement

- Relay Input/output Ports – 2 programmable

Electrical Components

- Input wiring – 3phase
- Input Voltage – 208/380 at 50.60hz configurable
- Frequency – 45–60HZ
- Input THD – Less than 45%
- Soft Start Capability
- Internal Back-up Protection
- Output wiring – 3phase
- Output Voltage – 208/380 at 50/60hz

Installation

At each UPS location, Contractor will:

- Re-configure power around existing UPS units to allow the AirTrain system continued operation without interruption while UPS unit is being replaced.
- Remove existing UPS units and all batteries.
- Install new UPS unit onto existing maintenance pads.
- Install maintenance bypass switch
- Test each unit to confirm communication with CICS.
- Load test unit battery operation to confirm 120 minute run time
- Remove old UPS unit and batteries from site.

Final Acceptance:

The following will be performed to verify proper function of each UPS unit.

- Inspect each UPS unit to verify all technical specifications have been met.
- Inspect each unit to confirm build quality.
- Inspect each unit for proper mounting to existing maintenance pad.
- Inspect each units wiring for proper termination upon final connection.
- Test each unit under full load conditions to verify it meets the 120 minute run time requirement.
- Test each unit to ensure proper transmission of operating status and alarm conditions to control center.
- Verify proper disposal of all old UPS units and all batteries.

Warranty:

Each unit will carry the following on-site warranty: 90 days labor and 1 year parts from date of purchase.

Appendix G

Task 2: AirTrain UPS Replacement

Cost of Project

Item	Qty	Description	Unit	Price
1	3	Eaton 9355 Powerware Series 20kVA/18kW 3-Phase UPS System with Internal Batteries, 18 Minute Runtime At Full Load, Input/Output 208V/208V, Unit Is Scalable To 30kVA with Connect UPS-X Web/SNMP Card Part #KB2013100000010. For locations, Lot C, Bldg. 679 Control Center and Rental Car Center	\$15,300	\$45,900
2	6	9355 20kVA 4 String Line & Match Extended Battery Cabinet and Batteries. Two EBC72's Per UPS In Addition To Internal Batteries Will Achieve 114 Minutes Of Run Time At Full Load Part#103004868. For locations, Lot C, Bldg. 679 Control Center and Rental Car Center	\$8,999	\$53,994
3	10	Eaton 9355 Powerware Series 10kVA/9kW 3-Phase UPS System With Internal Batteries, 8 Minute Runtime At Full Load, Input/Output 208V/208V, Unit Is Scalable To 15kVA With Connect UPS-X Web/SNMP Card Part# KA1011100000010. For Locations Bldg. 679 PDS, Bldg. 679 PDS, Westfield Road, Int., Garage – A, Int. Terminal A, Terminal 1 Garage, Terminal 2 Garage, Terminal – 3 Garage, Int. Terminal – G, Int. Garage - G	\$10,271	\$102,710
4	20	9355 10kVA 2-High Line & Match Extended Battery Module And Batteries. Two EBM96's Per UPS In Addition To Internal Batteries Will Achieve 124 Minutes Of Run Time At Full Load Part #103004193-5501. For Locations Bldg. 679 PDS, Bldg. 679 PDS, Westfield Road, Int. Garage – A, Int. Terminal A, Terminal 1 Garage, Terminal 2 Garage, Terminal – 3 Garage, Int. Terminal – G, Int. Garage - G	\$5,849	\$116,980
5	13	Maintenance Bypass Panels For PW9355 10kVA And 20kVA	\$1,648	\$21,424
6	13	Remove Old UPS Systems, Batteries and Battery Rack	\$1,879	\$24,427
7	1	Three Phase 480 to 208 30kVA Transformer For 20kVA UPS At Lot C	\$1,947	\$1,947
8	13	Labor - UPS Electrical Installation. This includes work that can be completed during regular business hours as well as work performed after hours. Also includes all electrical materials. Current electrical box attached to lower back of existing UPS units will be used and properly installed to the existing pad as an Input/Output box.	\$3,900	\$50,700

Appendix G

Task 2: AirTrain UPS Replacement

Item	Qty	Description	Unit	Price
9	13	Factory Startup & 1-Year Warranty (During Regular Business Hours)	-	Included
10	1	Freight (Cost Based On Complete Shipment – No Split Shipments)	-	\$9,992
11	1	Labor - Removal from Site and proper Disposal of UPS units and all batteries	-	\$12,000
12	1	CA Sales Tax on material at 8.75%	-	\$32,146
13	1	Project Management – Bombardier (15%)	-	\$66,011
14	1	CA Sales tax - 8.75% on Mark-up	-	\$5,776
		Total Task 2 Cost		\$544,007

Appendix G

Task 3: AirTrain Vehicle Flooring Replacement

General Project Scope

Contractor will replace worn flooring in all 38 AirTrain vehicles. Contractor shall use the following product for all vehicles:

- **Dura-Tile LT-50**, Manufactured by the Pawling Corporation
- **Height:** 3/8" (+1/8"-0")
- **Size:** 12" x 12" tiles
- **Installation:** Glue-down using waterproof marine based glue
- **Material:** 100% Recycled Rubber
- **Color:** Blue
- **Construction:** Rugged tire cord bonded to fiberglass backing
- **Static Coefficient of Friction Ratio:** Dry 0.67, Wet 0.89 (ASTM D-2047)
- **Flammability:** Exceeds (FF-1-70) flammability rating

Installation

Contractor will perform the following on each vehicle:

- Demolition and disposal of existing flooring and upholstery material (recycle where possible).
- Clean and prepare floor for new material.
- Installation of 270 Sqft of 12" X 12" LT-50 carpet tiles per vehicle.
- Replace existing carpet on both end compartments with customer supplied carpet.
- Quotation based on the availability of two (2) vehicles at a time.

Final Acceptance

- Each vehicle will be inspected by AirTrain manager to ensure installation quality prior to vehicle being released from the shop.

Warranty

Each vehicle will carry the following on-site warranty: 90 days labor and 1 year on material from date of purchase.

Task Cost

AirTrain Flooring Installation x 38 Vehicles (Includes Freight)	\$166,585
CA Sales Tax- 8.75% on Material	\$14,576
Labor to Remove and Install Flooring	\$111,430
Labor to Install Side Wainscoting	\$17,100
Bombardier Project Management Fee (10%)	\$29,511
CA Sales tax - 8.75% on Mark-up	\$2,582
Total Task 3 Cost	\$341,784

Appendix G

Task 4: Replacement of Worn or Obsolete Equipment

Scope

As indicated in Appendix B General Requirements, 7.0 Repair and Replacement of Parts, Components or Materials, Contractor when necessary will replace parts, components, or materials associated with the operation and maintenance of the AirTrain that have either become worn beyond repair or obsolete and can no longer be serviced.

Total Task 4 Cost

Contractor shall promptly repair or replace the equipment at a not-to-exceed cost of \$300,000 over the three-year contract term.

City and County of San Francisco
Airport Commission
P.O. Box 8097
San Francisco, California 94128

Modification No. 3

THIS MODIFICATION (this "Modification") is made as of November 3, 2016, in San Francisco, California, by and between **Bombardier Transportation (Holdings) USA Inc.** ("Contractor"), and the City and County of San Francisco, a municipal corporation ("City"), acting by and through its Airport Commission or the Commission's designated agent, hereinafter referred to as "Commission."

RECITALS

WHEREAS, City and Contractor have entered into the Agreement (as defined below); and

WHEREAS, City and Contractor desire to amend the Agreement on the terms and conditions set forth herein to address the replacement of obsolete equipment; and

WHEREAS, the Commission awarded this contract to Contractor on September 16, 2008, pursuant to an agreement to settle a dispute among the City and County of San Francisco, Bombardier Transportation (Holdings) USA, Inc., and Factory Mutual Insurance Company which was filed in the United States District Court for the Northern District of California, case number C 04-5307 PJH, and further pursuant to Resolution No. 08-0173; and

WHEREAS, on November 18, 2008, by Resolution No. 266-08, the Board of Supervisors approved the Agreement under San Francisco Charter Section 9.118; and

WHEREAS, Commission approved Modification No. 1 pursuant to Resolution No. 13-0156 on July 23, 2013; and

WHEREAS, on December 10, 2013, by Resolution No. 429-13, the Board of Supervisors approved the modification to the Agreement under San Francisco Charter Section 9.118; and

WHEREAS, Comission approved this Modification No. 2 pursuant to Resolution No. 14-0104 on May 19, 2014; and

WHEREAS, on September 9, 2014, by Resolution No. 328-14; the Board of Supervisors approved the modification to the Agreement under San Francisco Charter Section 9.118 but reduced the not to exceed amount by \$4,340 for a new not-to-exceed amount of \$100,543,834; and; and

WHEREAS, Commission approved this Modification No. 3 pursuant to Resolution No. 16-0277 on November 1, 2016; and

WHEREAS, on February 14, 2017, by Resolution No. 44-17, the Board of Supervisors approved the modification to the Agreement under San Francisco Charter Section 9.118 for a new not-to-exceed amount of \$ 15,444,968; and

NOW, THEREFORE, Contractor and the City agree as follows:

1. **Definitions.** The following definitions shall apply to this Amendment:

a. Agreement. The term "Agreement" shall mean the Agreement dated September 16, 2008 between Contractor and City, as amended by the:

Modification No. 1, dated August 1, 2013; and
Modification No. 2, dated May 20, 2014.

b. Contract Monitoring Division. Effective July 28, 2012, with the exception of Sections 14B.9(D) and 14B.17(F), all of the duties and functions of the Human Rights Commission under Chapter 14B of the Administrative Code (LBE Ordinance) were transferred to the City Administrator, Contract Monitoring Division (“CMD”). Wherever “Human Rights Commission” or “HRC” appears in the Agreement in reference to Chapter 14B of the Administrative Code or its implementing Rules and Regulations, it shall be construed to mean “Contract Monitoring Division” or “CMD” respectively.

c. Other Terms. Terms used and not defined in this Modification shall have the meanings assigned to such terms in the Agreement.

2. **Section 2. Term of the Agreement** is hereby amended to extend the term of the contract for one year for a new ending date of February 28, 2018.

3. Section 4. Services Contractor Agrees to Perform of the Agreement is amended to address the replacement of obsolete equipment as detailed in Appendix G, Tasks 5 and 6.

4. **Section 5. Compensation** is hereby amended to increase the total compensation payable by an amount not to exceed Fourteen Million Nine Hundred One Thousand One Hundred Thirty Four Dollars (\$14,901,134) for a new total not to exceed amount of One Hundred Fifteen Million Four Hundred Forty Four Thousand Nine Hundred Sixty Eight Dollars (\$115,444,968).

5. **New Section 32. Earned Income Credit (EIC) Forms** is hereby replaced in its entirety with a **New Section 32. Consideration of Criminal History in Hiring and Employment Decisions** to read as follows:

32. Consideration of Criminal History in Hiring and Employment Decisions.

a. Contractor agrees to comply fully with and be bound by all of the provisions of Chapter 12T “City Contractor/Subcontractor Consideration of Criminal History in Hiring and Employment Decisions,” of the San Francisco Administrative Code (Chapter 12T), including the remedies provided, and implementing regulations, as may be amended from time to time. The provisions of Chapter 12T are incorporated by reference and made a part of this Agreement as though fully set forth herein. The text of the Chapter 12T is available on the web at www.sfgov.org/olse/fco. A partial listing of some of Contractor’s obligations under Chapter 12T is set forth in this Section. Contractor is required to comply with all of the applicable provisions of 12T, 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 Chapter 12T.

b. The requirements of Chapter 12T shall only apply to the Contractor's or Subcontractor's operations to the extent those operations are in furtherance of the performance of this Agreement, and shall apply only to applicants and employees who would be or are performing work in

furtherance of this Agreement, whose employment is or would be in whole or in substantial part physically located in the City and County of San Francisco, which excludes Airport property.

1) Applicants or employees who would be or are performing work in furtherance of this Agreement may be required to be screened by the U.S. Department of Homeland Security for security badging. A rejection by the U.S. Department of Homeland Security of an applicant's or employee's security badging application, and the resulting inability of the Contractor to hire the applicant or assign the employee to perform services under this Agreement, shall not be considered an Adverse Action under Chapter 12T.

c. Contractor shall incorporate by reference in all subcontracts the provisions of Chapter 12T, and shall require all subcontractors to comply with such provisions. Contractor's failure to comply with the obligations in this subsection shall constitute a material breach of this Agreement.

d. Contractor or Subcontractor shall not inquire about, require disclosure of, or if such information is received, base an Adverse Action on an applicant's or potential applicant for employment or employee's: (1) Arrest not leading to a Conviction, unless the Arrest is undergoing an active pending criminal investigation or trial that has not yet been resolved; (2) participation in or completion of a diversion or a deferral of judgment program; (3) a Conviction that has been judicially dismissed, expunged, voided, invalidated, or otherwise rendered inoperative; (4) a Conviction or any other adjudication in the juvenile justice system; (5) a Conviction that is more than seven years old, from the date of sentencing; or (6) information pertaining to an offense other than a felony or misdemeanor, such as an infraction.

e. Contractor or Subcontractor shall not inquire about or require applicants, potential applicants for employment, or employees to disclose on any employment application the facts or details of any conviction history, unresolved arrest, or any matter identified in subsection 32.4, above. Contractor or Subcontractor shall not require such disclosure or make such inquiry until either after the first live interview with the person, or after a conditional offer of employment.

f. Contractor or Subcontractor shall state in all solicitations or advertisements for employees that are reasonably likely to reach persons who are reasonably likely to seek employment to be performed under this Agreement, that the Contractor or Subcontractor will consider for employment qualified applicants with criminal histories in a manner consistent with the requirements of Chapter 12T.

g. Contractor and Subcontractors shall post the notice prepared by the Office of Labor Standards Enforcement (OLSE), available on OLSE's website, in a conspicuous place at every workplace, job site, or other location under the Contractor or Subcontractor's control at which work is being done or will be done in furtherance of the performance of this Agreement. The notice shall be posted in English, Spanish, Chinese, and any language spoken by at least 5% of the employees at the workplace, job site, or other location at which it is posted.

h. Contractor understands and agrees that if it fails to comply with the requirements of Chapter 12T, the City shall have the right to pursue any rights or remedies available under Chapter 12T, including but not limited to, a penalty of \$50 for a second violation and \$100 for a subsequent violation for each employee, applicant or other person as to whom a violation occurred or continued, termination or suspension in whole or in part of this Agreement.

6. New Section 58. Graffiti Removal is hereby replaced in its entirety with a **New Section 58. Sugar-Sweetened Beverage Prohibition** to read as follows:

58. Sugar-Sweetened Beverage Prohibition. Contractor agrees that it will not sell, provide, or otherwise distribute Sugar-Sweetened Beverages, as defined by San Francisco Administrative Code Chapter 101, as part of its performance of this Agreement.

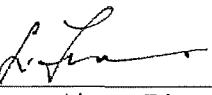
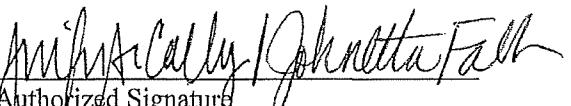
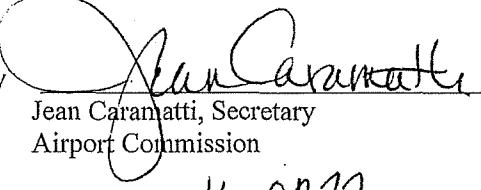
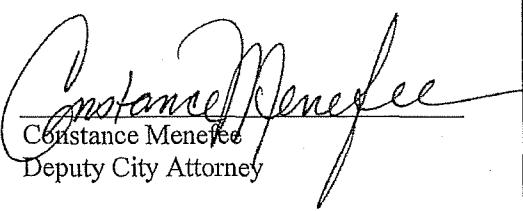
7. Appendix E. Spare Parts, Tools, and Equipment List is hereby replaced in its entirety with the new Appendix E-2. Additional spare parts needed for the work contemplated under this modification will be added to the Spare Parts, Tools, and Equipment List at the next modification.

8. Appendix G. Appendix G is hereby amended to add Tasks 5 and 6 to address replacement of obsolete equipment covered under the contract. Performance of the Tasks in Appendix G is subject to mutually agreeable terms and conditions, which shall be established prior to the start of each task. Appendix G is also amended to correct an administrative error in the heading of Modification No. 2 Appendix G pages 1 of 8 and 2 of 8. The correct heading should have been "Task 1: AirTrain LED to LCD Sign Upgrade" not "Task 2: AirTrain UPS Replacement."

9. Effective Date. Each of the changes set forth in this Modification shall be effective on and after the date of this Modification.

10. Legal Effect. Except as expressly modified by this Modification, all of the terms and conditions of the Agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, Contractor and City have executed this Amendment as of the date first referenced above.

CITY	CONTRACTOR
AIRPORT COMMISSION CITY AND COUNTY OF SAN FRANCISCO	
By:  Ivar C. Satero, Airport Director	 Authorized Signature
Attest:	JENNIFER CALEY/Johnetta Falk Printed Name
By  Jean Caramatti, Secretary Airport Commission	Vice President / Secretary Title
Resolution No: <u>16-0277</u>	Bombardier Transportation (Holdings) USA Inc. Company Name
Adopted on: <u>Nov. 1, 2016</u>	40554 City Vendor Number
Approved as to Form:	1501 Lebanon Church Road Address
Dennis J. Herrera City Attorney	Pittsburgh, PA 15236 City, State, ZIP
By  Constance Meneely Deputy City Attorney	(412) 655-5700 Telephone Number
	25-1579550 Federal Employer ID Number

Appendix E-2: Spare Parts

Part No.	Description	Qty
0899363G01	CONTACT ASSEMBLY	8
1018J06G03	REVERSER TYPE XR-148 ELECTRO-PNEUMATIC	2
1074F75G07	BRAKE AIR COMPRESSOR 60HZ	2
1074F75H44	MOTOR	2
1252A46H04	RESISTOR 392 OHMS .250W 1% NA60	1
1252A46H15	RESISTOR 511 OHMS .250W 1% NA60	2
1252A55H29	RESISTOR 301K OHMS .250W 1% NA60	2
1252A80H21	RESISTOR 1.62K OHMS .750W 1% NA70	4
1253A04H01	RESISTOR 1 OHM 50W 1%	4
1253A44H05	TRANSISTOR 2N3715	4
1253A44H15	TRANSISTOR 2N6306	2
1502F63G05	GUIDE WHEEL ASSEMBLY	8
1502F97G10	WHEEL ASSEMBLY	2
18D9633H01	STD.CONTACT .62 LG COPPER EXTRUSION	8
1913F14G02	MODIFIED MOUNTING BRACKET	6
1913F14G03	MODIFIED MOUNTING BRACKET	12
1913F14G05	MODIFIED MOUNTING BRACKET	12
1913F14H01	MTG BRACKET 1) SIGNAL RAIL	4
1913F14H05	Shim	12
1913F14H06	MTG BRACKET 1) LOCK PIN	4
1999E63G02	DRAFTGEAR	1
1999E63H01	ELECTRICAL COUPLER HEAD ASSEMBLY	1
1999E63H02	MECHANICAL COUPLER HEAD ASSEMBLY	1
1999E63H03	CLAMP ASSEMBLY	2
1A96918G01	STD. UMC CONTRACTOR SHUNT AT ASSEMBLY	6
1A96920G01	STD. UMC CONTACTOR INTERLOCK FINGER	10
1A97462792	FUSE 5A 125V FAST-BLOWN PIG-TAIL	6
1A97462792	FUSE 5A 125V FAST BL	6
1A97462793	THERMAL PAD SCR 2.44X 4.25	1
1A97462794	THERMAL PAD SCR .81X	2
1A97462794	THERMAL PAD SCR .81X 3.64	1
1A97462799	FUSE 500 VOLT 100 AMP	2
1A97462801	FUSE 600VAC 3A DUAL ELEM UL	4
1A97462801	FUSE 600VAC 3A DUAL ELEM UL	2
1A97462802	CAP MET FOIL 70UF 280VAC	1
1A97462804	SCR MODULE 90A 800V	2
1A97462804	SCR MODULE 90A 800V	1
1A97599H04	STATIC RAM CARD 24MB	1
1A97601H01	SECOND SERIAL PORT CABLE & KIT	1
1B37424H09	DIODE ASSEMBLY 25A 200 PRV DA-180	2
1B38681G03	DIODE ASSEMBLY	4
1B38681G04	DIODE ASSEMBLY	4
1B38995G01	SHOE ASSEMBLY	3000
1B38996G01	SHOE HOLDER POWER SUB ASSEMBLY	16
1B38997G01	SHOE HOLDER ATO SUB-ASSEMBLY	64
1B39166G01	2 SLOT VME J2 BACKPLANE ASSEMBLY	1
1B39166G01	2 SLOT VME J2 BACKPLANE ASSEMBLY	1

Appendix E-2: Spare Parts

Part No	Description	Qty
1B39673H01	SENTRONIC VALVE	4
1B39824G02	RESISTOR ASSEMBLY	3
1B39825G02	CAPACITOR ASSEMBLY	2
1B39836G01	ATO SHOE HOLDER SUPPORT ASSEMBLY	16
1B39837G01	POWER SHOE HOLDER SUPPORT ASSEMBLY	12
1B40194G03	RESISTOR ASSEMBLY	2
1B40194G04	RESISTOR ASSEMBLY	2
1B40194G05	RESISTOR ASSEMBLY	3
1B40194G06	DIODE ASSEMBLY	2
1B40194G07	VOLTAGE REGULATOR ASSEMBLY	2
1B40194G10	RESISTOR ASSEMBLY	2
1B40194G11	RESISTOR ASSEMBLY	2
1B40194G13	DIODE ASSEMBLY	2
1B40488G01	COLLECTOR CABLE ASSEMBLY	8
1B40488G02	COLLECTOR CABLE ASSEMBLY	8
1B40488G03	COLLECTOR CABLE ASSEMBLY	8
1B40488G04	COLLECTOR CABLE ASSEMBLY	8
1B40811G06	COLLECTOR CABLE	32
1B40820G01	SFAA VEHICLE DYNAMIC GRAPHICS ASSEMBLY	0
1B40820G02	SFAA VEHICLE DYNAMIC GRAPHICS ASSEMBLY	0
1B40820G03	SFAA VEHICLE DYNAMIC GRAPHICS ASSEMBLY	0
1B40820G04	SFAA VEHICLE DYNAMIC GRAPHICS ASSEMBLY	0
1B41300H01	Trip shaft kit	2
1B41300H02	Upper stud assembly	3
1B41300H03	Lower stud assembly	3
1B41300H04	Elect. Operated Mechanism	3
1B41300H05	Shunt Trip Assembly	3
1B41300H06	Shunt Release Assembly	3
1B41300H07	Anti-Pump Relay	3
1B41300H08	Spring Charge Motor Kit	3
1B41300H09	Bussman Type FNQ-R Fuse, 2A, 600V	6
1B41300H10	Rating Plug, Digitrip T 10 Series, 800AS/600RP	4
1B41300H11	Rating Plug, Digitrip T 10 Series, 800AS/800RP	1
1B41300H12	Rating Plug, Digitrip T 10 Series, 1600AS/1200RP	1
1B41300H13	Rating Plug, Digitrip T 10 Series, 1600AS/1600RP	1
1B41300H14	Fuse, class J, fast Acting, 3A, 600V	6
1B41300H15	Bussman Type FRS Fuse, 20A, 600V	6
1B41300H16	Digitrip, 510 LSI	1
1B41300H17	Digitrip, 510 LS	1
1B41300H18	Bussman Type FNQ Fuse, 10A, 500V	2
1B41300H19	Bussman Type FNQ Fuse, 6A, 500V	6
1B41300H20	Fuse, 1A Class J	10
1B41301H01	Temperature Monitor	1
1B41301H02	Thermostat	2
1B41301H03	Heater	6
1B41302H01	Cutler Hammer Control Relay, 120VAC Coil, 2NO-2NC	6
1B41302H02	Time Mark Voltage Sensing Relay	6

Appendix E-2: Spare Parts

Part No	Description	Qty
1B41302H03	Cutler Hammer Molded Case Circuit breaker, 3 Pole, 600V, 600A	2
1B41302H04	Cutler Hammer Motor Operator, 120 VAC	2
1B41302H05	Cutler Hammer Molded Case Circuit breaker, 1 Pole, 15A	2
1B41302H06	Gould Time Delay Fuse, 600V, 1A	15
1B41303H01	C-H 240 VAC Relay	1
1B41303H02	C-H 240 VAC Reversing Contactor	1
1B41303H03	ITI Voltage Transformer 600V/120V	2
1B41303H04	Bussman Type FNQ-R Fuse, 2A, 600V	6
1B41303H05	ITI VT, 50 VA, 600/120	3
1B41303H06	Ohmite Resistor, 1000 Ohm, 175W	2
1B41303H07	Honeywell Thermostat, 40-80 Degree F	1
1B41303H08	Space Heater, 250-375W / 125V-95W	1
1B41303H09	CSM Customer Supplied Material (Vital Relays)	1
1B41303H10	15A/1P Circuit Breaker	3
1B41303H11	10A/2P Circuit Breaker	1
1B41303H12	25A/1P Circuit Breaker	1
1B41303H13	15A/2P Circuit Breaker	1
1B41303H14	Timemark 3 PH Monitor, 50 VAC PH-N	1
1B41303H15	C-H E22 2 POS Switch, Rotate 90 Degree	2
1B41303H16	Breaker Control SW	2
1B41303H17	C-H D15 Relay, 120 VAC	4
1B41303H18	Agastat On-Delay Timer 120V	1
1B41303H19	GE Voltage Relay	1
1B41303H20	Timemark 3 Phase Power Monitor	2
1B41303H21	Timemark Current Unbalance Relay	2
1B41303H22	Basler Reverse Power Relay	2
1B41303H23	Ind Lt, 22MM Resistor Type, 120 VAC/DC	3
1B41303H24	Bussman Type FNQ Fuse, 6A, 500V	6
1B41303H25	Class J Fuse, 3A, 600V	6
1B41303H26	Lightning Secondary Arresters, 3P, 650 V	4
1B41303H27	Bussmann Type LPJ Fuse, 1A, 600V	12
1B41303H28	Square D Circuit Monitor	1
1B41303H29	DSII Breaker Cell SW 3-NO, 3-NC	3
1B41303H30	Bussmann Type FRS-R Fuse, 20AA, 600V	4
1B41303H31	CPT, 56KV, 600/120-240V with Fuse Puller	1
1B41303H32	Bussman Type FNQ Fuse, 10A, 500V	4
1B41303H33	C-H breaker 150A/3P 100KAIC	1
1B41303H34	C-H breaker 100A/3P 100KAIC	1
1B41303H35	C-H breaker 30A/3P 100KAIC	1
1B41303H36	C-H breaker 200A/3P 100KAIC	1
1B41303H37	Crompton Voltage Relay, 120 VAC	3
1B41303H38	3PH Current Transformer, 1000/5A	2
1B41303H39	Contact Block for D15 Relay, 4-NO	2
1B41303H40	C-H D15 Relay, 4 N-O, 120 VAC	3
1B41303H41	GFR Relay, 1-12 A, Electric Reset	1
1B41303H42	GFR Sensor 1-12 A, 5.5 Dia	1
1B41303H43	AgastatTimer (64GFS)	1

Appendix E-2: Spare Parts

Part No	Description	Qty
1B41303H44	Contact Block for D15 Relay	1
1B41303H45	D15 Relay On/Off Delay Timer Module, 0.1-30 S	1
1B41303H46	DSII-516	1
1B41303H47	DSII-508	1
1B41304H01	Agastat Time Delay Relay	3
1B41304H02	Breaker GHC 1 Pole 15 A	4
1B41304H03	Breaker GHC 1 Pole 30 A	2
1B41304H04	Cap Trip Device 120 VAC	4
1B41304H05	Diode 400V PRV 40A	4
1B41304H06	Relay MG-6 125V DC, Open EL Rst	2
1B41304H07	Thermostat, Fixed 110 F/43.3	1
1B41304H08	S-D Relay 2120V/60Hz, DPDT, 12 Pin	3
1B41304H09	CT 600:5 C100	3
1B41304H10	Fuse 15.5 KV 0.5 E	6
1B41304H11	Pull Fuse 3 Pole 30 A	1
1B41304H12	Fuse 6 A Control	8
1B41304H13	MOC, 9-P, 5A-4B Conn Only	3
1B41304H14	Arrester, 9KV Station Class	6
1B41304H15	Voltage Xfrm, VIZ-11, 7200-120V	3
1B41304H16	36W Breaker Ramp Assy	1
1B41304H17	Rail Clamp, VCP-W	2
1B41304H18	Test Jumper, Ten Conductor VCP	1
1B41304H19	E22 Bulb Removal Tool	5
1B41304H20	Breaker 150 VCP-W 500 1200 A	3
1B41304H21	Snubber - 5 or 15 KV 1200A Main	2
1B41305H01	125 VDC/120VAC Spring Charging Motor	1
1B41305H02	125 VDC/120VAC Spring Release Coil	1
1B41305H03	120VAC Anti-Pump Y Relay	1
1B41305H04	Motor Cut-off Switch	1
1B41305H05	Position Switch	1
1B41305H06	Auxiliary Switch	1
1B41305H07	Fastener Kit	1
1B41305H08	Rectifier Assy	1
1B41305H09	1200A Push Rod Assy	1
1B41305H10	1200A Primary Contact Assy	6
1B41306H01	BKR CONT SW 24 1C, 1T Non-Pull	2
1B41306H02	E22 Contact Block 1NC	2
1B41306H03	IND LT E22 Green 48V	3
1B41306H04	IND LT E22 Red 48V	3
1B41306H05	REL LOR-24, 125VDC, 4A/4B, 2-ST	2
1B41306H06	Resistor 4020Ohm 5W	3
1B41306H07	Switch W2, 2Pos, 8 Poles	2
1B41306H08	Switch W2, 2Pos, 8 Poles	1
1B41306H09	BE1-27/59, 1PH, 55-160VAC, 125 V	1
1B41320H02	FUSE 500 VOLT 50 AMP	2
1B41320H04	SCR 3 PHASE BRIDGE 1200V 110A	1
1B41320H05	THERMAL PAD SCR 3.70X 1.34	1

Appendix E-2: Spare Parts

Part No	Description	Qty
1B41320H06	FUSE SUBMIN .1A	6
1B41320H12	CAP 3700UF 450VDC	1
1B41320H12	CAP 3700UF 450VDC	1
1B41320H13	IGBT DUAL 600V 150A	2
1B41320H15	FUSE 2-12A 125V PICO AX.LEAD	6
1B41320H15	FUSE 2-12A 125V PICO AX.LEAD	4
1B41320H18	PWB ASSY TRANSIENT SUPPRESSOR	1
1B41320H18	PWB ASSY TRANSIENT SUPPRESSOR	1
1B41320H19	PWB ASSY RECTIFIER DRIVE	1
1B41320H20	PWB ASSY POWER SUPPLY	1
1B41320H20	PWB ASSY POWER SUPPLY	1
1B41320H21	PWB ASSY UPS INTFC	1
1B41320H21	PWB ASSY UPS INTFC	1
1B41320H22	PWB ASSY SBS DRIVE	1
1B41320H22	PWB ASSY SBS DRIVE	1
1B41320H23	PWB ASSY POWER BOARD	1
1B41320H24	PWB ASSY PWR BOOSTER	1
1B41320H25	PWB ASSY DISPLAY BOARD	1
1B41320H25	PWB ASSY DISPLAY BOARD	1
1B41320H26	FUSE 500 VOLT 150AMP	2
1B41320H31	IGBT DUAL 600V 400A	1
1B41320H32	PWB ASSY INV. DRIVE	1
1B41320H33	PWB ASSY	1
1B41320H34	FUSE 70A 600V	3
1B41320H35	PWB ASSY RECTIFIER DRIVE	1
1C40468H04	CAM .63) 7.00 DIA	1
1C40483G15	RESISTOR TUBE RIBFLEX 7.5 OHMS	4
1C40540G01	AIR COMPRESSOR - GENL ASSEMBLY	0
1C40570G04	SWITCH & REPLACEMENT PARTS	1
1C40570H02	REPLACEMENT BLOCK	2
1C40570H04	REPLACEMENT HEAD	2
1C40811H77	RELAY	8
1C40811H02	MOTOR & GEAR HOUSING ASS'Y	2
1C40811H07	SWITCHLEVER	16
1C40811H19	SWITCH SNAP ACTION	8
1C40811H20	BUMPER	24
1C40811H23	RES ADJ 100W 10% 5 OHMS	10
1C40811H27	RING RET EXT	30
1C40811H28	RES ADJ 100W 10% 10 OHMS	10
1C40811H29	RES ADJ 100W 10% 20 OHMS	10
1C40811H50	PIN ROLL .125X1.25	50
1C40811H63	VARISTOR ASS'Y	8
1C40811H64	RECTIFIER ASS'Y	8
1C40811H98	MOTOR & GEAR HOUSING ASS'Y	2
1C41229H01	CONTACT SWITCH 1)	2
1C41229H02	CONTACT SWITCH 1)	2
1C41229H03	CONTACT BLOCK 1)	4

Appendix E-2: Spare Parts

Part No.	Description	Qty
1C41448H01	SWITCH - PRESSURE WAVE	8
1C41537H01	TRANSFORMER (CURRENT)	2
1C41706G01	LOGIC CRADLE FAN ASS'Y	0
1C41710H01	EL BREAKER 2 POLE	2
1C41773G07	ANTENNA INSTALLATION	2
1C41821H01	PRESSURE REGULATOR	3
1C41830H01	AD-9 AIR DRYER	2
1C41830H03	DESICCANT CARTIDGE	19
1C41830H05	PURGE VALVE MAINTENANCE KIT	38
1C41830H06	24 VOLT HEATER & THERMOSTAT ASS'Y	2
1C42642G01	DIODE ASSEMBLY	2
1C42642G02	DIODE ASSEMBLY	4
1C42875H02	MOUNTING RAIL 1)	1
1C43432H01	VIDEO DRIVER BOARD 1)	1
1C44327H01	TRANSFORMER ENCAPSULATED	2
1C44610G01	PC BOARD FLEXIBLOK VEHICLE DIG IN ASSY	2
1C44610G02	PC BOARD FLEXIBLOK VEHICLE DIG IN ASSY	2
1C44610G03	PC BOARD FLEXIBLOK VEHICLE DIG IN ASSY	2
1C44612G01	PC BOARD FLEXIBLOK REGION ATP CPU ASSY	2
1C44612G02	PC BOARD FLEXIBLOK REGION ATP CPU ASSY	2
1C44613G01	PC BOARD FLEXIBLOK REG SER COMM ASSY	2
1C44615G01	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44615G01	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	1
1C44615G02	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44615G03	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44615G08	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44615G08	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	1
1C44615G09	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44615G10	PC BOARD FLEXIBLOK REGION DIG INPUT ASSY	2
1C44633G01	FLEXIBLOK WAYSIDE COMM PROCESSOR ASSY	2
1C44676G01	MANUAL ENABLE SWITCH PLATE ASSEMBLY	1
1C44701G01	PC BOARD FLEXIBLOK VEHICLE ATP CPU ASSY	2
1C44701G02	PC BOARD FLEXIBLOK VEHICLE ATP CPU ASSY	2
1C44702G01	PC BOARD FLEXIBLK VEH SER COM PRCSR ASSY	2
1C44810G01	WIPER MOTOR ASSEMBLY	2
1C44955G01	LIGHT PANEL ASSEMBLY	2
1C45405H06	TEMPERATURE SENSOR	4
1C45770G01	FLEXIBLOK REGION SOURCE DIG OUT PC BOARD	2
1C45770G01	PC BOARD FLEXIBLOK REGION SOURCE DIG OUT	1
1C45770G02	FLEXIBLOK REGION SOURCE DIG OUT PC BOARD	2
1C45770G03	FLEXIBLOK REGION SOURCE DIG OUT PC BOARD	2
1C45770G04	FLEXIBLOK REGION SOURCE DIG OUT PC BOARD	2
1C45771G01	FLEXIBLOK REGION SINK DIG OUT PC BOARD	2
1C45771G01	PC BOARD FLEXIBLOK REGION SINK DIG OUT	1
1C45771G02	FLEXIBLOK REGION SINK DIG OUT PC BOARD	2
1C45771G03	FLEXIBLOK REGION SINK DIG OUT PC BOARD	2
1C45771G04	FLEXIBLOK REGION SINK DIG OUT PC BOARD	2

Appendix E-2: Spare Parts

Part No	Description	Qty
1C45928G01	ROUTER MODULE ASSEMBLY	1
1C45928G02	ROUTER MODULE ASSEMBLY	1
1C46071G01	ALARM SWITCH ASSEMBLY	3
1C46122G01	NORMING POINT READER ASSEMBLY	1
1C46718G01	TRAIN REGISTRY 68040 CPU	1
1C46718G02	TRAIN REGISTRY 68040 CPU	1
1C46719G01	TRAIN REGISTRY SER COMM PRCSR	1
1C46720G01	TRAIN REGISTRY WAYSIDE COMM PRCSR	1
1C46831G01	FIBER OPTIC RACK ASSEMBLY	1
1D62645H01	MTG BRACKET FIBERGLASS MOLD	80
1D62645H02	MTG BRACKET FIBERGLASS MOLD - HIGH STR	16
1D62751H04	Knuckle	1
1D63190G09	VARISTOR SUPPRESSION DEVICE	2
2007E21G01	TRAIN REGISTRY CABINET	1
2007E43G01	REGION ATP VME CRADLE ASSY	1
203P516G01	PC BOARD BATTERY CHARGER & PULSE	2
203P521G02	P C BOARD BATTERY CHARGER AND PHASE	2
2125F98G02	RESISTOR ASSEMBLY	8
2127F15G03	GENL ASSEMBLY DUAL OUTPUT P-SIGNAL GEN	2
2127F15G04	GENL ASSEMBLY DUAL OUTPUT P-SIGNAL GEN	0
21D7111G01	CONTACT ASSEMBLY	8
2256F54G03	HIGH SPEED RAMP ASS'Y LEFT HANF (LEXAN)	2
2256F54G04	HIGH SPEED RAMP ASS'Y RIGHT HAND (LEXAN)	2
2257F71G03	Center Assembly, pivot beam	1
225P735G01	P C BOARD PROP. MONITOR PANEL LED ASSY	2
2263D94G01	BRUSH HOLDER ASSEMBLY	8
2263D99G01	CAPACITOR MOUNTING ANGLE AND ASSEMBLY	2
2263D99G02	CAPACITOR ASSEMBLY	4
2267D80G01	LEAF SPRING ASSEMBLY	2
226P152G02	P C BOARD DYNAMIC BRAKE GATE ASSEMBLY	2
226P174G02	PC BOARD 1 PHASE 60 HZ BATTERY CHGR ASSY	2
226P256G01	P C BOARD P SIG & BRK SIG GEN PWR ASSY	2
226P336G01	P C BOARD BATTERY CHARGER MONITOR ASSY	2
226P344G01	P C BOARD MANUAL CONTROLLER 15V	2
226P400G01	PC BOARD DOOR RECEIVER/DRIVER ASSEMBLY	3
2271D28G01	PINION SHROUD ASSEMBLY	1
2271D28H02	SHROUD 16.87 X 5.30) .062 THK STL	1
227D847H01	TRANSFORMER	2
22A8997G04	STATIONARY PART	0
24D3488H01	STD ARC HORN 1.375) .063 X 1.75 CU	6
2525F21G02	VEHICLE AIR PIPING	0
2528F96G03	GEN ASS'Y TRANS MOTOR D.C. 1460-P3	3
2531B84G02	LIGHTNING ARRESTOR ASSEMBLY	2
2531F06G01	POWER & SIGNAL RAIL MOUNTING THRU SWITCH	0
2532B34G01	RIGHT HAND BALL SOCKET ASSEMBLY	2
2532B34G02	LEFT HAND BALL SOCKET ASSEMBLY	2
2534B39H01	ADJUSTABLE PRESSURE SWITCH #604G1	2

Appendix E-2: Spare Parts

Part No	Description	Qty
2534B39H02	ADJUSTABLE PRESSURE SWITCH #604G11	6
2534B78H02	MANUAL VALVE FULL PORT	2
2534B78H03	MANUAL VALVE FULL PORT	2
2535F20G01	BATTERY BOX ASSEMBLY	0
2536B52H03	HUBODOMETER SIZE 10 X 22.5 MICHELIN	2
2537B93G01	RESISTOR ASSEMBLY	2
2538B14H01	WINDOW GLAZING RBR EXTRN 160.00+/-2.00)	32
2538B23G01	RESISTOR ASSEMBLY	3
2538B23G02	RESISTOR ASSEMBLY	2
2539B87H01	DUST SHIELD FR .06 THK HALF HARD AL SHT	2
2559A61H06	GROMMET .50 ID .06 PNL	20
2559B24G01	TEMPERATURE SENSOR	2
2560B11G01	DRIVE SHAFT ASSEMBLY	2
2560B16H02	EXTINGUISHER (FIRE)	4
267P636G01	PC BOARD DUAL P. SIGNAL GENERATOR ASSY	2
267P680G01	PC BOARD TRANSMITTER ASSEMBLY	3
267P858G02	PC BOARDPOWER SUPPLY ASSEMBLY	2
267P926G01	PC BOARD OVERVOLTAGE CIRCUIT ASSEMBLY	2
2682F59G01	TOP DOOR TRACK R/H	0
2682F59G02	TOP DOOR TRACK L/H	0
2682F59H03	CAP RETAINER .125 THK STL	50
2687F29G01	CURRENT COLLECTOR ASSY (R/HAND)	8
2687F29G02	CURRENT COLLECTOR ASSY (L/HAND)	8
2688F16G03	I.D: RECEIVE ANTENNA ASSEMBLY	2
2688F16G04	I.D. TRANSMIT ANTENNA ASSEMBLY	2
2688F17G01	TYPE XMA-559 MANUAL CONTROLLER	3
268P052G01	PC BOARD BRUSH DETECTOR	2
268P060G01	PC BOARD ATC CRADLE MOTHERBOARD ASSEMBLY	1
2698A54H05	MAGNETIC HALL EFFECT SENSOR	5
2973A52G03	DIODE ASSEMBLY	3
2973A52G04	DIODE ASSY	2
3437C83G02	RADIUS ROD ASSEMBLY	2
3437C85H03	TIRE 10R-22.5 TRANSTEEL RADIAL	304
3437C97G01	SWITCH BOARD ASSEMBLY	0
3911C41H03	PRESSURE RELIEF	4
3925A65H01	RELIEF VALVE	4
3925A66H04	AIR CHECK VALVE	4
3925A67H03	VALVE QUICK RELEASE	12
3925A67H04	REBUILD KIT QUICK RELEASE VALVE	12
3925A67H05	SEALING RING QUICK RELEASE VALVE	12
3925A67H06	DIAPHRAGM QUICK RELEASE VALVE	12
3925A67H07	INSERT QUICK RELEASE VALVE	12
3925A86H02	RELAY VALVE	4
3925A87H01	VALVE PRESSURE HOLDING	2
3926A37H01	TRANSFORMER SIGNAL OR PULSE	3
3926A72H01	RESISTOR 10 OHMS 11W 5% TYPE 99	2
3926A89H01	TRANSFORMER SIGNAL OR PULSE	3

Appendix E-2: Spare Parts

Part No	Description	Qty
3927A03H21	CAPACITOR 1.0 UF 100 V +-5%	2
3927A06H41	RESISTOR 120 1/4W 5% RC07	4
3927A06H67	RESISTOR 1.5K 1/4W 5% RC07	2
3927A08H56	RESISTOR 510 OHMS 1W 5% TYPE RC 32	2
3927A22H01	TRANSFORMER	2
3930A47H04	TRANSFORMER POWER	4
3968C17H04	PUSHBUTTON (S.P.D.T.) CAT#OT1C1A	2
3968C50G02	ARMATURE ASSEMBLY	0
3972C53G01	GATE LEAD PANEL	4
3972C86H01	RIM (PAINTED)	8
3973C13H01	CHOKE	2
3973C14H01	TRANSFORMER 575/36/36	2
3973C86H12	KEYSWITCH	2
3973C86H13	PUSHBUTTON	2
3A62819H01	DISK DRIVE	1
3A63290H29	PIN COTTER .125 X 1.00 LG ZINC YEL CRMT	200
3A63290H31	PIN COTTER .125 X 1.50 LG ZINC YEL CRMT	100
3A63407G01	CAPACITOR W/MTG BRACKETS (660 VOLT)	4
3A63565H03	CAPACITOR 50UF 370VA	1
3A63565H03	CAPACITOR 50UF 370VA	1
3A63565H04	FUSE 1/2A 500VAC TIM	2
3A63565H04	FUSE 1/2A 500VAC TIME DELAY	2
3A63565H05	FUSE 2A 500VAC TIME DELAY	2
3A63565H05	FUSE 2A 500VAC TIME DELAY	2
3A63565H06	FAN MAJOR 115VAC 50/	1
3A63565H06	FAN MAJOR 115VAC 50/60HZ	1
3A63565H11	THERMAL PAD MOD 3.70X 1.89	2
3A63565H11	THERMAL PAD MOD 3.70X 1.89	2
3A63565H13	IGBT DUAL 600V 300A	1
3A63921H67	RESISTOR 1.5K OHM 2W +/-5% TOL	4
3A63921H67	RESISTOR 1.5K OHM 2W +/-5% TOL	1
3A64787G01	WIRELIST-TRAIN REGISTRY CABINET	1
3A64788G01	WIRELIST-TRAIN REGISTRY CABINET-A4 CRADLE	1
3D15179G01	LEVELING VALVE ASSEMBLY	4
3D15257G01	GATE CONTROL TRANSFORMER	2
3D15323H01	LEVELING VALVE	8
3D15403G01	Hard Ground Assy	6
3D15632G01	SPEED SENSOR ASSEMBLY	4
3D15632G02	SPEED SENSOR ASSEMBLY	2
3D15698G02	SWAY BAR ASSEMBLY	2
3D15968H01	Controller Model 7K	1
3D51640G03	PANEL ASSEMBLY	1
3D52075H02	MOTOR OPERATOR 120 VAC	2
3D99578G01	SWITCH HYDRAULIC UNIT	0
3D99727G01	HYDRAULIC POWER UNIT	1
3D99727H02	GEAR PUMP	2
3D99727H12	LEVEL GAGE (LHA)	1

Appendix E-2: Spare Parts

Part No	Description	Qty
3D99727H20	MOTOR 2HP 230/460 3PH. W/MTO	1
3D99914G01	LOW SPEED RAMP ASSEMBLY	1
404P102H74	TRANSFORMER	2
404P104H31	RESISTOR .20 OHM 10 WATT	2
404P111H54	CAPACITOR 52000 MFD-30 WVDC	3
404P112H92	POWER SUPPLY 85-264VAC QUAD OUT 350W	2
404P112H92	POWER SUPPLY 85-264VAC QUAD OUT 350W	1
404P112H93	POWER SUPPLY 24VDC IA 120VAC IN	2
404P115H06	L.E.D. (RED)	100
404P115H19	DIODE SPECIAL 100A 300V RECTIFIER	2
404P115H38	LED RED	10
404P117H95	RELAY 1300 OHM 16-24VDC 6FB STD.	2
404P117H96	RELAY GEN PURP 24DC 2A 6PDT 430 ohm	2
404P127H96	MODEM L/HAUL 1300 NM WFT-12 STAND ALONE	1
404P135H26	RESISTOR ADJUSTABLE 12 WATT WIRE WOUND	2
404P135H27	RESISTOR ADJUSTABLE 12 WATT WIRE WOUND	2
404P155H10	CAPACITOR	4
404P157H63	RESISTOR 50 WATT 33.2 OHM 1%	8
404P157H72	RESISTOR 1K OHMS 10.0W 1% RH10	2
404P157H90	RESISTOR 2W 1.5K OHM CARBON FILM	10
404P175H44	CLAMP KIT W/RETAINER 50 PIN	8
404P175H44	CLAMP KIT W/RETAINER 50 PIN	8
404P175H45	CLAMP KIT W/RETAINER 9 PIN	4
404P175H45	CLAMP KIT W/RETAINER 9 PIN	4
404P228H06	RESISTOR 2.2K OHMS 1W 5% RG1/2	14
404P290H13	1/2" Auto Aris, Vari-Focal CCTV Camera Lens	4
404P290H15	Video Switcher Controller Keyboard	1
404P290H18	20" Color Monitor	1
404P290H39	9832VI/O Quad Video I/O	1
404P290H40	9832VDA Quad Video Decoder	1
404P290H41	9832VEA Quad Video Encoder	1
404P290H42	9832RF Fiber Repeater	1
404P290H43	9832FT Fiber Transceiver	1
404P290H44	9832PS3 Power Supply	2
404P290H45	9832PS7 Power Supply	2
404P291H09	CONVERTER RS232 TO RS485	2
404P291H09	RS-422 / RS-485 Converter with Enclosure and 9VDC Supply	1
404P305H05	STRAIGHT SWIVEL	100
404P313H01	HOSE -04	200
404P313H02	HOSE .31 ID X .61 OD	1000
404P313H03	HOSE -08	500
404P313H05	HOSE -12	100
404P313H12	TEFLON HOSE	100
404P313H13	HOSE	200
404P313H14	TEFLON HOSE	100
404P313H15	TEFLON HOSE	100
404P332H03	SWITCH MOMENTARY ACTION	1

Appendix E-2: Spare Parts

Part No	Description	Qty
404P335H48	SWITCH	1
404P335H49	SWITCH	1
404P336H05	ROTARY SWITCH	2
404P341H04	TERMINAL BLOCK UKK 5-DIO	3
404P341H04	TERMINAL BLOCK UKK 5-DIO	2
404P348H09	BLOCK CONTACT-N.O.	2
404P348H10	STD CONTACT BLOCK	2
404P356H17	RELAY RP 1-1/2 PCB	2
404P356H17	RELAY RP 1-1/2 PCB	1
404P356H19	RELAY EJECTOR	1
404P356H19	RELAY EJECTOR	1
404P357H02	LIGHT INDICATOR	11
404P357H04	LAMP	20
404P357H55	LED 12VDC RED	2
404P357H56	LED 12VDC GREEN	2
404P357H57	LED 12VDC AMBER	2
404P360H21	LED GREEN 24/28V	4
404P360H22	LED YELLOW 24/28V	4
404P360H38	LAMP INDICATOR LED MF YELLOW 24V	8
404P360H40	LAMP INDICATOR LED MF GREEN 24V	4
404P394H01	MOUSE INTELLIPOINT VERSION 2.0 COMBO	1
404P394H29	COMPUTER COMPONENT - KEYBOARD	1
404P394H45	LAPTOP TERMINAL 133 MHZ PENTIUM	1
404P394H71	MONITOR 22" DIAMOND PRO 2060 DESKTOP	1
404P394H72	17 PAGE PER MINUTE LASERJET PRINTER	1
404P402H03	SPRING	8
404P405H07	SPEAKER	4
404P405H09	SPEAKER	2
404P405H14	SPEAKER	2
404P405H22	SPEAKER 2.5	2
404P419H03	LAMP FLUORESCENT	90
404P419H11	LAMP FLUORESCENT 32 WATT 48 LG	100
404P419H14	LAMP FLUORESCENT 25 WATT 36.00 IN LG	20
404P427H05	FUSE 25 AMP	10
404P437H34	SPRING CONTACT (14-16 AWG)	100
404P437H34	SPRING CONTACT (14-16 AWG)	84
404P437H51	RELAY 9-30 VDC ADJ. TIMER 125 OHM	2
404P437H56	RELAY O.A. BIASED 400 OHM 6FB	4
404P437H56	RELAY O.A. BIASED 400 OHM 6FB	1
404P437H64	RELAY O.A. BIASED 1000/250 OHM	1
404P437H96	VITAL RELAY 12-14 VDC 800 OHM	6
404P437H97	RELAY TIME DELAY 24 VDC 11 PIN INTERVALON	4
404P437H98	COUPLER PARTS CENTER PLATE	2
404P438H09	DIODE	4
404P439H74	RESISTOR 2 WATTS 50 OHM N-MALE	2
404P443H02	RELAY SOCKET 8 PIN	2
404P443H07	RELAY SOCKET	2

Appendix E-2: Spare Parts

Part No	Description	Qty
404P443H12	RELAY	3
404P443H16	RELAY	2
404P443H57	SPRING HOLD DOWN	40
404P443H67	RELAY SOCKET	3
404P443H92	RELAY 48 VDC 10 AMP 2 POLE	2
404P449H06	Spring, Contract SST	8
404P478H03	PRESS CONTROL 0/100 PSI W/0-10V OUTPUT	4
404P480H03	CONTACTOR	3
404P480H33	CONTACTOR	2
404P480H35	CONTACTOR INTERLOCK	2
404P485H28	4" Waterproof PA Speaker with 70 Volt / 4 Watt Transformer	10
404P488H22	BREAKER 2 POLE 4 AMP 240 VAC	4
404P488H22	BREAKER 2 POLE 4 AMP 240 VAC	20
404P488H32	CIRCUIT BREAKER GFI DIN MOUNTED	2
404P488H37	CIRCUIT BREAKER	2
404P491H27	AUDIO MATCHING TRANSFORMER	1
404P498H10	SWITCH PRESSURE	2
404P500H07	AMPLIFIER 6 WATT AUDIO POWER	1
404P500H09	MICROPHONE PREAMPLIFIER MODULE	1
404P500H10	1/8 DIN LCD GREEN BACKLIT DISPLAY	4
404P501H07	LINE AMPLIFIER ASSY W/LONWORKS CONNECTOR	1
404P501H08	LINE AMPLIFIER ASSY W/LONWORKS CONNECTOR	1
404P501H12	PA Amplifier 2 Channel x 100 Watt	1
404P502H34	FUSE 2.0 AMP 250 VOLTS 5X20 MM	10
404P502H35	FUSE 4 AMP 250V 5X20 MM	12
404P502H35	FUSE 4 AMP 250V 5X20 MM	3
404P502H36	FUSE 6.3 AMP 250 V 5X20 MM	6
404P502H36	FUSE 6.3 AMP 250 V 5X20 MM	2
404P506H02	SWITCH TOGGLE	4
404P506H05	SWITCH	2
404P506H11	TOGGLE SWITCH SPST 6A/250V	1
404P506H38	SWITCH TURN POSITION KEY	2
404P513H03	POTENTIOMETER	2
404P513H11	POTENTIOMETER	2
404P513H16	POTENTIOMETER 8 OHM	2
404P513H16	POTENTIOMETER 8 OHM	1
404P513H34	POTENTIOMETER 5K 2W PLASTIC W/LKG BSHG	1
404P532H02	SWITCH 2 PORT KVM	1
404P532H58	SWITCH KEY OPERATED 6 POLES	2
404P532H76	SWITCH ROTARY 45 DEG DETENT W/KNOB	1
404P532H82	SWITCH ROTATIONAL 3 POS LEAD-TRAIL	2
404P533H11	GROOVE PIN .125 DIA .875 LG STL	100
404P538H47	SPRING	12
404P538H57	SPRING .480 OD 1.50 FREE .045 WIRE	50
404P538H74	CONTACT SPRING AWG 18-20	8
404P538H74	CONTACT SPRING AWG 18-20	4
404P546H01	BEARING CUP	40

Appendix E-2: Spare Parts

Part No	Description	Qty
404P546H02	BEARING CONE	40
404P546H03	BEARING CUP	40
404P546H04	BEARING CONE	40
404P547H04	SEAL	50
404P547H07	SEAL	50
404P547H46	TORQUE SEAL ORANGE	50
404P548H01	KEYED WASHER	8
404P549H01	GREASE CAP	8
404P551H01	CASTLE NUT	8
404P551H06	WHEEL STUD .500-20 1.31 LG	40
404P551H07	WHEEL NUT .500-20 NYLON RINGLOCK	40
404P554H22	FUSE	8
404P564H05	Bearing	4
404P567H14	SENSOR TIRE MONITOR KIT	8
404P585H14	FUSE 1.0 AMP 600 V 4 C 500 V DC	15
404P594H01	VARISTOR	8
404P594H24	VARISTOR 127 VDC	4
404P595H08	AB BREAKER 15 AMP	11
404P595H09	AB BREAKER 20 AMP	4
404P595H80	BREAKER MAGNETIC HYDRAULIC 5.0 AMPS	2
404P595H84	BREAKER 1 POLE 277 VAC 15A	4
404P595H87	BREAKER 1 POLE 277 VAC 30A	2
404P595H90	BREAKER 1 POLE 277 VAC 70A	2
404P598H04	POTENTIOMETER 10K OHM 3 WATTS	1
404P598H05	POTENTIOMETER 1K OHM 3 WATTS	1
404P600H35	WASHER .382 ID .750 OD .032 T SST	100
404P611H50	CAPACITOR 20 UF 370VAC	2
404P617H48	BREAKER 40A 227 VAC 1 POLE	2
404P630H15	RELAY 24VDC	2
404P630H22	RELAY 24VDC 2 DPDT 10 AMP	4
404P630H25	RELAY MODULE UMK22-REL12/21-21	1
404P649H02	FILTER	4
404P649H28	FAN 24 VDC BALLBEARING 35CFM	2
404P649H40	FAN TRAY ASSEMBLY 115VAC 192CMH X3 FANS	1
404P649H40	FAN TRAY ASSEMBLY 115VAC 192CMH X3 FANS	1
404P650H16	BUMPER 1.00 DIA .69 LONG RUBBER	16
404P659H01	RELAY LIGHTING	10
404P660H01	BALLAST SINGLE LAMP	8
404P660H02	BALLAST DOUBLE LAMP	8
404P661H01	LAMP SOCKET FLOURESCENT SIDE INSERT	8
404P663H06	RF SWITCH 4-POS N-M CABLE HARNESS	2
404P681H30	FLANGE BEARING .502 I.D. .691 O.D. .75 LG	1
404P682H01	CONTROL RELAY	2
404P682H02	CONTROL RELAY	2
404P682H21	RELAY GERMAN SIGNAL (6NO/2NC)	20
404P682H22	RELAY GERMAN SIGNAL (4NO/4NC)	4
404P682H23	HEAVY DUTY DC CONTROL RELAY	2

Appendix E-2: Spare Parts

Part No	Description	Qty
404P683H08	THYRISTOR 200V 70A	3
404P690H01	End, Right Hand Rod	1
404P690H02	End, Left Hand Rod	1
404P690H03	End, Right Hand Rod	1
404P690H04	End, Left Hand Rod	1
404P694H06	INDICATING LIGHT	4
404P694H12	PUSHBUTTON FLUSH 2-NO 2-NC WHITE	2
404P694H13	PUSHBUTTON FLUSH 2-NO 2-NC BLUE	2
404P697H36	BATTERY GEL CELL 97 AMP HR 12V	2
404P699H01	SOLENOID VALVE	2
404P700H01	DOUBLE CHECK VALVE	2
404P701H09	LOW POWER LINE FILTER 3A	2
404P703H07	TOGGLE SWITCH.	2
404P703H55	SWITCH TOGGLE	2
404P703H67	SWITCH TOGGLE	1
404P703H72	SWITCH SUB MINIATURE PUSHBUTTON	2
404P708H54	115 VAC Power Supply	1
404P708H65	POWER SUPPLY	1
404P709H11	TRANSMITTER CARTRIDGE	2
404P709H60	DIGITAL VOICE ANNOUNCEMENT UNIT	1
404P709H74	RADIO EQUIPMENT MDR 18-32 VDC	1
404P709H75	RADIO EQUIPMENT BDR RACK MOUNT	1
404P709H78	N-CONNECTOR, EPOXY SEAL	1
404P709H79	2-4 GHZ, EPOXY SEAL	4
404P709H80	2-4 GHZ, EPOXY SEAL	2
404P709H81	2-4 GHZ, EPOXY SEAL	1
404P709H83	POWER DIVIDER, 1-4 GHZ	2
404P709H85	DIRECTIONAL COUPLER	1
404P709H90	DOUBLE RF HYBRID	1
404P732H10	ANTENNA 902-928 MALE TAG READER	2
404P747H18	SWITCH ASSY W/CONNECTOR MS3112E-12-8P	1
404P747H23	FDDI BYPASS SWITCH SC-SC-DB9 RACK-2M	2
404P747H25	SWITCH FDDI BYPASS SC-SC-MDIN RACK-2M	1
404P765H10	RESISTOR MTG HDW 210-1000	2
404P765H11	RESISTOR MTG HDW 210-12 WATT	2
404P810H03	VALVE PRESSURE RELIEF	2
404P810H04	SOLENOID VALVE	2
404P810H05	SOLENOID VALVE	2
404P810H06	SOLENOID VALVE	2
404P810H22	VALVE 1/4 3 WAY DIRECT ACTING	2
404P810H24	VALVE REPAIR KIT FOR 404P810H22	4
404P813H18	FILTER	4
404P813H19	CHECK VALVE .38-14 NPTF DRY SEAL	2
404P820H22	FILTER ELEMENT (10B)	4
404P829109	MONITOR 37 INCH SVGA	1
404P829118	OTR-150 Optical Transceiver	1
404P829126	HARD DISK DRIVE 2.5 GB/BYTES	1

Appendix E-2: Spare Parts

Part No	Description	Qty
404P829128	250 WATT COMPUTER POWER SUPPLY	2
404P837H01	SONALERT 10-48 VDC 4500 HZ	1
404P837H02	SONALERT 10-48 VDC 1900 HZ	1
404P837H03	SONALERT	1
404P840H01	PRESSURE GAUGE	1
404P840H11	PRESSURE GAGE 0-160PSI BK MOUNT	4
404P840H12	PRESSURE GAGE 0-300PSI BK MOUNT	4
404P840H13	PRESSURE GAGE 0-60PSI BACK CONN.	2
404P903H44	CONTACT BLOCK SPST N.O.	2
404P930H02	BELT	4
404P931H07	FLTR MEDIA 12.88 X 13.88 X .75 THK FOAM	8
404P949H07	BOOT	8
404P949H08	SHOCK ABSORBER 1.38 BORE .63 ROD	8
404P963H30	POWER SUPPLY 12 VDC	1
404P963H32	POWER SUPPLY 115 VAC PLUG-IN	1
404P963H36	POWER SUPPLY 115VAC - 9VDC PLUG-IN	1
404P968H10	HAND PUMP SINGLE PISTON	1
404P988H85	SWITCH TYPE UK5-MTK-P/P	2
404P988H89	TERMINAL BLOCK FUSED W/LED 15-30V	4
404P988H89	TERMINAL BLOCK FUSED W/LED 15-30V	5
404P988H97	FUSE PLUG 5-15V AC/DC W/LIGHT	10
404P988H98	FUSE PLUG 15-30V AC/DC W/LIGHT	8
404P996H02	VALVE IN-LINE CHECK	2
404P996H03	CHECK VALVE	2
404P996H06	TOGGLE VALVE .25 M/.25 M .125 ORIFICE	4
404P996H08	Valve, Bleeder	1
4077B45H02	D C AMMETER 1)	2
4077B76G02	SWITCH ASS'Y	2
4078B16H01	VOLTMETER	1
4078B51H01	THYRISTOR	4
4078B74G01	STD. INTERLOCK MOVING PART ASSEMBLY	8
4078B89H01	SWITCH TEMPERATURE LEVEL	1
409P033H98	TRANSPOUNDER INTERROGATOR - VEH 10 CHAR	2
409P034H04	REDUNDANT MODBUS PLUS OPTION ADAPTER	3
409P034H07	MODULE I/O BASE	2
409P034H37	MODICON PLC COMPACT CONTROLLER 984-120	2
409P034H43	DEP 218 INPUT MODULE 115 VAC	4
409P034H45	SERIAL ADAPTER LONTALK SLTA-10	1
409P071H02	Digital Sound Processor	1
409P084H04	CBX SLA16 Subscriber Line Analog Module	1
409P084H04	CBX PSUI Power Supply Unit.	1
409P084H05	CCF Operator Display Telephone	1
409P084H05	MSF Office Telephone	1
409P084H06	Wall Mount Telephone	1
409P084H07	Passenger Station Emergency Telephone	1
409P084H08	Blue Light Telephone with AE700 Surface Mount Enclosure	1
409P119H52	POWER SUPPLY RACK MOUNTABLE	2

Appendix E-2: Spare Parts

Part No	Description	Qty
409P119H91	POWER SUPPLY ASSEMBLY (#S10833)	1
409P129H23	AIR CONDITIONER MOISTURE INDICATOR	6
409P176H05	SMOKE ALARM RELAY BASE	4
409P177H28	AUDIO AMPLIFIER UNIT	1
409P177H34	BEAM POWERED TRANSPORTATION TAG	2
409P177H34	BEAM POWERED TRANSPORTATION TAG	4
409P177H35	TRANSPODER INTERROGATOR - WAYSIDE	2
409P180100	RS232 TO RS485 OPTICAL ISOLATED MODEM	1
409P180102	3 PCI 2 CPU 8 ISA SLOT BACKPLANE	1
409P180H98	DISPLAY TERMINAL TOUCH SCREEN	2
409P188103	8.4 GBYTE HARD DISK DRIVE	1
409P188110	120MBYTE REMOVABLE DISK DRIVE	1
409P188H26	RESISTOR TERMINATOR CAPS BNC 50 OHM	2
409P188H26	RESISTOR TERMINATOR CAPS BNC 50 OHM	2
409P188H27	TRANSCEIVE CONNEX MINI BNC	2
409P188H27	TRANSCEIVE CONNEX MINI BNC	2
409P189H01	CONTROLLER 1.5 K	1
409P189H02	POWER SUPPLY 120 VAC 24 VDC	3
409P189H03	EEPROM CARD 8 K BYTE	2
409P189H04	SUBRACK PRIMARY	1
409P189H05	SUBRACK SECONDARY	1
409P189H06	CABLE BUS EXTENSION	1
409P189H08	OUTPUT MODULE 8 PT RELAY	4
409P189H11	INPUT MODULE 16 POINT 24 VDC	2
409P189H20	CONTROLLER MOMENTUM PROCESSOR	3
409P191105	RECEIVER 62.5 MULTIMODE 10 DB BUDGET	1
409P191106	TRANSMITTER 62.5 MULTIMODE 10 DB BUDGET	1
409P191111	FIBER OPTIC/RF CONVERTER BASE UNIT	1
409P191125	FIBER OPTIC SYSTEM	2
409P196H43	MODEL 857 10 SLOT CARDFILE W BACK PLANE	1
409P196H70	1/3" CCD Color CCTV Camera (120VAC)	4
409P197H24	PCI GRAPHICS CARD	1
409P197H25	DIGI 8 PORT SERIAL BOARD	1
409P197H75	144 MBYTE STATIC RAM DISK DRIVE	1
409P197H80	40X CD ROM DRIVE	1
409P198H24	COMPUTER COMPONENTS	1
409P199143	Digital to Analog Audio Converter	1
409P199H39	ETHERNET LAN 12 PORT HUB	1
409P199H52	SEC SERIAL PORT/PS2 MOUSE CABLE & KIT	1
409P199H62	CONTROL MODULE - CPM 6400	1
409P199H63	POWER SUPPLY FOR MATRIX SWITCH RACK	1
409P199H65	8-PORT I/O MODULE (RS-232) - CPM 6400	1
409P199H93	SUPERSTACK II SWITCH 2200	1
409P199H99	56 KBPS INTERNAL FAXMODEM	1
409P210H17	HIGH RESOLUTION VIDEO CONVERTER	1
409P210H18	VIDEO MONITOR - 20	1
409P210H19	KEYBOARD VIDEO CONTROLLER	1

Appendix E-2: Spare Parts

Part No	Description	Qty
409P210H20	TIME LAPSE VIDEO RECORDER	1
409P219H12	RING SEAL	4
409P236H10	RELAY	2
409P236H13	TERMINAL BLOCK TYPE UKK5	10
409P237H05	LOWER PLATE	2
409P237H06	UPPER PLATE	2
409P237H11	COUPLER PARTS RUBBER BUFFER	4
409P237H16	DUST CAP	2
409P237H17	ROLL PIN 8 X 45	4
409P237H19	RUBBER BUMPERS	2
409P241H01	GASKET COUPLER	4
409P241H02	GASKET COUPLER	4
409P241H05	PIN CENTER	2
409P241H06	NUT CENTER PIN	2
409P241H07	RING RUBBER	4
409P241H09	BUSHING UPPER CENTER	2
409P241H10	BUSHING LOWER CENTER	2
409P248H75	PC BOARD 10 SLOT VME J1 BACKPLANE	1
409P248H75	PC BOARD 10 SLOT VME J1 BACKPLANE	2
409P248H76	PC BOARD 7 SLOT VME J1 BACKPLANE	1
409P248H77	PC BOARD 5 SLOT VME J1 BACKPLANE	1
409P248H79	PC BOARD 2200 DAS PCI FIBER FDDI ADAPTER	1
409P248H88	48 Power Supply and Ringing Generator (48V/25Hz)	1
409P249101	12-Port Analog Voice Interface Card (12LVOI-P)	1
409P249102	High Quality Audio / Public Address Interface Card (HQAUD-M)	1
409P249102	High Quality Audio / Public Address Interface Card (HQAUD-S)	1
409P249103	4-Wire E&M Interface Card	1
409P249104	BORA Common Logic Module	1
409P249105	RS 422 Interface Card	1
409P249106	RS-485 interface Card	1
409P249107	RS 232 Interface Card	1
409P249110	12-Port Analog Voice Interface Card (12LVOI-T)	1
409P250H94	FILTER ASSEMBLY	35
409P262H24	PA Ambient Noise Sensing Controller	1
409P276H13	WIPER BLADE ASSEMBLY (31.5)	4
409P301H01	Hi-Tech Spare Parts Kit Includes: 1 Complete Dynamic Message Si	1
409P302H61	MOTOR, 2HP, 480V, 1800RPM, 56C	1
409P302H62	BEARING CARBON GRAPHITE, 1.5"	1
409P302H63	BEARING - 4 BOLT FLANGE, 1"	6
409P302H64	1" BORE, #1610 TAPER LOCK BUSHING	2
409P302H65	FUSE AJT30	2
409P302H66	FUSE GGM-4	2
409P302H67	FUSE FRN-R-5	1
409P302H68	RECEIVER EYE IR-M12-15M	1
409P302H69	MANUAL AMO/TIMER ISG-N34-115V	1
409P302H70	TRANSMITTER EYE IT M12 35M	1
4166A87H01	RELAY TYPE B	3

Appendix E-2: Spare Parts

Part No	Description	Qty
4227B27G01	CONTACT STUD ASSEMBLY	32
4227B59G01	CAM SHUNT	8
4567B03H07	CAPACITOR 1 UF 660 VAC	6
4675C15G04	BRAKE TRANSFORMER	0
4677C95G09	VARISTOR ASSEMBLY	4
4677C95G28	VARISTOR SUPPRESSION DEVICE	3
4678C64G01	TRANSFORMER & POTENTIOMETER PANEL ASSY	2
4680C29G04	AAR RACK ASSEMBLY	0
4680C65H01	AIRSIDE SPRING	8
4682C17G02	BRUSH HOLDER PIN	32
4722A43H02	BOLT .500-13 X 1.25 HEX HD STL	100
4766A18G02	VARISTOR ASSEMBLY	6
4766A18G05	VARISTOR ASSEMBLY	4
4766A18G08	VARISTOR ASSEMBLY	6
4766A40G06	DIODE ASSEMBLY	4
4766A40G11	DIODE ASSEMBLY	2
4766A40G12	DIODE ASSEMBLY	2
4766A40G13	DIODE ASSEMBLY	8
4766A40G16	DIODE ASSEMBLY	3
4766A40G18	DIODE ASSEMBLY	4
4767A67G01	LIGHTNING ARRESTER	14
4767A86H12	BALL VALVE	2
4767A86H15	Valve, Check	1
4767A90G01	STD. CONTACT INTERLOCK FINGER	8
4768A05H11	CRITICAL RELAY 4 FORM C 24V	4
4768A30H01	TRANSFORMER	4
4776A87H01	FUSE BLOCK #3519 0-60 AMPS 600V	4
4778A79G01	STD. FINGER INTERLOCK	10
4893B70H02	GAUGE	3
4894B90H01	SPRING .0747 THK SST	16
4896B59H01	SWIVEL STEM 3.50) .375 DIA STL	16
4896B60H01	SPACER .505) .375 DIA 1/2 HARD BRS	8
4898B19G06	LIGHTNING ARRESTER ASSEMBLY	8
4898B19G07	LIGHTNING ARRESTER ASSEMBLY	8
4898B51G02	PINNED POWER RAIL INSTALLATION	0
4898B51G04	PINNED SIGNAL RAIL INSTALLATION	0
4899B59H01	PIN 3.50) .375 DIA	100
4899B64H01	EXTENSION SPRING	12
4899B65H03	ALIGNMENT PLATE 1.75 X .75) .125 THK	40
4D02279G02	TRANZORB ASSEMBLY	2
5574C12H06	Cylinder Hydraulic	1
5574C31G03	GUIDE TIRE ASSEMBLY	0
5574C31H03	TIRE	16
5574C40G01	DOOR SLIDE ASSEMBLY L.H.	2
5574C41G01	DOOR SLIDE ASSEMBLY R.H.	2
5574C95H04	Ramp	7
5574C95H05	Ramp	6

Appendix E-2: Spare Parts

Part No	Description	Qty
5575C64H02	SWITCH SNAP ACTION ROLLER	2
5578B62G01	BRUSH HOLDER ASSEMBLY	16
5579B40H01	FAN DC BRUSHLESS	6
5580B05G01	RESISTOR ASSY 11 K 1 W	2
5580B05G02	DIODE ASSY IN5399	2
5582B88H01	BEARING	64
5585B41H05	ADJUSTING PLUNGER ASSY 16 DEGREE ANGLE	8
5585B41H05	ADJUSTING PLUNGER ASSY 16 DEGREE ANGLE	16
5585B78H01	CHANNEL 5.00 X 1.92) .062 THK SST	20
5585B79H01	ARM 11.00) .375 DIA STL	64
5585B85H01	KEEPER 9.50) .188 X 1.00 CF STL	20
5585B93H01	BRUSH HOLDER PLUG 2.00) .625 X 1.50 BR	16
5586B24H02	SWIVEL STEM 4.25) .375 DIA STL	50
5586B62H02	CYLINDER HIGH PRESSURE	2
5586B62H03	GASKET	2
5586B62H04	CYLINDER LOW PRESSURE	2
5586B62H05	GASKET	2
5586B62H06	CAP SUCTION VALVE	2
5586B62H08	SEAL O-RING CAP	4
5586B62H09	SEAL FELT PLUNGER TO SLEEVE	4
5586B62H10	SEAL O-RING PLUNGER TO SLEEVE	4
5586B62H16	HEAD LOW PRESSURE CYLINDER	2
5586B62H17	GASKET LOW PRESSURE CYLINDER	2
5586B62H18	VALVE ASSEMBLY DISCHARGE	4
5586B62H20	VALVE ASSEMBLY SUCTION	4
5586B62H26	SEAL O-RING CAP	4
5586B62H27	SEAL FELT PLUNGER TO SLEEVE	8
5586B62H28	SEAL O-RING PLUNGER TO SLEEVE	4
5586B62H33	HEAD HIGH PRESSURE CYLINDER	2
5586B62H34	GASKET HIGH PRESSURE CYLINDER	2
5586B62H35	VALVE ASSEMBLY DISCHARGE	4
5586B62H37	VALVE ASSEMBLY SUCTION	4
5586B62H42	ELEMENT AIR CLEANER	38
5586B62H53	SPRING	2
5586B62H54	VALVE CHECK	2
5586B62H55	PIN	2
5586B62H56	SEAL PIN	2
5586B62H57	RETAINER OIL RELIEF SPRING	4
5586B62H58	SPRING OIL RELIEF	4
5586B62H60	PISTON	2
5586B62H61	DIAPHRAGM	4
5586B62H66	PISTON ASSEMBLY HIGH PRESSURE	4
5586B62H70	BALL NYLON OIL RELIEF VALVE	4
5586B62H73	SLEEVE RUBBER	4
5586B62H75	SEAL OIL FRONT	2
5586B62H81	CUP BEARING	4
5586B62H83	GASKET INTERCOOLER TUBE	8

Appendix E-2: Spare Parts

Part No	Description	Qty
5586B62H85	VALVE ASSEMBLY SAFETY	4
5586B62H86	O-RING OIL PUMP COVER	4
5586B62H87	ROTOR OIL PUMP	2
5586B62H88	VANE OIL PUMP ROTOR	8
5586B62H89	SPRING VANE	8
5586B62H91	PIN ROLL	4
5586B62H94	PIN ROLL	4
5586B66H01	CARBON BRUSH GRADE W187	32
5587B02G01	CYLINDER AIR COMPRESSOR - HIGH PRESSURE	2
5587B02G02	CYLINDER AIR COMPRESSOR - LOW PRESSURE	2
5587B07G01	CRANKSHAFT ASSY AIR COMPRESSOR	2
5587B09G01	PISTON & CONNECTING RODS - HIGH PRESSURE	2
5587B09G02	PISTON & CONNECTING RODS - LOW PRESSURE	4
5587B11G01	INTERCOOLER AIR COMPRESSOR	2
5587B12G01	REAR RETAINER AND OIL PUMP	4
5621B15G01	HUB AND SHAFT ASSEMBLY	0
5621B16G01	BRAKE PARTS	0
5621B19G01	GENERAL ASSEMBLY DRIVE AXLE	2
5624B12H01	LEVER 1)	1
5624B19H01	MODIFIED SOCKET	8
5625B54H02	CAP EXTRUSION 90.50)	16
5625B82H01	BUMPER E.A.R. ISODAMP #C.1002.25	4
5630B48G01	MICROPHONE ASS'Y	1
570A055H31	O RING STD SIZE 210	16
577B060H33	DIODE	2
5819C58G03	FINGER ASSEMBLY	16
5824C49G01	SOLENOID VALVE	4
5827C89H04	Cylinder Hydraulic	1
5D56060H21	CAM	6
5D72149G01	PROPULSION MONITOR ASSEMBLY	0
5D72500G04	SMOKE DETECTOR ASSEMBLY (GRAPHICS)	2
5D72501G02	SMOKE DETECTOR MOUNTING BRACKET	2
5D73028G01	PC BOARD R110 CONVERTER MOTHERBD ASS'Y	2
5D73062G01	PC BOARD GEALOC POWER SUPPLY ASSEMBLY	2
5D73065G01	PC BOARD MANUAL CONTROL II ASSEMBLY	2
5D73067G02	PC BOARD MANUAL CONTROL I ASSEMBLY	2
5D73091G01	PC BOARD FRANKFURT 16 SLOT P2 BACKPLANE	1
5D73122G01	PC BOARD FRANKFURT RELAY STAT IND ASS'Y	2
5D73200G01	PC BOARD GEALOC POWER SUPPLY ASSEMBLY	1
5D73201G01	PC BOARD DIGITAL INPUT PCB ASSEMBLY	1
5D73205G02	PC BOARD GROUND LOSS DETECTION ASSY	2
5D73206G01	PC BOARD AUDIO MATRIX ASSEMBLY	1
5D73220G01	PC BOARD ATCS SYNC/VITAL DRVR INTFC ASSY	2
5D73220G02	PC BOARD ATCS SYNCHRONIZER/VITAL DRIVER	2
5D73220G03	PC BOARD ATCS SYNC VITAL DRIVER	1
5D73221G01	PC BOARD MULTI PURPOSE I/O ASSEMBLY	2
5D73221G02	PC BOARD MULTI PURPOSE I/O ASSEMBLY	2

Appendix E-2: Spare Parts

Part No	Description	Qty
5D73222G02	PWR SUPPLY ASSY (24V IN 5V +/-12V OUT)	2
5D73299G01	PC BOARD LAS VEGAS RADIO RELAY I/O ASSY	2
5D73299G01	PC BOARD LAS VEGAS RADIO RELAY I/O ASSY	1
5D73338G01	PC BOARD DIGITAL OUTPUT ASSEMBLY	1
5D73338G02	PC BOARD DIGITAL OUTPUT ASSEMBLY	1
5D73412G01	PC BOARD RF INTERFACE ASSEMBLY	1
5D73412G02	PC BOARD RF INTERFACE ASSEMBLY	2
5D73413G01	PC BOARD 386 CPU ASSEMBLY	1
5D73449G01	PC BOARD NUMBER ONE END TERMINATION CARD	3
5D73449G02	PC BOARD NUMBER ONE END TERMINATION CARD	2
5D73452G01	PC BOARD BRAKE PROP CONTROLLER ASSY	2
5D73458G01	PC BOARD SAN FRANCISCO DOOR TX TERM ASSY	3
5D73463G01	PV BOARD SAN FRANCISCO NON-CPU M/B ASSY	1
5D73473G01	PC BOARD, DOOR TX/RX ASSEMBLY	2
5D73479G01	PC BOARD MANUAL SPEED LIMITER ASSEMBLY	2
5D74294H01	MOTOR 115 VAC 60 HZ	1
5D74330G03	FLAG ASSEMBLY TRIP STOP	1
5D74457G16	VEHICLE RADIO ASSEMBLY	0
5D74649G01	PHASE VOLTAGE RELAY GEN ASS'Y	2
5D74671G01	GUIDE WHEEL HUB ASSEMBLY	2
5D74715H01	COMPRESSOR	1
5D74715H07	VALVE-CHECK	4
5D74716H02	COIL - CONDENSER	2
5D74716H05	VALVE - RELIEF	4
5D74716H06	ISOLATOR - SHOCK MOUNT	8
5D74716H08	VALVE - SERVICE	2
5D74716H09	RECEIVER - LIQUID	4
5D74716H10	MOTOR - CONDENSER	2
5D74716H14	VALVE - PURGE	4
5D74716H20	VALVE - RECEIVER (INLET AND OUTLET)	3
5D74717H04	BLOWER (RH)	1
5D74717H08	MOUNT-SHOCK	16
5D74717H11	COIL-EVAPORATOR	2
5D74717H17	VALVE-LIQUID & MODULATING	2
5D74717H19	VALVE-EXPANSION	2
5D74717H23	THERMOSTAT-OVERHEAT	2
5D74717H24	BLOWER (LH)	1
5D76262H03	EQUALIZER VALVE 110 PSI	4
5D76263H22	VEHICLE RADIO 1)	1
5D77763G01	DIGITAL I/O INTERFACE MODULE PDISO-8	1
5D77773H05	ETHERNET EXPRESS PRO 10+	1
5D77773H06	ETHERNET EXPRESS PRO 10+	1
5D77998H27	FILTER DRIER CARTRIDGE	6
5D79410H01	DTE/TERM'D LINE DRIVER CARD	2
5D79410H02	DTE/UNTERM'D LINE DRIVER CARD	2
5D80189H01	CPU BOARD PENTIUM P5000HX SERIES	1
5D81178H01	ETHERNET PC LINK2 BD	1

Appendix E-2: Spare Parts

Part No	Description	Qty
5D81799G01	CENTRAL RADIO SYSTEM COMPUTER ASSEMBLY	1
60A2872G37	CAM SWITCH TYPE XCA-398	2
6157A58H04	THERMAL RELAY	2
6246D69H09	SHACKLE 7.25 X 2.75) .38 HR STL	16
6523B68H01	Magnet	4
652A103H02	DRAIN VALVE	4
652A589H03	WASHER .202) 2.375 DIA STL	50
6961C69G01	ASSEMBLY DUAL QUICK RELEASE VALVE KIT	4
6965C16H02	TRANSFORMER ENCAPSULATED	2
6967C72G02	KNUCKLE CASTING	24
6967C72G03	KNUCKLE CASTING	8
6969C55G01	PANEL ASSEMBLY	0
6971C67H02	BREAKER 3 POLE 600 VAC 15 AMP	2
6971C67H07	BREAKER 3 POLE 600 VAC 15 AMP	3
6971C68H01	BREAKER 3 POLE 600 VAC 70 AMP	3
6971C68H04	BREAKER 3 POLE 600 VAC 125 AMP	2
6972C93G01	POWER RAIL JOINT ASSEMBLY	50
6972C93G02	SIGNAL RAIL JOINT ASSEMBLY	40
6972C93G04	HALF ALIGN PLATE ASSEMBLY	20
6972C93H01	Plate, Joint	6
6972C93H02	Plate, Alignment	6
6972C93H06	Plate, Joint	6
6972C94H05	POWER COVER 5 FEET BEIGE	100
6972C94H21	POWER COVER 2.50 FEET BEIGE	6
6972C95G03	ISOLATION GAP	10
6972C97G02	POWER TERMINAL	16
6972C98G02	Expansion Joint Power	6
6973C66G02	VARISTOR ASSEMBLY	4
6973C66G07	VARISTOR ASSEMBLY	4
6973C66G10	VARISTOR ASSEMBLY	4
6973C66G14	VARISTOR ASSEMBLY	2
6974C38H01	CARBON BRUSH GRADE 933	40
6976C08G05	ROLLER BEARING ASSEMBLY	6
6D56059G01	DOOR OPERATOR R.H.	4
6D56059H21	CAM	6
6D56060G01	DOOR OPERATOR L.H.	4
6D56130G01	POWER FEED ASSEMBLY	5
6D56434G01	HEADLIGHT/TAILLIGHT ASSY (CLEAR)	0
6D56434G02	HEADLIGHT/TAILLIGHT ASSY (RED)	0
6D56434H07	LAMP - HALOGEN HI/LO	16
6D56434H08	LAMP - INCANDESCENT RED	16
6D56529G01	PROGRAM SWITCH PANEL ASSEMBLY	0
6D56575G01	A/C COMPRESSOR ASSEMBLY UNIT	1
6D56575H04	SWITCH-HIGH PRESSURE	2
6D56575H05	SWITCH-LOW PRESSURE	2
6D56575H06	SWITCH-MODULATION PRESSURE	2
6D56575H15	ISOLATOR SHOCK MOUNT	12

Appendix E-2: Spare Parts

Part No	Description	Qty
6D56575H18	TRANSFORMER	2
6D56575H19	CIRCUIT BREAKER - COMPRESSOR	2
6D56575H20	CIRCUIT BREAKER - CONDENSER FAN	2
6D56575H21	CIRCUIT BREAKER - OVERHEAD HEATER	2
6D56575H22	CIRCUIT BREAKER - BLOWER FAN	2
6D56575H23	CONTACTOR	4
6D56575H24	RELAY BASE OVERLOAD	2
6D56575H25	OVERLOAD	6
6D56575H26	OVERLOAD	6
6D56575H27	PC BOARD CONTROL	2
6D56576G01	HVAC EVAPORATOR ASSEMBLY	1
6D56576H02	MOTOR-BLOWER 2-SPEED	2
6D56576H07	WHEEL-BLOWER (CW)	1
6D56576H08	WHEEL-BLOWER (CCW)	1
6D56576H28	HEATER ASSEMBLY	2
6D56576H34	SWITCH-AIRFLOW	4
6D56576H36	SENSOR-RETURN AIR (NOT SHOWN)	4
6D56576H37	VARISTOR-SURGE SUPPRESSOR	4
6D56576H40	SWITCH FREEZE PROTECTION	2
6D56631G01	MANUAL CONTROLLER COMPARTMENT ASSEMBLY	0
6D56864G01	CENTRAL CONTROL COMPUTER ASSEMBLY	1
6D56865G01	FRONT END COMPUTER ASSEMBLY	1
6D56867G01	OPERATOR STATION COMPUTER ASSEMBLY	1
6D56868G01	GENERAL SYSTEM DISPLAY COMPUTER ASSEMBLY	1
6D56869G01	OFFICE NETWORK BRIDGE COMPUTER ASSEMBLY	1
6D57047G01	TERMINAL BLOCK ASSY - P24 DISTRIBUTION	1
6D57052G01	TERMINAL BLOCK PANEL - P24 DISTRIBUTION	1
6D57064G01	ATC2 CRADLE - ASSEMBLY	1
6D57226G01	ATO COMPUTER ASSEMBLY	1
6D57226G02	ATO COMPUTER ASSEMBLY	1
6D57228G01	INDUSTRY PACK BOARD ASSEMBLY	1
6D57252G01	POWER SUPPLY ASSEMBLY	1
6D57255G01	GRAPHICS FRONT END COMPUTER	1
6D57299G01	FIBER OPTIC TERMINAL BOX ASSEMBLY	1
6D57607H01	GEALOC FIELD POWER SUPPLY	2
6D57607H01	GEALOC FIELD POWER SUPPLY	1
6D57612G01	TERMINATION PANEL ASSEMBLY - JUMPER PNL	0
6D57695G01	TERM CARD CRADLE ASSEMBLY	0
6D57696G01	ATC2 CRADLE ASSEMBLY	0
6D57740G02	TERMINAL BLOCK ASSEMBLY	0
6D57761G01	SPEAKER/MICROPHONE PANEL ASSEMBLY	0
6D57762G01	SPEAKER/MICROPHONE INSTALLATION	0
6D57793G01	CONDENSER UNIT ASSEMBLY	1
6D57793H02	FAN-CONDENSER	2
6D57800G01	FIRE EXTINGUISHER INSTALLATION	0
6D57803H01	CPU BOARD	2
6D57803H02	CPU BOARD	2

Appendix E-2: Spare Parts

Part No	Description	Qty
6D57820G01	SAN FRANCISCO VEH COMMUNICATIONS CABLE 18	0
6D57825G01	VEHICLE COMMUNICATION CONTROLLER HARNESS	0
6D57827H01	DTE/TERM'D OPTO-ISOL'D LINE DRIVER BD	2
6D57827H02	DTE/UNTERM'D OPTO-ISOL'D LINE DRIVER BD	2
6D57842G01	RACKMOUNT DISPLAY COMPUTER ASSEMBLY	1
6D58053H01	CENTRAL CONTROL - PWR SUPPLY ASSY	1
6D58550G01	IONIZATION SMOKE DETECTOR (CTR LOCATION)	3
6D59447G01	LOWER DOOR GUIDE - C-100 & CX-100 VEHICLE	4
6D59447G02	LOWER DOOR GUIDE - C-100 & CX-100 VEHICLE	4
6D59563G01	DYNAMIC GRAPHICS ASSEMBLY	4
6D59669H01	SERIAL INTERFACE BOARD	1
6D59669H02	SERIAL INTERFACE BOARD	1
70310CB07C	SPRING PIN .125 DIA X .750 LG SST	100
70310CB07F	SPRING PIN .125 DIA X 1.00 LG SST	40
70310CB0BA	SPRING PIN .188 DIA X 1.00 LG SST	100
70310CB0DT	SPRING PIN .250 DIA X 1.625 LG SST	300
70500CT00Y	WASHER .375 STD STL	100
70510CV10G	LOCKWASHER .138 REG STL	100
70510CV10Q	LOCKWASHER .375 REG STL	100
70510DL10S	LOCK WASHER .500 X-DUTY STL	100
73482AP00S	FUSE 60A 250V SB	10
760C217G07	SHUNT	8
795C168G01	CONTACTOR ARC CHUTE - MOLDED	4
8368D84H26	VEHICLE GLASS	8
8368D84H27	VEHICLE GLASS	2
8368D84H28	VEHICLE GLASS	4
8368D93G06	TYPE TE-359 BTRY CHGR & DOOR SPLY G/ASSY	2
8584C27G01	HYDRAULIC HOSE ASSEMBLY	1
8584C27G02	HYDRAULIC HOSE ASSEMBLY	1
8584C27G03	HYDRAULIC HOSE ASSEMBLY	1
8584C27G05	HYDRAULIC HOSE ASSEMBLY	1
8588C18H01	SWITCH 2 POS - 12 CONTACT	2
8589C64100	SPRING BRAKE CHAMBER ASS'Y	8
8589C64100	SPRING BRAKE CHAMBER ASS'Y	8
8589C64185	SEAL ADJUSTING BOLT	16
8589C64185	SEAL ADJUSTING BOLT	32
8589C64H13	SPINDLE WHEEL BEARING	1
8589C64H14	O RING	60
8589C64H62	CONE HUB BRG. OUTER	4
8589C64H63	CUP HUB BRG. OUTER	4
8589C64H64	NUT WHEEL STUD	40
8589C64H67	CUP HUB BRG. INNER	4
8589C64H68	CONE HUB BRG. INNER	4
8589C64H69	OIL SEAL HUB BRG.	8
8589C64H71	BRAKE DRUM	4
8589C64H72	CAP SCREW	40
8589C64H74	BRAKE LINING KIT	8

Appendix E-2: Spare Parts

Part No	Description	Qty
8589C64H77	COLLET NUT - BRAKE CHAMBER	8
8589C64H77	COLLET NUT - BRAKE CHAMBER	16
8589C64H78	RIVETS	140
8589C64H79	LININGS	16
8589C64H80	BOLT ADJUSTING	16
8589C64H80	BOLT ADJUSTING	32
8589C64H86	CAP SCREW HOLD DOWN CLIP	8
8589C64H86	CAP SCREW HOLD DOWN CLIP	16
8589C64H87	SPRING - BRAKE SHOE RETURN	8
8589C64H87	SPRING - BRAKE SHOE RETURN	16
8589C64H88	BRAKE SHOE & LINING ASS'Y	8
8589C64H88	BRAKE SHOE & LINING ASS'Y	16
8589C64H90	NUT HOLD DOWN CLIP	8
8589C64H90	NUT HOLD DOWN CLIP	16
8589C64H91	CLIP HOLD DOWN	8
8589C64H91	CLIP HOLD DOWN	16
8589C64H93	WEDGE ASSEMBLY	8
8589C64H93	WEDGE ASSEMBLY	8
8589C64H94	SPIDER BRAKE	8
8589C64H94	SPIDER BRAKE	2
8591C07H01	SIGNAL COVER 5 FEET BEIGE	80
8591C07H13	SIGNAL COVER 2.50 FEET BEIGE	4
8591C09G01	SIGNAL EXPANSION JOINT ASS'Y	10
8591C12G01	SIGNAL ISOLATION JOINT	6
8592C16G03	STD. CONTACTOR 200 AMPS TYPE UMC-109A	2
8592C18G06	STD CONTACTOR AND INTERLOCK TYPE UMC-109G	2
8593C08H03	TRANSFORMER 600V/60HZ & 600V/50HZ 10VA	3
8593C21G01	CYLINDER HEAD ASSY - LOW PRESSURE	2
8593C22G01	CYLINDER HEAD ASSY - HIGH PRESSURE	2
8593C23G01	OIL PUMP COVER (WITH UNLOADERS)	2
8594C63H02	STD. FAN 24 VDC 94 CFM	3
8594C63H04	STD. FAN 12 VDC 106 CFM	3
8617A79G01	CONTACT WITH INSERT	8
8618A09G07	RESISTOR ASSEMBLY	1
8838D98H01	WHEEL HUB	2
8840D42G06	GENERAL ASSEMBLY TYPE UT-323 OVERLOAD	2
8840D61G01	RESISTOR PANEL R.H.	2
8840D61G02	RESISTOR PANEL L.H.	2
8840D61G03	RESISTOR PANEL R.H.	1
8840D61G04	RESISTOR PANEL L.H.	1
8840D97G02	INDICATOR ASSEMBLY	2
8840D97G03	PUSHBUTTON ASSEMBLY	2
8840D97G04	PUSHBUTTON ASSEMBLY	2
8840D97G05	PUSHBUTTON SWITCH ASSEMBLY	2
8840D97G07	PUSHBUTTON ASSEMBLY	2
8840D97G08	PUSHBUTTON ASSEMBLY	2
8840D97G09	PUSHBUTTON ASSEMBLY	2

Appendix E-2: Spare Parts

Part No	Description	Qty
8840D97G11	PUSHBUTTON ASSEMBLY	2
8840D97G12	PUSHBUTTON ASSEMBLY	2
8840D97G13	PUSHBUTTON ASSEMBLY	2
8840D97G14	PUSHBUTTON ASSEMBLY	2
8840D97G32	PUSHBUTTON ASSEMBLY	2
8840D97G38	PUSHBUTTON SWITCHES & INDICATORS	2
8840D97G44	INDICATOR ASSEMBLY	2
8840D97G83	ALARM TEST PUSBUTTON ASSEMBLY	2
8840D97G84	FLUID LEVEL INDICATOR ASSEMBLY	2
8840D97G85	PUSHBUTTON ASSEMBLY	2
8844D32G01	AIR CONTROL PKG SOLENOID VALVE	2
8844D32H02	COIL, 24 VDC	4
8844D32H03	REPAIR KIT	4
ZL145WA	Siemens Hicom CBX w/ 31E5533, 31E4405, & SLA16N	2
VideoPoster VP III	Apollo Display Technology (Video PC Boards)	4
46" LCD Display	Apollo Display Technology (46" Monitor)	8

Appendix E-2: Tools, and Equipment List

Item	Qty	Part No.	Location
Laser printer	2		2ND FLOOR
Laser color printer	1		2ND FLOOR
IBM compatible PCs (servers)	2		2ND FLOOR
Spectrum analyzer w/noise marker	1		ALFREDO
Tic tracer	12		ALL TECHS
Frequency/Time domain reflectometer	1		AVMET V102
Traction Motor Support Cradle	1	5D79169G01	BAY 5 WALL
Dot matrix printers	2		CENTRAL
System simulator	1		CENTRAL
Soldering/desoldering stations	2		ELEC ROOM
Soldering iron	2		ELEC ROOM
Bench VAST	1		ELEC ROOM
Portable VAST	1		Supply room
Programmable	1		ENG OFF
Tool, Actuation, Flat Tire System	1	401P401H14	LEAD DESK
Battery soldering iron	2		LIB
End Play Measuring Tool	2	6D55567G01	Mech Room
Guidewheel Assembly Fixture	1	6D55460G01	Mech Room
Bearing Cup Driver (Upper)	1	1C44422G01	Mech Room
Bearing Cup Driver (Lower)	1	1C44423H01	Mech Room
Grease Seal Driver	1	1C44424H01	Mech Room
Grease Seal Driver (Lower)	1	1C44425H01	Mech Room
Dust Shield Driver	1	1C44418G01	Mech Room
Coupling Hub Hydraulic Removal Assy	1	3D51371G01	Toolcrib
Plate 11.00 X 23.63 X .25 Thk Alum (H01)	3	1C43246H01	Mech Room
Planetary Hub Bearing Cup Puller	1	5D56121G01	I108
Planetary Hub/brake Drum Cradle	1	1C43244G01	BAY 5 WALL
Planetary Ring Gear Lifting Tool	1	1C43137G01	V104
Dust Seal Driver	1	1B39122H01	Mech Room
Brake Adjustment Tool	1	1C43136H01	Mech Room
Cable W/Custom Deutsch Connector	1	404P723H32	LEAD DESK
6 channel chart recorder	1		mechrm cab
8 channel chart recorder	1		mechrm cab
Power supply, 40 V - (BK Model 6020, 0-60v)	1		mechrm cab
Digital thermometer	1		MRA3,
Track mapper	0		NA
IBM compatible PCs (work stations)	21		OFFICES
Portable IBM compatible PC	2		SUPS
Analog multimeter, portable, Simpson 260-p	1		ENG OFF
Ty wrap tool	3		TOOL WALL
Frequency counter	1		U127
Function generator	1		U127
Signal generator, Lizard portable Transmitter	1		LIB
Power meter w/power head	1		U127
Sound level meter	1		U127
Bench model DMM	1		U132
Hi-pot	1		U132
Power supply, 0-30 V, ELECTO IND. MODEL 3012A	1		U132
Fluke, 123 Scopemeter	1		V131
FLuke, 43B Power Analyser	1		V133
Meggar, 1000 V, AVO Model 210600	1		V102
Commutator Resurfacing Tool Assy	1	2255F39G01	V103
Hub Seal Driver	1	1B39123H01	V103
Grease Cap Driver	1	1C44419H01	V104
Bearing Nut Removal Tool	1	3D51373G01	V104
Bearing Cup Driver	1	1B39120H01	V104
Bearing Cup Driver	1	1B39121G01	V104
Pinion Yoke Removal/Installation Tool Set	1	5D74845G01	V104

Appendix E-2: Tools, and Equipment List

Item	Qty	Part No.	Location
Socket 1.75 Hex Special	1	4077B16G02	V104
Special Socket 1)	1	4724A87H02	V104
Phase sequence indicator	1		V107
Clamp-on current meter (AC/DC) FLUKE 31	1		V107
Heat gun	2		V111
Hand-held DVM	8		V112, MRA3
Force gauge	1		V117, MRA1
Clamp-on current probe	1		V131
Power supply, 20 V, Tenma 72-6628	1		V132
Resistor decade box	1		V133
10' X 20' Flat Bed Trailer	0		NR
FLUKE 863, Graphic multimeter	1		V102
O-scope probe (provided w/ scope)	2		V102
O-scope probe (provided w/ scope)	1		V117
Capacitance decade box	1		LIB
Extender boards, propulsion	3	225P748G01	A129
Extender boards, ATO	2	409P248H90	
Extender boards, wayside	3	226P338G01	ELEC ROOM
Power Supply, B&K Precision model 1715 0-60v	1		mechrm cab
Notch Filter	1		NA
Fluke Thermal Imager, Model TI-30, s/n 89720099	1		LIB
Fluke Power Quality Analyser, Model 434,	1		LIB
Special Coupler Tool Set	1		mechroomcab
Adhesive Back Sandpaper for Orbital Sander	1	2D709	BACK WALL
7" Grinder disc	10	3VP30	back wall
41/2" Grinder disc	20	3VX05	back wall
14" Cut-off blades	6	4A896	back wall
6' X 8' Welding Screen	1	3T970	Bay 1 bot
Drum dollies	3	3KR53	bay 5
25' Extension Cord	4	2W566	bay flooor
High Pressure Steam Cleaner	1	5GH72	BOT FLOOR
Micrometer Set 0-6"	1	5C675	Library
Wheel Chauks	2	4W941	Load dock
5" Bench vise	2	1ATH0	mech room
14" Cut-off saw, Milwaukee	1	2AC06	MECH ROOM
Rechargeable Latern	3	2V837	MECH ROOM
Rechargeable Flashlight	3	2V888	mech room
8" Bench Grinder	1	4Z909	Mech room
8" Bench vise	2	5C804	Mech room
9-Speed 20" Floor drill press	1	6W281	Mech room
15" Floor Standing Band Saw	1	6Y002	Mech room
Wheel bearing packer	1	6Y907	Mech room
Heavy duty industrial workbench	6	7W087	MECH ROOM
12 ton Hydraulic press and H frame	1	7Z820	MECH ROOM
Shop Stools	6	2W175	mech room flr
12" Dial Caliper	1	5C665	MRA1
5/16" - 6" Internal Micrometer	1	5C717	MRA1
6" Dial Caliper	1	5C667	MRA1,U122
6" Digital Caliper	2	5C672	MRA1,U122
Degreaser transfer pump	1	2P683	sh floor
9" long Hex 3/8" drive ratchet	1	1AF34	shift toolbox
Metal Tool Box	2	2W019	Shop floor
Oil Waste Can	1	2W560	Shop floor
Hydraulic Lift Table	2	3KR47	Shop floor
3 Ton Gantry	1	3KR62	Shop floor
Crane Trolley	1	3TP86	shop floor
Platform Truck	2	3W077	shop floor
8' Stepladder	2	3W142	shop floor

Appendix E-2: Tools, and Equipment List

Item	Qty	Part No.	Location
3" Fiberglass Step Stool	6	3W332	shop floor
12' Stepladder	1	3W422	shop floor
Grease pail doily	1	4F987	shop floor
Drum Containment Platform Ramp	1	4RF65	shop floor
Drum Containment Platform	2	4YF76	shop floor
Heavy Dity Rool Around Tool Box	2	6A575	shop floor
Oil dispenser, air operated	1	6Y820	shop floor
Grease Gun Handle Style	2	6Y826	shop floor
Grease Gun Pistol Style	2	6Y829	shop floor
12" Felxible Hose	6	6Y835	shop floor
Oil dispenser, Hand operated	1	6Y881	shop floor
Air operated grease gun	2	6Y885	shop floor
Oil drain pan	1	6Y902	shop floor
Oil drain pan	1	6Y903	shop floor
Drain pan funnel	1	6Y910	shop floor
50' Water Hose	3	1P649	SHOP FLR
9" long Hex 1/2" drive ratchet	1	3R747	shop tool box
Bins for storage cabinets	32	2W779	storeroom
Bins for storage cabinets	96	2W780	storeroom
2 3/4 Ton Pallet Jack	1	3KR84	storeroom
Plate Dolly	2	3W218	storeroom
1000lb Floor Scale	1	3W494	storeroom
Fire safety cabinet, safety yellow	2	4T196	storeroom
Sliding drawer units	2	5W885	storeroom
1 3/4" Cup Brush	5	3A203	supply shelf
1/2" Spiral Wire Brush	2	4F727	Supply shelf
1" Spiral Wire Brush	2	4F731	supply shelf
Maintenance Free Respirators	2	4JG05	Supply shelf
Band saw blades	6	4L226	Supply shelf
Band Saw Blades	6	4L236	Supply shelf
Disposable Ear Plugs	1	4T147	Supply shelf
Dust / Mist Respirator	2	4T823	Supply shelf
8" Bench grinding wheels	4	6A091	Supply shelf
Funnel	4	6Y806	Supply shelf
Utility Knife	6	5R685	tool bxs
Tot Bag for Tools	6	4A670	Toolcrib
12" Hacksaw	2	4K799	Toolcrib wall
Carpenter Square	1	5W189	Toolcrib wall
50foot Extension Cord	2	5W576	Toolcrib wall
100' Extension Cord	2	5W577	Toolcrib wall
48" Straight Edge	2	6C233	Toolcrib wall
Combination Square 12"	2	6X996	Toolcrib wall
24" Straight Edge	2	2H406	Toolcrib wall 1
Freon Recovery System	1	1Z861	TOP SHELF
A/C Pressure Vacum Gauge Set	1	3T078	U115
Freon Leak Detector	1	3T449	U115
Hole Saw Kit	1	4L638	U118
Pneumatic Rivet Gun	1	4Z913	U118
Manual Rivet Gun Kit	2	6A644	U118
Chain Hoist 3 Ton	1	3KR22	U119
4 ton Hydraulic ram system	1	3ZC68	U119
Chain Hoist	1	4Z312	U119
3/8" 18V battery powered drill with keyless chuck,	2	4PD94	U121
Circular saw, 7 1/2" blade, Milwaukee	1	4Z372	U121
Circular saw blades	2	5G890	U121
Depth Gauge 0"-6"	1	5C723	U122
1/2" Electric impact wrench, Dewalt DW291	1	4JB74	U123
1/2" Hammer drill, Milwaukee	1	6Z040	U123

Appendix E-2: Tools, and Equipment List

Item	Qty	Part No.	Location
8' Nylon Sling	4	1A598	U124
Shackle	6	2G796	U124
Chain Hooks	12	3X692	U124
3/8" Chain (Bucket)	1	3Z940	U124
Chain Slings	2	4X461	U124
Portable band saw stand	1	1Y335	U126
Portable variable speed band saw, Deep cut,	1	6Z345	U126
1/4" Die Grinder Milwaukee	1	1Y068	U128
1/2" Electric drill with keyless chuck, Milwaukee	2	4A937	U128
6 ft. Nylon sling	2	1A597	U129
10' Nylon Sling	2	6A259	U129
Electric angle grinder 4 1/2", Milwaukee	1	4A942	U133
Electric 2" die grinder, Milwaukee	1	4Z818	U133
Welding Helmet	1	1N782	V105
Welding Vest	2	2AG83	V105
Welding Gloves	2	4JF98	V105
Deluxe Drum Wrench	1	6A240	V108
Cable Cutter 24" Long	1	2G996	V113
8" Bench grinder stand	1	4Z154	V114
9" Suction Cups	4	6A987	V115
Air operated blow gun, regulated to 30psi	4	5X786	V116
6" Cross vise	1	6Z848	V119
Oil transfer pumps	2	1P893	V120, sh floor
Hand Stamps, Letter & Numbers	1	1F113	V121
Stencil set	1	6A231	V121
HVLP Spray Gun	1	4TH37	V125
Motor for Band Saw	1	6K639	V125
Drill Bit Set 8 Piece (9/16" -1")	1	1A050	V126
Drill Bit Set 118 Piece (1/16" -1/2")	2	1A522	V126
3/4" Dewalt Impact Gun	1	3MJ17	V128
Orbital Sander Milwaukee	1	3W786	V128
Electric angle grinder 7°, sander Milwaukee	1	4Z819	V128
3/8" Electric right angle drill, Milwaukee	1	6Z037	V128
Battery charger	1	2Z556	V131
Portable Lite Stands	3	83998	back wall
18 Piece Hex Key T Handle Set	1	46288	box 4 floor
13 Piece Ball Hex Key Set	2	46754	bx 4 floor
110V Mig Welder	1	20418	I103
16 Gallon Shop Vacum	1	17703	mech room
Ignition Wrench Sets	2	43109	mech room an
3 Piece Channel Lock Set	2	45439	mra2,mrd1, 2nd
3lb Sledge Hammer	2	38311	mra4
16oz Rubber Mallet	2	45787	mra4,mrd3
16oz Claw Hammer	2	38127	mra4,tocribwa
5 Piece Pry Bar Set	2	43067	mra4,tocribwa
10" Pipe Wrench	1	30841	MRB2
Ratchet Wrench Sets (1/4"-7/8")	2	42160	mrb2
5 Piece Adjustable Wrench Set	1	44036	mrb2,mrd1,2nd
7 Piece PlierSet	2	45225	mrc2
13 Piece Vise Grip Set	1	45634	U109
3 Piece Extra Large Adjustable Wrench Set	1	44916	mrd3, tc wall
3/8" X25' Air Hose	3	16203	shop floor
3/8" X 50'Air Hose	6	16204	shop floor
3/8" X 50' Hose Reels	6	18644	shop floor
Halogen Drop Lights	6	83895	shop floor
Flourescent Drop Lights on Reels	12	83912	shop floor
15" Hand Saw	1	36071	tool crib
18" Pipe Wrench	1	30843	tool crib wall

Appendix E-2: Tools, and Equipment List

Item	Qty	Part No.	Location
14 Piece Clamp Set	1	31470	tool crib wall
Oxy / Acet Cutting Torch	1	20170	tool crib,
Hand Held Vacum 3 Gallon	2	17768	tool crib, shop
Portable Air Compressor	1	16735	tool shed
25 Piece File Set	2	31233	U103, various
20 Piece Screwdriver Sets	2	47452	u105, bx 4
Stuby Wrench Set	2	44138	u106, mrb1
Extra Large Wrench Set (1 1/16"-11 1/2")	2	45965	u106, mrb1
Ratcheting (5/6"-1 1/2") Tap Holder	1	4064	U108
Ratcheting (0"-1 1/4") Tap Holder	1	4065	U108
58 Piece Tap and Die Set	1	52311	u108
8 Piece File Set w/Handles	2	31326	bx 4 floor
259 Piece Standard Mechanic Tool Set	4	33758	shop floor
5 Piece Hammer Set	2	38074	toolcrib wall
Offset Ratchet Wrench Sets	2	43375	mrb2
9 Piece PlierSet	2	45311	2nd shift 2a
10 Piece Vise Grip Set	1	45635	MRD2
3 Piece Folding Hex Key Set	2	46287	bx 4 floor
Offset Ratcheting Driver Set	1	YA487	BX 4 FLR
Mag Base Dial Indicator	1	GA3645	GUIDE CAB
Tire Infaltor w/Gauge	4	YA258	Mech floor
3/8" 6 pt. Impact Standard Socket Set	1	212IMFY	mechroom wa
3/8" 6 pt. Impact Deep Socket Set	1	212SIMFY	mechroom wa
1/2" 6pt Impact Standard Socket Set	1	320IMY	mechroom wa
1/2" 6 pt Impact Deep Socket Set	1	320SIMY	mechroom wa
3/4" 6 pt Drive deep well impact socket set	2	420SIMY	mechroom wa
3/4" 6 pt Shallow Thin Wall Socket Set	2	422IMFSY	mechroom wa
3/4" 6 pt. Drive impact socket set	2	427IMY	mechroom wa
3/8" Drive Torque Wrench 40-200inch Ib	1	QC2R200	MRA3
1/2" Drive Crows Foot Set	1	314SCO	MRB2
1/2" Spline Socket Torque Adapter	1	SRES306	MRB2
Spline Wrench Set (7/32"-1")	1	XDES608A	MRB2
Valve Stem Core Removcal Tool	2	TR1170	MRC2
3" Cut Off Saw	1	AT15	MRC3
1/4" Drive Impact ratchet	2	AT200D	MRC3
1/2" Drive impact gun	2	AT500E	MRC3
3/8" Drive impact ratchet	2	AT700E	MRC3
3/8" Right Angle Air Drill	1	AT81	MRC3
3/8" Drive impact gun	2	IM31	MRC3
3/8" Air Drill	1	PDR3A	MRC3
Screw Starter Flat Tip	2	SSM5A	MY CAB
Torque Multiplyer	1	GA184A	PIN TOOL BX
General Purpose Puller Set	1	CJ2000SB	STORE WALL
3/4" 12 pt Standard Socket Set	2	414AHD	U100
Ratcheting Bit Set	1	CRA180PV	U101
6" Divider	1	PMF129	U102
1/4" Drive Torque Wrench 40-200inch Ib	1	QC1R200	U102
Punch and Chiesel Holder	2	PPC5A	U102, MRA3
1/4" Drive Torque Wrench 10-50inch Ib	2	QC1R50	U102, U107
6 Piece Long Roll Pin Set	2	PPCL60AK	U103
12 Piece Rool Pin Set	2	PPR712K	U103
Retaining Ring Plier Set	1	PRQ625	U108
Hole Punch Set	1	PGH8A	U108
3/8" Drive Torque Wrench 20-1 OOft Ib	2	QC2R100	U108, MRA3
1/2" Drive Torque Wrench 50-250ft Ib	2	QC3R250	U117
3/4" Drive Torque Wrench 120-600ft Ib	2	QC4R600A	U117, MRA3
Rivet insert kit, Threadsetter Set	1	HP650	U118
Cotter Pin Pullers	4	CP3B	V103

Appendix E-2: Tools, and Equipment List

Item	QTY	PART NO.	LOCATION
Safety Wire Pliers	2	WTRW6	V106
Safety Wire PLiers	2	WTRW9	V106
Thermometer	4	ACT83	V116
Bent Feeler Gauge Set	2	FB300A	V116,BX4FLR
Pneumatic Orbital Sander	1	PSF100	V118
Air Nibbler	1	AT18	V118
3/4" Drive impact gun	2	AT77	V123,MRC3
Carbon Scrapper Set	2	CSA300	
Feeler Gauge Set	2	FBL325A	BX 4 FLR
Stick Style Tire Pressure Gauges	2	GA246	V113
Screw Starter Phillips Tip	2	GA260A	BX 4 FLR
Tread Depth Gauge	2	GA599	
3/4" Drive Breaker Bar	1	L872RM	
Scrapper Set	2	PK500	
1/8"-1/2" Reamer	2	R120	PEG DRAW
1/2"-1" Reamer	2	R121	PEG DRAW
Refrigeration Wrench	2	R404	
1/2" Drive Long Handle Ratchet	2	SL832	MRA3
Xantrex Power Supply, model # XDL56-4P	1		JEFF
RAD Torque Machine, model RAD 550SL	1		shop floor
Micro-Ohmmeter, model# LOM-510A	1		JEFF
Vericom Brake rate Tester	1		Eric
Tyco Electronics Die Crimp# 2 for large Crimper	1		shop floor
QC2FR75 TORQUE WRENCHES	3	QC2FR75	2 on U112, 1 MRA3
Sandyjet Abrasive Sand Blaster	1		3RD FLOOR
Genie Lift Truck,	2		3RD FLOOR Bay 2
Alcatel Vacuum Pump	2		back wall
12 FT extension Ladders	2		Bay 2 bot level
Louisville Ladder /ramp	1		Bay 2 bot level
6' Fiberglass Ladder, 6JJ82	1	6JJ82	Bay 2 bot level
28 'Ladder 3W140	2	3W140	Bay 2 bot level
MRV Fuel Tank	1		Bay 5
12' Cotterman Ladder	1		bay 5
4 ' Cotterman Ladder	1		bay 5
Microair Vacuum System	1		bay 5
Tractmax hepa Vacuum	1		bay 5
Wesco Lift Dolly, DPL-54-2222	1	DPL-54-2222	Bay 5
Rolling Bin Carts	1		Bay 5
Lincoln electronic meter assy, quarts, 6WB36	1	6WB36	Bay 5
Ridgid KJ-99 Jack Stands	2	KJ-99	bay 5
3/4 ton Wheel Dolly ATD-7227	1	ATD-7227	Bottom Floor
Wire Spool Spindle Rack	1		Bottom Floor
Pipe Rack	1		Bottom Floor
Yellow containment Drums 55 gallon	4		Bottom Floor
Black 4 way special pallets	1		Bottom Floor
Yellow Battery Containment pallet	1		Bottom Floor
Orange Pallet Grabber	1		Bottom Floor
8 FT Loading Ramp walkway	1		Bottom Floor
Speed Scrub 2601 Power Floor Cleaner	1	2601	Bottom Floor
Saber WINDSOR Floor Cleaner	1		Bottom Floor
Large Capacity Plastic Liquid storage Tank	1		Bottom Floor
Yellow Lift cage for Forklift	1		Bottom Floor
Ridgid Tristand 1/8 to 6 n460	1	n460	Bottom Floor 2nd Isle
Yamaha 4D4600 Gas Generator	1	4D4600	Bottom floor 2nd Isle Back
36" floor Fans Qty 3 used fair	4		Bottom floor 2nd isle back
Uline Hand Stretch wrapper Model h-88	3	h-88	Bottom Floor 1st Isle Back
Programmable Logic Controller, plc guide switch	1		Electronic Room
Ridgid Battery operated Sawsall	1		Electronic Room

Appendix E-2: Tools, and Equipment List

Item	Qty	Part No.	Location
Portable Scunci Steam machine	1		Electronic Room
SPECTOLINE EPROM Eraser	1		LIB
Streppel Glasfaser 110 vac	1		LIB
Dewalt Cordless rt angle drill kit, DW960	1	DW960	LIB
Ridgid cordless rt angle drill, R82233	1	R82233	LIB
Amp Crimper, 59824-1	1	59824-1	LIB
AF8 VEAM CRIMPER	1		LIB
Pyle National crimping tool kit	1		LIB
Litton Veam Connector assy kit dmc2	2	dmc2	LIB
RYCOM 3111A Selective Voltmeter, QTY 2	2	3111A	LIB, T129
Tektronix P5200 HIGH VOLTAGE Probe	1	P5200	LIB
Mitoyo Caliper 505-705	1	505-705	LIB
MITOYO CALIPER 2904F	1	2904F	LIB
Dial Indicator, chicago dial	1		LIB
AMP Crimper f0026	1	f0026	LIB
AWS PSI- 8031 Indicator	1	PSI- 8031	LIB
Burndy HYTOOL M8ND Crimper	1	M8ND	LIB
Fluke Current Transformer 801600a	1	801600a	LIB
Textronics probe, P6113B	1	P6113B	LIB
FLUKE 850/1300 FIBER OPTIC SOURCE	1	FLUKE 850/1300	LIB
Fluke 52 Thermometer	1	Fluke 52	LIB
FLUKE 87 MULTIMETER	1	FLUKE 87	LIB
FLUKE 77 MULTIMETERS	3	FLUKE 77	LIB
Sencore Capacitor inductor Analyzer lc76	1	lc76	LIB
Simpson Sound Meter System 886-2, type 2	1	886-2, type 2	LIB
NOYES MLP MULTIMODE LIGHT PACK	1		LIB
Anritzu Spectrum Analyzer mp 1550a	1	mp 1550a	LIB
General Radio capacitor decade Box	1		LIB
Yokogawa 2786 Decade Resistance Box	1	Yokogawa 2786	LIB
Proto Torque Wrench, 6006a 10-80 ft	1	6006a	LIB
proto Torque Wrench, 6003 PB 10-100 ft	1	6003 PB	LIB
Snap-on flex head torque Wrench TQFR250	1	TQFR250	LIB
MONARCH RPM GUN	1		LIB
SNAP-ON TORQUE QC1R50	1	QC1R50	LIB
SNAP-ON TORQUE QT1R50	2	QT1R50	LIB
SNAP-ON TORQUE WRENCH, QD1R50	1	QD1R50	LIB
SNAP-ON TORQUE WRENCH, QC1200	1	QC1200	LIB
PROTO TORQUE WRENCH 6062A	1	6062A	LIB
GRAPHTEC Thermal array Chart Recorder, WR	1	WR 8000	LIB
Snap-on QC5R1000 Torque Wrench	1	QC5R1000	LIB
Electro Physik Thickness Gauge, Minitest 600	1	Minitest 600	LIB
Tire Cage	1		Loading Dock
Skidmore Wilham Calibration Tool	1		Mechroom
Kar Products Hardware storage Cabinets	1		mechroom
Bird, Digital Power Meter, model 5000ex	1	5000ex	MECHROOM CAB
Battery tester 6/12/ volt	1		MECHROOM CAB
Guidewheel Assy Fixture, 6D55460G01	1	6D55460G01	MECHROOM FLOOR
QC3R250 TORQUE WRENCH	1	QC3R250	MRA3
Long QCR250 TORQUE WRENCH	1	QCR600A	MRA3
QCR600A Torque Wrench	1		MRA3
pneumatic Calking Gun	1		MRC4
Dayton Wet/dry Vacuum model # 1D456D	1	1D456D	PDS Room
Black Rolling Cart, 3 shelf Bretford	1		PDS Room
10 ft Ladder fiberglass Model # FS1510	1	FS1510	PDS Room
8 FT fiberglass ladder	1		Pds Room
Green flat Hand Cart 2 x 4	2		PDS Room, by spools
System Drawings, 1 Pallet,	1		SF1307
Extra Metal shelving units, 1 Pallet	1		SF1415

Appendix E-2: Tools, and Equipment List

Item	Qty	Part No.	Location
AQUAWORKS Parts Cleaning Machines	1		shop floor
2 shop fans 24"	1		shop floor
10' Ladder M7110-1 type 1A	1	M7110-1 type 1A	STOREROOM
Uline Banding Cart and tools	1		Storeroom
Forklift Extensions, 8 FT,	1	6XX16	Storeroom back wall
Fire Safety Cabinets	4		storeroom, Janitorial, BAY 5
Air Operated Calking gun 3M BP 480-85 MIX PAC	1	BP 480-85	Storeroom back shelf
Spectroline DC-3300A Eprom/waiver Eraser	1	DC-3300A	T126
Tektronix 314 storage Oscilloscope	1	Tektronix 314	T126
Astromed MT9500 Chart Recorder	1	MT9500	T128
HP 6274B DC Power Supply	1	HP 6274B	T128
Lambda LRA-17 Rack Power Supply	1		T128
Milwaukee Mag Drill,	1		Tool crib cage floor
Craftsman 150 psi 3 hp 4 gal air compressor	1		Tool crib cage floor
Portatorch, Lincoln	1		toolcrib floor
Dayton Battery Charge 40/2 amp	1		toolcrib floor
Battery powered grease gun, Lincoln	1		toolcrib floor
48 " Straight Edge	2		toolcrib wall
MEASURING DISTANCE WHEEL, Lufkin	1		top shelf toolcrib
BEX bluepoint BEX13 Bolt Extractor Set	1	BEX13	U113
LCD Vacuum Gauges	2	69070	U115
Freon Leak Detector	1		U115
Hydraulic Rivet Gun	1		U118
Hole saw Kit, Westward	1	4wx60	U118
Electric Winch3VJ64	1		U119
4 TON HYDRAULIC RAM SET	1		U119
Chain Hoist 3 ton	1		U119
Vari speed Jigsaw	1		U120
6" DIAL Calipers, nsk	1		U122
Starett Micrometer model	2	230p	U122,,MRA1
Hilti Hammer Drills	2	TE-6A	U125
HILti Hammer Drills	1	TE15	U125
Portable Variable band saw Milwaukee	1		U126
1/4" Die Grinder Milwaukee	1		U128
Greenlee Hydraulic Knockout Set 7506, 1/2 - 2"	1	7506	U130
Hilti Hammer Drill	1	TE-55	U130
David White auto level	1		U131
Tripod, David White mod 9045	1	9045	U131
Measuring stick, David White	1		U131
PLS-5 Lazar Level	1	PLS-5	U131
Audio Visual VOLTAGE Detector, Salisbury	1		U132
Mag Drill, Hougen rotor broach	1		U133
ULTRA -LOK self Ratcheting Lifeline & Harness	3		U134
Tie Downs	6	3kn70	U134
Cross Needle SWR and power meter	1	cn-1031	V101
Diode removal tool,	1	577B060H33	V103
Radius Rod Removal Tools	2		V103
Submersible Pump	4	5RV54	V119
Extech Lazer photo/contact Tachometer	1		V122
Transfer Pump	1	6Y881	V125
Dewalt Grinder 4 1/2 "	1		V128
Special Seismic tool Measuring Kits	2		V129
Complete Mechanics tool Sets with tool box	46		shop floor
(SFO Owned) Toyota Sitdown Forklift, Propane op.	1		1st Floor
Fluke 179 multimeter	1		JROW
OUTDOOR STORAGE SHED	1		BY CARWASH
OIL HEATER	1		CONFERENCE ROOM
Honda Generator	1		Bay 2

Appendix E-2: Tools, and Equipment List

Item	Qty	Part No.	Location
Carpet Loader Attachment for Forklift	1		bottom floor
UTICA, ts-100 Torque limit Screwdriver, mc	1	8554a25	victor
MCARR Digital torque wrench,	1	CD2250A	VICTOR
McCarr Digital torque wrench,	1	CD280ff	victor
McCarr proto Hex Bit Ball Set 7 pc	1		Victor
AMP PRO CRIMPER,	2	90869-1	VICTOR
AMP EXTRACTION TOOLS,	2	318831-1	VICTOR
Daniels SAAFE T Cable tool,	1	SCT323	ERIC
UNION SWITCH RELAY TEST STAND,	1	PN150	ALFREDO
UNION SWITCH RELAY TEST STAND, GRS B1	1		ALFREDO
Xantrex Power Supply, model # XDL56-4P	1		JEFF
RAD Torque Machine, model RAD 550SL	1		shop floor
Micro-Ohmmeter, model# LOM-510A	1		JEFF
Vericom Brake rate Tester	1		Eric
Tyco Electronics Die Crimp# 2 for large Crimper	1		shop floor

Appendix G

Task 5: AirTrain Vehicle Tri-Handle Stanchion Replacement

General Project Scope:

Contractor will provide all material, labor, tools, engineering, vehicle drawing updates/configuration management associated with the supply and installation of 190 new tri-handle stanchion assemblies into the AirTrain vehicles at the San Francisco International Airport.

Installation:

Currently each vehicle is outfitted with five (5), single pole stanchions along the center line of the vehicle and two (2) stanchions that are offset near the door opening. To increase the number of locations within the center portion of the vehicle that passengers can hold themselves steady during vehicle movement, Contractor will replace the five (5), single pole, center-line stanchions with tri-handle stanchions. Replacement of the single stanchion design with a tri-handle stanchion design will improve passenger experience on the AirTrain system and increase the safety level inside the vehicle while traversing the system.

Retrofits will be performed during normal station door maintenance inspections and will not impact normal AirTrain operations.

Final Acceptance:

The following will be performed to verify final acceptance:

- Once units arrive on site, a quality assurance inspection will be performed prior to installation.
- After QA inspection, the installation of each unit will begin. Installation process will be inspected to confirm proper mounting.
- Contractor to ensure any debris from project has been removed from all areas upon completion of job.

Warranty

Each unit will carry a standard warranty of 1 year on all parts from date of purchase.

Cost of Project:

The firm fixed price for the combined scope as described is broken down as follows:

• Contractor Labor Charges – Includes:	\$56,280.00
○ Project Management	
○ Engineering	
○ Configuration Management	
○ Drafting	
○ Installation (38 Vehicles)	
• Qty (190) – Tri-Handle Stanchion Post @ \$875.85/ea.:	\$166,411.50
• Qty (190) – Bottom Plate @ \$138.25/ea:	\$26,267.50
• Qty (185) – Trim Ring @ \$69.68/ea:	\$12,890.80
• Miscellaneous installation hardware and adhesives:	\$5,967.38
• CA Sales Tax on Materials (8.75%):	\$18,509.50
• <u>Material Shipping:</u>	\$5,332.70
TOTAL:	\$291,659.38

Appendix G

Task 5: AirTrain Vehicle Tri-Handle Stanchion Replacement

Payment Terms: The following payment schedule is proposed for this project:

- 15% of order value to be invoiced upon receipt of authorized notice to proceed
- 10% of order value to be invoiced upon completion of material order
- 25% of order value to be invoiced upon 1st car installation and acceptance by the customer
- 25% of order value to be invoiced upon delivery of remaining material to SFO
- 25% of order value to be invoiced upon completion and testing of all units

Appendix G

Task 6: AirTrain Station Door Auto-Lock Replacement

General Project Scope:

This project will replace 122 automatic station door auto-lock assemblies located at the various AirTrain stations. The project scope includes the following:

- Contractor will provide all necessary project management, engineering, drafting and material supply for retrofitting one hundred and twenty-two (122) station doors plus four (4) spare Auto-Lock systems and a complete Spare Parts kit.
- Contractor SDC Staff will be responsible for installation and testing of the new auto-lock equipment, on a schedule to be mutually agreed to by SFO and Contractor.

Installation:

Retrofits will be performed during normal overnight shutdown periods recognizing that installation and testing activities, whenever possible, must not impact normal AirTrain operations.

Final Acceptance:

The following will be performed to verify final acceptance:

- Once units arrive on site a quality assurance inspection will be performed prior to installation.
- After QA inspection the installation of each unit will begin. Installation process will be inspected to confirm proper mounting.
- A final test of each unit will be performed after installation to ensure secure close and lock is achieved.
- Contractor to ensure any debris from project has been removed from all areas upon completion of job.

Warranty:

Each unit will carry a standard warranty of 1 year on all parts from date of purchase.

Cost of Project:

The firm fixed price for the Auto-Lock retrofit is as follows:

• Bombardier Labor Charges – Includes:	\$27,560.00
○ Project Management & Scheduling	
○ Engineering	
○ Planning	
○ CADD/Drafting	
○ Installation (126 assemblies)	
• Qty (126) – Auto-Lock Assemblies @ \$1,264.65/ea:	\$159,345.90
• Qty (1) – Set of Alignment Tools:	\$1,030.54
• Qty (1) – Spare Parts Kit:	\$3,727.59
• CA Sales Tax on Materials (8.75%):	\$14,259.10
• Freight:	\$4,137.05
• <u>Optional Services (on-site training, calibration of tooling, etc.):</u>	\$3,795.00
TOTAL:	\$213,953.93

Appendix G

Task 6: AirTrain Station Door Auto-Lock Replacement

Payment Terms:

- 15% of order value to be invoiced upon receipt of authorized notice to proceed
- 10% of order value to be invoiced upon completion of material order
- 25% of order value to be invoiced upon 1st station door installation and acceptance
- 25% of order value to be invoiced upon delivery of remaining material to SFO
- 25% of order value to be invoiced upon completion and testing of all units



San Francisco International Airport

December 8, 2017

Ms. Angela Calvillo
Clerk of the Board
Board of Supervisors
City Hall
1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco, California 94102-4689

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2017
SFO

Subject: Approval of Modification No. 4 to Contract 8838 to provide AirTrain Operations and Maintenance Services at San Francisco International Airport, between Bombardier Transportation (Holdings) USA, Inc. and the City and County of San Francisco, acting by and through its Airport Commission

Dear Ms. Calvillo,

Pursuant to Section 9.118 of the City Charter, I am forwarding for the Board of Supervisor's approval, the Modification No. 4 to Contract 8838 to provide Operation and Maintenance Services for the AirTrain System, between Bombardier Transportation (Holdings) USA, Inc. and the City and County of San Francisco, acting by and through its Airport Commission. Modification No. 4 will exercise the last one-year option (March 1, 2018 through February 28, 2019) increasing the contract amount by \$14,854,228, for a new total contract amount not to exceed \$130,299,196. The Airport Commission has approved the terms of the contract by adopting Resolution 17-0280 on November 7, 2017.

The following is a list of accompanying documents:

- Board of Supervisors Resolution;
- Approved Airport Commission Resolution No. 17-0280;
- Memorandum to the Airport Commission recommending Resolution No. 17-0280
- Form SFEC-126 for the Board of Supervisors;
- Form SFEC-126 for Mayor Lee; and
- Copy of Original Agreement, Contract 8838
- Copy of Amendment No. 1 to Contract 8838.
- Copy of Modification No. 2 to Contract 8838.
- Copy of Modification No. 3 to Contract 8838.
- Approval as to form of Modification No. 4 to Contract 8838 from the City Attorney's Office.

Please contact Cathy Widener, Airport Governmental Affairs at 650-821-5023 if you have any questions or concerns regarding this matter.

Very truly yours,
Jean Caramatti
Jean Caramatti
Commission Secretary

AIRPORT COMMISSION CITY AND COUNTY OF SAN FRANCISCO
Enclosures

EDWIN M. LEE
MAYOR

LARRY MAZZOLA
PRESIDENT

LINDA S. CRAYTON
VICE PRESIDENT

ELEANOR JOHNS

RICHARD J. GUGGENHIME

PETER A. STERN

IVAR C. SATERO
AIRPORT DIRECTOR

FORM SFEC-126:
NOTIFICATION OF CONTRACT APPROVAL
(S.F. Campaign and Governmental Conduct Code § 1.126)

City Elective Officer Information (Please print clearly.)	
Name of City elective officer(s):	City elective office(s) held:
Members, SF Board of Supervisors	Members, SF Board of Supervisors

Contractor Information (Please print clearly.)	
Bombardier Transportation (Holdings) USA Inc.	
(1) Board of Directors of Bombardier Transportation (Holdings) USA Inc. (BTHUSA)- B. Jill Hampton, Dan Gray, Jennifer Callery (2) President - B. Jill Hampton (3) N/A- No person owns 20 percent or more (4) N/A (5) BTHUSA does have a group of employees known as the "PAC-Political Action Committee" whose role is to support the Government in the U.S. at State and Federal levels when mass transit is involved.	
Contractor address: 1501 Lebanon Church Road, Pittsburgh PA 15236	
Date that contract was approved:	Amount of contract: Not to exceed \$130,299,196
Describe the nature of the contract that was approved: Maintenance and operation services of the AirTrain system which operates 24 hours every day, providing access to SFO's Terminals, Terminal Parking Garages, Rental Car Center and BART Station.	
Comments: Modification No. 4 to Contract 8838, originally awarded pursuant to a settlement filed in the United States District Court for the Northern District of California, case number C 04-5307 PJH and further pursuant to Airport Commission Resolution No. 08-0173, No. 13-0156, No. 14-0104, 16-0277, and 17-0280.	

This contract was approved by (check applicable):

the City elective officer(s) identified on this form
 a board on which the City elective officer(s) serves San Francisco Board of Supervisors
Print Name of Board
 the board of a state agency (Health Authority, Housing Authority Commission, Industrial Development Authority Board, Parking Authority, Redevelopment Agency Commission, Relocation Appeals Board, Treasure Island Development Authority) on which an appointee of the City elective officer(s) identified on this form sits

Print Name of Board

Filer Information (Please print clearly.)	
Name of filer: Angela Calvillo, Clerk of the Board	Contact telephone number: (415) 554-5184
Address: City Hall, Room 244, 1 Dr. Carlton B. Goodlett Pl., San Francisco, CA 94102	E-mail: Board.of.Supervisors@sfgov.org

Signature of City Elective Officer (if submitted by City elective officer) Date Signed

Signature of Board Secretary or Clerk (if submitted by Board Secretary or Clerk) Date Signed