NOTICE OF AWARD OF CONTRACT

TO:
NABI BUS
106 NATIONAL DRIVE
ANNISTON, AL 36207

DATE ISSUED: NOVEMBER 1, 2013
CURRENT CONTRACT NO: 539-14

CONTRACT TITLE: 40' CNG TRANSIT BUSES
PRIOR CONTRACT NO: N/A

THIS IS A NOTICE OF AWARD OF CONTRACT AND NOT AN ORDER. NO WORK IS AUTHORIZED UNTIL THE VENDOR RECEIVES A VALID COUNTY PURCHASE ORDER ENCUMBERING CONTRACT FUNDS.

The contract term covered by this Notice of Award is effective IMMEDIATELY and expires on DECEMBER 31, 2015.

The contract documents consist of the terms and conditions of Rider Agreement No. 539-14, including any exhibits, attached or amendments thereto.

THE AWARD IS CONTINGENT UPON THE RECEIPT OF A VALID INSURANCE CERTIFICATE BY THE COUNTY PURCHASING AGENT.

CONTRACT PRICING:
REFER TO EXHIBIT C (ATTACHED)

ATTACHMENTS:
RIDER AGREEMENT 539-14

EMPLOYEES NOT TO BENEFIT:
NO COUNTY EMPLOYEE SHALL RECEIVE ANY SHARE OR BENEFIT OF THIS CONTRACT NOT AVAILABLE TO THE GENERAL PUBLIC.

VENDOR CONTACT: CHRIS DABBS
EMAIL: CHRIS.DABBS@NABIUSA.COM
TELEPHONE NO.: 229-291-3067

COUNTY CONTACT: MICHELLE CHANEY
EMAIL: MCHANNEY@ARLINGTONVA.US
TELEPHONE NO.: 703-228-7249

CONTRACT AUTHORIZATION

Ivete Gonzalez
Procurement Officer

DISTRIBUTION

VENDOR: 1
BID FOLDER: 2
ARLINGTON COUNTY, VIRGINIA
OFFICE OF THE PURCHASING AGENT
2100 CLARENDON BOULEVARD, SUITE 500
ARLINGTON, VA 22201

AGREEMENT NO. 539-14

THIS RIDER AGREEMENT (hereinafter "Agreement") is made, on the date of its execution by the County, between NABI Bus (successor in interest to North American Bus Industries, Inc.), 106 National Drive, Anniston, AL 36207 ("Contractor"), an Alabama L.L.C. authorized to transact business in the Commonwealth of Virginia, and the County Board of Arlington County, Virginia ("County"). The County and the Contractor, for the consideration and quantities specified herein or specified in a County Purchase Order referencing this Agreement, agree as follows:

1. CONTRACT DOCUMENTS
The Contract Documents consist of this Agreement, Exhibit A (Section V “Technical specifications” and Section VII “Quality Assurance” of City of Santa Monica Invitation to Bid 2981), Exhibit B (Quality Assurance and Technical specifications sections of bid submitted by NABI in response to ITB 2981) and Exhibit C ("Pricing Schedule") (collectively, “Contract Documents” or “Contract”).

The phrases "County Board of Arlington County" or "Arlington County" shall be substituted, as appropriate, for the phrase “the City”, “the City of Santa Monica”, “Santa Monica” wherever those phrases appear in Exhibits A and B. The phrases “Santa Monica Big Blue Buses” or "SMBBB" are substituted with “Arlington Transit (ART)” wherever those phrases appear in the Contract Documents. Where the terms of this Agreement vary from the terms and conditions of the other Contract Documents, the terms and conditions of this Agreement shall prevail.

This Agreement rides a competitive procurement process conducted by the City of Santa Monica, CA. The Contractor desires to extend to the County the same pricing as the Contractor’s agreement with the City of Santa Monica, CA.

The Contract Documents set forth the entire agreement between the County and the Contractor. The County and the Contractor agree that no representative or agent of either of them has made any representation or promise with respect to the parties’ agreement which is not contained in the Contract Documents.

1.1. Exhibit A, Paragraph 5-97.5 shall be deleted in its entirety and replaced with the following:
Prior to the delivery of the coaches and associated equipment, the Contractor shall forward the operating, maintenance, and repair manuals, plus the parts list as specified, directly to:
ATTN: Kelley MacKinnon
Arlington County, VA
2100 Clarendon Boulevard, suite 900
Arlington, VA 22201
1.2. Exhibit A, Paragraph 5.110. "Title warranties and fees" shall be
deleted in its entirety and replaced with the following:
Contractor warrants that the title to each coach delivered to the
County will be free, clear, unencumbered and fully marketable, and that
Contractor will have the right to convey such title to the County.
Contractor shall present with each coach delivered to the County a copy
of Contractor’s title documents and all other documents necessary for
the transfer of title to the County.

The Contractor shall provide a certificate of origin, a mileage
statement, and other pertinent documents at time of delivery of the
unit. The documents shall list the owner as:
County of Arlington, Board of Supervisors
2701 South Taylor Street
Arlington, VA  22206

2.  CONTRACT TERM
The Contractor’s provision of buses for the County (“Work”) shall commence
following the date of execution of this Agreement by the County and shall be
completed no later than December 31, 2015 (“Contract Term”), subject to any
modifications as provided for in the Contract Documents.

3.  CONTRACT PRICING
The County will pay the Contractor in accordance with the terms of the
Payment paragraph below at the unit prices set forth in Exhibit C for Work
provided by the Contractor, as described and required in the Contract
Documents, and accepted by the County.

4.  SCOPE OF WORK
The Contractor agrees to provide the goods described in the Contract
Documents. The primary purpose of the Work is to provide forty feet (40’) low
floor Compressed Natural Gas (“CNG”) transit buses (the “Buses”).

The Contract Documents set forth the minimum work estimated by the County and
the Contractor to be necessary to complete the Work. It shall be the
Contractor’s responsibility, at the Contractor’s sole cost, to provide the
specific Work set forth in the Contract Documents sufficient to fulfill the
purposes of the Work. Nothing in the Contract Documents shall be construed
to limit the Contractor’s responsibility to manage the details and execution
of the Work.

5.  APPROVAL DRAWING
A drawing of the proposed Buses shall be provided for approval before
construction begins. The finalized and approved drawing shall become part of
the Contract Documents. This drawing shall indicate the chassis make and
model, major components, etc. Any revisions made at the pre-production
conference (as defined in Section 6 hereof) must be reflected on the revised
drawings. All finalized drawings must be signed by the Contractor, and the
County Project Officer.

6.  PRE-PRODUCTION CONFERENCE
Prior to the start of any construction and within sixty (60) days of the
Contractor’s receipt of the County Purchase Order, there shall be a pre-
production conference (the “Pre-Production Conference”). The Pre-Production
conference will be held at the Contractor's facility. The purpose of this conference is to review in detail any designs, drawings, or measurements that may be required with respect to the construction of the Buses. The Contractor shall be prepared to present any and all items critical to design, delivery, testing, acceptance, and overall contractual performance.

7. PROJECT OFFICER
The performance of the Contractor is subject to the review and approval of the Arlington County Project Officer ("Project Officer"), who shall be appointed by the Director of the Arlington County department or agency requesting the work under the Contract Documents. However, it shall be the responsibility of the Contractor to manage the details of the execution and performance of its work pursuant to the Contract Documents.

8. PAYMENT TERMS
Payment terms will be recorded by the County as net thirty (30) days. The County will pay the Contractor within thirty (30) calendar days after the date of receipt of a correct invoice approved by the Project Officer. An invoice's correctness will be determined by the Project Officer.

The invoice shall be submitted by the Contractor after the delivery and written acceptance of the bus by the County Project Officer. If several Buses are accepted at the same time, the Contractor can submit a single invoice for all those Buses that have been accepted.

The number of the County Purchase Order shall appear on all invoices. Invoices shall be submitted in duplicate.

9. PAYMENT OF SUBCONTRACTORS
The Contractor is obligated to take one of the two following actions within seven (7) days after receipt of amounts paid to the Contractor by the County for work performed by any subcontractor under this Contract:

a. Pay the subcontractor for the proportionate share of the total payment received from the County attributable to the work performed by the subcontractor under this Contract; or

b. Notify the County and the subcontractor, in writing, of the Contractor's intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment.

The Contractor is obligated to pay interest to the subcontractor on all amounts owed by the Contractor to the subcontractor that remain unpaid after seven (7) calendar days following receipt by the Contractor of payment from the County for work performed by the subcontractor under this Contract, except for amounts withheld as allowed in subsection b. above. Unless otherwise provided under the terms of this Contract, interest shall accrue at the rate of one percent (1%) per month.

The Contractor shall include in each of its subcontracts, if any are permitted, a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements as those contained herein with respect to each lower-tier subcontractor.
The Contractor's obligation to pay an interest charge to a subcontractor pursuant to this section may not be construed to be an obligation of the County. A Contract modification may not be made for the purpose of providing reimbursement for such interest charge. A cost reimbursement claim may not include any amount for reimbursement for such interest charge.

10. NON-APPROPRIATION
All funds for payments by the County to the Contractor pursuant to this Contract are subject to the availability of an annual appropriation for this purpose by the County Board of Arlington County, Virginia. In the event of non-appropriation of funds by the County Board of Arlington County, Virginia for the goods or services provided under this Contract or substitutes for such goods or services which are as advanced or more advanced in their technology, the County will terminate the Contract, without termination charge or other liability to the County, on the last day of the then-current fiscal year or when the appropriation made for the then-current year for the services covered by this Contract is spent, whichever event occurs first (the "Effective Termination Time"). If funds are not appropriated at any time for the continuation of this Contract, cancellation will be accepted by the Contractor on thirty (30) days prior written notice, but failure to give such notice shall be of no effect and the County shall not be obligated under this Contract beyond the date of termination specified in the County's written notice. Provided, however, that the County will be obligated to pay the Contractor for those Buses for which the Contractor has received a Purchase Order and subject to the same requirements as set forth in the "Payment Terms" paragraph above.

11. COUNTY PURCHASE ORDER REQUIREMENT
County purchases are authorized only if a County Purchase Order is issued in advance of the transaction, indicating that the ordering agency has sufficient funds available to pay for the purchase. Such a Purchase Order is to be provided to the Contractor by the ordering agency. The County will not be liable for payment for any purchases made by its employees without appropriate purchase authorization issued by the County Purchasing Agent. If the Contractor provides goods or services without a signed County Purchase Order, it does so at its own risk and sole expense.

12. DELIVERY
All goods are purchased F.O.B. destination in Arlington County as designated in this Contract. All costs for handling and transportation charges to the designated point of delivery shall be borne by the Contractor. Transportation, handling and all related charges are included in the unit prices or discounts submitted by the Contractor with its bid.

13. WARRANTY
All goods and materials provided to the County shall be fully warranted by the Contractor against factory defects. Any defects which may occur as the result of either faulty material or workmanship by the manufacturer or supplier within the period of the manufacturer's or supplier's standard warranty shall be corrected by the Contractor at no expense to Arlington County. The Contractor shall provide evidence of all manufacturers' and suppliers' warranties to the Project Officer at the time of delivery. All goods and materials are also warranted by the Contractor against defects resulting from the use of inferior or faulty materials or workmanship for one
(1) year from the date of final acceptance by the County in addition to and irrespective of any manufacturer's or supplier's warranty. No date other than the date of final acceptance shall govern the effective date of the warranty, unless that date is agreed upon by the County and the Contractor in advance and in a signed writing.

14. **INSPECTION, ACCEPTANCE, TITLE, AND RISK OF LOSS**

Inspection and acceptance of goods or materials by the County will be at the delivery location in Arlington County, Virginia, and within ten (10) calendar days of delivery, unless otherwise provided for in the Contract. The County will not inspect, accept, or pay for any goods or materials stored or delivered off-site by the Contractor.

Title and risk of loss or damage to all goods shall be the responsibility of the Contractor until acceptance by the County. The County’s right of inspection shall not be deemed to relieve the Contractor of its obligation to ensure that all articles, materials and supplies are consistent with specifications and instructions and are fit for their intended use. The County reserves the right to conduct any tests or inspections it may deem appropriate before acceptance.

No goods or materials shall be purchased by the Contractor or any subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that it has good title to, and that it will require all subcontractors to warrant that they have good title to, all goods or materials for which the Contractor invoices the County for payment.

15. **EMPLOYMENT DISCRIMINATION BY CONTRACTOR PROHIBITED**

During the performance of this Contract, the Contractor agrees as follows:

a. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, age, disability or any other basis prohibited by federal or Virginia law related to discrimination in employment except where there is a bona fide occupational qualification reasonably necessary or related to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

b. The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that the Contractor is an Equal Opportunity Employer.

c. Notices, advertisements and solicitations placed in accordance with federal law, rule or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.

d. The Contractor will comply with the provisions of the Americans with Disabilities Act of 1990 which prohibits discrimination against individuals with disabilities in employment, and mandates their full participation in both publicly and privately-provided services and activities.
e. The Contractor will include the provisions of the foregoing paragraphs in every subcontract or purchase order of over $10,000.00, so that these provisions will apply to each subcontractor or vendor.

16. EMPLOYMENT OF UNAUTHORIZED ALIENS PROHIBITED
In accordance with § 2.2-4311.1 of the Code of Virginia, 1950, as amended, the Contractor acknowledges that it does not, and shall not during the performance of this Contract, knowingly employ an unauthorized alien as that term is defined in the federal Immigration Reform and Control Act of 1986.

17. DRUG-FREE WORKPLACE TO BE MAINTAINED BY CONTRACTOR
During the performance of this Contract, the Contractor agrees to (i) provide a drug-free workplace for the Contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of marijuana or any other controlled substance is prohibited in the Contractor's workplace, and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the Contractor that the Contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over $10,000.00 relating to this Contract, so that the provisions will be binding on each subcontractor or vendor.

For the purposes of this section, "drug-free workplace" means a site for the performance of work done in connection with a specific contract awarded to a contractor by Arlington County, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, distribution, dispensation, possession or use of any controlled substance or marijuana during the performance of the contract.

19. TERMINATION FOR CAUSE, INCLUDING BREACH AND DEFAULT; CURE
The Contract shall remain in force for the Initial Contract Term or any Subsequent Contract Term(s) and until the County determines that all the following requirements and conditions have been satisfactorily met: the County has accepted the Work, and thereafter until the Contractor has met all requirements and conditions relating to the Work under the Contract Documents, including warranty periods. However, the County shall have the right to terminate this Contract sooner if the Contractor is in breach or default or has failed to perform satisfactorily the Work required, as determined by the County in its discretion.

If the County determines that the Contractor has failed to perform satisfactorily, then the County will give the Contractor written notice of such failure(s) and the opportunity to cure such failure(s) within at least thirty (30) days before termination of the Contract takes effect ("Cure Period"). If the Contractor fails to cure within the Cure Period, or as otherwise specified in the notice, the Contract may be terminated for the Contractor's failure to provide satisfactory Contract performance. Upon such termination, the Contractor may apply for compensation for Contract services satisfactorily performed by the Contractor, allocable to the Contract and accepted by the County prior to such termination unless otherwise barred by
the Contract ("Termination Costs"). In order to be considered, such request for Termination Costs, with all supporting documentation, must be submitted to the County Project Officer within fifteen (15) days after the expiration of the Cure Period. The County may accept or reject, in whole or in part, the application for Termination Costs and notify the Contractor of same within a reasonable time thereafter.

If the County terminates the Contract for default or breach of any Contract provision or condition, then the termination shall be immediate after notice from the County to the Contractor (unless the County in its discretion provides for an opportunity to cure) and the Contractor shall not be permitted to seek Termination Costs.

Upon any termination pursuant to this section, the Contractor shall be liable to the County for all costs incurred by the County after the effective date of termination, including costs required to be expended by the County to complete the Work covered by the Contract, including costs of delay in completing the Project or the cost of repairing or correcting any unsatisfactory or non-compliant work performed or provided by the Contractor or its subcontractors. Such costs shall be either deducted from any amount due the Contractor or shall be promptly paid by the Contractor to the County upon demand by the County. Additionally, and notwithstanding any provision in this Contract to the contrary, the Contractor is liable to the County, and the County shall be entitled to recover, all damages to which the County is entitled by this Contract or by law, including and without limitation, direct damages, indirect damages, consequential damages, delay damages, replacement costs, refund of all sums paid by the County to the Contractor under the Contract and all attorney fees and costs incurred by the County to enforce any provision of this Contract.

Except as otherwise directed by the County in the notice, the Contractor shall stop work on the date of receipt of notice of the termination or other date specified in the notice, place no further orders or subcontracts for materials, services, or facilities except as are necessary for the completion of such portion of the Work not terminated, and terminate all vendors and subcontracts and settle all outstanding liabilities and claims. Any purchases after the date of termination contained in the notice shall be the sole responsibility of the Contractor.

In the event that the Contractor desires to contest the County’s decision to terminate the Contract for cause, the Contractor may invoke the provisions of the Dispute Resolution paragraph herein. In the event any termination for cause, default, or breach shall be found to be improper or invalid by the Circuit Court for Arlington County, Virginia, then such termination shall be deemed to have been a termination for convenience pursuant to Section 19 hereto.

19. **TERMINATION FOR THE CONVENIENCE OF THE COUNTY**

The performance of Work under this Contract may be terminated by the County Purchasing Agent, in whole or in part, whenever the Purchasing Agent shall determine that such termination is in the County's best interest. Any such termination shall be effected by the delivery to the Contractor of a written notice of termination at least fifteen (15) days before the date of termination, specifying the extent to which performance of the Work under this Contract is terminated and the date upon which such termination becomes
effective. The Contractor will be entitled to receive compensation for all
Contract services satisfactorily performed by the Contractor and allocable to
the Contract and accepted by the County prior to such termination and any
other reasonable termination costs as negotiated by the parties, but no
amount shall be allowed for anticipatory profits.

After receipt of a notice of termination and except as otherwise directed,
the Contractor shall stop all designated work on the date of receipt of the
notice of termination or other date specified in the notice; place no further
orders or subcontracts for materials, services or facilities except as are
necessary for the completion of such portion of the work not terminated;
immediately transfer all documentation and paperwork for terminated work to
the County; and terminate all vendors and subcontracts and settle all
outstanding liabilities and claims. Provided, however, that the County will
be obligated to pay the Contractor for those Buses for which the Contractor
has received a Purchase Order and subject to the same requirements as set
forth in the "Payment Terms" paragraph above.

20. **INDEMNIFICATION**
The Contractor covenants for itself, its employees, and subcontractors to
save, defend, hold harmless and indemnify the County, and all of its elected
and appointed officials, officers, current and former employees, agents,
departments, agencies, boards, and commissions (collectively the "County" for
purposes of this section) from and against any and all claims made by third
parties or by the County for any and all losses, damages, injuries, fines,
penalties, costs (including court costs and attorney's fees), charges,
liability, demands or exposure, however caused, resulting from, arising out
of, or in any way connected with the Contractor’s negligent acts or
omissions, including the negligent acts or omissions of its employees and/or
subcontractors, in performance or nonperformance of the Work called for by
the Contract Documents. This duty to save, defend, hold harmless and
indemnify shall survive the termination of this Contract. If, after notice
by the County, the Contractor fails or refuses to fulfill its obligations
contained in this section, the Contractor shall be liable for and reimburse
the County for any and all expenses, including, but not limited to,
reasonable attorneys fees incurred and any settlements or payments made. The
Contractor shall pay such expenses upon demand by the County and failure to
do so may result in such amounts being withheld from any amounts due to
Contractor under this Contract.

21. **CONFIDENTIAL INFORMATION**
The Contractor, and its employees, agents, and subcontractors, hereby agree
to hold as confidential all County information obtained as a result of its
Work under this Contract. Confidential information includes, but is not
limited to, nonpublic personal information, personally identifiable health
information, social security numbers, addresses, dates of birth, other
contact information or medical information about a person, information
pertaining to products, operations, systems, customers, prospective
customers, techniques, intentions, processes, plans, expertise and any
information entrusted to any affiliate of the parties. The Contractor shall
take reasonable measures to ensure that all of its employees, agents, and
subcontractors are informed of, and abide by, this requirement.
22. **ETHICS IN PUBLIC CONTRACTING**
This Contract incorporates by reference Article 9 of the Arlington County Purchasing Resolution, as well as any Virginia or federal law related to ethics, conflicts of interest, or bribery, including, by way of illustration and not limitation, the Virginia State and Local Government Conflict of Interests Act (Code of Virginia § 2.2-3100 et seq.), the Virginia Governmental Frauds Act (Code of Virginia § 18.2-498.1 et seq.), and Articles 2 and 3 of Chapter 10 of Title 18.2 of the Code of Virginia, as amended (§ 18.2-438 et seq.). The Contractor certifies that its offer was made without collusion or fraud and that it has not offered or received any kickbacks or inducements from any other bidder, supplier, manufacturer, or subcontractor and that it has not conferred on any public employee having official responsibility for this procurement any payment, loan, subscription, advance, deposit of money, services, or anything of more than nominal value, present or promised unless consideration of substantially equal or greater value was exchanged.

23. **COUNTY EMPLOYEES**
No employee of the County shall be admitted to any share in any part of this Contract or to any benefit that may arise therefrom which is not available to the general public.

24. **FORCE MAJEURE**
The Contractor shall not be held responsible for failure to perform the duties and responsibilities imposed by this Contract if such failure is due to fires, riots, rebellions, natural disasters, wars, or an act of God beyond the control of the Contractor and outside the scope of the Contractor’s then-current, by industry standards, disaster plan that make performance impossible or illegal, unless otherwise specified in the Contract.

The County shall not be held responsible for failure to perform its duties and responsibilities imposed by the Contract if such failure is due to fires, riots, rebellions, natural disasters, wars, or an act of God beyond the control of the County that make performance impossible or illegal, unless otherwise specified in the Contract.

25. **AUTHORITY TO TRANSACT BUSINESS**
The Contractor shall, pursuant to Code of Virginia § 2.2-4311.2, be and remain authorized to transact business in the Commonwealth of Virginia during the Initial Term and any Subsequent Contract Term(s) of this Contract. A contract entered into by a Contractor in violation of this requirement is voidable, without cost or expense, at the sole option of the County.
26. **RELATION TO THE COUNTY**
The Contractor is an independent contractor, and neither the Contractor nor its employees or subcontractors will, under any circumstances, be considered employees, servants or agents of the County. The County will not be legally responsible for any negligence or other wrongdoing by the Contractor, its employees, servants or agents. The County will not withhold from payments to the Contractor any federal or state unemployment taxes, federal or state income taxes, Social Security tax, or any other amounts for benefits to the Contractor or its employees, servants or agents. Furthermore, the County will not provide to the Contractor any insurance coverage or other benefits, including workers' compensation, normally provided by the County for its employees.

27. **ANTITRUST**
By entering into this Contract, the Contractor conveys, sells, assigns and transfers to the County all rights, title, and interest in and to all causes of action the Contractor may now have or hereafter acquire under the antitrust laws of the United States or the Commonwealth of Virginia, relating to the goods purchased or acquired by the County under this Contract.

28. **AUDIT**
The Contractor agrees to retain all books, records and other documents related to this Contract for at least five (5) years after final payment. The County or its authorized agents shall have full access to and the right to examine any of the above documents during this period and during the Initial Contract Term and any Subsequent Contract Term. If the Contractor wishes to destroy or dispose of records (including confidential records to which the County does not have ready access) within five (5) years after final payment, the Contractor shall notify the County at least thirty (30) days prior to such disposal, and if the County objects, shall not dispose of the records.

29. **ASSIGNMENT**
The Contractor shall not assign, transfer, convey, sublet, or otherwise dispose of any award, or any or all of its rights, obligations, or interests under this Contract, without the prior written consent of the County.

30. **AMENDMENTS**
Unless otherwise specified herein, this Contract shall not be amended except by written amendment executed by persons duly authorized to bind the Contractor and the County.

31. **ARLINGTON COUNTY PURCHASING RESOLUTION AND COUNTY POLICIES**
Notwithstanding any provision to the contrary herein, no provision of the Arlington County Purchasing Resolution or any applicable County policy is waived in whole or in part.

32. **DISPUTE RESOLUTION**
All disputes arising under this Contract, or its interpretation, whether involving law or fact, or extra work, or extra compensation or time, and all claims for breach of contract shall be submitted to the Project Officer for decision at the time of the occurrence or beginning of the work upon which the claim is based, whichever occurs first. Any such claim shall state the facts surrounding it in sufficient detail to identify it, together with its character and scope. In accordance with the Arlington County Purchasing
Resolution, claims denied by the Project Officer may be submitted to the County Manager in writing no later than sixty (60) days after final payment. The time limit for final written decision by the County Manager in the event of a contractual dispute, as that term is defined in the Arlington County Purchasing Resolution, is fifteen (15) days. Procedures for considering contractual claims, disputes, administrative appeals, and protests are contained in the Arlington County Purchasing Resolution, which is incorporated herein by this reference. A copy of the Arlington County Purchasing Resolution is available upon request from the Office of the Purchasing Agent. The Contractor shall not cause a delay in the Work pending any decision of the Project Officer, County Manager, County Board, or a court of law.

33. **APPLICABLE LAW, FORUM, VENUE, AND JURISDICTION**
This Contract and the work performed hereunder shall be governed in all respects by the laws of the Commonwealth of Virginia, and the jurisdiction, forum, and venue for any litigation with respect hereto shall be in the Circuit Court for Arlington County, Virginia, and in no other court. In performing its work under this Contract, the Contractor shall comply with applicable federal, state, and local laws, ordinances and regulations.

34. **ARBITRATION**
It is expressly agreed that nothing under the Contract shall be subject to arbitration, and that any references to arbitration are expressly deleted from the Contract.

35. **NONEXCLUSIVITY OF REMEDIES**
All remedies available to the County under this Contract are cumulative, and no such remedy shall be exclusive of any other remedy available to the County at law or in equity.

36. **NO WAIVER**
The failure of either party to exercise in any respect a right provided for in this Contract shall not be deemed to be a subsequent waiver of the same right or any other right.

37. **SEVERABILITY**
The sections, paragraphs, sentences, clauses and phrases of this Contract are severable, and if any phrase, clause, sentence, paragraph or section of this Contract shall be declared invalid by the Circuit Court for Arlington County, Virginia, such invalidity shall not affect any of the remaining phrases, clauses, sentences, paragraphs and sections of this Contract.

38. **NO WAIVER OF SOVEREIGN IMMUNITY**
Notwithstanding any other provision of this Contract, nothing in this Contract or any action taken by the County pursuant to this Contract shall constitute or be construed as a waiver of either the sovereign or governmental immunity of the County. The parties intend for this provision to be read as broadly as possible.
39. **SURVIVAL OF TERMS**
In addition to the numbered sections in this Agreement which specifically state that the term or paragraph survives the expiration of termination of this Contract, the following sections if included in this Contract also survive: INDEMNIFICATION; RELATION TO COUNTY; AUDIT; WARRANTY; AND CONFIDENTIAL INFORMATION.

40. **HEADINGS**
The section headings in this Contract are inserted only for convenience and are not to be construed as part of this Contract or a limitation on the scope of the particular section to which the heading precedes.

41. **AMBIGUITIES**
Each party and its counsel have participated fully in the review and revision of this Agreement. Any rule of construction to the effect that ambiguities are to be resolved against the drafting party shall not apply in interpreting this Agreement. The language in this Agreement shall be interpreted as to its fair meaning and not strictly for or against any party.

42. **NOTICES**
Unless otherwise provided herein, all notices and other communications required by this Contract shall be deemed to have been given when made in writing and either (a) delivered in person, (b) delivered to an agent, such as an overnight or similar delivery service, or (c) deposited in the United States mail, postage prepaid, certified or registered, addressed as follows:

**TO THE CONTRACTOR:**
Steve Spence  
NABI Bus, LLC  
106 National Drive  
Anniston, AL 36207

**TO THE COUNTY:**
Kelley MacKinnon  
Arlington County, VA  
2100 Clarendon Boulevard, 9th floor  
Arlington, Virginia 22201

AND
Richard D. Warren, Jr., Purchasing Agent  
Arlington County, Virginia  
2100 Clarendon Boulevard, Suite 500  
Arlington, Virginia 22201

43. **NON-DISCRIMINATION NOTICE**
Arlington County does not discriminate against faith-based organizations.

44. **INSURANCE REQUIREMENTS**
The Contractor shall provide to the County Purchasing Agent a Certificate of Insurance indicating that the Contractor has in force the coverage below prior to the start of any Work under this Contract and upon any contract extension. The Contractor agrees to maintain such insurance until the completion of this Contract or as otherwise stated in the Contract Documents.
All required insurance coverages must be acquired from insurers authorized to do business in the Commonwealth of Virginia, with a rating of "A-" or better and a financial size of "Class VII" or better in the latest edition of the A.M. Best Co. Guides, and acceptable to the County. The minimum insurance coverage shall be:

a. Workers Compensation - Virginia Statutory Workers Compensation (W/C) coverage including Virginia benefits and employers liability with limits of $100,000/100,000/500,000. The County will not accept W/C coverage issued by the Injured Worker's Insurance Fund, Towson, MD.

b. Commercial General Liability - $2,000,000 combined single limit coverage with $5,000,000 general aggregate covering all premises and operations and including Personal Injury, Completed Operations, Contractual Liability, Independent Contractors, and Products Liability. The general aggregate limit shall apply to this Contract. Evidence of Contractual Liability coverage shall be typed on the certificate.

c. Business Automobile Liability - $1,000,000 Combined Single Limit (Owned, non-owned and hired).

d. Additional Insured - Arlington County, and its officers, elected and appointed officials, employees, and agents shall be named as an additional insureds on all policies except Workers Compensation and Auto Liability; and evidence of the Additional Insured endorsement shall be typed on the certificate.

e. Cancellation - All insurance policies required by this Contract shall be endorsed to include the following provision: "It is agreed that this policy is not subject to cancellation or non-renewal until thirty (30) days prior written notice has been given to the Purchasing Agent, Arlington County, Virginia." If there is a material change or reduction in coverage the Contractor shall notify the Purchasing Agent immediately upon Contractor’s notification from the insurer. Any policy on which the Contractor has received notification from an insurer that the policy has or will be cancelled or materially changed or reduced must be replaced with another policy consistent with the terms of this Contract, and the County notified of the replacement, in such a manner that there is no lapse in coverage. Not having the required insurance throughout the Contract Term is grounds for termination of the Contract.

f. Any insurance coverage that is placed as a "claims made" policy must remain valid and in force, or the Contractor must obtain an extended reporting endorsement consistent with the terms of this Contract, until the applicable statute of limitations has expired, such date as determined to begin running from the date of the Contractor's receipt of final payment.

g. Contract Identification - The insurance certificate shall state this Contract's number and title.

The Contractor shall require all subcontractors to maintain during the term of this Contract, Commercial General Liability insurance, Business Automobile
Liability insurance, and Workers' Compensation insurance in the same form and manner as specified for the Contractor. The Contractor shall furnish subcontractors' certificates of insurance to the County immediately upon request by the County.

No acceptance or approval of any insurance by the County shall be construed as relieving or excusing the Contractor from any liability or obligation imposed upon the Contractor by the provisions of the Contract Documents.

The Contractor shall be responsible for the Work performed under the Contract Documents and every part thereof, and for all materials, tools, equipment, appliances, and property of any description used in connection with the Work. The Contractor assumes all risks for direct and indirect damage or injury to the property or persons used or employed on or in connection with the Work contracted for, and of all damage or injury to any person or property wherever located, resulting from any action, omission, commission or operation under the Contract, or in connection in any way whatsoever with the contracted Work.

The Contractor shall be as fully responsible to the County for the negligent acts and omissions of its subcontractors and of persons employed by them as it is for negligent acts and omissions of persons directly employed by it.

Notwithstanding any of the above, the Contractor may satisfy its obligations under this section by means of self insurance for all or any part of the insurance required, provided that the Contractor can demonstrate financial capacity and the alternative coverages are submitted to and acceptable to the County. The Contractor must also provide its most recent actuarial report and provide a copy of its self insurance resolution to determine the adequacy of the insurance funding.

WITNESS these signatures:

THE COUNTY BOARD OF ARLINGTON COUNTY, VIRGINIA

AUTHORIZED SIGNATURE: 

NAME: RICHARD D. WARREN, JR. TITLE: PURCHASING AGENT DATE: 11/1/13

NABI Bus, LLC

AUTHORIZED SIGNATURE: 

NAME: BRIAN DEWSNUP TITLE: VICE PRESIDENT & GENERAL MANAGER DATE: 10/31/13
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TECHNICAL SPECIFICATIONS
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TECHNICAL SPECIFICATIONS

40' LOW FLOOR ADVANCED DESIGN TRANSIT COACHES
WITH OPTION FOR ADDITIONAL COACHES

5-1 GENERAL
The unit shall be an air-conditioned 40' low floor advanced body design transit coach. It shall have seating, as further described, and floor configurations suitable for Santa Monica Big Blue Bus passenger use. It shall be the manufacturer's latest production model, conforming to the detailed requirements listed below. (NOTE: Dimensions used throughout this specification are U.S. standard units; i.e., inches, pounds, etc.). Experimental or prototype units may be considered unacceptable.

In all cases, materials must be new and furnished as specified. Where brand names or specific items are used in these specifications, consider the term "approved equal" to follow. Wherever such names appear, approved equals will be accepted only with the prior written concurrence from the Santa Monica Big Blue Bus Purchasing Department.

General Dimensions

Curb Weight:
Front Axle 10,000 Lbs
Rear Axle 18,000 Lbs
Total 31,000 Lbs

Seating Capacity 38 Passengers (Min.)
Length at Body 40+3" Feet
Width at Body 102 Inches (Max)
Height 124 Inches (Max)
Aisle Width 24.5 Inches (Min)
Wheelbase (front to center) 230 Inches (Max)
Wheelbase (center to rear) 308 Inches (Max)
Ground Clearance 12 Inches (Min)

Turning Radius:
Inside 35.5 Feet (Max)
Outside 43 Feet (Max)

Rear Aisle Step:
Two Step Rear Riser Height 7.5 Inches (Min)
Tread Depth 21.5 Inches (Min)
Doorway Height - Entrance 87.5 Inches (Min)
Doorway Height - Exit (center) 86 Inches (Min)
Doorway Height - Exit (rear) 85 Inches (Min)
5-2 DEFINITIONS
The following are definitions of special terms used in this document:

5-2.1 **Authorized Signor:** The person who is executing this contract on behalf of the Manufacturer/Contractor and who is authorized to bind the Manufacturer/Contractor.

5-2.2 **Class 1, Physical Safety:** A failure that could lead directly to passenger or driver injury and represents a severe crash situation.

5-2.3 **Class 2, Road Call:** A failure resulting in an in-route interruption of revenue service. Service is discontinued until the coach is replaced or repaired at the point of failure.

5-2.4 **Class 3, Coach Change:** A failure that requires removal of the coach from service during its assignments. The coach is operated to a rendezvous point with a replacement coach.

5-2.5 **Class 4, Bad Order:** A failure that does not require removal of the coach from service during its assignments but does degrade coach operation. Driver or inspector shall report the failure.

5-2.6 **Coach Down:** A coach that is unserviceable due to parts not in stock, generally used for warranty conditions, but may be used for other situations as required.

5-2.7 **Contracting Officer:** The person who is executing this contract on behalf of Santa Monica Big Blue Bus, and who has complete and final authority except as limited herein.

5-2.8 **Contractor:** The successful manufacturer who is awarded a contract for providing all coaches and equipment described in the contract documents.

5-2.9 **Curb Weight:** Weight of vehicle, including maximum fuel, oil and coolant; and all equipment required for operation and required by their specification, but without passengers or driver.

5-2.10 **db (Decibels):** A unit for measuring the relative loudness of sound, equal to approximately the smallest degree of difference of loudness detectable by the human ear.

5-2.11 **Defect:** Patent and latent malfunction or failure in the manufacture or design of any component or subsystem that causes a coach to cease operating or causes it to operate in a degraded mode.

5-2.12 **Fireproof:** Materials that will not burn or melt at temperatures less than 2,000°F.

5-2.13 **Fire Resistant:** Materials that have a flame spread index less than 150 as measured in a radiant panel flame test per ASME- E 162-75.
5-2.14 **Free Floor Space:** Floor area available to standees, excluding ingress/egress areas, area under seats, area occupied by feet of seated passengers, and the vestibule area.

5-2.15 **Gross Load:** One hundred fifty (150) pounds for every designated passenger seating position, for the driver, and for each 1.5 square feet of free floor space.

5-2.16 **GVWR (Gross Vehicle Weight Rate):** Curb weight plus gross load.

5-2.17 **HIC (Head Injury Criteria):** The following equation presents the definition of head injury criteria:

\[ a = \frac{t_2 - t_1}{2} \cdot g \]

Where \( a \) = the resultant acceleration at the center of gravity of the head form expressed as a multiple of \( g \), the acceleration of gravity, \( t_1 \) and \( t_2 \) = any two points in time during the impact.

5-2.18 **Procuring Agency:** Santa Monica Big Blue Bus.

5-2.19 **Related Defect:** Damage inflicted on any component or subsystem as a direct result of a defect.

5-2.20 **Seated Load:** One hundred fifty (150) pounds for every designated passenger seating position and the driver.

5-2.21 **SLW (Seated Load Weight):** Curb weight plus seated load.

5-2.22 **Supplier:** Any manufacturer, company, or agency providing units, components, or subassemblies for inclusion in the coach.

5-2.23 **Work:** Any and all labor, supervision, services, materials, machinery, equipment, tools, supplies, and facilities called for in the contract and necessary to the completion thereof.

5-3 **MAINTENANCE PERSONNEL SKILL LEVELS**

a) **“A”** = Journey worker or Class A Mechanic

b) **“B”** = Service Mechanic or Class B Service worker

c) **“C”** = Mechanic

d) **“Utility”** = Servicer, Cleaner, Fueler, Oiler, Miscellaneous

5-4 **ABBREVIATIONS**

a) **ADA** Americans With Disabilities Act

b) **ANSI** American National Standards Institute

c) **ASHRAE** American Society of Heating, Refrigerating & Air Conditioning Engineers

d) **ASTM** American Society For Testing and Materials

e) **AWS** American Welding Society

f) **BMCS** Bureau of Motor Carrier Safety

g) **CMVSS** Canadian Motor Vehicle Safety Standards

h) **EPA** Environmental Protection Agency
5-5 LEGAL REQUIREMENTS
The coach shall meet all applicable FMVSS, all applicable BMCS and ADA regulations in effect at the date of manufacture.

The Contractor shall comply with all applicable Federal, State and Local regulations. In the event of any conflict between the requirements of these specifications and any applicable legal requirement, then the legal requirement shall prevail.

5-6 GROSS VEHICLE WEIGHT RATING (GVWR)
Gross Vehicle Weight Rating (GVWR) for coaches supplied shall be sufficient to accommodate fully loaded coach (fuel, oil and coolant as well as all equipment specified herein) plus full passenger (seated and standing) load for safe and normal in-service transit operation.

5-7 BODY FRAME AND CONSTRUCTION
5-7.1 Body frame shall be of integral chassis-less design, using high tensile steel with girder-type construction. Aluminum with girder or tubular-type construction will also be permitted.

5-7.2 Body frame components shall be so configured as to prohibit the retention of water within the frame sections.

5-7.3 All framing and welded surfaces shall be treated with a cleaning solution and coated with any of the following: Red Oxide Primer, Tectyl 127, Tectyl 215, PPG DPV 166 High Solids Chromate Primer, Epoxy Zinc Chromate Primer, Black Zinc, Red Oxide Zinc, or approved equals.

5-7.4 Aluminum skins shall be riveted using stainless steel rivets. All joints shall be welded or riveted with minimum 1/4 inch rivets. Where framing is to be removed for accessibility, SAE Grade 8 bolts shall be used.

5-7.5 Chassis, body, power plant, and battery tray framing must use high-grade 300 series stainless steel electrically welded using 308 wire.

5-7.6 Reinforced fiberglass and plastic materials shall be excluded from the structural support sections of the basic body construction, except for replaceable panels or doors.

5-7.7 Under normal conditions of transit service throughout the service life of the coach, the basic structure shall withstand fatigue damage that is

...
sufficient to cause Class 1 or Class 2 failure. The structure shall also withstand impact and inertial loads due to normal street travel throughout the coach's service life without permanent deformation or damage.

5-7.8 The coach, at GVWR and under static conditions, shall not exhibit deformation or deflection that impairs operation of doors, windows, or other mechanical elements. Static conditions include the coach at rest with any one wheel or dual set of wheels on a six (6) inch curb or in a six (6) inch deep hole.

5-7.9 All structure, body, and panel-bending mode frequencies, including vertical, lateral, and torsional modes, shall be sufficiently removed from all primary excitation frequencies to minimize audible, visible, or sensible resonant vibrations during normal service.

5-7.10 It shall be possible to jack up the coach at curb weight, with a common eight (8) inch high, hand or floor jack when a tire or dual set is completely flat and the coach is on a level, hard surface without crawling under any portion of the coach and without relocating the coach. Tire removal and reinstall shall be completed by a class "B" service worker in less than twenty (20) minutes from the time the coach is sufficiently high to remove and reinstall a wheel and tire assembly. The coach shall withstand such jacking to a height of eighteen (18") inches at any one or any combination of wheel locations without permanent deformation or damage.

5-7.11 The coach axles or jacking plates shall accommodate the lifting pads of a 3-post hoist system. Jacking plates, if used as hoisting pads, shall be approximately five (5") inches square, with a turned-down flange not less than one (1") inch deep on each side to prevent the coach from falling off the hoist. Other pads of the coach structure shall support the coach on jack stands independent of the hoist.

5-8 BODY

5-8.1 Body and under structure shall be built as an integral unit adequately reinforced at all joints where stress concentration may occur.

5-8.2 Before assembling, all metal body parts shall be given a thorough multiple stage anti-corrosion treatment, and zinc chromate primer paint shall be applied to both aluminum and steel. Stainless steel body parts are not required to be anti-corrosion treated.

5-8.3 All nuts, bolts, and washers shall be zinc or cadmium-plated or phosphate-coated to prevent corrosion.

5-8.4 All nuts and bolts shall be SAE Grade 8 quality or better and washers shall be an equivalent of SAE Grade 8 or better.

5-8.5 All clips and clamps shall be stainless steel with a neoprene coating.

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5-8.6 All exterior side panels between roof line and rub rail shall be .20-inch thick core mat reinforced fiberglass or a minimum of .060-inch aluminum. Rear closure door shall be smooth .063-inch aluminum. Skirt panels below rub rail shall be fiberglass. All aluminum exterior panels shall be riveted in place with minimum ¼ inch diameter solid anodized aluminum rivets, and no sheet metal screws shall be permitted. Fiberglass panels shall be secured by 3/16 inch stainless steel countersunk sealed rivets. Rub rail dividing side panels and skirt panels shall be internally ribbed for reinforcement to protect against damage to side panels. Aluminum exterior side panels, skirt panels, and rear closure door panels shall be anodized or painted per the exterior paint scheme requirement.

5-8.7 Front section shall be of single piece molded fiberglass; aluminum panels may be used for front section below windshield. Galvanized sheet shall be acceptable below windshield.

5-8.8 Rear quarter panels shall be constructed of .080-inch smooth aluminum or fiberglass.

5-8.9 Windshield housing shall be constructed of adequate material to prevent flexing of housing, windshield movement, and windshield leaks.

5-8.10 Roof panel shall be constructed of .040-inch minimum smooth aluminum or approved equal and shall comply with Federal Motor Vehicle Safety Standards.

5-8.11 All exterior joints and seams shall be protected by the application of caulking compound of zinc chromate-type 3J6 epoxy polysulfide, hydol epoxy, sikaflex urethane, Guertin Brothers GS1058 Sealant, or approved equal. Body shall be thoroughly water-tested and made tight to prevent leakage.

5-9 FLOOR
5-9.1 The floor shall be a continuous flat plane from the entrance at the front of the coach to the rear exit door, except at the wheel housings, but it shall not interfere with the passenger seating. Where the floor meets the walls of the coach the surface edges shall be blended with a circular section of radius not less than ¼” inch, and a molding or cove shall prevent debris accumulation between the floor and wheel housings. All interior moldings shall be smooth and free of sharp edges and designed to last the life of the coach. The cut edges and bottom are to be sealed with a polyurethane sealant to prevent deterioration by rot, fungus, etc; no edge gaps will be permitted. Plywood ¼ inch thick 7-ply resin waterproof bond laminated fir; AB Marine Grade wood shall be used and plugged on both sides. Wood must be bolted to the under-frame. Waterproof adhesives may be used in addition to bolting floor to the under frame. Self-tapping stainless steel screws, 5/16 inch cherry rivets, and ¼ inch bolts may be
used in conjunction with tapping plates with a thickness equal to a standard fastening. A no-shrink fiberglass rein shall be used for screw fillers and joint fillers. MOR-BOND FA-206 fillers are acceptable.

5-9.2 The floor shall be level from the entrance door to the exit door. The floor may elevate at the rear axle with two 7½" step risers, incorporated for easy access. The floor at the rear of the coach shall not exceed 29½" above the ground, with a 1.5° slope upwards towards the chesterfield.

5-9.3 RCA Transit-floor PGF ribbed rubber flooring shall be furnished in the aisle and smooth rubber flooring shall be furnished under the seats. Color shall be RCA, medium blue and white, # 702, standard marbleized floor covering.

5-9.4 Step treads shall be of matching colored material, 5/16 inch ribbed, with metal backing totally enclosed in rubber to prevent contact of metal backing with step well. Integ rally molded yellow nosing shall be furnished on all step edges including floor level. A minimum two (2) inch wide, yellow rubber strip line shall be provided across aisle just rearward of driver’s seat. Bottom screws on step treads shall be stainless steel.

5-9.5 Anodized aluminum, rubber or stainless steel rim moldings shall be applied at the floor covering edges around all wheelhouses, driver’s platform, dash panel, and at side wall joints not otherwise covered by floor heating ducts. Anodized aluminum, rubber or stainless steel trim moldings shall be applied at edge of floor and wheel housing base. All seams to wheel housings and corners to wheel housings shall be covered by stainless steel, rubber or anodized aluminum moldings.

5-9.6 All joints in floor covering shall be butt- cut type. Aisle strip shall extend between seat mounting tracks. All access openings in the floor shall be sealed to prevent entry of fumes and water into the coach interior. Flooring materials shall be flush with the floor and shall be edge-bound with stainless steel to prevent the edges from coming loose. Access openings shall be non-symmetrical so that the ribs of reinstalled flooring shall be properly aligned. Fasteners shall tighten flush with the floor.

5-10 CRASH WORTHINESS

5-10.1 The coach body and roof structure shall withstand a static load equal to one-hundred-fifty (150) percent of the curb weight evenly distributed on the roof with no more than a six (6") inch reduction in any interior dimension. Windows shall remain in place and shall not open under such a load.

5-10.2 The coach shall withstand a 25 mph impact by a 4,000 pound, post 1973, American automobile at any point, excluding doorways, along either side of the coach with no more than three (3") inches of permanent structural deformation at seated passenger hip height. This impact shall not result

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in sharp edges or protrusions in the coach interior.

5-10.3 Exterior panels below the rub rail and their supporting structural members shall withstand a static load of 2,000 pounds applied perpendicular to the coach anywhere below the rub rail by a pad no larger than five (5") inches square. This load shall not result in deformation that prevents installation of new exterior panels to restore the original appearance of the coach.

5-11 ACCESS DOORS AND SERVICE COMPARTMENTS
5-11.1 Exterior hinged access doors shall be provided to service and remove without difficulty the following components: transmission, engine, radiator, batteries, air cleaner, windshield washer reservoir, A/C receiver tank and dryer, Heater-A/C blower motors, front and rear electrical junction boxes, windshield washer pump, defroster blower motors, and wiper motors, stop light and low air switch access panel. All large exterior hinged doors must use gas filled props.

5-11.2 An internal engine access panel shall be provided at rear transverse settee. Panel shall be from the floor to the bottom edge of seat and shall be the width of the two middle seats. The panels shall be constructed of stainless steel and shall be fastened by stainless steel bolts. Engine access panel shall be easily removable. Access to bolts for removal of panel shall be without obstruction.

5-11.3 An additional engine access panel shall be made available underneath the hinged rear transverse seats. This panel shall be fully removable and shall be a minimum of 30 inches wide and 18 inches deep. The panel shall be constructed of stainless steel and fastened by stainless steel bolts.

5-11.4 Access for power steering box mounting bolts, CNG tank mounting bolts, straps, sending unit and fill-neck fasteners must also be provided.

5-12 AXLES
5-12.1 The front axle shall be a MAN type rigid axle, or equal, with S-Cam brakes, auto slack adjusters and non-asbestos linings. The capacity of this axle to be sufficient for the coach loaded to GVWR.

5-12.2 Adjustable steering stop screws shall be incorporated into each end of the axle center to provide a 51 degree maximum turn angle of the wheels to prevent interference between the tires and their adjacent components.

5-12.3 Replaceable bronze upper and lower bushings shall be provided with the steering knuckles, along with upper and lower grease fittings in the king pin boss for proper lubrication.

5-12.4 Tie rod assembly shall consist of the rod and two end assemblies. Tie
rod ends shall be provided with grease fittings for lubrication. Non-grease (throwaway-type) ends will not be permitted.

5-12.5 The rear axle shall be a heavy-duty low profile, planetary hub type, MAN type axle incorporating one-piece stamped stud axle housing. The axle shall be a Man model HB-1352-B with a GVWR rating of 28,600 lbs. The axle incorporates a spiral bevel drive with a planetary reduction hub (T-Drive), comes with auto slack adjusters, S-Cam type brakes and non-asbestos linings. Capacity of this axle to be sufficient for the coach loaded to GVWR. The axle shall be equipped with grease seals. This axle shall have auto slack adjusters, S-Cam type brakes and non-asbestos linings.

5-12.6 Axle gear ratio shall be 4.08:1, to maximize low speed acceleration. A top road speed of 65 MPH shall be obtained on straight, level road at recommended governed engine speed with all accessories in operation and coach carrying standard load weight.

5-12.7 The differential carrier shall be removable as a complete unit from the axle housing. Axle tubes shall be made removable without removing entire differential housing. A magnetic drain plug shall be provided.

5-12.8 Wheel hubs shall be motor-type mounted, single nut-style, utilizing grease type bearing. Budd-type wheels shall not be permitted on front or rear axles.

5-143 SUSPENSION
5-143.1 Full air leveling suspension system designed to maintain a constant floor height in relation to the axles regardless of load. Air source shall be accessory air tank with a pressure-regulating valve to protect from leaks in the suspension air springs.

5-13.2 Front suspension shall have two (2) to four (4), eight and one half (8½) inch rolling lobe-type air bellows.

5-13.3 Rear suspension shall have two (2) to four (4), eleven and one half (11½) inch rolling lobe-type air bellows.

5-13.4 System must maintain constant height of body in relation to axles, regardless of load. Source of air shall be a separate tank, and a pressure valve shall protect against air loss from leaks or failure of suspension system.

5-13.5 To control lateral, longitudinal, and torsional movement, each axle (front and rear) shall have four (4) rubber bushed non-lubricating radius arm assemblies (two (2) lower, one (1) upper and one (1) lateral).

5-13.6 The front axle’s upper radius rod shall incorporate a threaded caster adjusting clamp, which will permit adjustment without removing radius rod.
5-13.7 Shock absorbers are to be provided on each side of front, center and rear axles. Shock absorbers shall have eye ring-type upper and lower mounts. Shock absorbers are to be Roni, Gabriel, Delco, or approved equal. No studded shock absorbers shall be permitted.

5-13.8 Front and rear stabilizer bars are to be attached laterally to body under structure in rubber mounting, with links at both ends to suspension supports. Self-locking nuts to be riveted on the stabilizing bar “U” clamp bracket.

5-13.9 Stabilizer bars (sway bars) shall be constructed of one-piece solid high tensile steel. No tubular steel will be accepted.

5-14 COACH KNEELE
5-14.1 The coach shall be designed to provide kneeling of the front of the coach to facilitate ingress and egress for elderly or handicapped persons. The kneeling system shall be controlled by a toggle switch located to the left side of the driver, and when actuated, shall cause the front entrance step to lower to eleven and one half (11½”) inches maximum above the ground. Switch to be protected to prevent inadvertent usage, in a position adjacent to the door control level to facilitate ease of operation with one hand. An automatic brake interlock and accelerator interlock shall be provided applying the rear brakes during the entire lowering and raising kneeling cycle to prevent inadvertent movement of the transit coach. The kneeling feature will be independent of door operation and operated at driver’s discretion.

5-14.2 Lowering and rising cycle of the kneeling system shall be 15 seconds maximum.

5-15 STEERING
5-15.1 A hydraulically assisted Power Steering Gear shall be integral type with flexible lines eliminated or the number and length reduced. Steering gear failure shall not result in loss of steering control. Steering gear must be able to operate on automatic transmission fluid.

5-15.2 The steering mechanism shall be so constructed that the coach can be easily steered by the operator and shall be such as to make the wheel free from road shock and vibration. Steering from full left to full right turn shall be accomplished in no more than approximately nine complete turns of the steering wheel. The steering mechanism shall be power-assisted, self-centering, requiring little or no effort for the operator to bring the coach back to a straight-ahead position after turning. The steering wheel shall be no greater than eighteen (18”) inches in diameter; black in color and the wheel ring shall be made entirely of all plastic or synthetic resin, molded over metal. Further, it shall be provided with
puller holes in the hub so that a standard or universal puller may be used.

5-15.3 The following specifications shall be adhered to in regard to ease of steering:

5-15.3.1 The required pull at the steering wheel rim will not exceed 40 lb to turn the front wheel five (5°) degrees right or left.

5-15.3.2 The requirements are for a wet coach, empty, on a dry concrete floor, clean and free from loose or foreign material, with tires inflated to 70 lb pressure.

5-15.3.3 The pull at the rim for a wet coach with a seated load (150 lbs per passenger) shall not exceed 60 lb. under the same conditions as outlined above.

5-15.4 Provisions shall be made for easy external adjustment of steering gear backlash.

5-15.5 Power steering pump shall be a Vane-type pump. Hydraulic power shall be 4.0 GPM at 1200 PSI. A pressure relief valve shall be provided and set at 1500 PSI. Power steering pump must be able to operate on automatic transmission fluid.

5-15.6 A six (6) quart capacity fluid reservoir with a meshed screen filter shall be provided. Reservoir shall have a dipstick and sight glass for fluid level. Fill cap to be provided with restraining chain. Dipstick must also have restraining chain.

5-15.7 Power steering hoses shall be neoprene type, AQP-based, designed to withstand operating pressures of 2,000 PSI or greater.

5-15.8 The steering column must be able to tilt and telescope, allowing for maximum operator control and comfort.

5-16 DRIVE LINE
5-16.1 The drive shaft shall be a minimum of four (4) inch O.D. heavy-duty type, equipped with a protective guard and shall incorporate Series 1810 universal joints. The drive shaft shall have a metal guard or guards bolted to the chassis capable of preventing the shaft from whipping through the floor and/or causing damage to the brake, fuel or exhaust systems, in case it breaks or becomes disconnected.

5-16.2 Guard may be welded to engine cradle assembly upon condition that guard does not obstruct removal of drive shaft or any other component.

5-17 INSULATION FROM HEAT
5-17.1 Inside walls and ceiling shall be adequately insulated with fiberglass blankets, minimum 1¼ inch thick with 0.75 lb. density, sealed in
polyethylene or approved equal. Sidewall insulation shall consist of two layers of glass fibers compressed to a thickness of 3/16 inch with a density of 1½ lbs per cubic foot. Layers are separated by 1 mil thick aluminum foil and bonded together with a phenolic resin binder with silicone additive. Use of polyethylene bagged fiberglass or plastic polystyrene shall also be permitted.

5-17.1.1 Engine seat and riser shall be insulated with minimum 1½ inch thick fiberglass blanket protected by aluminum foil for long life and maximum protection against heat radiation from the engine compartment. Baryfoil ½ inch thick shall also be permitted.

5-198 SOUND INSULATION

5-198.1 The combination of inner and outer panels and any material used between them shall provide sufficient sound insulation so that a sound source with a level of 83 db measured at the outside skin of the coach shall have a sound level of 65 db or less at any point inside the coach. These conditions shall prevail with all openings, including doors and windows, closed and with the engine and accessories switched off.

5-198.2 The coach generated noise level experienced by a passenger at any seat location in the coach shall not exceed 83 db and the driver shall not experience a noise level of more than 75 db under the following test conditions. The coach shall be empty except for test personnel, not to exceed four (4) persons, and the test equipment. All openings shall be closed and all accessories shall be operating during the test. The coach shall accelerate at full throttle from a standstill to 35 mph on level commercial asphalt or concrete pavement in an area free of large reflecting surfaces within fifty (50') feet of the coach path. During the test, the ambient noise level in the test area shall be at least 10 db lower than the coach under test. Instrumentation and other general requirements shall conform to SAE Standard J366. If the noise contains an audible discrete frequency, a penalty of 5 db shall be added to the sound level measured.

5-19 FIRE PROTECTION

5-19.1 An Amerex electronic fire suppressant V50 system shall be provided. In addition, an Amerex Gas detection system shall also be provided. The passenger and engine compartments shall be separated by a bulkhead(s), which shall be an incorporation of fireproof materials in its construction and be a firewall barrier. This firewall shall preclude or retard propagation of an engine compartment fire into the passenger compartment. Only necessary openings shall be allowed in the firewall and these shall be fireproofed.
5-19.2 Any passageways for the climate control system air shall be separated from the engine compartment by fireproof material. Piping through the bulkhead shall have copper, brass, or fireproof fittings sealed at the firewall with copper or steel piping on the forward side.

5-19.3 Wiring may pass through the bulkhead only if connectors or other means are provided to prevent or retard fire propagation through the firewall. The conduit and bulkhead connectors shall be sealed with fireproof material at the firewall.

5-19.4 Engine access panels in the firewall shall be fabricated of fireproof material and secured with fireproof fasteners. These panels, their fasteners, and the firewall shall be constructed and reinforced to minimize warping of the panels during a fire that will compromise the integrity of the firewall.

5-20 CORROSION RESISTANCE
5-20.1 The coach shall resist corrosion from atmospheric conditions. It shall maintain structural integrity and nearly maintain original appearance throughout its service life, provided it is maintained in accordance with the procedures specified by SMBBB. Materials exposed to the elements and all joints and connections of dissimilar metals shall be corrosion resistant and shall be protected from galvanic corrosion. Representative samples shall withstand a two (2) week salt spray test in accordance with ASTM Procedure B-117 with no visual or structural detrimental effects to normally visible surfaces, and any significant structural degradation or weight loss of over one (1) percent for other members or components. All undercarriage metal framing, engine module framing, must be liberally undercoated. Undercoating must be exceptionally durable to meet the SMBBB heavy-duty transit needs.

5-20.2 Coach(s) shall be undercoated with non-flammable, resin type material.

5-221 UNDERCOATING
5-221.1 The underneath portion of the under frame and step well including the wheel housings, shall be sprayed generously with a fire retardant Tectyle 127 undercoating material, or approved equal.

5-221.2 All electrical components, airlines and brake system components, and lug fittings shall be protected from undercoating spray.

5-232 BATTERY COMPARTMENT
5-232.1 The batteries shall be mounted on a slide out type tray with access door in body side. Inside of the door shall be covered with a durable insulating material to prevent an electrical short if door is damaged inward. Upper portion of door is to be louvered to provide for ventilation.
The battery compartment and tray shall be stainless steel.

5-232.2 Battery compartment shall be large enough to allow for no contact between door and any portion of batteries, including any posts or wiring harness.

5-232.3 Battery harnesses and cables shall be properly fitted so as not to chafe or pull loose when extending battery tray to full extension.

5-22.4 Battery compartment to be extended a minimum of four (4) inches above the battery in order to service battery hold-downs. Photographs of any proposed alternate, swing-out type battery tray must be provided to allow for SMBBB consideration for approved equal.

5-22.5 Battery tray shall extend sufficiently to allow a full visual inspection of all battery cells and all sides of batteries.

5-22.6 Battery hold-down shall be solid hard rubber. Steel and stainless steel hold-downs shall not be permitted.

5-22.7 At least two (2), one (1) inch drain ports shall be provided at opposite ends of battery tray. Drains shall be equipped with tubing, which will channel acid away from all portions of coach, while coach is both stationary and in motion. Drain ports are not required for self-drain-type trays, which channel acid away from all portions of coach.

5-22.8 The battery compartment shall be vented and shall retain the battery in place during upset or rollover of the coach.

5-23 BATTERIES
Two, Delco 8D type, 12-volt batteries shall be provided.

Battery equalizers shall be installed, to provide proper charging voltage to all batteries and still maintain each battery independently. Equalizers shall be mounted in a location away from the heat of the engine, preferably in a compartment that is cooled by the coach air conditioning system.

5-24 BATTERY DISCONNECT SWITCH
An Underwriters approved Battery Disconnect Switch shall be mounted in the battery compartment. The switch shall interrupt the positive 4/0 cable at the main terminal.

5-25 ESCAPE HATCH
Coaches shall have two (2) emergency roof escape hatches located at the front and back half of the roof, or other approved suitable location, which will comply with FMVSS requirements.
5-26 INTERIOR TRIM

5-26.1 Ceiling trim panels shall be hard-faced melamine, heat and scratch-resistant resin with a hardboard back, 1/10 inch minimum thickness, applied sectional with stainless steel or anodized aluminum trim strips covering panel joints. The section between the large side windows down to the bottom of the window shall be painted with Imron or covered with melamine, Acrylic PVC Phenylene Oxide, or approved equal; color of paint or covering material to be subject to approval by SMBBB.

5-26.2 Lower sidewall trim panels shall be melamine, or approved equal applied sectional with stainless steel or anodized aluminum trim strips covering panel joints. Horizontal trim molding shall cover the top of the side-wall trim at the base of the side windows. Color and finish of melamine to be subject to approval by SMBBB.

5-26.3 The driver's platform riser trim shall be anodized aluminum or stainless steel.

5-26.4 Openings to the underside of the dash compartment will be protected to prevent accumulation of debris behind the dash panels. An anodized aluminum shield, or approved equal, shall protect all apparatus in front of the driver's toe board. Adequate operator shoe clearance to normally operate the brake and accelerator pedals must exist for a size fourteen (14) shoe.

5-27 WHEELHOUSES

5-27.1 Front and rear wheelhouses shall be stainless steel and provide an attractive interior appearance. Rear wheelhouse shall extend from the bottom edge of the forward skirt panel to bottom edge of the rear skirt panel. Center wheelhouse shall extend from bottom edge of center skirt panel to bottom edge of coach body forward of area. Forward wheelhouse to extend from bottom edge or forward skirt panel to bottom edge of coach body forward of wheelhouse. Wheelhouse should be able to resist penetration due to sudden tire failure or road hazards.

5-27.2 Splash aprons shall be installed behind each wheelhouse, extending to within three (3) inches of the ground. Rear splash aprons shall be the full width of the coach to protect all rear compartments from road splash. Front splash aprons must also be full width of the coach.

5-28 FENDERS

Rubber fenders shall be applied to the exterior contour of the wheelhouses to control wheel splash. Fenders shall be fastened with stainless steel screws for easy removal.
5-29 WHEELS AND TIRES
5-29.1 WHEELS
All wheels shall be Alcoa aluminum Dura Bright, or approved equal, with polished finish on both sides. The wheels and tires shall be balanced and aligned. Front wheels shall be interchangeable with each other and the center and rear duals shall be interchangeable with each other. Wheels shall be compatible with tires in size and load carrying capacity.

5-29.2 TIRES
Contractor shall furnish, mount, spin balance tires, and provide all weights for installation. The load on any tire shall not exceed the tire suppliers rating. The tires shall be the manufacturer’s recommended steel belted radials, Goodyear 275/70R x 22.5 or approved equal.

5-29.3 SPARE WHEELS AND TIRES
One (1) spare mounted Alcoa Aluminum Dura Bright wheel and tire, for each coach delivered, shall be delivered at time coaches are delivered.

5-29.4 HUBO-ODOMETER
All coaches supplied under this contract shall have hub-odometer installed on the right rear outside dual wheel. The hub-odometer shall be precise and super sealed to keep out moisture. The hub-odometer shall have a capacity reading no less than 999,999 miles. The hub-odometer shall be a Stemco, Model TracBat/RF or approved equal. The mileage indicator on the hub-odometer shall not show the tenths of mile.

5-30 BUMPERS AND TOW-EYES
5-30.1 Two-piece energy-absorbing bumpers to be installed both front and rear. Bumpers shall be solid black in color, to be minimum surface depth of ¼ inch. Rear bumper to be full depth. Rear bumper shall be constructed to prevent persons from securing a handhold or foothold thereon. Both front and rear bumper shall allow attachment of a rigid tow bar.

5-30.2 Front bumper shall have heavy gauge steel, "Wrap Protector Plate" installed on each corner of the bumper (between bumper and coach) to protect to wheelchair mechanism and the roadside coach body.

5-30.3 Dual tow eyes shall be provided at the front bumpers. There shall be dual tow eyes at the rear of the coach below the bumper.

5-30.4 All tow eyes must not be extended further than the width of the bumper.

5-30.5 Each tow eye shall accommodate a crane hook with a one (1") inch throat.

5-30.6 Each tow eye shall withstand, without permanent deformation, tension loads up to 1.2 times the curb weight of the coach within twenty (20°) degrees of the longitudinal axis of the coach.
5-31 WIRING

5-31.1 A Program Logic Control (PLC) electrical system consisting at a minimum of, rear of coach mounting card cage with power supply, processor and network card and a mix of input and output cards, block input/output modules located throughout the coach typically two in the side console, and one in the dash and exit door, to have configuration capacity of thirty two (32) point blocks. The engine, transmission and climate control systems are to be controlled by their own dedicated control system, but all other systems are controlled by the PLC. This includes all lights, doors, engine starting and fast idle controls, lifting and kneeling, retarder and climate control interfaces, etc. Each switch or other input device and each light, valve or other output device is to be wired to the closest input or output card or block. Each input or output point is to have a status LED.

5-31.2 The control logic is to be software based. The documentation for the logic shall consist of ladder logic with each device identified by name and logical address. Comments describing the program are to be included where necessary before each rung of the ladder. This documentation in conjunction with the status LED’s are for ease of rapidly troubleshooting the coach.

5-31.3 The logic system is to be capable of being entered or changed via a personal computer and a user friendly, menu driven software program. This program shall also be used for troubleshooting by providing real-time information on the status of each input and output, and can be used to force inputs and outputs on or off. It shall also be used to change timer values.

5-31.4 The system provided shall be completely modular for expansion. The main processor shall contain rack mounted cards, with satellite units self-contained for “daisy-chaining” into the communications and power loops at any location. All wiring to the system shall be via removable terminal blocks so a faulty unit can be changed without having to disturb any wiring.

5-31.5 The contractor shall furnish the program and laptop personal computer for the bus wiring and for all engine/propulsion systems. Four programs and four laptops for each order of coaches shall be provided, to diagnose, operate and maintain the coach. If necessary this can be provided through a local distributor by the contractor. Following this procedure the contractor and local distributor shall provide registration and ongoing support for the software as required. Local training for this system shall also be provided.

5-31.6 All wiring shall be vinyl insulated or both vinyl and fabric insulated and permanently color-coded for ease of identification. The engine compartment wiring insulation (except wiring for lights) shall be cross-link.

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or cross grain polyethylene. The engine compartment wiring shall be permanently numbered and permanently color-coded. The fluorescent light wiring shall be two layers cross-link or cross grain polyethylene insulation or aircraft type high voltage wire. The battery cable shall be 4/0 gauge, with minimum of 0.075-inch wall plastic insulation or cross-linked polyethylene. Cable may be 3/0 gauge for 24-volt applications.

5-31.7 The main wiring harness shall be loom covered and concealed within “C” shaped channels of mainframe or coach body for protection from the elements. All harnesses and wiring shall be securely retained by rubber or nylon covered clips or solid nylon straps. The wiring shall terminate at appropriate junction terminals set in Bakelite or molded plastic material. All wiring end connectors shall be of the soldered or machine crimped insulated type. Wiring cables larger than No. 10 will be equipped with soldered or machine-crimped terminals. All circuits shall be protected by manual, reset-type circuit breakers, except the speedometer, backup lights, and engine compartment lights which may use a line fuse. Automatic reset circuit breakers may be used for starter solenoid, headlamps, and dashboard area lights.

5-31.8 Multiple plug and receptacle-type connectors shall be provided to permit rapid disconnect of multiple circuits for engine, closure door wiring, and directional signal switch. Screw terminals for power leads shall be permitted for directional signal switches.

5-31.9 All wiring harnesses shall be designed for this coach and contain only wiring for units thereon, plus sufficient extras for future use. A minimum of five (5) color-coded wires shall be installed in the wiring harness that runs from the rear PLC compartment to front driver console. Universal type wiring harnesses will not be accepted.

5-31.10 Provide a driver’s electrical panel terminal block, which shall be accessible from an internal/external access door. External door shall be hinged at top, with door prop up and secured with 5/16” square key fasteners.

5-31.11 Multiple plug connectors outside the interior of the coach must be totally weather-proof (i.e., water, dust, moisture) type. EXAMPLE: Body harness to DDEC II controls.

5-32 INTERIOR LIGHTING
The passenger interior lighting system shall be DINEX lighting system or approved equal. The interior lighting system shall provide a minimum 15 foot-candle illumination on a 1 square foot plane at an angle of 45 degree from horizontal, center 33 inches above the floor and 24 inches in front of the seat back at each seat position. Allowable average light level for the rear bench seats shall be 7 foot-candles. Floor surface in the aisles shall be a minimum of 10 foot-
candles, vestibule area a minimum of 4 foot-candles with the front doors open and minimum of 2 foot-candles with the front doors closed. The front entrance area and curb lights shall illuminate when the front door is open and master run switch is in the “Lights” positions. Rear exit area and curb lights shall illuminate when rear door is unlocked.

The light source shall be located to minimize windshield glare with distribution of the light focused primarily on the passengers’ reading plane while casting sufficient light onto the advertising display. High power solid state LED strip shall be in one-foot section increment with high power LED manufactured by either Nichia or Philips or approved equal with expectation to maintain on average 60-70% of original brightness after 60,000 hours of operation. The brightness of each individual light fixture shall be software programmable to minimize glare. Photo sensor detects and adjusts light level automatically relative to ambient light for passenger comfort.

Lens material shall be translucent polycarbonate. Lens shall be designed to effectively “mask” all individual LED’s to make them invisible and there shall be no visible “hot spot” or “dark spot”. Lens shall be sealed to inhibit incursion of dust and insects yet are easily removable for service. If threaded fasteners are used they must be held captive in the lens. Access panels shall be provided to allow servicing of components located behind light panels.

Individual driver module shall be provided for each light fixture. Driver module shall have built-in self protection of thermal shut-down and restart, PWM (Pulse Width Modulation) output to regulate light level, reverse polarity protect and rebuildable.

When the master switch is in the RUN or NITE/RUN mode, the first light module on each side of the coach shall slowly fades to darkness when the front door is in the closed position and light output shall gradually illuminate to reach maximum light level when the door is opened. Solid state LED lighting shall have unlimited on-off cycles.

Failure of any light fixture or driver module shall be broadcasted via telltale light panel or dashboard display. The system will look for supply current and lighting fixture temperature to be approximately the same for all of the driver modules, and will show which module(s) seem to have a problem.

The light system may be designed to form part of the entire air distribution duct.
5-33 EXTERIOR LIGHTING

5-33.1 All exterior lights shall be LED type wherever possible, lights and reflectors must meet DOT, and State of California Vehicle Law Requirements.

5-33.2 "Dual" headlights of sealed beam type are required, with high and low beam controlled from a foot switch on the floor that is sealed and protected from moisture. Sealed beam units shall be Halogen type and have a low beam rating of 600-hour life.

5-33.3 Front and side directional signals shall be amber LED type. Directional signals shall be operated by a foot switch mounted on the floor of the left side of driver near high beam control switch.

5-33.4 Rear lamps shall consist of six (6) totally sealed beam Halogen assemblies, mounted vertically, three (3) per side, upper lamps shall be amber sealed beam Halogen directional signals, middle lamps shall be Stop/Brake light and shall be red, and bottom lamps shall be clear sealed beam Halogen back-up.

5-33.5 The coach shall be equipped with two additional “Decel” (deceleration) lamps programmed to activate whenever the driver removes pressure from the accelerator. The decel lamps shall be mounted in the center of rear of the coach as approved by SMBBB. The design and type of the lamps also needs SMBBB approval.

5-33.6 A four (4) way flashing circuit shall be provided, which when activated, will cause front, side and rear directional signals to begin flashing simultaneously, thereby causing them to function as traffic hazard warning signals.

5-33.7 A four (4)-candle power rear license plate light shall be provided in license plate well. License plate light must be sealed beam lamp.

5-33.8 A beeper alarm located in engine compartment shall be actuated when transmission is put in reverse gear.

5-33.9 Provide a flashing round amber light located at pedestrian height on the right front corner of the coach, which will flash during the lowering and raising of the coach via the kneeling feature. Front turn signal may be used in lieu of additional lamp.

5-34 JUNCTION BOXES

All relays, controllers, flashers, automatic circuit breakers, and other electrical components shall be mounted in vibration free and easily accessible junction boxes. The boxes shall be sealed to prevent moisture from normal sources from entering the boxes and to prevent any fires that may occur inside the boxes from propagating outside the boxes.
5-35 INSTRUMENT PANEL AND CONTROL SWITCHES

5-35.1 Contractor must provide a full description of proposed instrument panel for approval by SMBBB.

5-35.2 Instrument panel shall include:

(a) Voltmeter

(b) Three (3) inch air gauge (150 PSI), (Engler, VDO, Forster, or approved equal)

(c) Speedometer driven from left front wheel or transmission

(d) Telltale lights to indicate door unlocked (emergency door Unlatched if door is required), stop lights on, or headlight high beam on

(e) Transmission and engine microprocessors (amber indicators for check engine or transmission, red for shutdown modes)

(f) Low air pressure

(g) Air-conditioning malfunction

(h) Directional signal action

(i) Indicator light warning failure of 12 Volt system, if Vanner equalizer fails.

(j) Fire alarm

In addition a buzzer shall sound for low air pressure, and separate visual and audible engine fire detector. The instrument panel shall be illuminated and located directly in front of driver's seat for easy reading. Speedometer shall have prominent markings in MPH.

5-35.3 Engine shutdown with spring-loaded overrule toggle switch or push-button (momentary-on) shall be provided for the following engine and transmission conditions:

(a) Low Oil Pressure (Engine)

(b) High Water Temperature

(c) Low Coolant level (Shutdown shall not occur until after eight (8) seconds duration)

(d) Transmission Oil Temperature

5-35.4 A front control switch panel shall be locate in a panel directly to the left of operator and shall be designed for simplification of electrical controls and shall be inclined for easy access to control switches. Top surface of control panel shall have main control or master switch with four positions;
(a) "ENGINE STOP" All systems "OFF", EXCEPT power available for interior, stop, turn and hazard lights, silent alarm, horn and Farebox.

(b) "DAY RUN" All systems and engine "ON", EXCEPT headlights, park, tail and marker lights

(c) "NIGHT PARK" All systems "OFF", EXCEPT those listed in Engine Stop and power to radio and marker lights.

(d) "NIGHT LIGHT" All systems and engine "ON"

A separate switch shall control driver's heater and defroster motor. Engine starter switch shall be push-button type. Normal control of all electrical units, except stop lamps, turn signals, hazard flashers, horn, and destination signs, shall be obtained through positioning of main control switch. Toggle-type switches for alternate control of interior and sign lighting, passenger buzzer, and any special equipment shall be installed.

5-35.5 A rear electrical access panel and junction box at the rear of the coach shall be provided. The box shall be accessible by means of a slide out drawer.

5-35.6 Both front and rear control panels shall be hinged from the top and shall be equipped with door gas props. A side-hinged panel shall be permissible with gas filled props only.

5-35.7 Starting motor switch is to be wired so that engine cannot be started when coach is in gear. Delco Starter or approved equal must have over-crack protection built in to the starter housing.

5-36 MARKING OF CONTROLS
All operating controls, light switches, and controls for auxiliary equipment shall be clearly and permanently marked and identified by means of metal or oil resistant plastic identification plates with stamped recessed lettering filled with a contrasting color paint. All switches shall be "ON" in the up position.

5-37 MIRRORS
5-37.1 The coach will be equipped with corrosion resistant, outside rearview mirrors on each side of the coach. Mirrors shall permit the driver to view the highway along both sides of the coach, including the rear wheels. Mirrors shall be firmly attached to the coach to prevent vibration and loss of adjustment, but not so firmly attached that the coach or its structure is damaged when the mirror is struck in an accident. The right side rearview
mirror shall be mounted so that its lower edge is no less than 80 inches above the street surface. Mirrors shall retract or fold sufficiently to allow coach-washing operations.

5-37.2 Exterior mirrors shall be B&R remote control mirror head with arm, or approved equal. Left and right shall be a single flat mirror without directional lights and shall conform to the SMBBB existing fleet mirrors.

5-37.3 The control switch shall be mounted on the right hand side of the driver’s console.

5-37.4 A four (4) inch by sixteen (16) inch rectangular rearview mirror, Acme, or approved equal, shall be installed for the driver’s view of transit coach interiors. Such mirror shall have a clear view safety glass with frame.

5-37.5 Acme, or approved equal, round, six (6) inches front step well mirror and twelve (12) inches exit door convex mirror combination shall be provided to allow for driver’s view of exit doors step well. Adequate reinforcement shall be provided behind the mounting bracket inside the body panel as required.

5-38 HORN
Two heavy-duty, dual horns shall be furnished and installed so as to be protected from wheel wash. Horn control shall be at center of steering wheel.

5-39 SAFETY EQUIPMENT
Safety equipment boxes shall be provided, which shall be easily accessible to the driver and contain the following:

(a) 5 lb., “A B C class, Fire Extinguisher
(b) Three red emergency reflectors.

5-40 DOORS
5-40.1 The front entrance door on the right-hand side ahead of the front wheel shall be a metal, plug type, with a minimum 31-inch width. Meeting edges shall be equipped with two (2) inch extruded rubber edges on each door section that overlap by at least ½ inch. This shall be accomplished by means of a lap joint rubber extrusion on the meeting edges of the two door edges. The door shall be full air-operated with Vapor Corporation, or approved equal, pneumatic door engine and controls with a shut-off valve. Door operating levels shall be splined to the shafts. Door shall have one-piece glazing for the length of the door, in order to allow grab rail clearance for wheelchair ramp. The front and rear exit doors shall have a minimum vertical open clearance of seventy-two (72) inches minimum.
5-40.2 The rear door located just ahead of the rear wheels shall be a "plug" type with a minimum thirty one (31) inch clear opening between the door shafts, operated by Vapor or approved equal, and a two (2) inch extruded rubber edge on each door section that overlaps by at least ½ inch. Two inch extruded rubber edge on each door section must also utilize sensitive edge capability. Each section of the door shall be glazed above and below the belt rail. An anodized aluminum or stainless steel grab rail, approximately forty-eight (48) inches long, shall be installed vertically on the front and rear section of the door near the meeting edge. Door operating levers shall be splined to the shafts.

5-40.3 The front entrance and rear door shall have Vapor, or approved equal, interlock control with the rear brakes and accelerator interlock to prevent movement of coach with the door in an open position. A speed sensor switch shall be installed that will prevent the doors from opening while the coach is in motion, over three (3) miles per hour, or as adjusted. Speed sensor switch shall be set so door cannot be opened until coach comes to a complete stop. An adjustable pressure regulator to adjust air control to brake interlock shall also be provided. Interlock controls shall be above the door and readily accessible for servicing. Interlock controls may be located below the floor if they are readily accessible for servicing.

5-40.4 The rear brakes shall be interlocked so as to prevent the coach from moving when the wheelchair ramp is being operated in a loading, unloading, or stowing cycle. Contractor shall supply complete information about interlock system operation at the time of bid. This information must establish that the system used is the functional equivalent of that specified.

5-40.5 Front entrance and rear exit doors shall be controlled from a five-position single lever door control valve with a handle operating in a horizontal plane. The door shall not be able to slam open or slam close under any condition. Rear doors shall have a Vapor "Class" passenger sensing system installed to prevent doors closing when passengers are in the door area.

5-40.6 Micro switches shall have a metal frame for tightening to prevent over-tightening and binding.

5-40.7 In closed position, front entrance and rear exit doors shall fit snugly against coach body and bottom step so as to prevent drafts and intrusion of water.

5-40.8 A rear door master switch shall be located in right-hand front dash compartment, driver's safety compartment, or front destination sign compartment. If single door master switch controls both doors, master switch may be located in the entry door compartment.
5-40.9 The switch controlling the interlocking device, to prevent the coach from moving when the center and rear door is open, shall not be accessible from the driver’s position.

5-40.10 The rear door shall have the words “EXIT DOOR” conspicuously lettered on the interior of the door, or immediately adjacent thereto, in letters at least two (2) inches high.

5-40.11 The rear door shall have an easily accessible emergency opening device located adjacent to the exit door, designed to operate the door regardless of all other controls. This device shall be identified, and instructions for its use shall be posted on or adjacent thereto. The operation of this device shall be interlocked so as to actuate the brakes to affect a smooth stop at a rate of deceleration equivalent to a stop within 75 feet from a speed of 20 MPH. The device shall be concealed by an easily breakable, clear plastic panel and shall have a hammer or other device provided to gain access to the handle or lever, color to be red. Hammer shall be attached to coach by metal chain. A clip mount shall be provided for the hammer.

5-40.12 The plug-type rear exit door shall be designed to:

5-40.12.1 Delay release of the brake interlock until after the doors are fully and completely closed;

5-40.12.2 Prevent the doors from being unlocked by driver’s door control while pressure is applied on the inside of the doors;

5-40.12.3 Lock the doors closed mechanically, in case of electric power failure.

5-40.13 Front, center and rear door controls shall be accessible through a top-hinged door with proper and two quarter-turn spring latches with knurled knobs.

5-40.14 Door control access panels shall be of sufficient size to allow the ease of maintenance and inspection.

5-41 WINDOWS

5-41.1 All windows shall be manufactured by Ricon, model 3-minute window. Window construction and glazing must comply with FMVSS No. 217.

5-41.2 Coaches shall have at least three (3) large windows on each side of the coach. Large side windows shall be tip-in style mounted in a black anodized aluminum frame, which shall allow easy removal of windowpane without removing sash from coach. Large side windows must be tip-in style.
5-41.3 Large side windows shall be push-out type, hinged at top for emergency escape. Sash shall be equipped with a positive locking device to prevent accidental opening. Sash shall be black anodized aluminum.

5-41.4 Window beside driver shall be a sliding type, mounted in an anodized aluminum frame. Windows shall be push-out type with sash hinged at top for emergency escape. Sash shall be equipped with a positive locking device to prevent accidental opening.

5-41.5 Window behind front entrance door shall be split sash, non-sliding type with fixed pane top transom or clear Lucite sash to accommodate side destination sign.

5-41.6 Small windows opposite exit door shall be mounted in a black anodized aluminum frame and shall be a tip-in type. Sash shall be hinged at top for emergency escape. Sash shall be equipped with a positive locking device to prevent accidental opening. Window is not required if coach design provides for a large type window.

5-41.7 Driver's window shall be mounted in a split-sash, horizontally-sliding, black anodized aluminum frame. Window glazed with lightly gray tinted, single density, safety sheet glass ¼ inch thick, per federal specifications. Window may also be fixed pane for upper half, with lower half being split-sash, horizontally sliding.

5-41.8 Windshield shall be fixed-type, split vertically, glazed with safety float, and laminated clear glass. Top six (6) inch portion of windshield shall be glazed with laminated super neutral safety sheet glass, moderately blue tinted. Curb side windshield to have upper shade band.

5-42 WINDOW GLAZING

5-42.1 Side window glazing shall be laminated safety glass conforming to FMVSS 205 and the applicable requirements of ANSI Z26.1.

5-42.2 Glazing shall be gray in color, and consistent from window to window. Minimum luminous transmission shall be 28 percent as measured by ASTM D-1003. Maximum solar energy transmittance shall be 39 percent as measured by ASTM E-424.

5-42.3 All side windows, except driver's window and front door windows shall be lightly gray tinted.

5-42.4 Front door windows and driver's side window shall be single density, laminated safety sheet glass and marked as such per Federal specifications.

5-42.5 Front destination sign window shall be clear glass at least ¼ inch thick or equivalent.
5-42.6 An identification plate with instructions for operating push-out sash shall be attached to the adjacent body panel next to each push-out window.

5-42.7 Escape latch handles shall be coated with red pliable plastic.

5-42.8 All push-out windows shall have a minimum clear opening height of seventeen (17) inches and a minimum width of twenty-four (24) inches.

5-43 WINDOW GUARDS
5-43.1 Window Guards shall be installed on all side windows. Window guards shall be 1/8 or 1/16" plastic disposable covers, "Glass Guard" manufactured by Ricon or approved equal.

5-43.2 Attachment brackets shall match the color of the window frame and shall be constructed of stainless steel.

5-43.3 Installation and removal of the window guards shall be performed with the removal of no more than three (3) screws. Screw fasteners shall be tamper proof type screws to deter vandalism.

5-43.4 Window guards shall follow the contour of the original window, to allow for the appearance of one continuous window pane. Window guard shall seal out dust, dirt and moisture from between the window guard and the window.

5-44 WHEELCHAIR LOADING SYSTEM
5-44.1 Each coach is to provide a wheelchair loading system (wheelchair ramp) to provide ingress and egress quickly, safely, comfortably, and in a forward direction for a passenger in a twenty eight (28) inch wide wheelchair from the street level or curb. The system must comply with all codes, rules and regulations of the Americans with Disabilities Act of the U.S.A. Each wheelchair loading system must be located in front door area. For each wheelchair position the wheelchair restraint devises shall be an American Seating securement ARM restraint system or approved equal. In addition, applicable ADA belts shall be provided.

5-44.2 LOADING SYSTEM

5-44.2.1 A fold out Ricon hydraulically operated ramp (ADA compliant) or approved equal, shall be provided at the front door for deployment by the driver from the drivers seated position. The deployed ramp measuring 30.5" wide and 44" long shall fold out to the curb height and retract back into a recessed floor area.

5-44.2.2 Drivers controls shall consist of an easy to operate three position toggle switch on the instrument panel marked DEPLOY-FLOAT-STOW.
5-44.2.3 When the wheelchair ramp is in the stowed position, no parts of the lift's hydraulic or electrical system shall be exposed to the coach interior.

5-44.2.4 The ramp shall be prevented from retracting when a wheelchair or passenger is on the platform.

5-44.2.5 The incorporation of the wheelchair loading system shall not present a hazard nor inconvenience any passenger.

5-44.3 RAMP PLATFORM

5-44.3.1 Must meet all Americans with Disabilities Act requirements where applicable.

5-44.3.2 The ramp platform while in the float position shall float to either the deployed or stowed position without hydraulic assistance.

5-44.3.3 The platform shall be constructed of minimum 5/16 inch cold-rolled steel or approved equal. Framing for ramp shall be secured to coach frame with minimum ½ inch Grade 5 bolts. All fasteners shall be stainless steel. All bushings shall be oil impregnated, centered bronze style. All components shall be easily accessible for repair. Surfaces requiring paint shall be prepared and painted according to the paint requirements in this specification.

5-44.3.4 The ramp must be electrically controlled and hydraulically powered by means of a 12 or 24 VDC Power Pack. The electrical control box shall be made weather tight with a non-absorbing gasket for its access panel. All controls shall be approved by SMBBB hydraulic and electrical switches shall be permanently marked to indicate their function.

5-44.3.5 An auxiliary, hand-operated mechanism shall be incorporated into the chair ramps hydraulic system to permit the operation of the ramp in the event of electrical or hydraulic failure.

5-44.3.6 The entire wheelchair ramp including all components shall be protected from outside splash and road debris/materials. An easily removable stainless steel protective pan shall be installed to protect the wheelchair ramp if required. Skid plates shall be provided to protect the ramp slide rails. Provision shall be made to restrict debris and other foreign matter on the platform from being carried under coach floor during the stowing cycle.
5-44.4 SAFETY FEATURES

5-44.4.1 In the event of electrical or hydraulic failure, the ramp must stop in the position it is in at the moment of malfunction.

5-44.4.2 The loading platform shall be covered with replaceable or renewable, non-skid, epoxy type material with the Santa Monica Big Blue Bus Logo imprinted on the non-skid material.

5-45 EXTERIOR BUS IDENTIFICATION AND LETTERING

5-45.1 Coach numbers shall be approximately six (6) inches high, and white in color and located at four different exterior locations as determined by SMBBB after the bid is awarded. Current locations for bus numbers are front of coach: right side, rear of coach, upper right side, sides of coaches, upper front side. The sequence of coach numbers shall be provided by SMBBB.

5-45.2 One interior location above the windshield in characters at least two (2) inches high. Coach numbers will be assigned by SMBBB. Specific locations of numbers shall be subject to approval by SMBBB.

5-45.3 Roof top numbers shall be minimum length of forty-two (42) inches, minimum width of thirty (30) inches, with a width of six (6) inches and a minimum space of eight (8) inches between numbers and shall be white.

5-45.4 The following Exterior decals shall be provided: a white www.big blue bus.com decal shall be installed on the rear of the coach, above the AC access door. "Provided by Compressed Natural Gas" shall be a white decal and provided and installed on both sides of the fuel cylinder storage roof compartment. The City of Santa Monica (white) and decal shall be installed on both top sides of the front of the coach along with the bus number. On each side of the coach, the big blue bus shall be installed in white lettering as on current bus designs. The manufacturer is required to submit a minimum of 3 exterior designs to SMBBB for review for this advanced bus body.

5-45.5 A CHP garage identification number (in black lettering) CA 33644, shall be provided on each side of the coach at the lower bottom of the center of the side of the coach.

5-46 INTERIOR DECALS AND LOGOS

5-46.1 Area surrounding wheelchair tie-down area shall be signed to designate its use for wheelchair-bound passengers.

5-46.2 An identification plate, with instructions for the use of the folding seat and
wheelchair lock, shall be installed on the adjacent body panel next to the seat. All such signing and instructions shall be subject to the approval of SMBBB.

5-46.3 The following decals, two (2) of each decal per coach, shall be supplied and installed by the successful Contractor. (Subject to approval by SMBBB.) Decals must have a minimum 1 mill thick coating of clear Mylar.

5-46.3.1 “SMOKING, EATING, AND RADIO PLAYING IS PROHIBITED”

DIMENSIONS: 4 ½ inches high X 12 ½ inches wide.

Decal shall be red, white, and blue in color. (Universal symbols shall be used in lieu of lettering.)

5-46.3.2 “ATTENTION DRIVER TURN OFF A/C BEFORE SHUTTING OFF ENGINE”

“PUT COACH IN NEUTRAL BEFORE TURNING ON A/C”

“TURN ON FAST IDLE AFTER A/C IS ON FOR 10 SECONDS”

DIMENSIONS: 3 ½ inches high X 5 inches wide.

Red lettering and border, white background.

5-46.3.3 “EXIT DOOR”

DIMENSIONS: 2 inches high X 12 inches wide.

Black lettering, white background, no border.

5-46.3.4 “EMERGENCY EXIT”

“BREAK WINDOW”

“PULL RED HANDLE”

“PUSH DOOR TO OPEN”

DIMENSIONS: 3 inches high X 5 inches wide.

Red lettering, red border, white background.

5-46.3.5 A Universal Symbol Depicting Handicapped Accessibility.

DIMENSIONS: 5 inches high X 5 inches wide.

White symbol and border, blue background.
5-46.3.6  "PLEASE EXIT THROUGH BACK DOOR"
DIMENSIONS: 1 inch high X 8½ inches wide.
White lettering and border, clear background.

5-46.3.7  "WATCH YOUR STEP"
DIMENSIONS: 3 inches high X 18 inches wide.
White lettering, red background, no border.

5-47 FINISH AND COLOR

5-47.1 All exterior surfaces shall be smooth and free of visible wrinkles and dents. Exterior surfaces to be painted shall be properly cleaned and primed as appropriate for the paint used, prior to application of paint to assure a proper bond between the basic surface and successive coats of original paint. Paint shall be applied smoothly and evenly with the finished surface free of dirt, runs, orange peel, and other imperfections.

5-47.2 All exterior finished surfaces shall be impervious to fuel, and commercial cleaning agents. Finished surfaces shall not be damaged by controlled applications of commonly used graffiti removing chemicals.

5-47.3 All metals and exterior surfaces will be thoroughly cleaned by methods in accordance with the paint manufacturer’s Dupont recommendations immediately before the first coat of the overall sealer is applied.

5-47.4 Coach exteriors shall be painted to the general graphic design approved by SMBBB. Minor variations to this general graphic design scheme may be required in order to accommodate the specific styling and construction of contractor’s coaches. Variations must be approved by SMBBB.

5-47.5 Contractor will supply to SMBBB graphic design drawings of the front, rear, both sides, and roof of the coaches that shall be painted. Black masking to be painted around windows.

5-47.6 A complete paint and graphic detail will be provided to SMBBB prior to the beginning of production.

5-47.7 SMBBB color scheme shall consist of design specifications. The contractor shall provide and SMBBB shall approve prior to manufacture. The color scheme shall be no more than three (3) colors plus basic coach color. Contractors may provide decals, subject to SMBBB approval. The following paint numbers are: Blue PPG DCC 190122. The final coat shall be a two stage clear coat finish.

5-47.8 Please note: upon acceptance of finished product, both interiors and exteriors of coaches shall be free of over spray, dust, dirt and any other contaminants.
5-48 WINDSHIELD WIPERS

5-48.1 Two (2) compressed air powered Windshield Wipers with individual control for each wiper shall be provided. Wiper motors shall be mounted in such a way to show an uncluttered appearance at the front dash and provide maximum visibility and safety. Wiper arms shall be painted black so as to reduce glare.

5-48.2 Wiper motors shall be easily accessible for servicing from the outside of the coach by means of access doors.

5-48.3 Compressed air powered Windshield Washers, or approved equal, shall be provided, incorporating a “dry arm” feature. Reservoir shall be a minimum of one (1) gallon. Reservoir shall be accessible from an access door located on the exterior of the coach.

5-48.4 Defroster openings shall be screened with an opening adequate enough to allow for the entire windshield to be kept free from frost or fog.

5-48.5 Wiper motors shall be piped to exhaust air below the floor.

5-49 PA SYSTEM

The Contractor shall furnish a “Speak Easy” audible public address system. The microphone and controls shall be provided and located in the driver’s compartment. The control unit space layout and connection shall be furnished inconspicuously within the passenger compartment. Eight (8) surface-mounted speakers shall be provided in appropriate locations throughout the passenger compartment. Two (2) additional weather-proof, surface-mounted speakers shall be located outside the coach at the front and rear doors. Front and rear speakers shall be operated separately through the microphone control. A foot switch shall activate the microphone for the driver and be located on the left side of the floor next to the turn signal floor switches.

5-50 DESTINATION SIGNS

5-50.1 An LED color, automatic, eighteen (18) character, electronic destination sign system, Twin Vision or approved equal, shall be furnished and installed in each coach. The destination sign system shall consist of:

(a) Front Destination Sign
(b) Side Destination Sign to be seven (7) rows X ninety (90) column
(c) Rear Route Number Destination Sign
(d) Driver’s Membrane Pad Control Console and Display
(e) All Cables, Conduit and Accessories
(f) Four (4”) inch x six (6”) inch, Laminated Destination Sign, Route Number, and Description Chart
(g) Blackout in unused Front Destination Sign area

5-50.2 Installation of the conduit and cables to each of the destination signs
shall be done that will allow for the signs to be fully opened for servicing.

5-50.3 The sign system shall have the capability to display a minimum of 4,000 single line, eighteen (18) character messages, with the capability of displaying up to 8,000 more lines. The system shall have the additional ability to sequentially display multi-line destination messages, but with the route number portion remaining stable in a constant on-mode at all times. Characters shall be unaffected by any atmospheric conditions or radio frequencies. The sign and voice annunciator must comply with all ADA requirements where applicable.

5-50.4 All sign display characters shall be in color and sized to enable a person with 20/20 vision to identify the destination displayed on the front and rear signs from a distance of at least one hundred and fifty (150) feet and the side sign from a minimum of fifty (50) feet in both bright sunlight and nighttime conditions. The front and side signs shall have equal readability at points sixty five (65) feet on either side of a line perpendicular to the center of the mean plane of the display.

5-50.5 The system shall be designed so that in the regular mode the same destination display appears on both the front and side signs. The messages shall be written from left to right. The system shall be capable of displaying concurrently or alternately separate readings, as determined by the coach operator, on the front and side signs.

5-50.6 The sign system shall have the capability of displaying special public relations messages alternately with the regular text and route messages.

5-50.7 The sign system shall incorporate a means of adjusting the length of time the messages are displayed. The interval shall be variable from one (1) second to ten (10) seconds in duration.

5-50.8 Power to the sign system shall be controlled by the coach run switch. The sign shall operate in all positions of this switch except OFF. The sign shall be internally protected against voltage transients and RF interference.

5-50.9 Input power to the sign shall be fused externally to the sign with a 3AG Fuse and Holder (Little Fuse 150145, or approved equal). The fuse holder shall be readily accessible in the front sign compartment area. The size of fuses provided shall be approved by sign manufacturer.

5-50.10 The signs shall be designed where the removable components are retained by quarter turn Duzs Fasteners, or approved equal. Tamper-proof screws shall be used on screws exposed to the public.

5-50.11 The front destination sign shall be capable of displaying both a “LS” character alpha text and a three (3) Digit Alphanumeric Route Sign. The text character size shall be a minimum 6.1 inches high. The route sign display character shall be a minimum 8.3 inches high. The route number
portion will display characters in a double dot (wide stroke) format in both the horizontal and vertical legs of all characters.

5-50.12 The route sign shall be capable of being programmed to display characters in either single or double dot format. Quarter turn Duzs Fasteners, or approved equal, will be provided to aid in the quick removal of components. Four fasteners shall be located on the sign back cover. Sign programming shall be accomplished with a hand held programmer or laptop computer with programming provided by contractor.

5-50.13 The side destination sign shall be capable of displaying the same information as presented on the front sign (18 alphanumeric characters). The 3-digit route number portion shall be a minimum of 6.1 inches high, displaying the message in a single dot format. The text or route name information, fifteen (15) characters, to be a minimum of 2.7 inches high. The height ratio difference between the route number portion (three (3) characters) and route name (fifteen (15) characters) must be maintained.

5-50.14 Location of the driver’s control console shall be within easy reach of coach driver in a seated position and shall provide the controls and memory for message display. Specific location of driver’s control console shall be subject to approval by SMBBB. The controls shall include a membrane switch for selection of preprogrammed messages and a display to monitor the selection. The memory shall include preprogrammed messages and the capability for on coach programming using Flashcards or a direct plug-in connection contained within the console unit.

5-50.15 The destination sign system shall be protected by a Westco UV protection systems, or approved equal. The Westco UV protection system consists of the following:

(a) Exterior coach destination sign window manufactured from .250 WS-1014 abrasion resistant coated (S.D.C. coating), specially formulated UV barrier acrylic sheet

(b) Glazing contained in the automated sign manufactured from .125 WS-1003 uncoated, specially formulated UV barrier acrylic sheet

5-51 ADVERTISING CARD RACKS

Full length interior advertising card racks above the standee windows are to be provided along each side of coach to accommodate eleven (11) inch advertising card signs. Screw heads shall not interfere with insertion of advertising cards. Butt joints of panel section must be covered with trim strips.
5-52 ELECTRONIC EQUIPMENT COMPARTMENT
The following provisions for the installation of a Siemens communication system shall be included:

5-52.1 A compartment shall be provided to accommodate the radio, GPS equipment, voice annunciation and camera DVD equipment. The compartment shall be located behind the driver. The compartment shall include a minimum of (4) slide-out trays that lock in place and are designed for a minimum weight of 150 lbs. with heavy-duty slide or roller mechanism. All wiring required shall be routed to this equipment compartment to support these features.

5-52.2 This compartment shall be located and constructed to prevent the entrance of moisture, dust, and contaminants. Each compartment shall have a key lock suitable for securing all enclosed equipment. All locks shall be keyed the same. A limited number of master keys are to be provided.

5-52.3 The compartment shall be connected to the driver's area by waterproof, one (1) inch inside diameter metallic conduit containing fish wire between drivers area and radio compartment. Conduit installation shall permit future installation of cable by pull-through method without removing connectors.

5-52.4 The Contractor shall provide a 12 volt power circuit and negative ground circuit to radio compartment from battery with a minimum No. 12 standard wire properly loomed and enclosed in conduit and equipped with a 30 AMP circuit breaker and a 5 stud terminal block.

5-52.5 The Contractor shall provide, at the sidewall location, within convenient operator's reach, clear space for mounting the radio control head, speaker and handset. The proposed location shall be submitted with the proposal.

5-52.6 The Contractor shall provide a minimum four and one half (4½) inch diameter access panel to the antenna base area on the interior of transit coach. The radio compartment shall include a ¾ inch inside diameter conduit with a pull wire. The antenna mounting and lead termination shall be accessible from the coach interior. Antenna shall be located on or near center line of coach roof on level section three (3) to four (4) feet from the front. The Contractor shall provide a mounting plate installed in roof panel.

5-52.7 All sharp edges on conduit shall be removed and have protected openings on conduit ends (vinyl or nylon) to preclude wire abrasions.

5-52.8 All Continental AG, 5265 Rockwell Drive NE, Cedar Rapids, IA, 52402, equipment and camera system shall be supplied and installed by the manufacturer. Contact for the SMBBB Siemens representative is: Marcia
Glazer, (319) 743-1000.

5-53 FAREBOX

5-53.1 SMBBB shall provide and install the farebox and it shall be located to the right of the operator's seat so that it can be easily reached by both the operator and boarding passengers.

5-53.2 The location shall permit accessibility to the vault for easy manual removal. The Contractor shall provide SMBBB drawings showing location of farebox and stanchions. Location and type of mounting, for GFI farebox shall be subject to SMBBB approval.

5-53.3 Farebox data information collection system and cashbox shall be compatible with SMBBB existing revenue collection system which is a GFI system.

5-54 TRANSFER MACHINE-NOT REQUIRED

5-55 BIKE RACKS

Provide and install Sportworks # DL2 bike racks, or approved equal. Bike racks shall be stainless steel.

5-56 BIKE RACK CONSTRUCTION

5-56.1 Bike Racks shall not exceed 66 inches across the front of the coach by 28 inches of protrusion horizontally from the bumpers, nor weigh in excess of 38 pounds, and shall be capable of transporting two (2) bikes.

5-56.2 Load capacity shall be a minimum of two hundred (200) pounds in a central location of the bike rack.

5-56.3 Bike rack and bumper mounts shall be made of stainless steel.

5-56.4 All hinges and pivot pins shall be stainless steel in construction.

5-56.5 There should be no sharp corners that will pose a safety problem to the customer or cause a problem in washing the coach in the coach washer.

5-56.6 The bike rack shall be designed, that when a bike is mounted in the rack, the wheels of the bike will be protected from hitting the road surface in the event the coach enters a deep gutter.

5-56.7 The construction of the bike rack will be such that no part of the rack will contact any part of the bike other than the tires.

5-56.8 The construction of the bike rack and the bumper mounts shall allow for the quick separation of the two and only require one person.

5-56.9 There are to be no loose or attaching parts for the bike rack or bike restraining system, it must be a self contained unit.
5-57 BIKE RACK MOUNTING & INSTALLATION
5-57.1 The lowest point on the bike rack will not be less than 22 inches measured from the road surface with the coach suspension at normal ride height.

5-57.2 The bumper mount shall not extend more than one inch below the bumper. This is to keep the angle approach of the coach at the manufacturer’s specifications.

5-57.3 The bike rack shall be constructed so as not to interfere with the accessibility of the windshield wipers, drivers vent, headlights or windshield washer tank filler tube, when in the upright position.

5-57.4 The coach with bike rack installed shall be able to go through the wash rack without requiring the assistance of the Operator, Mechanic or Utility Persons.

5-57.5 The bike rack shall not damage the brushes or other wash rack equipment beyond normal wear and tear.

5-57.6 The bike racks shall not interfere with the ability of the coaches to “kneel” allowing physically impaired passengers to embark / debark.

5-57.7 The bike racks shall not interfere with access for towing.

5-58 BIKE RACK LOADING
5-58.1 The bike rack shall be able to be deployed by the passenger with one hand, and without additional assistance.

5-58.2 Any support arms or locking device to hold the bike rack, shall be constructed in such a way that when the bike rack is being stored in the upright position it will not be necessary for the customer to orient it beforehand.

5-58.3 The bike rack shall accommodate a minimum of two bikes with two wheels each.

5-58.4 The bike rack shall accommodate all bicycles with a wheel size equal to or larger than 16 inches in diameter, to include children and mountain bikes.

5-58.5 The bike rack shall allow for the loading or unloading of either bike separately and independently.

5-58.6 It shall be required that the loading/unloading of the inside bike be performed from the curb side of the coach.

5-58.7 There shall be no additional or attaching clamping mechanisms, i.e. Clamps, Bungee Cords or Locks, to hold the bikes in place while they are
in the bike rack.

5-58.8 The bike rack shall be designed so that the pedals of the bike will not contact each other when loaded.

5-59 HEATING / VENTILATION AND AIR CONDITIONING SYSTEM

5-59.1 GENERAL
The coach shall be equipped with a Thermo King Air Conditioning and Heating system or approved equal utilizing R-214A refrigerant and consisting of the following:

(a) One (1) Thermo King Rooftop A/C condenser and evaporator with heater unit.
(b) One (1) Thermo King Rear Mount A/C condenser and evaporator with heater unit
(c) Two (2) Compressors, hydraulic motor, driven via hydraulic pump mounted on coach main engine.

5-59.2 The temperature control system shall be designed for automatic or manual control. Conditioned air shall be introduced and circulated through the coach utilizing air ducts mounted above the side windows down the length of the coach.

5-59.3 A detailed description on the design of the proposed HVAC systems shall be furnished by the manufacturer and shall require the approval of SMBBB.

5-60 INTERIOR CLIMATE CONTROL SYSTEM
The coach shall be equipped with a Thermo King roof mount air conditioning system, with a Thermo King Compressor (or approved equal) driven by the main coach engine. Refrigerant lines and/or hoses shall be routed through the articulation part of the coach.

5-60.1 COMPRESSIONS

5-60.1.1 One (1) Thermo King (or approved equal) compressors shall be mounted in the engine compartment. Each compressor shall have a minimum of thirty-seven (37) cubic inch displacement and shall be designed to operate on refrigerant 407C.

5-60.1.2 The compressor shall be driven by motors utilizing hydraulic pressure. A single hydraulic pump shall be installed on the main engine and operated by belt drive or direct gear drive.

5-60.1.3 Both compressors shall be adjusted to operate at a constant speed regardless of engine RPM or load.
5-60.2 EVAPORATOR, HEATER AND CONDENSER COILS
The evaporator, heater and condenser coils shall be constructed of 3/8 inch outside diameter refrigerant grade copper tubing having minimum .012 inch wall thickness. The copper tubing shall be mechanically expanded into aluminum fins having a minimum thickness of .008 inch and aluminum header plates having a minimum thickness of .080 inch. The fin spacing shall be: evaporator and heater coils nine (9) fins per inch; condenser coil eight (8) fins per inch using high efficiency deep wave fins. The condenser coils shall be dipped in an acrylic base, polyvinyl material to provide a 2 mil thick coating of the entire exterior surface for corrosion protection and quick dirt release during washing.

5-60.3 ELECTRONIC WIRING AND TERMINALS
All unit wiring shall be UL758, style 3173/3196 having copper strands with tinned alloy coating rated for up to 600 volts. The insulation shall be cross-linked polyethylene, rated for 125° degrees Celsius and shall be white in color with hot stamp number coding the entire length at a maximum spacing of one (1) to three (3) inches. All terminals shall be “forklok” or ring type with vinyl insulation. All terminals shall be machine crimped, hand crimping is not acceptable.

5-60.4 MOTORS
All A/C motors, evaporator, condenser and heater shall be brushless, permanent magnet, 27V ECDC. (EG&G Rotron or approved equal) designed, selected and applied to maximize efficient operation, airflow and long life. Motors shall be totally enclosed with electronic drive and shall not contain brushes or commutators. All motors and drives shall be designed to provide maintenance free operation and shall be warranted for four (4) years with unlimited mileage. Each condenser shall have four (4) each, 1.15 HP motors. The evaporator/heater shall have two (2) each, ½ HP motors, capable of two (2) speed operation.

5-60.5 CONTROLS
A/C / Heater control switches shall be provided in the operator area. There will be one switch for the unit. The switch will be labeled **Front A/C - Off – Heater**.

5-60.6 SAFETY CONTROLS
Safety controls are required as follows:
(a) Resettable circuit breakers on all electrical motors and power cables.
(b) Low Freon pressure cut-out.
(c) High Freon pressure cut-out.
(d) Power relay to disable HVAC unit if coach charging system fails.

5-60.7 FILTER/DRYER
Each unit shall be equipped with a disposable solid core filter drier of at
least forty-one (41) cubic inch capacity. Loose core driers shall not be used. The drier shall be installed between two (2) service valves to allow easy replacement of the drier with minimal loss of refrigerant charge.

5-60.8 AUXILIARY WATER PUMP
Each system shall be equipped with an auxiliary water pump capable of pumping fifteen (15) gallons of water per minute so as to force hot water to the heater cores. The pump motor shall be brushless, permanent magnet, 27V ECDC, (EG&G Rotron or approved equal) designed, selected and applied to maximize efficient operation, water flow and long life. Motors shall be totally enclosed with electronic drive and shall not contain brushes or commutators. All motors and drives shall be designed to provide maintenance free operation and shall be warranted for four (4) years with unlimited mileage.

5-60.9 REFRIGERANT, HOSES, COPPER TUBING, FITTINGS

5-60.9.1 Suction and discharge hoses shall be provided to connect the air conditioning unit to the compressor. The hoses shall have ORS swivel fittings, stainless steel exterior braid, and exterior sleeve for abrasion protection. The discharge ORS fittings shall use a brass sealing ring and the suction ORS fitting shall use a neoprene O-ring. The internal composition if the hoses shall be of convoluted (corrugated) stainless steel (Teflon lined hoses are not acceptable due to effusion rates).

5-60.9.2 All condensers and evaporators should be constructed of refrigeration grade, Series 122 seamless type that meet ASTM specifications. All solder joints shall be silver soldered. All coils shall be dipped in an acrylic base polyvinyl material to provide a 2 mil thick coating of the entire exterior surface for corrosion protection and quick dirt removal during wash.

5-60.9.3 ORS Swivel fittings and mating shall be flat face O-ring type on the suction side for positive sealing. ORS Swivel fittings and mating shall be Brass sealing ring type on the discharge side for positive sealing.

5-60.10 EXPANSION VALVE
The expansion valve shall be externally equalized. It shall have a replaceable power head and cage assembly and be equipped with a 100 mesh screen at the inlet to prevent contaminants from plugging the seat. The super heat switch shall be factory set, requiring no field adjustment. The expansion valve bulb shall be clamped to the suction line in the evaporator compartment and insulated from effects of surrounding air temperature. The expansion valve body shall be properly secured and accessible from the return air area of each unit.
5-60.11 OPERATOR’S HEATER AND DEFROSTER

5-60.11.1 The operator’s heater and defrost system shall be independently controlled with easily moveable cable or electronic control.

5-60.11.2 The defroster shall meet all State and Federal requirements.

5-60.11.3 The system shall be located under the dash to provide heat or fresh air for the operator.

5-60.11.4 Each system shall be equipped with an auxiliary water pump, separate from the roof mount water pump, capable of pumping fifteen (15) gallons of water per minute, forcing hot water to the defroster cores. The pump motor shall be brushless, permanent magnet, 27V ECDC, (EG&G Rotron or approved equal) designed, selected and applied to maximize efficient operation, water flow and long life. Motors shall be totally enclosed with electronic drive and shall not contain brushes or commutators. All motors and drives shall be designed to provide maintenance free operation and shall be warranted for four (4) years with unlimited mileage. The pump shall be located from the mid to front portion of the coach in an easily accessible area and away from road debris and inclement weather. This system shall also provide shut-off valves and manual bleed valves at the pump and defroster core.

5-60.11.5 Such a system shall be able to entirely clear the windshields, operator side window and front door glass regardless of weather conditions.

5-60.11.6 The defrost motor shall be brushless, permanent magnet, 27V ECDC, (EG&G Rotron or approved equal) designed, selected and applied to maximize efficient operation, airflow and long life. Motors shall be totally enclosed with electronic drive and shall not contain brushes or commutators. All motors and drives shall be designed to provide maintenance free operation and shall be warranted for four (4) years with unlimited mileage. Defrost motor shall provide no less than three (3) blower speeds.

5-60.12 PIPES AND HOSES

All heater and water lines shall be of heavy-duty copper or brass except where shock absorbing or flex-type lines are required. All joints shall be...
of the slip-fit soldered type. All lines not enclosed within the body or passenger areas shall be heavily insulated.

5-60.13 HEATER CORES
5-60.13.1 All heater cores shall be of copper and brass. Metal used in the tanks shall be of adequate thickness with drawn reinforcements. All of the tanks shall be of sufficient size to preclude fatigue failure.

5-60.13.2 Heater cores, motors and fans must be readily accessible and installed to permit easy removal.

5-60.14 HVAC HOUR METERS
For preventive maintenance scheduling purposes, two (2) hour meters shall be located in the climate control panel of each HVAC unit. One (1) hour meter shall monitor the evaporator/heater motor(s) operation (HVAC System), the second hour meter shall monitor the total operating hours on the A/C Compressor.

5-60.15 AIR INTAKES
Outside openings for air intake shall be located to ensure cleanliness of air entering the climate control system, particularly with respect to exhaust traffic. All intake openings shall be baffled to prevent entry of snow, sleet or water. Outside air shall be filtered before discharge into the passenger compartment. The filter shall meet the ASHRAE requirement for five (5) percent or better atmospheric dust spot efficiency, 50 percent weight resistance and a minimum dust holding capacity of 120 grams per 1,000 cfm ceiling. More efficient air filtration may be provided to maintain efficient heater and/or evaporator operation. Air filters shall be easily removable for service. Moisture drains from air intake openings shall be located so that they will not be subject to clogging from road dirt.

5-61 CLIMATE CONTROL VALIDATION
Prior to delivery of the coaches to SMBBB, the coaches shall be delivered to an Independent Testing Facility or SMBBB approved facility, to test the air conditioning system for compliance to these specifications. The Contractor shall provide a minimum of thirty (30) days notice, prior to delivery, to allow an authorized representative of SMBBB to attend and observe the random testing of the air conditioning systems. At a minimum three (3) coaches shall be selected, at random, by SMBBB representative for testing by the contractor. All testing shall be conducted at the contractor’s expense, to include any retesting required. All testing shall be conducted by an Independent Testing Facility or other facility as approved by the SMBBB. For purposes of this validation the “Houston Pull Down Test” shall be conducted and shall be the test parameters. Failure to achieve the minimum performance, is cause for SMBBB non acceptance of coaches. All test results shall be provided to SMBBB.
5-62 HOUSTON PULL DOWN TEST
The requirements for the Interior Climate Control System shall meet or exceed all requirements outlined in the Houston Pull Down Test as follows:

5-62.1 PREPARATION
The coach shall be instrumented per Instruction Specification and include the addition of three thermocouples located four (4) ft. above the floor on the center line of the coach and corresponding to the standard locations detailed in the above standard.

The three thermocouples plus the drivers head level thermocouple shall be the points of consideration when determining pass or fail of the coach being tested.

With the coach in a closed room, adjust the room temperature control to hold 110° degrees Fahrenheit +/- 1° degree Fahrenheit. The coach windows and/or roof vents may be opened to speed up soak time, if desired. No humidity is to be added to the room, it must be monitored and recorded.

When the soak condition has been met, a minimum of ½ hour of data should be recorded to demonstrate a stable soaked temperature. (Monitor seat cushion mass temperature or insulated floor sensor.)

5-62.2 PRETEST CHECKS
Close all windows and vents, including the drivers fresh air for auxiliary heater.

The drivers defroster fans should be off for the test, but the driver's cooling blower (if installed) should be on and set to maximum.

The main fresh air intake must be closed. Be sure to note on data sheets the condition of all vents and fresh air openings.

Start the engine only and allow it to run while completing preparations.

Make a visual check of temperature probes, wet bulb samplers, room fans, windows and vents, unit thermostat (set it all the way down) and data recorder to insure that all channels are operating.

5-62.3 THE (MODIFIED HOUSTON PULL TEST)
Start the data recorder and record data at one minute intervals.

No simulated solar load shall be used.

Turn on the air conditioner and exit the coach as quickly as possible - note that all doors are closed as they would be under normal operation.

The engine speed for this test is 1500 rpm and may require special adjustments to hold it at that speed.

Hold the 100° degrees Fahrenheit temperature ambient while recording data for a minimum of 35 minutes. (40 minutes is used in Houston). No
humidity need be added but it must be monitored and recorded.

The requirement for passing this test is that the system shall pull the interior (four thermocouples previously noted) from 110° degrees Fahrenheit down to 70° degrees Fahrenheit +/- 3° degrees Fahrenheit within 30 minutes from the start of the A/C system. That is all four thermocouples must be below 73° degrees Fahrenheit in 30 minutes (not an average).

5-63 STANCHIONS / GRAB RAILS AND MODESTY PANELS

5-63.1 All stanchions and grab rails shall be 1¼ inch diameter, stainless steel. Fittings shall be stainless steel, or an approved equal corrosion resistant material.

5-63.2 Modesty panels shall be brushed aluminum.

5-63.3 A full length ceiling grab rail, one on each side of the aisle, with heavy case aluminum type brackets and stainless steel finish, incorporating wrap around clamp at rail shall be provided. Grab rail ends shall terminate at ceiling connections or in elbows, and exposed ends are to be avoided. Ceiling grab rail can be interrupted in the joint area, as necessary by design.

5-63.4 A vertical stanchion shall be mounted from the floor to the ceiling, or ceiling grab rail, at the right rear of the driver’s seat. All stanchions in the driver’s area and the front door area shall be yellow coated.

5-63.5 Vertical stanchions shall be mounted from the floor to ceiling or ceiling grab rail at the inside rear corner of the front and rear step well. A handrail of smooth surface, anodized extruded aluminum, or approved equal, shall be extended from the stanchions to the body side, approximately thirty four (34) inches off the floor, modesty panels shall be riveted or bolted with self-locking nuts to the stanchion and body side. Do not provide rear exit door modesty panels on either side of coach.

5-63.6 An entrance grab rail shall be provided at the dash and shall be yellow coated.

5-63.7 A vertical stanchion shall be provided at the front of the center and rear door adjacent to the body side from the side of the step well to the door header and shall be yellow coated. A permanently fixed driver’s guard rail shall be provided to the right of the driver and shall be yellow coated. There shall be a minimum of two (2) inches between the back-rest of the driver’s seat and any stanchion, cross-rail or partition behind such seats.

5-63.8 A diagram of proposed stanchion locations with proposed passenger seating diagram shall be provided. Number and location of stanchions shall be subject to approval by SMBBB. All stanchions and grab rails must comply with any ADA requirements where applicable.

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5-64 DRIVERS PARTITION
5-64.1 A full width driver’s partition reinforced to prevent road vibration shall be provided behind the driver’s seat and may be part of the electronic equipment compartment. The panel shall not be less than six (6) inches nor more than ten (10) inches from the floor. The top of the panel shall be extended to the ceiling panel.

5-64.2 The section shall have a one-quarter (¼) inch thick Lucite sash window fifteen (15) inches high and twenty three (23) inches wide. One-quarter (¼) inch tinted polycarbonate may be used in lieu of melamine.

5-65 COAT HOOK / SUN VISOR AND REGISTRATION HOLDER
5-65.1 A coat hook shall be provided behind the operator’s seat on the exterior wall.

5-65.2 A sliding sun visor, mounted on guide poles shall be provided for the front of the drivers windshield and the driver’s side window.

5-65.3 A six (6") x six (6") vinyl registration holder in a color to match the dash panel shall be provided on the upper part of the operator’s modesty panel.

5-65.4 A driver’s compartment light, mounted overhead with separate switch shall be provided.

5-65.5 One driver’s dash mounted fan shall be provided.

5-66 VENTILATORS
5-66.1 A hinged type RAM ventilator shall be provided at driver’s side or immediately above driver’s windshield. If fresh air is provided through driver’s heater/defroster unit, this ventilator shall not be required.

5-66.2 A hinged-type RAM ventilator shall be provided below the driver’s side window to circulate air to the driver’s leg area.

5-66.3 All ventilators shall include non-absorbent, weatherproof seals.

5-66.4 The driver’s ventilator motor shall be brushless, permanent magnet, 27V ECDC, (EG&G Rotron or approved equal) designed, selected and applied to maximize efficient operation, airflow and long life. Motors shall be totally enclosed with electronic drive and shall not contain brushes or commutators. All motors and drives shall be designed to provide maintenance free operation and shall be warranted for four (4) years with unlimited mileage.

5-67 OPERATOR SEAT
The driver’s seat shall be a Recaro air ride seat or approved equal. Covering shall be leather. The seat shall be fully adjustable fore and aft, with a minimum nine (9")
inch travel. Adjustable armrests shall be installed and must be flip-up style. The seat inserts must be warranted and guaranteed for three (3) years against fading and wear due to normal operation and subject to normal cleaning methods.

5-68 PASSENGER SEATING

5-68.1 Seating arrangement of each coach shall be for a minimum thirty-eight (38) passenger capacity, with transverse seating seats on the side and transverse seating at the extreme rear. Seats may be provided over the wheel wells and in association with areas specified for wheelchair passengers.

5-68.1.1 Contractor must provide a full technical description of seat arrangement proposed, for each size coach, including dimension for knee room, spacing, and side view, and any alternate layout the Contractor may wish to include for consideration. Information must include price adjustments for alternate seating plans. Final seating plan shall be subject to approval by SMBBB.

5-68.1.2 A minimum twenty (20) inch wide center aisle shall be maintained.

5-68.2 SEAT DESIGN

5-68.2.1 Selected material shall minimize damage from vandalism and shall reduce cleaning time. The seat shall be contoured for lateral support, individuality, and comfort to each individual passenger. The seat cushion and back may be padded with neoprene foam, or material with equal properties, in areas contacted and loaded by passengers in the normal seated position and shall be covered.

5-68.2.2 The upper rear portion of the seat back, seat back handhold, and upper rear surface of the modesty panels located immediately forward of transverse seats shall be padded and/or constructed of energy absorbing materials. During the 10g deceleration the HIC number shall not exceed 400 for passengers ranging in size from a six (6) year old child through a 95th-percentile male. The minimum radius of any part of the seat back, handhold, or modesty panel in the head or chest impact zone shall be a nominal ¼ inch. All seats shall be American Seating, Otaco 850 with VR50 Vandal Resistant upholstered inserts, or approved equal. Seat fabric colors shall be provided by BusTex and shall include the transit logo.
5-69  SEAT MOUNTING
No obstructions will be permitted which might narrow seating ability. Height of seat from floor will not exceed seventeen and one-half (17½) inches for transverse seats, nineteen (19) inches for settee and flip-up seats, and seats over wheel wells shall not exceed twenty (20) inches. Deviation in seat height from floor will be permitted for proper seat alignment to belt rail. All seat sub-frames should be mounted without stress or strain, and in no case shall seats be installed so that any passenger extremity can be caught. All fastenings shall be tamper-proof and neat in appearance. Recessed seat tracks for transverse seats shall be heavy-duty anodized aluminum; side-wall seat rails shall be anodized aluminum.

5-70  SEAT FRAMES
5-70.1 Seat frames shall be one (1) inch square Type 304 stainless steel tubing which shall be of sufficient strength to prevent sagging and twisting under passenger weight. The seats shall be retained in framework by use of stainless steel rivets. The rivets shall not be used to support the seat but rather to retain it in the seat framework.

5-70.2 The upper transverse frame structure shall be one (1) inch square Type 304 stainless steel of a gauge necessary to provide strength under all normal applications. Stainless steel back panels shall be provided on rear of transverse seats. Color, if applicable, to be subject to approval by SMBBB.

5-70.3 Seat grab handles shall be provided at top of transverse seats and are to be covered with molded energy-absorbing thermo-plastic. Color to be subject to approval by SMBBB. Color is to run throughout grab rail.

5-70.4 The lower frame shall be one (1) inch diameter square tubing and shall be provided with Type 304 stainless steel mounting brackets for attachment to the wall.

5-70.5 Cantilever type seating in lower section of coach shall have a 2½ inch square 14 gauge, stainless steel structural design to support the seat under all conditions of occupancy and shall be of a design to minimize dirt catching projections. Floor mount shall have plastic cover caps to allow for concealed anchorage of the pedestal to the coach floor.

5-71  TRANSVERSE SETTEE
5-71.1 Seat body and seat frames shall conform to the same general design and construction as the longitudinal seats. Seats shall be mounted on a single frame, with a device to hold it in an open position safely.

5-71.2 Rear seats shall be hinged to provide easy access to engine compartment.
SETTEE FACING

Rear transverse settee facing from the floor to the lower edge of seat shall be stainless steel, or unpainted anodized aluminum, and riveted with stainless steel rivets. Screws and snap fastenings are not permitted. Under seat area will be properly dressed to facilitate cleaning; projections or ledges are not permitted. Space in back of, between, and at the ends of seats shall be such as to prevent the accumulation of rubbish or other debris.

HANDICAPPED SEATING

5-73.1 On all coaches, the first two (2) sets of passenger seats to the rear of the left and/or right forward wheel housing shall be of a folding type, such as that manufactured to accommodate wheelchair bound passengers or three passenger longitudinal fold up, barrier type. The seat shall be American Seating Otaco or approved equal and shall be upholstered in design, color and material of other passenger seating. The folding mechanism of the seat frame shall be easily activated and positioned by wheelchair bound passenger to accommodate a wheelchair in a secure manner for traveling.

5-73.2 The folding seat may be longitudinal. Transporting position for wheelchair shall be forward facing. The folding seating shall be mounted to coach wall and also to coach floor, with an inch square stainless steel tubular leg on aisle end. Such legs shall be securely mounted to coach floor. Folding seat(s) shall have a positive locking mechanism to maintain seat in upright or normal position until released by passenger.

5-73.3 Wheelchair tie-down system shall be an American Seating Standard ARM belt tie-down system or approved equal, using Q-Straint belts

5-73.4 The area designated for wheelchair passengers shall be located a sufficient distance from longitudinal seats, wheel housing, stanchions, or other obstructions to permit easy access and necessary room for maneuvering by wheelchair bound passengers to and from wheelchair tie-downs.

POWER PLANT COMPARTMENT

5-74.1 The propulsion engine and drive train shall provide power to enable the coach to meet the defined acceleration, top speed, and grade ability requirements. Sufficient excess power shall be available to operate all accessories. A power alternative shall be available.

5-74.2 The standard configuration power plant shall enable the coach to maintain a minimum speed of 25 MPH on an eight (8) percent grade.

5-74.3 The power plant compartment shall be completely sealed to prevent smoke or fumes from entering the coach interior. The engine bulkhead shall be insulated to minimize heat and shall have the ability to maintain
a 20° degree Fahrenheit differential between the engine compartment and the interior of the coach, and noise transfer to the coach interior shall not be above 86 db.

5-74.4 The compartment shall be lighted by a minimum of five (5) each twenty one (21) foot candle power lamps. An additional twenty one (21) foot candle power lamp shall illuminate the rear electrical junction box.

5-74.5 Lamps shall be enclosed by a clear high temperature resistant lens.

5-74.6 Small, spring-loaded access doors shall be provided to check and add engine oil and radiator water without necessity of opening a large compartment door.

5-74.7 The complete power plant, including radiator, engine, and transmission shall be cradle mounted and re-mountable as a unit and so arranged to provide convenient accessibility for servicing. Engine cradle mounting must be self-aligning laterally and longitudinally.

5-74.8 Compartment doors shall be sturdily constructed, well fitted, and reinforced, where necessary, of material and finish harmonizing with other exterior features of the coach.

5-74.9 An oil pressure gauge, coolant temperature gauge, engine “RUN” switch, starter cutout switch, starter switch, lamp switch and throttle control are required in the engine compartment. Throttle control shall be manually operated and lockable when engine is in “rear start or run” position. All engine compartment switches and wiring must be environmentally sealed to keep dust and moisture out.

5-74.10 Coolant temperature gauge shall be mechanical. All gauges shall be moisture resistant and shock-proof.

5-74.11 Doors hinged at top shall be provided with heavy-duty, gas filled lifts equipped with positive means of locking the doors in the open position.

5-74.12 Engine, hydraulic (except power steering), fuel, and oil lines, shall be Aeroquip FC 186 Teflon with wire braid or approved equal.

5-75 ENGINE

5-75.1 The engine shall be a Cummins ISL G 280, 280HP engine or approved equal, with direct injection and inline mounted, with gear driven accessories. The engine shall be a 4-cycle, spark ignited, inline 6-cylinder, turbocharged, CAC. The engine must be capable of giving satisfactory life and performance and shall, with normal maintenance, operate with no smoke or objectionable odors using fuels and oils meeting the manufacturer’s recommendation. The vendor shall furnish horsepower, torque curve charts, and ratings for proposed engine operating on compressed natural gas. The coach and engine shall also meet the Federal, State and local EPA Regulations. This engine shall
meet the EPA and CARB 2010 engine emission standards.

5-75.2  The engine shall be equipped with a microprocessor-based electronic control system that complies with SAE 1578 and J 1939 data links “Recommended Practice for Serial Data Communication Between Microprocessor System In Heavy-Duty Vehicle Applications”. This system should include an engine-mounted, Electronic Control Module (ECM) equipped with an Electrically Erasable Programmable Read Only Memory (EPROM) to control engine function. The system shall also include electronic fuel injectors, an electronic accelerator pedal, and various sensors to monitor coolant level, oil pressure, water temperature, turbocharger pressure, engine speed, cylinder sequencing (timing) and location. When impairment occurs in any one of these areas, the microprocessor shall signal the driver through a properly labeled light on the dashboard. Trouble codes logged by the electronic control module shall be permanently retained in the ECM memory until removed with proper equipment.

5-75.3  The electronic control module shall contain a backup microprocessor unit that takes over engine control in case a fault develops with the main microprocessor system. There shall be no mechanical controls of linkage to the ECM. The system shall include a check engine light (amber) and a stop engine light (red) to be mounted on the dashboard in view of the operator. These lights shall be activated by the electronic control module. The data readers shall be capable of troubleshooting beyond isolating to function.

5-75.4  If a fault develops in the engine system due to low oil pressure, high water temperature, low coolant level, or high transmission oil temperature, the electronic control module shall activate a programmed shutdown of the engine according to the following schedule:

<table>
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<tr>
<th>PERCENT OF THROTTLE</th>
<th>SECONDS AFTER FAULT DETECTED</th>
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<tbody>
<tr>
<td>100</td>
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<td>84</td>
<td>5</td>
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<td>68</td>
<td>10</td>
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<td>53</td>
<td>15</td>
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<td>40</td>
<td>17</td>
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</tbody>
</table>

Engine shutdown shall occur 30 seconds after fault detection. An override shall be provided to allow an additional 30 seconds of engine operation, each time the override is used, before final shutdown.
5-75.5 Engine shutdown due to low coolant level. A low water probe shall be provided with an amber telltale light incorporated into the warning system which shall only activate a shutdown mode if the warning (amber) light is illuminated for more than eight (8) seconds.

5-75.6 The programmed engine shutdown system shall also be programmed to be activated by receiving a signal from the transmission due to high oil temperature.

5-75.7 The engine air intake shall be through a removable screened opening at the rear of the coach. The screen opening and air duct to cleaner shall be isolated from the primary body structure for noise attenuation.

5-75.8 A Balwin dry type air cleaner and silencer assembly, incorporating broad band attenuation centered about 250 hertz, shall be used. Engine air duct shall be so shaped as to minimize water entrance into the air induction system. A passage shall be provided so that any water that does find entry into the system can be drained prior to entry into the air cleaner element. Air cleaner element must be a Balwin or approved equal.

5-75.9 All flexible fuel, oil, air, and water lines in engine compartment shall be Teflon type, with braided stainless steel cover.

5-75.10 The engine shall be equipped with a fast idle device designed to operate only when the transmission shift lever is in neutral position and the parking brake is engaged. It shall be adjustable between 750-1000 RPM. The fast idle device shall be solenoid or air-operated and controlled from the operator’s location.

5-75.11 Magnetic drain plugs shall be provided.

5-75.12 Engine oil, water, and fuel filters must be Balwin or approved equal.

5-75.13 Spinner II engine oil filter or approved equal shall be provided for additional engine oil filtration.

5-75.14 Engine must be able to operate on API 15W-40 CE engine oil.

5-75.15 A Cummins Insight engine diagnostic software system and licensing shall be provided with each order.

5-76 ACCELERATOR INTERLOCK
Coach accelerator shall be electronically deactivated when coach doors are opened and/or when the coach is kneeling.

5-77 ALTERNATOR
The alternator shall be a 12 volt, AC Delco, oil-cooled, brushless type, flange-mounted and gear driven from the engine, or approved equal. Alternator
shall have an output capacity of 300 amperes, and it shall be capable of developing a minimum of 190 amperes at an engine idle of 465 RPM. The voltage regulator shall be a three unit transistor-type, and must be compatible with the operating characteristics of the alternator. The Delco 24 volt, 270 amperes capacity, oil cooled gear drive alternator shall also be permitted. The alternator shall be equipped with an oil drain plug. Alternator can be belt or gear driven. Belt driven alternator mounting must use Grade 8 fasteners.

5-78 AIR SYSTEM

5-78.1 The air compressor shall be TU-FLO 750 or approved equal and shall be flange mounted, steel gear driven from the engine, have a minimum output of 16.5 cubic feet per minute at 1250 engine RPM, be lubricated from the engine, and be water cooled. Ball bearings shall be used at each end of the crankshaft. The air storage system shall consist of three tanks with a combined capacity of at least 4850 cubic inches.

5-78.2 Stop light and low air switches shall be located above the floor at the lower portion of the dash compartment, to the right of the driver. Switches shall be accessible through a hinged or removable access panel. Switches may also be located at the side console and be accessible from the exterior of the coach via a side hinged access panel or a top hinged panel with door prop.

5-78.3 Provision shall be made to apply shop air to the coach air system at two locations using an Schrader Valve, or approved equal. Schrader valves to be located:
- (a) On the engine compartment bulkhead
- (b) At the front of the coach under front bumper, centered on coach.

5-78.4 The third air tank for the air suspension shall have a valve or valves to regulate and protect the air system and shall be isolated.

5-78.5 The following air-lines shall be provided:

5-78.5.1 Flexible air compressor discharge line shall be a minimum one (1) inch O.D. Aeroquip AQP or neoprene air hose or approved equal, and shall have a flanged-type swivel connector at the compressor. Annealed copper, stainless steel, or Teflon covered with braided stainless steel may be used after initial flexible portion of line.

5-78.5.2 Lines between the air dryer and air tanks shall be Aeroquip FC 350 AQP, Parker Anderson Thermal Plastic or approved equal.

5-78.5.3 Lines from quick release or relay valves to the brake chambers shall be Flexible Aeroquip 2550, 2554, 2570 or
constructed as follows: AQP or neoprene tube with two nylon braids and AQP or neoprene cover.

5-78.5.4 Engine compartment lines shall be Aeroquip FC 186 Teflon, wire braided or approved equal. Other lines shall be annealed silicone synflex, or copper tubing. All air lines shall be protected with rubber grommets at all points where the lines pass through the under structure components.

5-78.6 A check valve shall be furnished between the first and second tanks adjacent to the second tank. The first air tank shall have a 150 PSI safety valve. A check valve shall be installed between compressor and first tank. Test procedures shall be provided to establish whether or not the check valve is in working order.

5-78.7 All air tanks shall be equipped with Bendix AD9 air dryer and quality type petcock, or approved equals. Drain valves shall be provided to preclude moisture accumulation in the air system. Air dryer must have 12 volt heater.

5-79 COOLING SYSTEM

5-79.1 Temperature of operating fluids on the coach shall be controlled by a cooling system(s). The cooling system shall be sized to maintain fluids at safe, continuous operating temperatures during the most severe operations possible with the coach loaded to GVWR and with ambient temperatures up to 120° degrees Fahrenheit. The engine shall be cooled by a water-based, pressure type cooling system that does not permit boiling or coolant loss during the operations described above. Engine thermostats shall be easily accessible for replacement. The engine cooling system shall be equipped with a properly sized spin-on, disposable water filter. Shutoff valves shall allow filter replacement without coolant loss. Valves shall permit complete shut-off of both lines for the heating and defroster units. All low points in the water-based cooling system shall be equipped with drain cocks. Air vent valves shall be fitted at high points in the cooling system unless it can be demonstrated that the system is self-purging.

5-79.2 A sight glass to determine satisfactory engine coolant level shall be provided and shall be accessible by opening one of the engine compartment’s access doors. A spring-loaded, push-button type valve shall be provided, to safely release pressure or vacuum in the cooling system. The coolant filler shall be no more than 66 inches above the ground and shall be accessible through the same access door.

5-79.3 The radiator shall be, at a minimum, heavy duty, six (6) row cores with eight (8) fins per inch, of durable corrosion-resistant construction with
bolted-on removable tanks. Radiator piping shall be stainless steel or brass tubing and if practicable, rubber hoses shall be eliminated. Necessary hoses shall be premium, silicone rubber type that are impervious to all coach fluids. All hoses shall be secured with premium, stainless steel, self-adjusting constant torque type clamps with a collared screwdriver head manufactured by Breeze Corporation. Fan speed shall be regulated to minimize fan noise. No heat producing components or climate control system components shall be mounted between the engine cooling air intake aperture and the radiator. A temperature-controlled fan shall be supplied which shall not be driven when the coolant temperature is less than 180° degrees Fahrenheit. The design of the cooling system must be so that there is a minimum of 12° degrees Fahrenheit to 18° degrees Fahrenheit temperature drop between water inlet and water outlet of radiator with engine running at normal operating temperature and outside ambient temperature of 120° degrees Fahrenheit.

5-79.4 The radiator shall be of sufficient capacity to be capable of maintaining designed optimum operating temperature of the engine and transmission when the outside ambient temperature is at 120° degrees Fahrenheit and the coach is operating with the equivalent weight on board equal to a full seated load, plus 3,725 pounds for standees, plus three (3) pounds for each cubic foot of under floor space provided on a ten (10) percent grade with the air conditioning running.

5-80 NATURAL GAS (LNG OR CNG) FUEL SYSTEM

5-80.1 The natural gas fuel cylinders shall be sized for a daily driving range of 300 miles and be designed for the required maximum pressures needed to operate in a transit environment. The tanks shall be rigidly supported by at least four supports, arranged for easy removal. The cylinders shall incorporate a manual drain. The cylinders shall be roof mounted.

5-80.2 A nominal ten (10") inch by ten (10") inch fueling access door shall be provided. Door must be able to remain in an open position while fueling. Activation of this door shall prevent the operator from starting the vehicle.

5-80.3 All filters or check valves required for the gas operated engine and natural gas cylinder system shall be provided.

5-80.4 The fuel filler neck shall be equipped for LNG or CNG filling, (subject to fuel type selected), be located at the rear curbside of the bus, and have all the required safety features. The manufacture shall provide to SMBBB all information relating to natural gas filling and shall provide training for this alternate fuel system.
5-81 BRAKES

5-81.1 Service brakes shall be six wheel internal expanding air operated type, capable of stopping the coach at a deceleration rate equivalent to a stop within 16 feet from a speed of 20 MPH, on dry pavement with a full seated load. All air brake controls shall be Bendix Westinghouse, with an R-12 rear brake relay valve and E6, E7 or E10 brake application valve, or approved equal. Service brakes shall comply with the applicable FMVSS 121 Requirements.

5-81.2 Rear brake chambers shall be self-adjusting and include a protective boot for the push rod.

5-81.3 Brake hoses from the front and rear brake valves to the brake chambers shall be flexible constructed with AQP or neoprene tube with two nylon braids and AQP or neoprene cover or approved equal. Steel braided lines shall not be permitted.

5-81.4 Brake drums shall be 14½ inches minimum inside diameter, with minimum lining width as follows:
   a) Front six (6) inches and rear ten (10) inches.

5-81.5 Brake shoes shall consist of ¾ inch thick bolted non-asbestos, CMT-22a Brakepro or approved equal, with 3/8 inch bolts bolting the lining to the shoe. At the anchor pin end bushings shall be installed on the brake shoes and spider.

5-81.6 Brake camshaft bearing surfaces shall be chrome-plated.

5-81.7 Brake block shall have a maximum wear scribe line.

5-81.8 Brake cam shall be “S” type.

5-81.9 Brake cam bushings shall be bronze or brass.

5-81.10 The parking brake shall be a spring brake, with a hand-brake valve to the left of the driver and shall be capable of stopping the coach at a deceleration rate equivalent to a stop within 65 feet from a speed of 20 MPH, on dry pavement. The parking brake system shall comply with all applicable FMVSS 122 requirements.

5-81.11 Automatic slack adjusters shall be provided which shall be Haldex, or approved equal, with grease fittings. The automatic slack adjuster shall operate by measuring the shoe clearance not the push-rod stroke length.

5-81.12 The brake pedal shall be constructed of malleable iron of pressed steel.

5-82 TRANSMISSION

5-82.1 The transmission shall be ZF Ecomat which matches the engine requirements or approved equal. The transmission must utilize electronic valve body and integral retarder system.
5-82.2 The transmission is to be hydraulically operated, with minimum three forward ranges and one reverse range. It shall automatically change gear ratios and supply oil under pressure to the converter and the lubrication circuits. The torque converter will multiply engine torque and act as a fluid coupling between the engine and transmission gearing while starting and through first gear operation. The transmission gearing will consist of two or three seats of constant mesh planetary gears operated hydraulically actuated disc-type clutches to provide smooth, full power shifting. The clutches to be oil cooled and self-adjusting. The gear train will include first, second, third and fourth gear clutches, with a forward clutch applied in all forward ranges.

5-82.3 Transmission gear shift pad to be accommodated by an electronic arrangement.

5-82.4 Transmission shall be cooled by means of a heat exchanger that uses air to transmission fluid system.

5-82.5 The transmission shall have a built-in oil pump, neutral safety switch, back-up light switch, and shift selection lever.

5-82.6 The transmission gear ratios shall be appropriate for the normal functioning of the coach with full-seated loads in moderately hilly terrain.

5-82.7 The transmission’s electronic control system shall incorporate a self-diagnostic procedure that continuously monitors the following functions of components through the microprocessor:
   a) Low oil level
   b) Forward and reverse pressure
   c) Microprocessor
   d) Output speed sensor
   e) Solenoids
   f) Oil Temperature. (Engine shutdown activated at converter outlet temperature of 300° degrees F, amber light for 250° Degrees F) temperature. System must not be subject to premature shutdown.
   g) Shift selector
   h) System voltage
   i) Retarder output to cooler (350° Degrees F)

5-82.8 When impairment occurs in any one of the above areas, the microprocessor must signal the driver through a properly labeled amber light on the dashboard. The particular impairment must be automatically obtainable by the Maintenance Department through a coded signal.

5-82.9 If an impairment exists and is of such nature as to affect shifting or cause further damage to the transmission, a system must be integrated into the microprocessor to allow for limited coach operation by the driver to maneuver the coach to a safe location. The function should be present
under the following conditions:

a) Low input voltage or electrical loss
b) Loss of output speed signal
c) Solenoid failure

The driver must receive a visual signal by means of a “DO NOT SHIFT” light, as well as a continuous audible sound.

5-82.10 Continued limited operation capability, while the transmission is in range, must be present when the system loses total electrical power, including removal of the harness at the main transmission connector.

5-82.11 The transmission shall provide a signal to the Cummins engine shutdown system when the following condition is present in the transmission:

a) High oil temperature

5-82.12 The transmission shall be equipped with a retarder as provided by ZF, or approved equal. This design shall utilize a solenoid-type actuator which will allow for the transmission oil to be directed into the retarder housing.

5-82.13 The heat generated by the above-referenced system will be dissipated through the transmission’s cooling system. This must be sized to cool in extreme temperatures above 115 degrees outside air temperatures. Transmission must be able to operate on 40W E/O.

5-83 TRANSMISSION FILTERING SYSTEM

5-83.1 Filtering shall be accomplished with spin on type filters.

5-84 TRANSMISSION DIPSTICK
The transmission dipstick and filler spouts shall be easily accessible and mounted on the curb-side of the coach (away from traffic). An illustrated label detailing the checking and filling procedures for the transmission fluid shall be provided at the dipstick location. The label shall be permanently fixed and shall be made of plastic or metal and be of a durable design. A detailed checking procedure using the dipstick shall be described and illustrated in the Owner’s and/or Service Manuals.

5-85 EXHAUST SYSTEM

5-85.1 Exhaust system furnished must meet all applicable Federal and State regulatory standards for coach exhaust systems.

5-85.2 Exhaust gases and waste heat shall not be discharged on the right side and shall be directed generally away from the coach. Exhaust piping shall not restrict the underbody clearances. The location and design of the exhaust pipe shall be subject to the SMBBBs review and approval. Contractor must provide a vertical mounted exhaust system at the left rear corner of the coach above roof height.
5-85.3 The engine shall be certified to meet all applicable emission standards prior to date of delivery. The coach shall meet all applicable Federal and State Emission Standards.

5-86 CONTINENTAL INTELLIGENT TRANSPORTATION SYSTEM
The Manufacturer shall provide and install a new Continental Advanced Communication System (ACS) that is compatible with SMBBB existing system. The components for the ACS include a new Continental radio system with Automatic Vehicle Location (AVL), Automated Voice Annunciation, Automatic Passenger Counters, communication system interface between SMBBB buses and the City of Santa Monica traffic signal system and public information kiosks providing real time schedule information at locations throughout the service area.

The vehicle wiring and supporting systems shall accommodate the infrastructure for these components and provide an “open architecture” to enhance the maintenance and servicing of these components. The interior design of the bus shall accommodate the infrastructure for these components and provide an “open architecture” to maximize the interface of these components.

The vehicle wiring and infrastructure that support SMBBB ITS hardware/software infrastructure shall comply with the National Transportation Communication for ITS Protocol (NTCIP) COBRA and TCIP compatibility.

The bus Vehicle Area Network shall be based on the latest SAE J1708 and J1587 protocol and other applicable standards for physical, data and software interconnects. The bus shall also include a component rack capable of holding all hardware for the above referenced ACS including the radio, AVL equipment, and any interface boxes for these components. The bus shall include a SAE J-1708 Device Access Box with a minimum of four available spare ports.

A detailed drawing and description of the proposed requirements subject to SMBBB approval must be included with contractor’s proposals.

The Siemens Sales Contact person is: Marcia Glazier (319) 743-1102.

5-87 SECURITY CAMERA SURVEILLANCE SYSTEM
Digital video cameras G Mobile View III or approved equal shall be provided. Eight interior cameras and all related equipment shall be provided at strategic locations inside the coach. Audio shall be included as well. Two exterior cameras shall also be provided. Exterior cameras shall be installed on each side of the front of the coach above the right and left exterior mirrors. A DVD shall also be provided that will support the 10-camera system and installed in the electronic equipment cabinet.

The DVD shall have a minimum of 100 hours of storage data and include a removable drive. All required computer terminals and servers shall also be provided to operate the system completely. The DVD shall incorporate a wireless
feature that when enabled will allow the administrator to download files or "events or incidents".

5-88 COACH PERFORMANCE
Propulsion system and drive train shall provide power to enable the coach to meet the defined acceleration, top speed, and grade ability requirements. Sufficient excess power shall be available to operate all accessories.

5-88.1 The coach shall be capable of a top speed of sixty five (65) mph on a straight level road, with full passenger load, and all accessories operating.

5-88.2 Grade ability requirements shall be met on grades with a surface friction coefficient of 0.3 and above, with full passenger load, and all accessories operating. The power-plant shall enable the coach to maintain a speed of twenty five (25) mph on an eight (8) percent grade.

5-88.3 An average acceleration rate of at least 0.06 g shall be achieved, with full passenger load, between zero (0) and fifteen (15) mph. Acceleration measurement shall commence when the accelerator is depressed.

5-88.4 Jerk, the rate of change of acceleration, shall be minimized throughout the acceleration/deceleration range and shall be no greater than 0.3 g/sec. This requirement shall be achieved regardless of driver actions.

5-88.5 Coach shall be designed for minimum overhang. The wheelbase shall be sufficient to allow for minimal vibration, bounce or jousting.

5-88.6 A test consisting of a coach traveling at twenty (20) mph passing over an isolated bump in the road, to be created by a standard 2 X 4 that all wheels go over, shall not indicate more than a peak of 2g on an accelerometer positioned at any point on the floor of the coach.

5-89 PRINCIPLES OF DESIGN
5-89.1 All systems requiring servicing shall be equipped with approved self-contained check devices. The preferred check device for hydraulic system reservoir(s) shall be sight-gauges that are clearly marked to show service level and fluid. Pressure gauges shall be installed on accumulators, with easily connectable service ports in close proximity.

5-89.2 Venting systems for CNG, coolant, hydraulics, etc., shall not discharge vented or over serviced fluids on equipment, but shall direct such overflows to recovery containers. All parts of the unit shall be easily accessible for inspection, operation, and maintenance. All components shall be readily removable and replaceable. The unit will be closely inspected to assure conformance with these requirements.
5-89.3 If, in the opinion of the SMBBB any part of component is not readily accessible or removable, SMBBB may require the Contractor to correct these deficiencies at the Contractor’s own expense, before acceptance.

5-89.4 All operating controls, light switches, and controls for auxiliary equipment that may be installed in the cab or at any other location on the unit shall be clearly and permanently marked and identified by means of metal or oil resistant plastic identification plates with stamped recessed lettering filled with a contrasting color paint.

5-89.5 All systems shall be designed to allow quick and efficient operation of the unit. Pneumatic, electrical, hydraulic, and other systems shall be operational within a minimum amount of temperature stabilization, and accumulator or system build-up. From a “cold start” condition (systems depleted) to operationally ready shall require not more than two (2) minutes.

5-90 MATERIALS

5-90.1 All equipment furnished and the parts thereof shall be the manufacturer’s latest listed and published stock models, except where modification is specifically permitted or required. The equipment and parts shall meet all the applicable requirements of the specifications.

5-90.2 Wherever a particular brand or make or model of material or equipment is shown or specified on the contract drawings or in the specifications (and whether or not the words OR APPROVED EQUAL, ”SIMILAR”, “EQUAL TO”, or words of similar import are used (except where specifically stated otherwise), any other brand or make and model may be substituted if, in the sole opinion of SMBBB the equipment being substituted is equal to that shown or specified. The material or equipment may be substituted only after being submitted to and expressly approved by SMBBB. Such submission to SMBBB shall be made only by including the requested substitution in the Contractor’s detail sheet. Notwithstanding such approval, however, the Contractor assumes the risk that the substitute brand or make or model is not equal to that shown or specified. If at any time the substitute shall not appear to be so equal, the Contractor shall replace the substitute and reimburse SMBBB for any loss occurring on account of the substitute failing to be so equal. Any such submission shall not imply or impose on SMBBB any obligation whatsoever to discuss, disclose, or justify the reasons for its opinion, approval, acceptance or rejection. Furthermore, the acceptance of any other brand or make or model shall not in any way entitle the Contractor to additional compensation therefore, but SMBBB may make such reduction in the Contractor’s compensation as may be equitably warranted because of such acceptance in lieu of the standard. After acceptance of the Contractor’s proposal, no substitutions will be
permitted, except that a substitute brand or make or model named in the specifications may be submitted in writing to SMBBB for approval.

5-90.3 All materials used in the manufacturing of the coaches shall be new unless otherwise specified. All design, workmanship, and materials shall at all times and places be subject to the inspection of SMBBB designated representative(s). Should an item fail to meet his/her approval, it shall be forthwith made good, replaced, or corrected (as the case may be) by the Contractor at its own expense.

5-90.4 All materials used in construction of the coach and all its parts shall conform in all respects to the American Society of Testing Materials, Society of Automotive Engineers, or similar association standards. Materials used shall be of first quality and shall be exactly duplicated in manufacture, design and construction in each of the coaches.

5-90.5 All lumber shall be thoroughly kiln dried, free from knots and checks and shall be clear straight grain, dressed on all sides.

5-90.6 All painted aluminum sheets shall be thoroughly cleaned and coated on the outside with epoxy chromated protective paint (or approved equal) prior to assembly in coach.

5-90.7 All joints shall be protected by application of 1/64" thick double faced, foam tape and specified undercoating (or approved equal) at assembly.

5-90.8 All 5/8 inch o.d. and smaller bolts, nuts and washers, shall be zinc, cadmium plated, or phosphate coated to prevent corrosion.

5-91 MATERIALS/ACCESSORIES RESPONSIBILITY
The Contractor shall be responsible for all material and accessories used, whether the same are manufactured by the Contractor or purchased from supplier. This provision excludes tires, fare boxes, radios and other equipment leased or supplied by SMBBB, except insofar as such equipment is damaged by the failure of a part or component for which the Contractor is responsible, or except insofar as the damage to such equipment is caused by the Contractor during the manufacture of the coaches.

5-92 WORKMANSHIP
5-92.1 Workmanship shall be of the best quality and shall conform in all respects to the best practice in the industry.

5-92.2 Welding procedures, welding materials, and qualifications of operators shall be in accordance with the standards of the ASTM and the American Welding Society. All exposed welds shall be ground smooth after welding to present a smooth finished appearance. Where metal is welded to metal, the contact surfaces shall be free scale, grease and paint.
5-92.3 Where non-anodized metal is riveted or bolted to metal, contact surfaces shall be thoroughly cleaned with high temperature cleaning agent, double rinsed, and coated with critical corrosion zinc chromate primer (or approved equal). All rivets shall completely fill the holes. All bolts or rods passing through wood shall be cadmium plated (or approved equal). Where wood and wood are placed together, both shall be coated with powdered aluminum and spar varnish or linseed oil and titanium oxide, or other approved sealing compound.

5-92.4 All wood shall be filled, sealed and finished.

5-92.5 All steel and aluminum body parts which are to be painted shall be thoroughly cleaned and double rinsed, or one (1) water rinse and one (1) neutralizing rinse using metacote concentrate to inhibit corrosion and insure proper paint adhesion. Excess joint sealer shall be removed prior to priming with heavy-duty zinc chromate primer. Underside of all concealed metal panels shall be undercoated with Mortell Company Emulsion Asphalt #MBC-1605 undercoating compound (or approved equal). External roof joints may be protected with a resin type undercoating material. Particular care should be exercised to see this material is sprayed into all corners, crevices and pockets.

5-93 SPARE PARTS

5-93.1 PARTS INTERCHANGEABILITY
Spare parts shall be interchangeable with the original equipment and shall be manufactured in accordance with the quality assurance requirements as specified in this bid.

5-93.2 PARTS AVAILABILITY
The Contractor shall be required to guarantee availability of replacement parts for these coaches to SMBBB for a period of fifteen (15) years, minimum, following delivery of the coaches to SMBBB.

5-93.2.1 The Contractor shall maintain for a period of fifteen (15) years, the capability of delivering coach spare parts, to SMBBB within seventy-two (72) hours of placement of an order. The Contractor shall provide SMBBB with a list of parts that will not be available within this seventy-two hour time period. In order to meet this requirement, the Contractor may maintain a spare parts outlet or contract with a customs broker to expedite the customs clearance of foreign parts. It shall, however, remain the responsibility of the Contractor to meet the 72 hour delivery standard.

5-93.2.2 Availability of normal wear items such as filters, V-belts, hydraulic lines, and hoses shall not exceed twenty four
(24) hours in “coach down” situations. Review of Contractor’s ability to provide prompt parts and service will be used in determining the Contractor.

5-93.3 Failure to deliver parts, as required, may be used as a basis for disqualification of the Contractor in future solicitations.

5-94 FREIGHT CHARGES
The successful Contractor shall deliver all parts orders to SMBBB “F.O.B. Destination,” freight included. Exceptions shall be “rush” orders placed by SMBBB for a “coach down,” in which case the Contractor shall prepay the costs for expedited (air express) delivery via least cost routing and add it to SMBBB invoice. Requests for exceptions to the delivery requirements stated above must be approved by SMBBB prior to bid opening.

5-95 OMISSION
Notwithstanding the provision of drawings, technical specifications, or other data by SMBBB, the Contractor shall have the responsibility of supplying all parts and details required to make the coach complete and ready for service even though such details may not be specifically mentioned in the drawings and specifications. Radios, and other items that are installed by SMBBB shall not be the responsibility of the Contractor unless they are included in this contract.

5-96 WAREHOUSE LOCATION
Contractor shall state location of parts warehouses which will serve SMBBB and give the best estimate of the average time required for delivery of commonly used parts, once an order has been placed by SMBBB.

5-97 TECHNICAL SUPPORT DOCUMENTATION
5-97.1 Proper documentation clearly defining the operation and maintenance of the units shall be furnished by the Contractor. This documentation shall include, but not be limited to, the following items:

a) Operator’s Manual(s)

b) Parts Manual(s)

c) Recommended Spare Parts Listing(s)

d) Inspection Guide(s)

e) Problem Diagnosis and Minor Maintenance Manual(s)

f) Major Repair and Overhaul Manual(s)

g) Required Tools Listing

h) Key Components and Modified Parts

i) Prints, Diagrams

5-97.2 Contractor will be required to guarantee that it will provide maintenance and operating publications, including revisions and technical bulletins.
supplementing the publications for a period of not less than fifteen (15) years from the date of purchase.

5-97.3 All manuals, guides, listings, etc., shall be in the English language. All dimensions, tolerances, and specifications shall be in customary U.S. units. Each item is to be a distinct separate bound volume specifically addressing that subject. The preferred format is 8 1/2 X 11 inch page size (with fold-outs permissible) for all items. The Operator's Manual must be 8 1/2 X 11 inches, three-hole punched, and bound in a loose-leaf folder. Print style shall be selected for ease of readability, and print shall be not less than 10 point, with 12-point minimum preferred. This minimum print size shall apply to all sketches, drawings, or illustrations.

5-97.4 The coach shall be divided into major assemblies or systems throughout these manuals. To assist in cross referencing, the major portions and systems shall have the same coding in each manual. For example, if the engine is considered “Major Assembly II” in the Parts Manual, then Section II in all books shall relate to the engine.

5-97.5 Prior to the delivery of the coaches and associated equipment, the Contractor shall forward the operating, maintenance, and repair manuals, plus the parts list as specified, directly to:

ATTN: Mr. Ralph Merced
Santa Monica Big Blue Bus
1660 7th Street
Santa Monica, Ca. 90401

5-97.6 The manuals shall be shipped separately and not with the coaches.

5-97.7 All manuals shall be in the form of neatly bound books, with durable covers, and shall be properly identified with the manufacturer's name and the model and serial numbers of the equipment, etc. In addition, an electronic version of all manuals shall also be provided.

5-97.8 The Manuals shall be supplied in the following quantities:

a) 150 each Operator's Manuals
b) 15 each Parts Manuals (NOTE: One (1) must be laminated.)
c) 2 each Recommended Spare Parts Listings
d) 30 each HVAC maintenance/trouble shooting sets
e) 25 each Maintenance Manuals
f) 15 each Major Repair and Overhaul Manuals including trouble shooting and schematics
g) 2 each Required Tool Listings
h) 25 each PLC schematics sets

5-97.9 The final manuals shall be delivered at least two (2) weeks prior to the delivery of the first unit. In the event the manuals are not
delivered as specified above, a retainer will be imposed of five (5) percent per delivered unit from any payments due to the Contractor. Further, a deduction of five tenths (0.5) of one percent, per unit price (the unit price of each delivered coach) per month shall be made for the time from the manual due date until the actual delivery of the manuals. This deduction shall constitute a liquidated damage in anticipation of additional costs to SMBBB not being in possession of the required information.

5-98 OPERATORS MANUAL REQUIREMENT
The Operators Manual shall include normal operating instructions, emergency procedures, limitations, normal operating limits, specifications of importance to the operator, and other needed information. The Operators Manual shall contain the following major sections:
1) Introduction
2) Table of Contents (Main Category)
3) Systems Description
4) Controls/Instruments/Indicators Description/Operation
5) Normal Operating Procedures
   a) Exterior Inspection
   b) Interior Inspection
   c) Starting and Shutdown
   d) Driving
6) Emergency Procedures
7) Specifications
8) Detailed Index By Key Word

5-99 PARTS MANUAL REQUIREMENTS
5-99.1 The Parts Manual shall provide easy accurate reference to all components in the unit. It shall rely primarily on exploded diagrams, photographs, cutaway drawings, or three-dimensional renderings to allow proper part identification. Each part shall be pointed out by an arrow, line, or similar method, and shall be identified directly by part number or directly by a reference number. In addition to the visual means of parts identification, each part shall be verbally described in sufficient detail so it can be ordered. The quantity required for the subassembly or component question shall be listed and parts that must be replaced upon disassembly or in groups or sets shall be noted. For purposes of the Parts Manual, all parts shall be considered one of three types, as follows:

5-99.1.1 Commercially produced and available components. These parts shall be defined by a complete verbal description, sufficient to allow procurement, and an identification of the manufacturer and part number of the exact component installed. (EXAMPLE: Hex Head Cap Screw, 3/8n - 24 X 1 1/2 Grade 5 Acme Screw Company, Part No. 12345; OR: Rocker Switch,
5-99.1.2 Custom manufactured components that the Contractor has produced to specification and cannot be interchanged with standard commercial products. These parts must be documented sufficiently to allow contracting production of replacements for damaged components, which is hereby authorized. (EXAMPLE: Exhaust Pipe Hanger Bracket - Fabricate From 1½" X 2" - 316 SS, 12" Long, As Per BP2346.)

5-99.1.3 Proprietary items, such as custom circuit boards or components for which the release of detailed information would compromise trade secrets, confidential information, or proprietary methods. These parts shall be identified by a verbal description. Describe part number and list as a proprietary item to be ordered through the Contractor. (EXAMPLE: Servo Synchronizing Module - Part No. 12345 Proprietary Item, contact (NAME OF MANUFACTURER) For Replacement.)

5-99.2 The inclusion of Parts Manual(s) published by suppliers of major components shall be permitted so long as the basic information required above is obtained. When such manuals are bound volumes, they may be submitted separately and referenced accordingly in the Parts Manual.

5-99.3 The parts Manual shall contain the following major sections:
   1) Introduction.
   2) Index of Major Assemblies and System with Page Numbers or Sections.
   3) Illustration of Unit Showing Major Assemblies and Systems.
   4) Detailed Parts Information By Major Assembly or System.
   5) Index by Part Number and Page.
   6) Index by Each Part with Page, Alphabetical By Major Assembly or System.

5-100 RECOMMENDED SPARE PARTS LISTING REQUIREMENTS
The recommended spare parts listing shall consist of two parts. The first, a short concise listing of those components that the manufacturer recommends stocking for immediate availability for breakdown maintenance. The second section shall list those parts that should be procured prior to the start of planned maintenance procedures to minimize downtime (for example, a list of parts needed to perform a brake relining). Both sections shall be divided into headings, pages, or chapters by major assemblies or systems. The second section shall include the manufacturer's recommended frequency for replacement based on operating hours. Both lists shall include current pricing.

5-101 LIST OF PARTS REQUIRED FOR BUILDING
The Contractor shall furnish a list of all parts by number, description and quantity used in the building of the coach, upon delivery of the coaches.
5-102 INSPECTION GUIDE(S) REQUIREMENTS
A detailed checklist type guide shall be supplied for each recommended periodic inspection. The inspection guides shall be included in a manual with each form suitable for reproduction by SMBBB.

5-103 DIAGNOSIS AND MAINTENANCE MANUAL(S) REQUIREMENTS
The Problem Diagnosis and Maintenance Manual shall be the primary manual used in routine inspection, troubleshooting, and normal repair. The manual shall cover the minor maintenance operations anticipated due to normal wear and tear and routine service intervals. Replacement of all expendables, such as belts, hoses, clutches, brake linings, bulbs, and fuses, shall be specifically described. The Problem Diagnosis section shall be extensive and shall use charts, diagrams, "trees," or other methods of logically and methodically troubleshooting the unit. Heavy emphasis is to be placed on complex systems, such as electrical, pneumatic, or hydraulic. Schematic diagrams showing such systems in various operational conditions are mandatory. The Manual shall contain the following sections:

1) Introduction
2) Table of Contents
3) Normal Maintenance (By Major Assembly or System)
4) Troubleshooting (By Major Assembly or System)
5) Index

5-104 MAJOR REPAIR AND OVERHAUL MANUAL(S) REQUIREMENTS
The Major Repair and Overhaul Manual shall contain specific step-by-step disassembly instructions, wear limits and tolerances, guidance and recommendations, and quality assurance testing to be performed before returning the unit to service. The inclusion of manuals by suppliers of major components shall be permitted. When such manuals are bound volumes, they may be submitted separately and referenced accordingly in the Major Repair and Overhaul Manual. The Manual shall contain the following major sections:

1) Introduction
2) Table of Contents
3) Safety Section
4) Major Repair or Overhaul Instructions
   a) Determining Need For Repair or Overhaul
5) Disassembly
6) Inspection
7) Tolerance and Wear Limits
8) Reassembly
9) Testing
10) Special Tools or Fixtures Required
11) Index
12) Schematics
5-105 BLUEPRINTS AND DIAGRAMS REQUIREMENTS
Manufacturer(s) shall furnish ten (10) laminated copies of all drawings, blueprints, and wiring diagrams covering the complete coach and all its subassemblies.

5-106 REQUIRED TOOLS LISTING REQUIREMENTS
The Required Tools Listing shall specify tools, equipment, fixtures, jigs, and any other items that are required in the normal maintenance of the units (Tools or fixtures required only for Major Repair and Overhaul are NOT to be specified in this listing but are to be specified in the Major Repair and Overhaul Manual). The identification and quantity of tools required may be divided into general items and items specific to a particular major component or system.

5-107 TRAINING
5-107.1 Contractor shall provide an adequate educational program for SMBBB personnel to insure satisfactory operation, servicing and maintenance of the equipment furnished.

5-107.2 Instructions shall also include manufacturer’s recommendations for test frequency, limits and methods, including instructions required, where applicable. When methods of access, removal, dismantling or application are not self evident, the instruction shall cover these matters.

5-107.3 The Contractor shall provide a minimum of sixteen(16) days of instruction to the SMBBB Maintenance employees in the operation and maintenance of the equipment furnished, at the SMBBB facility, at such time as SMBBB may designate.

5-107.4 At the conclusion of the classroom instruction the Contractor shall furnish to SMBBB two (2) complete set of lesson plans, classroom notes, films, slides, tapes, etc., used in presenting the course.

5-107.5 The extent of instruction in the Contractor’s and sub-contractor’s shops for instruction of supervisory and/or SMBBB instructors shall be at the discretion of the Santa Monica Big Blue Bus.

5-107.6 ACCEPTANCE
5-107.6.1 ACKNOWLEDGMENT OF DELIVERY
When coaches are received by the SMBBB, receipts signed by the SMBBB or designee are understood to be simple acknowledgments and do not constitute acceptance by SMBBB.

5-107.6.2 NOTIFICATION OF ACCEPTANCE/NON-ACCEPTANCE
All coaches delivered to SMBBB shall be in conformance with these specifications, complete, and ready for revenue service.
As coaches are received in California, the SMBBB will notify the Contractor in writing, within fifteen (15) days after delivery if the coach has or has not been accepted. A letter of non-acceptance will furnish details of the deficiencies. Where deficiencies are noted, the Contractor will be required to make the necessary repairs, replacements or adjustments.

5-108.6.3 REPAIRS
The Contractor shall begin repairs within five (5) working days after receiving notification of non-acceptance from the SMBBB or designee of SMBBB. SMBBB shall make the coach available to complete such repairs in conformance with the Contractor's repair schedule. If possible, SMBBB will furnish reasonable space to Contractor. The Contractor shall provide, at its own expense, all spare parts, tools and space required to perform the repairs. At its option, SMBBB may require the Contractor to remove the coach from the SMBBB premises while repairs are being made. While said coach is under repair, the Contractor shall assume all risk of loss and shall indemnify and hold harmless the SMBBB and its officers and employees from any liability as a result of said possession. Should such repairs require component substitutions or modifications, the Contractor shall be responsible for amending and correcting all documentation supplied the SMBBB and required in this specification.

5-108 SERVICE SUPPORT
5-108.1 SMBBB shall require the contractor to have a qualified service representative present when the coaches are delivered. The service representative should be on site for an eight (8) hour period for each coach delivered. The service representative shall resolve minor repair, technical deficiencies and answer questions from on site personnel.

5-108.2 The service representative shall revisit the transit agency thirty (30) days after delivery, ninety (90) days after delivery, and one hundred and eighty (180) days after delivery. The purpose of each visit shall be to resolve warranty questions, answer technical questions from the maintenance personnel, and verify that the coaches are being properly maintained.

5-108.3 A qualified service representative shall visit the transit agency at least four (4) times each year after the first coach delivery, for a period of not less than five (5) years.
5-109 SERVICE AND INSPECTION INSTRUCTIONS
Prior to delivery, the coaches shall be completely inspected and serviced by the Contractor. A copy of the manufacturer's standard pre-delivery service check list shall be completed for each coach, signed by a representative of the organization performing the inspection/service, and delivered with the coaches.

The coaches will be inspected at time of delivery or within fifteen (15) days after receipt of each coach by an authorized representative of SMBBB, for workmanship, appearance, proper functioning of all equipment and systems, and conformance to all other requirements of this specification. In the event deficiencies are detected, the coach/coaches will be rejected to make the necessary repairs, adjustments, or replacements. Payment and/or the commencement of a discount period (if applicable) will not be made until the corrective action is made, the coach/coaches re-inspected, and accepted. If the coach/coaches is/are accepted after delivery and rejected because of deficiencies, it shall be the Contractor's responsibility to pick up the coach/coaches, make the necessary corrections, and redeliver the coach/coaches for re-inspection and acceptance.

5-110 TITLE WARRANTIES AND FEES
Contractor warrants that the title to each coach delivered to SMBBB will be free, clear, unencumbered and fully marketable, and that Contractor will have the right to convey such title to SMBBB. Contractor shall present with each coach delivered to SMBBB, a copy of Contractor's title documents and all other documents necessary for the transfer of title to SMBBB.

All documents or parts of documents which must be executed in order to transfer title to SMBBB shall be fully and properly executed and submitted to the Department of Motor Vehicles, State of Ca., to secure a title for each coach. All costs for title fees shall be borne by the Contractor. Title to each coach must be conveyed to the:

Santa Monica Big Blue Bus
1660 7th Street
Santa Monica, Ca. 90401

5-111 SPARE PART REQUIREMENTS
The following chart shall identify spare components as a deliverable to each contract. Quantities of spares shall be based upon the quantity of buses delivered by bus type. Pricing shall be provided in the original order, Section 1.1.2.3

Spare components shall be delivered within 5 days following bus delivery, unless specified otherwise, and shall be a condition of final bus acceptance.

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete cradle (e.g. CNG Eng. Trans.), R&amp;R ready including all accessories</td>
<td>1</td>
</tr>
<tr>
<td>Radiator and related heat exchangers</td>
<td>1</td>
</tr>
</tbody>
</table>

July 09
City of Santa Monica Bid #2981
<table>
<thead>
<tr>
<th>COMPONENTS (continued)</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power steering pump</td>
<td>1</td>
</tr>
<tr>
<td>Steering gearbox</td>
<td>1</td>
</tr>
<tr>
<td>Cooling system fan drive</td>
<td>1</td>
</tr>
<tr>
<td>24 vdc generator/alternator/power supply</td>
<td>1</td>
</tr>
<tr>
<td>Air compressor</td>
<td>1</td>
</tr>
<tr>
<td>Front Axle brake reline kit, pads, disc, hardware</td>
<td>1</td>
</tr>
<tr>
<td>Rear Axle brake reline kit, pads, disc, hardware</td>
<td>1</td>
</tr>
<tr>
<td>Front door motor, assy.</td>
<td>1</td>
</tr>
<tr>
<td>Rear door motor, assy.</td>
<td>1</td>
</tr>
<tr>
<td>Wheelchair ramp pump/valve control assembly</td>
<td>1</td>
</tr>
<tr>
<td>HVAC compressor w/ clutch</td>
<td>1</td>
</tr>
<tr>
<td>HVAC evaporator motor w/controller</td>
<td>1</td>
</tr>
<tr>
<td>HVAC condenser motor w/controller</td>
<td>1</td>
</tr>
<tr>
<td>HVAC system controller</td>
<td>1</td>
</tr>
<tr>
<td>HVAC hot water pump</td>
<td>1</td>
</tr>
<tr>
<td>Defroster motor w/ controller</td>
<td>1</td>
</tr>
<tr>
<td>PLC processor module</td>
<td>1</td>
</tr>
<tr>
<td>HVAC complete module to be used as R&amp;R of defective module</td>
<td>1</td>
</tr>
<tr>
<td>PLC 1/0 modules as set, set to include 1 each of each different module used within bus PLC system</td>
<td>1</td>
</tr>
<tr>
<td>Rear axle gear assembly, complete drop-in</td>
<td>2</td>
</tr>
</tbody>
</table>

### 5.112 DIAGNOSTIC TOOLS AND EQUIPMENT

The following chart of diagnostic tools and equipment necessary to effectively maintain the proposed buses shall be provided as part of this contract. Unless specified otherwise, the item deliverable is assumed to include all necessary hardware, software, interfaces, cables and instruction. It is also assumed, that diagnostic software will be operable in a laptop environment, therefore the "laptop" need not be a redundant deliverable for each item requiring a "laptop". The "laptop" shall be an industrial grade ruggedized suitable for intended use in a harsh environment.

<table>
<thead>
<tr>
<th>Diagnostic Tools, Equipment and Software/Cables</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC multiplex system, software/necessary cables, to troubleshoot system</td>
<td>1</td>
</tr>
<tr>
<td>Engine Propulsion system, software/cabling necessary to troubleshoot system</td>
<td>1</td>
</tr>
<tr>
<td>ABS / ATC system, software/cabling</td>
<td>1</td>
</tr>
<tr>
<td>HVAC, software/cabling or hand held device</td>
<td>1</td>
</tr>
<tr>
<td>Orbital communication system &amp; interfaces (Optional)</td>
<td>1</td>
</tr>
<tr>
<td>Lap Top Computers</td>
<td>4</td>
</tr>
</tbody>
</table>
SECTION VII – QUALITY ASSURANCE
6.1 CONTRACTOR'S IN-PLANT QUALITY ASSURANCE REQUIREMENTS

6.1.1 QUALITY ASSURANCE REQUIREMENTS
The contractor, the contractor's manufacturing plant for the bus as bid as shall be certified to ISO-9001:2000 standards at date of proposal submission. A copy of the final certification shall be included in the bidder's proposal package.

6.1.2 QUALITY ASSURANCE ORGANIZATION

6.1.2.1 ORGANIZATION ESTABLISHMENT
The Contractor shall establish and maintain an effective in-plant quality assurance organization. It shall be a specifically defined organization and should be directly responsible to the Contractor's top management.

6.1.2.2 CONTROL
The quality assurance organization shall exercise quality control over all phases of production from initiation of design through manufacture and preparation for delivery. The organization shall also control the quality of supplied articles.

6.1.2.3 AUTHORITY AND RESPONSIBILITY
The quality assurance organization shall have the authority and responsibility for reliability, quality control, inspection planning, establishment of the quality control system, and acceptance/rejection of materials and manufactured articles in the production of the transit buses.

6.1.3 QUALITY ASSURANCE ORGANIZATION FUNCTIONS

6.1.3.1 WORK INSTRUCTIONS
The quality assurance organization shall verify inspection operation instructions to ascertain that the manufactured product meets all prescribed requirements.

6.1.3.2 RECORDS MAINTENANCE
The quality assurance organization shall maintain and use records and data essential to the effective operation of its program. These records and data shall be available for review by the Resident inspectors. Inspection and test records for this procurement shall be available for a minimum of 3 years after inspections and tests are completed.

6.1.3.3 CORRECTIVE ACTION
The quality assurance organization shall detect and promptly assure correction of any conditions that may result in the production of defective transit buses. These conditions may occur in designs, purchases, manufacture, tests, or operations that culminate in defective supplies.
services, facilities, technical data, or standards.

6.1.4 STANDARDS AND FACILITIES

6.1.4.1 BASIC STANDARDS AND FACILITIES
The following standards and facilities shall be basic in the quality assurance process.

6.1.4.2 CONFIGURATION CONTROL
The Contractor shall maintain drawings, assembly procedures, and other documentation that completely describe a qualified bus that meets all of the options and special requirements of this procurement. The quality assurance organization shall verify that each transit bus is manufactured in accordance with these controlled drawings, procedures, and documentation.

6.1.4.3 MEASURING AND TESTING FACILITIES
The Contractor shall provide and maintain the necessary gauges and other measuring and testing devices for use by the quality assurance organization to verify that the buses conform to all specification requirements.

6.1.4.4 PRODUCTION TOOLING AS MEDIA OF INSPECTION
When production jigs, fixtures, tooling masters, templates, patterns, and other devices are used as media of inspection, they shall be proved for accuracy at formally established intervals and adjusted, replaced, or repaired as required to maintain quality.

6.1.4.5 EQUIPMENT USE BY RESIDENT INSPECTORS
The Contractor's gauges and other measuring and testing devices shall be made available for use by the resident inspectors to verify that the buses conform to all specification requirements. If necessary, the Contractor's personnel shall be made available to operate the devices and to verify their condition and accuracy.

6.1.5 MANUFACTURING CONTROL

6.1.5.1 CONTROLLED CONDITIONS
The Contractor shall ensure that all basic production operations, as well as all other processing and fabricating, are performed under controlled conditions. Establishment of these controlled conditions shall be based on the documented work instructions, adequate production equipment, and special working environments if necessary.

6.1.5.2 COMPLETED ITEMS
A system for final inspection and test of completed transit buses shall be
provided by the quality assurance organization. It shall measure the overall quality of each completed bus.

6.1.5.3 NONCONFORMING MATERIALS
The quality assurance organization shall monitor the Contractor's system for controlling nonconforming materials. The system shall include procedures for identification, segregation, and disposition.

6.1.5.4 STATISTICAL TECHNIQUES
Statistical analysis, tests, and other quality control procedures may be used when appropriate in the quality assurance processes.

6.1.5.5 INSPECTION STATUS
A system shall be maintained by the quality assurance organization for identifying the inspection status of components and completed transit buses. Identification may include cards, tags, or other normal quality control devices.

6.1.6 INSPECTION SYSTEM

6.1.6.1 INSPECTION SYSTEM SCOPE
The quality assurance organization shall establish, maintain, and periodically audit a fully documented inspection system. The system shall prescribe inspection and test of materials, work in process, and completed articles.

6.1.6.2 INSPECTION PERSONNEL
Sufficient trained inspectors shall be used to ensure that all materials, components, and assemblies are inspected for conformance with the qualified bus design. The City of Santa Monica shall be represented at the Contractor's plant by resident inspectors. They shall monitor, in the Contractor's plant, the manufacture of transit buses built under the procurement. The presence of these resident inspectors in the plant shall not relieve the Contractor of its responsibility to meet all of the requirements of this procurement.

6.1.6.3 INSPECTION RECORDS
Acceptance, rework, or rejection identification shall be attached to inspected articles. Articles that have been accepted as a result of approved materials review actions shall be identified. Articles that have been reworked to specified drawing configurations shall not require special identification. Articles rejected as unsuitable or scrap shall be plainly marked and controlled to prevent installation on the bus. Articles that become obsolete as a result of engineering changes or other actions shall be controlled to prevent unauthorized assembly or installation.
Unusable articles shall be isolated and then scrapped.

Discrepancies noted by the Contractor or resident inspectors during assembly shall be entered by the inspection personnel on a record that accompanies the major component, subassembly, assembly, or bus from start of assembly through final inspection. Actions shall be taken to correct discrepancies or deficiencies in the manufacturing processes, procedures, or other conditions that cause articles to be in nonconformity with the requirements of the contract specifications. The inspection personnel shall verify the corrective actions and mark the discrepancy record. If discrepancies cannot be corrected by replacing the nonconforming materials, THE CITY shall approve the modification, repair, or method of correction to the extent that the contract specifications are affected.

6.1.6.4 QUALITY ASSURANCE AUDITS
The quality assurance organization shall establish and maintain a quality control audit program as required by ISO-9001:2000.

6.2 INSPECTIONS

6.2.1 INSPECTION STATIONS
Inspection stations shall be at the best locations to provide for the work content and characteristics to be inspected. Stations shall provide the facilities and equipment to inspect structural, electrical, hydraulic, and other components and assemblies for compliance with the design requirements.

Stations shall also be at the best locations to inspect or test characteristics before they are concealed by subsequent fabrication or assembly operations. These locations shall minimally include underbody structure completion, body framing completion, body prior to paint preparation, water test before interior trim and insulation installation, engine installation completion, underbody dress-up and completion, bus prior to final paint touchup, bus prior to road test, and bus final road test completion.

6.3 ACCEPTANCE TESTS

6.3.1 RESPONSIBILITY
Fully documented tests shall be conducted on each production bus following manufacture to determine its acceptance by THE CITY. These acceptance tests shall include pre-delivery inspections and testing by the Contractor, and testing by THE CITY after the buses have been delivered.
6.3.2 PRE-DELIVERY TESTS
The Contractor shall conduct acceptance tests at its plant on each bus following completion of manufacture and before delivery to THE CITY. These pre-delivery tests shall include visual and measured inspections, as well as testing the total bus operation. Additional tests may be conducted at the Contractor’s discretion to ensure that the completed buses have attained the desired quality and have met the requirements in “Technical Specifications”. Any additional testing shall be recorded on appropriate test forms provided by the Contractor and shall be conducted before acceptance of the bus.

The results of pre-delivery tests, and any other tests, shall be filed with the assembly inspection records for each bus. A hoist, scaffold, or elevated platform shall be provided by the Contractor to easily and safely inspect bus roofs.

6.3.2.1 INSPECTION - VISUAL AND MEASURED
Visual and measured inspections shall be conducted with the bus in a static condition. The purpose of the inspection testing is to verify overall dimensional and weight requirements, to verify that required components are included and are ready for operation, and to verify that components and subsystems that are designed to operate with the bus in a static condition do function as designed.

6.3.2.2 TOTAL BUS OPERATION
Total bus operation shall be evaluated during road tests. The purpose of the road tests is to observe and verify the operation of the bus as a system and to verify the functional operation of the subsystems that can be operated only while the bus is in motion.

Each bus shall be driven for a minimum of 15 (fifteen) miles during the road tests. Observed Defects shall be recorded on the test forms. The bus shall be re-tested when Defects are corrected and adjustments are made. This process shall continue until Defects or required adjustments are no longer detected. Results shall be pass/fail for these bus operation tests.

6.3.3 POST-DELIVERY TESTS
THE CITY may conduct acceptance tests on each delivered bus. These tests shall be completed within 15 (fifteen) days after bus delivery. The purpose of these tests is to identify defects that have become apparent between the time of bus release and delivery to THE CITY. The post-delivery tests shall include visual inspection and bus operations.

Buses that fail to pass the post-delivery tests are subject to non-acceptance. THE CITY shall record details of all Defects on the appropriate test forms and shall notify the Contractor of acceptance, conditional acceptance, or non-
acceptance of each bus within five days after completion of the tests.

6.3.3.1 VISUAL INSPECTION
The post-delivery inspection is similar to the inspection at the Contractor's plant and shall be conducted with the bus in a static condition. Any visual delivery damage shall be identified and recorded during the visual inspection of each bus.

6.3.3.2 BUS OPERATION
Road tests will be used for total bus operation similar to those conducted at the Contractor's plant. Operational deficiencies of each bus shall be identified and recorded.
Quality Assurance
NABI, Inc.

Quality System
NABI, INC.

Quality Assurance

Contents

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Appendix II Procedure #QOP-10-02 – In-Process and Final Inspection
Appendix III Procedure #QOP-11-01 – Inspection, Measuring and Test Equipment
Appendix IV Procedure #QOP-13-01 - Control of Non-Conforming Material
Appendix V Procedure #QOP-14-01 - Corrective Action
Appendix VI Procedure #QOP-17-01 – Internal Quality Audits
Quality Policy

North American Bus Industries, Inc. is committed to the philosophy that excellence is in the details and achieved only through Continuous Quality Improvement.
The management system of

North American Bus Industries, Inc.

106 National Drive
Anniston, AL 36207
United States

has been assessed and certified as meeting the requirements of

ISO 9001:2000

For the following activities:

The design, component installation and servicing of transit buses.

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization.

This certificate is valid from 16 February 2007 until 18 December 2010.

Authorized by

Managing Director
SGS Systems & Services Certification
Division of SGS U.S. Testing Company Inc.
Meadows Office Complex 201 Route 17 North, Rutherford NJ 07070
(201) 935-3555 1 (201) 935-4555  www.us.sgs.com
QUALITY

Director of Quality
Ron Zawacki

Manager of Quality Control
Mac Johnson

Quality Engineer
Steve Giordano

QC Supervisor
Open

OC Inspectors
(12)

QA Document Control Specialist
Jan Mayfield

Prepared by:

Human Resources
Quality System

NABI, Inc. has developed a quality system to better satisfy customer requirements and to continuously improve the quality of our processes and products. Our quality system is certified to the International Standard, ISO-9001:2000, satisfying all elements in the standard.

Our Quality System covers design, development, production, installation and servicing of the company’s products.

The Quality System is divided into three levels of documentation:

1. Quality Manual

   The purpose of this manual is to document the company’s quality system, to instruct and guide employees and to inform our customers as to what controls have been implemented to assure product quality.

2. Procedures

   The purpose of procedures is to document the day to day operations of how each department performs their functions while satisfying ISO-9001:2000.

3. Work Instructions

   The purpose of work instructions is to define and document specific instructions for departmental tasks that could adversely affect the quality of our products.
Quality Assurance

NABI, Inc. has divided the Quality Assurance Program into seven major categories. Each category has a procedure to define the process. The categories, as defined by NABI, Inc., as well as the corresponding procedure, are as follows:

1. Receiving Inspection – Procedure #QOP-10-01
2. In-Process Inspection – Procedure #QOP-10-02
3. Final Inspection – Procedure #QOP-10-02
4. Inspection, Measuring and Test Equipment – Procedure #QOP-11-01
5. Control of Non-Conforming Material – Procedure #QOP-13-01
6. Corrective Action – Procedure #QOP-14-01
7. Internal Quality Audits – Procedure #QOP-17-01
Appendix I

Receiving Inspection
Procedure #QOP-10-01
1.0 PURPOSE

1.1 The purpose of this document is to establish a procedure for the inspection of purchased and manufactured materials at North American Bus Industries, Inc.

2.0 SCOPE

2.1 The scope of this document is to include all Quality Assurance Receiving Personnel.

3.0 PROCEDURE

3.1 All materials having part numbers received at North American Bus Industries, Inc shall be subject to incoming receiving inspection.

3.2 Receiving Inspectors shall initiate inspections using information obtained from Bar Code or Label placed on material by Materials Department. Minimum information required will include (1) Part Number (2) Purchase Order Number (3) Quantity.

3.2.1 Receiving Inspectors shall transfer information from materials selected for inspection from the Bar Code or Label to the Receiving Inspection Worksheet, Form #QOF-10-05.

3.3 Receiving Inspectors shall perform inspections using Engineering Specifications, Product Specifications, and Purchase Order as required. At a minimum 10% of each lot that is selected shall be inspected.

3.4 After inspection has been performed results shall be recorded electronically.

3.5 Inspection status of material selected for inspection shall be identified by using Acceptance Tag (Form FQOP-10-01-01) or Non-Conforming Material Tag (Form FQOP-13-01-01). Materials chosen as Non-Inspection shall be identified using NABI Non-Inspection (Form #QOF-10-01-10).
3.6 In the event materials are needed for production immediately a portion of the lot may be urgent released using Form FQOP-10-01-04. At a minimum 10% of the material must not be taken for production.

3.7 All materials found to be Non-Conforming shall be handled per Procedure QOP-13-01.

4.0 CONTROL OF QUALITY RECORDS

4.1 All records shall be maintained per procedure QOP-16-01.
Appendix II

In-Process and Final Inspection
Procedure #QOP-10-02
1.0 *PURPOSE:*

1.1 The purpose of this document is to establish a process for In Process and final inspection.

2.0 **SCOPE:**

2.1 The scope of this document includes all type buses and all associates.

3.0 **CRITERIA**

3.1 The criterion to be used for inspection will be documented and controlled engineering specifications, general workmanship guidelines, sales order specifications and work instructions.

4.0 **INSPECTION STATIONS**

4.1 The Quality Inspectors shall, at a minimum, conduct inspection activities as identified in the bus book supplied with each bus. Audit will take place with an approved installation check sheet on form #QOF-10-04-20 prescribed for each work stage and a general workmanship inspection shall be conducted on form #QOF-10-02-17.

5.0 **PRODUCT TRACEABILITY**

5.1 The Quality Inspectors shall complete the Serial Number Form QOF-10-04-01 and Builders Plate Form QOF-10-04-02 for items applicable at each inspection point. Upon completion of all required information the forms will be given to the Quality Clerk. In the event of a defective part which requires serial number documentation, it will be production's responsibility to notify the quality department of the part being replaced. The quality department will be responsible for changing the serial number documentation and notifying the quality clerk to make the necessary changes.

6.0 **PROCEDURE**

6.1 Manufacturing associates shall complete all installations/assemblies prescribed within each work center and the integrity/quality of the installations/assemblies...
<table>
<thead>
<tr>
<th>TITLE: In-Process and Final Inspection</th>
<th>DOCUMENT: QOF-10-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFFECTIVE DATE: September 5, 2008</td>
<td>REVISION LEVEL: P *</td>
</tr>
<tr>
<td>PREPARED BY: Mac Johnson</td>
<td>PAGE: 2 of 4</td>
</tr>
<tr>
<td>APPROVED BY: Andy Secor</td>
<td>APPROVED BY: Bill Pixley</td>
</tr>
<tr>
<td>APPROVED BY:</td>
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</tr>
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<td>APPROVED BY:</td>
<td>APPROVED BY:</td>
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<tr>
<td>APPROVED BY:</td>
<td>APPROVED BY:</td>
</tr>
</tbody>
</table>

shall at all times be the responsibility of the manufacturing associates. A listing of all installations/ assemblies to be performed in each work center shall be supplied to the area inspector by manufacturing engineering. The inspector shall document the installations/ assemblies on Form #QOF-10-04-20. It will be the responsibility of manufacturing to ensure that all assemblies are signed off as complete and that they meet the quality standards deemed acceptable for each assembly.

6.2 Before a bus is moved through an inspection point Quality will perform an audit using the approved installation check sheet and a general workmanship write up at a minimum of intervals determined by the rate of production. Manufacturing will be responsible for repairing all installation check sheet items found to be defective or incomplete as well as all workmanship defects. All installation check sheet and general workmanship items found defective or incomplete will be reviewed on all buses beyond the current inspection point up to the last bus audited and back to the point of installation by the inspector. Open items allowed to move beyond current inspection point will be documented on Form# QOF-10-02-17. Open items will remain open until completed by production and repair approved by a quality inspector.

6.3 The Quality Inspector shall inspect all installations / assemblies within the bus at the time of the audit. When defects are documented the type of defect shall be indicated as one of the following Workmanship, Part Shortage, Job Incomplete, Engineering, Kft/Imperial or paint.

6.3.1 Definitions

- Workmanship - failure of associate to follow workmanship guidelines and/or work instructions
- Parts Shortage – parts not in stock for production
- Job Incomplete – failure of an associate to complete a job assignment in the proper stage of production.
- Engineering – design issues found during the assembly process or customer issues with an accepted speed memo requiring engineering action.
- Kft/Imperial – any nonconformity found with what is supplied by NABI, Kft/Imperial and having engineering documentation used as the criteria from Kft/Imperial.
- Paint – a defect in the painting process and/or damage incurred during the production process.
6.4 Rejected installations/assemblies shall at all times be the responsibility of Manufacturing to repair. Once the item has been repaired and is acceptable the Quality Inspector will sign off the item as accepted. When an open item is moved to the next stage, it is manufacturing’s responsibility to track and repair the open item and notify the inspector of the repair in order to have the issue bought back and closed.

6.5 The forms used at each inspection stage shall accompany the bus through the assembly process with the exception of the open items which will be consolidated to one list as the bus moves through the inspection points to reduce any confusion of what is truly open on the bus from the previous inspection point. The prescribed method of storing all forms while the bus is in the production process is in a binder to provide protection for the documents. The binder (black book) shall be removed from the bus and filed at the time the bus is released from the ready lane.

6.6 When all manufacturing activities have been completed the bus shall be submitted to a Quality associate for final inspection and function testing in the ready lane.

6.6.1 Final Inspection and Function Testing shall consist of the following:

6.6.1.1 Electrical Functions (Form #MOF-09-07)
6.6.1.2 Water Testing (Form #QOF-10-03-06)
6.6.1.3 Pre-Road Test Checklist (Form #QOF-10-03-03)
6.6.1.4 Road Test Checklist (Form #QOF-10-03-04)
6.6.1.5 Overview of interior and exterior installations and paint
6.6.1.6 Overview of underbody installations and leaks
6.7 The inspectors shall report the results of all inspection activities on the appropriate form. The forms shall be completed properly and submitted to the Quality Clerk on the first scheduled work day of each week. Form used shall be as follows:

6.7.1 Form #QOF-10-04-11

6.8 All forms will be removed before the bus is presented to the Customer. Open items must be authorized per QOP-10-05 prior to release of bus from ready lane for customer presentation. Any open items must be presented to customer at time of Customer Presentation.

7.0 QUALITY RECORDS:

7.1 Quality Records shall be maintained per QOP-16-01, Control of Quality Records.
Appendix III

Inspection, Measuring, and Test Equipment
Procedure #QOP-11-01
1.0 PURPOSE

1.1 The purpose of this procedure is to provide for a system and instructions and to assign responsibility for calibration, identification and maintenance of measuring and test equipment.

2.0 SCOPE

2.1 All measuring equipment used to examine product to determine compliance with specification. When production tooling and templates are used as an inspection media they are included in this program.

3.0 TERMINOLOGY

3.1 Accuracy: The degree of conformity of a measurement to a standard or a true value.

3.2 Calibration: A comparison of measuring equipment with a standard of higher accuracy to detect, correlate, adjust, rectify, and document the accuracy of the equipment being compared.

3.3 Measurement and test equipment: All devices used to measure, gage, test, inspect or otherwise examine items to determine compliance with specifications.

3.4 Standard: Standards of the highest accuracy order in a calibration system, which establishes the basic accuracy values for that system.

4.0 RESPONSIBILITIES

4.1 Measurement and test equipment shall be assigned an identification number and shall be assigned to a specific Department/Area.

4.1.1 The Department Manager and/or Supervisor shall be responsible for the measurement and test equipment accountability.
4.1.2 Manufacturing Engineering shall be responsible for assigning the identification, and the measurement and test equipment to a specific Department/Area.

4.1.3 Once the identification number and department/area has been assigned, Manufacturing Engineering shall send the measurement and test equipment along with all calibration documentation to the Calibration Specialist, or designee.

4.1.4 The Calibration Specialist, or designee, shall verify the calibration documentation, enter the measurement and test equipment into the calibration system and return the measurement and test equipment to Manufacturing Engineering or the assigned Department/Area. If calibration is required the calibration shall be performed before the measurement and test equipment is released.

4.2 Users of measurement and test equipment shall ensure that these devices are properly stored when not in use and insofar as possible, protected from damage when in use.

4.3 Area Supervisors shall ensure that measurement and test equipment under their cognizance are adequate for the intended use or purpose.

4.4 Area Supervisors or equipment users shall prepare for back-up instrumentation when items are turned-in for calibration purposes.

4.4.1 The Calibration Specialist, or designee, shall issue a report at the first of every month to the Department/Area to identify measurement and test equipment requiring calibration for that month.

4.4.2 The Department/Area the measurement and test equipment is assigned to shall be responsible for bringing the measurement and test equipment to the Calibration Specialist, or designee, for calibration before the calibration due date expires.
4.5 Area Supervisors or measurement and test equipment users shall notify the Calibration Specialist, or designee, of any measurement and test equipment which indicate expired calibration intervals, inaccurate, malfunctioning, damaged, or any other condition that could void the calibration.

4.6 The Calibration Specialist, or designee, shall maintain an inventory file of measurement and test equipment.

4.7 The Calibration Specialist, or designee, shall maintain calibration records. Calibration information shall be entered into the calibration software, which is menu driven.

5.0 PROCEDURE

5.1 Written Instructions shall specify how calibration is to be performed. As a minimum, the instruction shall specify either the measurement standard or its required accuracy.

5.1.1 Calibration performed in-house shall be performed with specific written instructions.

5.1.2 Calibration performed by an external source. The external source shall be evaluated per POP-06-01.

5.2 All measurement and test equipment shall be periodically calibrated per established documented schedules. Adjustments of such a schedule shall be based upon the individual calibration history of each item in accordance with QOI-11-01-01, “Scheduling of Calibration Intervals.”

5.3 Calibration standards utilized when calibrating measurement and test equipment shall be traceable to the National Institute of Standards and Technology (NIST).
5.4 When practical, labels indicating date of last calibration, calibrator and when next calibration is due will be attached to the measurement and test equipment.

5.5 The environment aspect of measurement and test equipment use in the manufacturing plant and in the measurement and test equipment calibration area is deemed suitable and equivalent.

6.0 **EQUIPMENT EXEMPTED FROM CALIBRATION**

6.1 Measurement and test equipment used in situations where the accuracy of measurements is not important or where the measurement does not have any relation to the product are exempted from the calibration requirement. Such measurement and test equipment is labeled with stickers warning that it is not calibrated.

7.0 **RECORDS**

7.1 Records of measurement and test equipment are governed by procedure QOP-16-01.
Appendix IV

Control of Non-Conforming Material
Procedure #QOP-13-01
1.0 PURPOSE

1.1 The purpose of this document is to define the method and action taken for any material or parts found to be non-conforming to the applicable specifications and standards or due to damage.

2.0 SCOPE

2.1 The procedure applies to all occurrences of non-conforming material regardless of origin or level of assembly.

3.0 TERMINOLOGY

3.1 MRB = Material Review Board

3.2 Non-conforming = Product that does not meet all specified requirements.

3.3 Rework = Activities conducted to allow non-conforming parts / assemblies to be made exactly to specification.

3.4 Repair = Activities conducted to allow non-conforming parts / assemblies to be made functional for use although outside original specifications.

(NOTE: Distinction between repair and rework activities will only be made when contractually required.)

4.0 PROCEDURE

4.1 GENERAL
Suspect Material shall be handled as non-conforming until determined otherwise. Nabi will ensure that all product which does not conform to product requirements is identified and controlled to prevent its unintended use or delivery. Material that does not meet specifications is identified with a Non-Conforming Material Tag (FQOP-13-01-01) and placed in designated non-conforming material location.
4.2 **RESPONSIBILITY**
Any NABI employee can identify Non-conforming material. Non-conforming material shall be dispositioned by the MRB (Material Review Board).

4.3 **DISPOSITION (MRB)**
The MRB consists of representative from:
- Purchasing
- Quality
- Engineering
- Production
- Materials

MRB may disposition material in one or more of the following ways:

a) by ensuring action is taken to eliminate the detected non-conformity
b) by authorizing its use, by the customer; we do not normally accept parts under concession
c) by taking action to preclude its original use or application

4.4 **Re-Verification of corrected non-conforming material**
If non-conforming material is corrected it is re-verified to demonstrate conformity to the requirements. If non-conforming material is detected after delivery or use has started, NABI will take action appropriate to the effects, or potential effects, or the non-conformity.

5.0 **RECORDS**

5.1 Records shall be maintained in accordance with QOP-16-01.
Appendix V

Corrective Action
Procedure #QOP-14-01
1.0 **PURPOSE**

1.1 To define and document the procedure and responsibility for the issuance, responsibilities, distribution, and maintenance of the Corrective Action Request (CAR).

2.0 **SCOPE**

2.1 This procedure applies to the management and administration of Corrective Actions triggered by Material Review Board Activity, Customer Complaints, Internal Audits, Management Review, or the detection of non-conformance / non-conformity by any other means as of September 1, 1999.

3.0 **DEFINITIONS**

3.1 CAR – Corrective Action Request

3.2 MRB – Material Review Board

3.3 CA – Corrective Action

3.4 CAT – Corrective Action Team

3.5 Non-conformance / Non-conformity – Product or material which does not conform to the required specification and or process which does not conform to a Quality System Requirement.

4.0 **PROCEDURE**

4.1 Material Review Board, Supervisors, Managers, Internal Auditors, any Department Head, or the Quality Staff can initiate Corrective Action Request.

4.1.1 All potential Corrective Action Requests shall be forwarded to the Quality Department Head or designated Quality Assurance personnel.

4.2 The Quality Department Head or designee shall maintain the Corrective Action System.
4.3 All Department Heads are responsible for implementing agreed Corrective Actions.

4.4 All Department Heads where applicable shall apply the Corrective Action taken, and controls implemented, to eliminate the cause of a non-conformity / non-conformance to other similar processes and products.

4.5 The Quality Department Head or designee shall evaluate the potential Corrective Action Request to determine if and how it should be issued.

4.6 The Quality Assurance Department Head shall report to Management significant occurrences necessitating Corrective Action and steps taken to prevent reoccurrence.

4.7 Before a CAR is issued, the Quality Department Head or designee checks the Corrective Action System and determines effectiveness of previous CAR’s by the following:

4.7.1 Check the non-conforming index for recurring problems for internal non-conformances and Supplier non-conformances.

4.7.1.1 If a non-conformance does recur within (6) six months of original completion date, Quality Systems will reopen the corresponding CAR and inform the appropriate individual(s) via correspondence. Reopened CAR’s will retain the original number with a revision indication. (Example: C99001 would become C99001A)

4.7.1.2 If the non-conformance is not recurring, the severity of the problem is reviewed by Quality Systems to determine if a CAR is warranted. If so, a CAR is issued.

4.7.2 Check the Audit non-conformity against past audits performed.

4.7.2.1 If the non-conformity does recur within (6) six months of original completion date, Quality Systems will reopen the corresponding CAR and inform the appropriate individual(s) via correspondence. Reopened CAR’s will retain the original number with a revision indication. (Example: C99001 would become C99001A)
4.7.2.2 If the Audit non-conformity is not recurring, a new CAR will be issued.

4.7.3 Check the Customer Complaint system for possible issues.

4.7.3.1 If the complaint does recur within (6) six months of original completion date, Quality Systems will reopen the corresponding CAR and inform the appropriate individual(s) via correspondence. Reopened CAR’s will retain the original number with a revision indication. (Example: C99001 would be C99001A)

4.7.3.2 If the Customer Complaint is not recurring, the severity of the problem is reviewed by Quality Systems to determine if a CAR is warranted. If so, a CAR is issued.

4.8 Once a non-conformity / non-conformance is identified and a CAR is warranted, Quality Systems assigns a CAR number and issues a Corrective Action Request (Form #QOF-14-01).

4.8.1 Assignment of a CAR number, example (C99001) or (C99001A).

4.8.1.1 “C” represents CAR, (Corrective Action Request).

4.8.1.2 “99” represents the year, (1999).

4.8.1.3 “001” represents the sequence number.

4.8.1.4 “A” represents the revision sequence (re-open).

4.9 Corrective Action data is recorded electronically.

4.9.1 All Corrective Action Requests are input into the Corrective Action Software. The system is menu driven. Tracking information is filed under reports.

4.10 A copy of the Corrective Action Request (Form #QOF-14-01) remains in the Log Book until the completed copy of the CAR is returned. The completed copy is then placed in numerical order in the Corrective Action Logbook and the other copy is discarded.
4.11 Corrective Action Requests are issued to Department Supervisors and Managers. Quality Systems communicates the non-conformance or non-conformity and the noted due date.

4.11.1 A standard due date of (10) tens days from date of issue may be assigned to any Internal Corrective Action Request.

4.11.2 A standard due date of (15) fifteen days from date of issue may be assigned to any External Corrective Action Request.

4.11.3 Due dates may be extended with the approval of the Quality Department Head or designee.

4.12 The issuer shall be responsible for:

4.12.1 Analyzing the problem.

4.12.2 Implementing containment action (when appropriate).

4.12.3 Establishing CAT (Corrective Action Team) when appropriate.

4.12.4 Identifying and verifying root cause(s).

4.12.5 Determining and implementing Corrective Action.

4.12.6 Returning the completed Corrective Action Request to the Quality Department Head or designee.

4.12.6.1 If the Corrective Action Request cannot be completed by the due date, the issuer is responsible for obtaining an extension to the due date.

4.12.6.2 A sign off sheet or other evidence of completion must support Corrective Action responses, which involve additional training or communications with associates.

4.13 A listing of overdue Corrective Actions shall be prepared monthly at a minimum for review.
4.14 Issuers with overdue Corrective Actions shall be notified by memo or e-mail.

4.15 Corrective Action Request shall be closed when completed by the issue, returned to, and accepted by the Quality Department Head or designee.

4.16 The Quality Department Head or designee shall assign follow-up dates reflective of Corrective Action taken and severity of occurrence.

4.16.1 Follow-up / Verification date shall be placed into the database to act as a trigger mechanism for effectiveness review.

4.16.2 The Quality Department Head or designee opens a Follow-up / Verification Plan and designates an Assignee.

4.16.3 The Follow-up / Verification description shall describe the evidence for plan completion. The description is determined by the Corrective Action response. More than one item may be assigned.

4.16.4 A hard copy shall be printed from the software and be placed in the Logbook with the completed copy of the Corrective Action Request.

4.16.5 The assignee shall request evidence from the applicable Department as required.

4.16.6 The Quality Department Head or designee shall monitor the due date.

4.17 Follow-up / Verification.

4.17.1 If effective, the Assignee shall document the Follow-up / Verification performed, sign and date the Follow-up / Verification Form, and return it to the Quality Department Head or designee to close the plan. A completed hard copy of the follow-up / Verification shall replace the copy placed in the file with the Corrective Action Request. Objective evidence, if obtained during the Follow-up / Verification shall also be placed with the completed Corrective Action Request.

4.17.2 If not effective, the Assignee shall document the Follow-up / Verification performed, sign and date the Follow-up / Verification Form, and return it to the Quality Department Head or designee. The Quality Department
4.18 Corrective Action Request and Overdue Corrective Action Request are reviewed in Management Review Meetings.

4.19 Overdue Follow-up / Verification reports are run monthly at a minimum to provide follow-up and overdue information for notices.

5.0 RECORDS

5.1 All records shall be maintained for 3 years.

5.2 After 3 years, the records shall be destroyed.
Appendix VI

Internal Quality Audits
Procedure #QOP-17-01
1.0 PURPOSE

1.1 This procedure sets forth the method for evaluation of the quality system.

2.0 SCOPE

2.1 This procedure applies to activities associated with internal audits used to determine the effectiveness of the quality system and to verify whether quality activities and related results comply with planned arrangements.

3.0 DEFINITIONS

3.1 Auditor – The auditor for the purpose of the Quality System Audit shall be a person trained on the performance of internal audits.

3.2 Lead Auditor – The lead auditor for the purpose of the Quality System Audit shall be a person trained on the performance of leading internal audits.

4.0 RESPONSIBILITY / AUTHORITY

4.1 The Quality Assurance Department Head or the Lead Auditor is responsible for the publishing and updating of the Internal Audit Schedule, (Form #QOF-17-01-08). This responsibility includes assigning auditors / audit teams to perform the audits, and to sign the Internal Audit Schedule to reflect approval.

4.2 Auditors / Audit Teams are responsible to carry out assigned audits per the Internal Audit Schedule.

4.3 The Auditors / Audit Teams are responsible for requesting Corrective Action Request(s) from the Quality Systems Specialist or designee as required. The Quality Systems Specialist or designee shall issue the Corrective Action Request(s) and close the Corrective Action Request(s).

4.4 Responsible departments / individuals are required to supply timely Corrective Action Response(s) for identified Finding(s).
4.5 The Quality Assurance Department Head or the Lead Auditor is responsible to assure only qualified auditors are used.

4.6 Internal Auditors shall meet the following criteria:

4.6.1 Have been trained in the performance of internal audits by either internal training sessions or external training session. Records of these training sessions shall be maintained in the Human Resources Department or the Training Department.

4.6.2 Internal trainers shall have been trained as a Lead Auditor.

5.0 PROCEDURE

5.1 Auditors / Audit Teams shall perform systems audits per a predetermined schedule.

5.1.1 The audit schedule shall identify the area to be audited, and to which standard that will be used.

5.1.2 The audit schedule may be developed based upon one or more of the following:

5.1.2.1 Corrective Action Request Written

5.1.2.2 Number of Nonconformance Reported

5.1.2.3 Customer Complaints

5.1.2.4 Trend Analysis

5.1.2.5 Previous Audit

5.2 The Audit schedule may be deviated from due to availability of personnel, and the area shall be rescheduled for a later date with the approval of the Lead Auditor.
5.3 Auditors / Audit Teams shall conduct the audits with the use of the Internal Audit Checklist (Form #QOF-17-01-09). The Internal Audit Checklist shall be developed by the Lead Auditor with assistance of assigned auditor and the use of the QSA (Quality System Assessment) (Second Edition) and/or procedures pertaining to the audited department. The Internal Audit Checklist is to be used as a guide during the audit. It is not necessary to answer each question in the checklist. Checklist shall be turned into the Lead Auditor upon completion of the audit.

5.3.1 The Lead Auditor shall review the Internal Audit Checklist completed by the Auditors / Audit Teams to ensure that the required elements were properly audited and documented per the Internal Audit Schedule.

5.3.2 If properly audited and documented the Lead Auditor shall sign and date the Internal Audit Checklist, and retain as a quality record.

5.3.3 If not properly audited and documented the Lead Auditor shall return the Internal Audit Checklist to the appropriate Auditor / Audit Team for proper completion. Once properly completed the Audit / Audit Team returns the Internal Audit Checklist to the Lead Auditor.

5.3.4 The Lead Auditor shall follow section 5.3.2 or 5.3.3 as applicable.

5.5 The Lead Auditor or designated representative shall be responsible for preparing the audit report. At a minimum the audit report shall include:

5.5.1 Purpose

5.5.2 Scope

5.5.3 Area Audited

5.5.4 Findings
5.5.5 Observations

5.6 Internal Audit results shall be discussed during Management Reviews.

6.0 **RECORD KEEPING REQUIREMENTS**

6.1 Records shall be filed in the Quality Department.

6.2 Records shall be maintained for 3 years, after which they shall be destroyed.

7.0 **RELATED DOCUMENTS**

7.1 ISO-9001

7.2 QSA (Quality System Assessment) (Second Edition)
Exterior Elevation Drawing
NABI 40LFW - LOW FLOOR CNG BUS
Santa Monica

Date: Sept, 17, 2009.
Created by: Facklmann
ELEVATION DRAWING
Drawing number: 100-9220-A02
Seating Layout Drawing
Description of Interlock System
Cleaning and Inspection

1. Wash all metal parts in mineral spirits and dry them thoroughly.

NOTE: Service parts for the R-12DC relay valve consist of one maintenance kit that contains the items marked with an asterisk (*) on Figure 6.

2. Inspect all metal parts for deterioration and wear, as evidenced by scratches, scoring and corrosion.

3. Inspect the exhaust valve seat on the relay piston for nicks and scratches which could cause excessive leakage.

4. Inspect the inlet valve seat in the body for scratches and nicks, which could cause excessive leakage.

5. Inspect the check valve seat in the R-12DC cover and make sure all internal air passages in this area are open and clean and free of nicks and scratches.

6. Replacement of parts not contained in the maintenance kit will require replacement of the complete valve assembly.

Assembly

NOTE: All torques specified in this section are assembly torques and can be expected to fall off slightly after assembly. Do not retorque after the initial assembly torques fall. For assembly, hand wrenches are recommended.

Prior to assembly, lubricate all O-rings, O-ring bores and any sliding surface with a silicone lubricant equivalent to Dow Corning #10.

Wash all remaining parts in mineral spirits and dry thoroughly. Using the lubricant provided in this kit, lightly lubricate all O-rings, O-ring grooves, body bores and sliding surfaces.

1. Install O-rings (14 & 15) in the exhaust cover assembly (16).

2. Install O-ring (8) on piston (9).

3. Install sealing ring (7) on cover (1).

4. Install retainer (12) on inlet exhaust valve (11) and insert both in the body (10).

5. Install spring (13) in the body (10).

6. Install exhaust cover assembly (16) in the body (10). Depress and hold the exhaust cover assembly in the body.

7. Install retaining ring (17) in the body (10). Make certain the retaining ring is completely seated in the groove in the body.

8. Install piston (9) in body (10), with differential spring (18).

9. Install O-ring (5) on double check cover (6), install spring (2), guide (3) and double check diaphragm (4) in cover (1). Install cover (1) and torque torx head screws to 80-100 inch-pounds.

10. Referring to the marks made during disassembly, install cover (1).

11. Install the mounting bracket (not shown) on the cover (1).

12. Install the four cap screws in the cover (1) and torque to 80-100 inch pounds.

13. Test the valve as outlined in the "Operation and Leakage Test" section before returning the vehicle to service.

Brake Interlock

DESCRIPTION

The brake interlock is used with the rear door, leaning, passenger ramp, and fast idle systems. During use of these systems, partial air pressure is applied to the rear axle service brakes and the accelerator pedal is disabled. The "Brake" indicator illuminates when the brake interlock is activated.

OPERATION

Air pressure from the rear service reservoir is regulated to 42 psi by an RV-1 pressure reducing valve. When the brake interlock is activated, a normally-closed solenoid is energized, sending the regulated air pressure to the rear axle service brake R12-DC relay valve secondary control port. The relay valve then delivers 42 psi through the ABS modulator valves and into the service brake section of the rear spring brake chambers.

The pressure reducing valve and interlock solenoid are located on the bulkhead in front of the rear axle. Power to the solenoid is controlled by the multiplex system D1 module.
Pressure Reducing Valve  
Bendix Type RV-1

DESCRIPTION
The pressure reducing valve (Figure 7) is used with the brake interlock system to reduce and maintain a pre-set pressure of 42 psi. This pressure is applied to the rear service brakes when the interlock solenoid valve, connected to the reducing valve delivery port, is energized. A lock wire and seal are provided for a tamper proof adjustment setting.

OPERATION
The pressure setting of the reducing valve is determined by the setting of the adjusting cap, which exerts a force on the spring on top of the piston. Compressed air enters the supply port and passes out the delivery port. When the air pressure on the bottom of the piston overcomes the force of the spring on top of the piston, the piston moves upward and the inlet valve spring forces the inlet valve on its seat, closing off the supply of air. As the pressure in the delivery line drops, the force of the spring above the piston becomes greater than the air pressure below the piston, allowing the piston to move downward, moving the inlet valve off its seat and allowing air to pass out the delivery port.

If pressure in the delivery line exceeds the pressure setting of the reducing valve, the force exerted by the air pressure below the piston will be greater than the spring force above the piston. The piston will move up from the exhaust valve, permitting air to pass by the exhaust valve, through the hollow piston and valve guide and escape through the slot in the adjusting cap. When the force of the spring above the piston overcomes that of the air pressure below the piston, the exhaust valve is seated, and the pressure in the delivery line is the same as the setting of the reducing valve.

MAINTENANCE
Every six months or 24,000 miles, perform the "Operation and Leakage Tests" as indicated below:

Operating Test
Connect an accurate test gauge to the delivery line and observe what pressure the inlet valve opens, which is the delivery pressure. If delivery pressure varies more than 5 psi from the pressure setting indicated on the tag attached to the valve, the valve should be readjusted. Turning the adjustment cap clockwise will increase pressure. The lock nut should be tightened after each adjustment along with replacing the lock wire and seal.

Leakage Test
No leakage is permitted at the exhaust vent in the slot of the adjusting cap when making the operating test. Leakage at his point would indicate a leaking piston O-ring or a leaking exhaust valve seat.

If the pressure-reducing valve does not function as described, or leakage is excessive, it is recommended that it be replaced with a new unit or repaired.
REPLACEMENT

Removal
1. Secure vehicle by means other than the air brakes. Drain all reservoirs.
2. Identify and disconnect air lines attached to the valve.
3. Remove mounting hardware and the valve.

Installation
1. Inspect and clean the air lines that connect to the valve.
2. Mount the new valve and reconnect the air lines.
3. Perform the "Operation and Leakage Tests" in this section to verify operation.

OVERHAUL

Disassembly
1. Loosen the lock nut and remove the adjusting cap.
2. Remove the pressure regulating spring.
3. Remove piston assembly and O-ring.
4. Using needle-nose pliers, grab end of spring and rotate to dislodge the inlet exhaust valve spring from the groove of supply port and remove spring and inlet and exhaust valve.

Cleaning and Inspection
Wash all metal and plastic parts in mineral spirits. Rubber parts should be wiped clean. Inspect all parts for wear or deterioration. Check the springs for cracks, corrosion or distortion. Inspect all rubber parts and replace if they show signs of cracks, wear, deterioration, or are swollen.

Assembly

NOTE: Before assembling the valve, lubricate the piston, O-ring and body bores with Bendix silicone lubricant BW-650-M.

1. Replace lock nut on body and install O-rings in body bore.
2. Insert piston into valve body and spring inside of piston.
3. Replace the adjusting cap.
4. Carefully insert the inlet exhaust valve guide into small opening in piston.
5. Place spring in supply port. Using needle-nose pliers, grab end of inlet exhaust valve spring and twist the end into the groove of valve body as the small end seats around the inlet valve.
6. Adjust and test the valve as outlined under "Operation and Leakage Tests".

Stop Light Switches
Nason Model SM

DESCRIPTION
Two stop light switches are located on the air system test port panel. The switches (Figure 8) are installed in both front and rear service brake circuits for operation of the stop lights. The stop light switch is an electro-pneumatic 4 psi normally-open switch that operates in conjunction with the brake application valve. These switches complete the electrical circuit to the rear mounted stop lights when a brake application is made.

![Stop Light Switch](image)

Figure 8 - Stop Light Switch
## Arlington Pricing Summary

**Arlington Assignment: Santa Monica**

October 13, 2013

### Current Pricing PHI March - February 2013

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<td>flooring same as previous Arlington</td>
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<td>Arlington-10</td>
<td>Pricing to delete Santa Monica stainless steel rack and add a painted</td>
<td>$3,679</td>
<td>$0</td>
<td>$3,679</td>
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<tr>
<td></td>
<td>black bike rack same as previous Arlington</td>
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<tr>
<td>Arlington-11</td>
<td>Pricing to delete Santa Monica exterior scheme and add Arlington</td>
<td>$147</td>
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<tr>
<td></td>
<td>exterior scheme same as previous Arlington</td>
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<td>Arlington-12</td>
<td>Pricing to delete Santa Monica RCA premium floor covering and add</td>
<td>$3,043</td>
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<td></td>
<td>RCA TV 766 Gray Marble</td>
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<td>Arlington-13</td>
<td>Pricing to delete Santa Monica Ameco vision passanger seating and add</td>
<td>$3,043</td>
<td>$0</td>
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<td>Ameco 6446 passenger seating same as previous Arlington</td>
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<td>Arlington-14</td>
<td>Pricing to delete Santa Monica door lock system</td>
<td>$1,154</td>
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<td>Arlington-15</td>
<td>Pricing to delete Santa Monica rearview mirror driver seat and add recaro</td>
<td>$484</td>
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<td>Ergo-Metro Driver Seat</td>
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<td>Arlington-16</td>
<td>Pricing to delete Santa Monica Boss 17'' hidden frame tip in windows</td>
<td>$3,572</td>
<td>$0</td>
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<tr>
<td></td>
<td>and add vision standard frame without same configuration as previous</td>
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<td>Arlington but these will not be Stormlite</td>
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<td>Arlington-17</td>
<td>Pricing to delete Santa Monica evap brushless motors and add evap</td>
<td>$460</td>
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<tr>
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<td>permanent magnet motors</td>
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<td>Arlington-18</td>
<td>Pricing to delete Santa Monica Twin Vision Chrome III Destination Signs</td>
<td>$1,567</td>
<td>$0</td>
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<td></td>
<td>and add Twin Vision Chrome IV</td>
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<td>Arlington-19</td>
<td>Pricing to delete Santa Monica Continental Advanced Communication System</td>
<td>$2,539</td>
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<td>including radio system, AVL, GPS, APC system and add Digital</td>
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<td>Recorders 6000R same as previous Arlington</td>
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<td>Arlington-20</td>
<td>Pricing to delete Santa Monica DAF 42D Alternator and add Dafco 50</td>
<td>$422</td>
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<td>DAF Alternator</td>
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<td>Arlington-21</td>
<td>Pricing to delete Santa Monica GE Mobile Fiesta Video Surveillance</td>
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<td>Arlington-22</td>
<td>Pricing to delete Santa Monica Extended Warranties</td>
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<td>Arlington-23</td>
<td>Pricing to add Publications (see pulls tab)</td>
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<td>Arlington-24</td>
<td>Pricing to add training (100 hours)</td>
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<td>Arlington-25</td>
<td>Pricing to add service</td>
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<td></td>
<td>(see pull tab)</td>
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### Option Order Per Unit Pricing

<table>
<thead>
<tr>
<th>Option Order</th>
<th>Per Unit Pricing</th>
<th>Total</th>
<th>Subtotal</th>
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<tbody>
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<td></td>
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<td>$651,679</td>
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