

CONTRACT AWARD

STATE OF CONNECTICUT

**DEPARTMENT OF TRANSPORTATION
DIV. OF PURCHASING & MATERIALS MGMT.
2800 Berlin Turnpike**

**PO Box 317546
Newington, CT 06131-7546**

Mary Matuszak
Fiscal Administrative
Supervisor

(860) 594-2342
Telephone Number

CONTRACT AWARD NO.:
15DOT7002
DATE AWARDED: 28 April 2016
RFP DUE DATE: December 3, 2016
AUTHORIZATION: CGS 13b-34

CONTRACT AWARD

COMMODITY CLASS/SUBCLASS AND DESCRIPTION: 30', 35' and 40' Low Floor Heavy Duty Clean Fuel Diesel and Hybrid Electric Buses

FOR: Department of Transportation 2800 Berlin Turnpike Newington, CT 06131-7546	TERM OF CONTRACT /DELIVERY DATE REQUIRED: Contract Term: 5 Years From Date of Award Delivery: See Attached <u>Exhibit B</u> (Price Schedule) for Each Vendor
	TOTAL CONTRACT AWARD VALUE: \$325,820,197.00 CONTRACT AMOUNT IS ESTIMATED, AND WILL ULTIMATELY BE DETERMINED BY THE NUMBER OF BUSES AND SPARE PARTS PURCHASED OVER THE LIFE OF THE CONTRACT. ACTUAL COSTS ARE NOTED ON THE ATTACHED <u>EXHIBIT B</u> (PRICE SCHEDULE) FOR EACH VENDOR.
NOTICE TO CONTRACTORS: This notice of award is not an order to ship or to produce services. Purchase Orders against this contract will be furnished by the Department of Transportation. INVOICES SHALL BE RENDERED DIRECTLY TO THE DEPARTMENT OF TRANSPORTATION.	
CASH DISCOUNTS: Cash discounts, if any, shall be given SPECIAL ATTENTION, but such cash discount shall not be taken unless payment is made within the discount period.	
PRICE BASIS: Unless otherwise noted, prices include delivery and transportation charges fully prepaid f.o.b. agency. No extra charge is to be made for packing or packages.	
<u>THE ATTACHED DOCUMENTS ARE HEREBY INCORPORATED INTO CONTRACT AWARD NO. 15DOT7002 AND MADE A PART HEREOF</u>	

NAME AND ADDRESS OF CONTRACTOR(S):

Company Name: Gillig LLC		CORE Award No.: 15DOT7002AA
Address: 25800 Clawiter Road, Hayward, CA 94545		30' Low Floor (Diesel & Hybrid)
Tel. No.: (800) 735-1500 x 5093	Fax No.: (510) 785-6819	Est. Award Amount: \$34,498,420.00
Contact Person: Joseph Policarpio	SSN/FEIN No.: 26-3085364	
Certification Type (SBE,MBE, WBE or None): none	Terms: Net 45 Days	
Company E-mail Address and/or Company Web Site: www.gillig.com		

Company Name: New Flyer of America Inc.		CORE Award No.: 15DOT7002AB
Address: 711 Kernaghan Avenue, Winnipeg, Manitoba, Canada R2C 3T4		35', 40' Low Floor (Diesel & Hybrid)
Tel. No.: (204) 224-1251 x6240	Fax No.: (204) 224-4214	Est. Award Amount: \$291,321,777.00
Contact Person: Paul Smith	SSN/FEIN No.: 45-0414949	
Certification Type (SBE,MBE, WBE or None): none	Terms: Net 45 Days	Prompt Payment: See Exhibit B
Company E-mail Address and/or Company Web Site: www.newflyer.com		Progressive Payment Options

CONTRACT

Between

THE STATE OF CONNECTICUT

Acting by its

DEPARTMENT OF TRANSPORTATION

AND

GILLIG LLC

**30', 35' AND 40' LOW FLOOR HEAVY DUTY CLEAN FUEL DIESEL
AND HYBRID ELECTRIC BUSES**

APRIL 28

, 2016

Contract Award Date

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This contract (the "Contract") is made as of the day of execution of the contract, by and between, Gillig LLC (the "Contractor,") with a principal place of business at 25800 Clawiter Road, Hayward, CA, acting by JOSEPH POLICARPIO, its VICE PRESIDENT and the State of Connecticut, Department of Transportation (referred to in this Contract as the "Agency", "CTDOT", or the "Authority"), with a principal place of business at 2800 Berlin Turnpike, Newington, Connecticut, acting by Richard Andreski, its Bureau of Public Transportation Bureau Chief, in accordance with Section 13b-34 of the Connecticut General Statutes. *JK RMA*

Now therefore, in consideration of these presents, and for other good and valuable consideration, the receipt and sufficiency of which the parties acknowledge the Contractor and the State agree as follows:

1. Definitions. Unless otherwise indicated, the following terms shall have the following corresponding definitions:
 - (a) Bid: A Bid submitted in response to a Solicitation
 - (b) Claims: All actions, suits, claims, demands, investigations and proceedings of any kind, open, pending or threatened, whether mature, unmaturing, contingent, known or unknown, at law or in equity, in any forum.
 - (c) Confidential Information: This shall mean any name, number or other information that may be used, alone or in conjunction with any other information, to identify a specific individual including, but not limited to, such individual's name, date of birth, mother's maiden name, motor vehicle operator's license number, Social Security number, employee identification number, employer or taxpayer identification number, alien registration number, government passport number, health insurance identification number, demand deposit account number, savings account number, credit card number, debit card number or unique biometric data such as fingerprint, voice print, retina or iris image, or other unique physical representation. Without limiting the foregoing, Confidential Information shall also include any information that the Agency classifies as "confidential" or "restricted." Confidential Information shall not include information that may be lawfully obtained from publicly available sources or from federal, state, or local government records which are lawfully made available to the general public.
 - (d) Confidential Information Breach: This shall mean, generally, an instance where an unauthorized person or entity accesses Confidential Information in any manner, including but not limited to the following occurrences: (1) any Confidential Information that is not encrypted or protected is misplaced, lost, stolen or in any way compromised; (2) one or more third parties have had access to or taken control or possession of any Confidential Information that is not encrypted or protected without prior written authorization from the State; (3) the unauthorized acquisition of encrypted or protected Confidential Information together with the confidential process or key that is capable of compromising the integrity of the Confidential Information; or (4) if there is a substantial risk of identity theft or fraud to the Agency, the Contractor, or the State.
 - (e) Contract: The agreement, as of its Effective Date, between the Contractor and the State for any or all Goods or Services at the Bid price.
 - (f) Contractor: A person or entity who submits a Bid and who executes a Contract.
 - (g) Contractor Parties: A Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or

any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.

- (h) Day: All calendar days other than Saturdays, Sundays and days designated as national or State of Connecticut holidays upon which banks in Connecticut are closed.
 - (i) Force Majeure: Events that materially affect the cost of the Goods or Services or the time schedule within which to Perform and are outside the control of the party asserting that such an event has occurred, including, but not limited to, labor troubles unrelated to the Contractor, failure of or inadequate permanent power, unavoidable casualties, fire not caused by the Contractor, extraordinary weather conditions, disasters, riots, acts of God, insurrection or war.
 - (j) Goods: For purposes of the Contract, all things which are movable at the time that the Contract is effective and which include, without limiting this definition, supplies, materials and equipment, as specified in the Solicitation and set forth in Exhibit A.
 - (k) Goods or Services: Goods, Services or both, as specified in the Solicitation and set forth in Exhibit A.
 - (l) Records: All working papers and such other information and materials as may have been accumulated by the Contractor in performing the Contract, including but not limited to, documents, data, plans, books, computations, drawings, specifications, notes, reports, records, estimates, summaries and correspondence, kept or stored in any form.
 - (m) Services: The performance of labor or work, as specified in the Solicitation and set forth in Exhibit A.
 - (n) Solicitation: A State request, in whatever form issued, inviting bids, proposals or quotes for Goods or Services, typified by, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes. The Solicitation and this Contract shall be governed by the statutes, regulations and procedures of the State of Connecticut, Department of Administrative Services, even if the Agency has statutes, regulations and procedures which overlap DAS's. However, to the extent that the Agency has statutes, regulations or procedures which the Agency determines in its sole discretion to be inconsistent with DAS's, the Agency's shall control over those of DAS's. The Solicitation is incorporated into and made a part of the Contract as if it had been fully set forth in it if, but only if, the Solicitation is in the form of an invitation to bid, request for information or request for quotes. A Solicitation in the form of a request for proposals is not incorporated into the Contract in its entirety, but, rather, it is incorporated into the Contract only to the extent specifically stated in Exhibit A.
 - (o) State: The State of Connecticut, including the Agency and any office, department, board, council, commission, institution or other agency of the State.
 - (p) Termination: An end to the Contract prior to the end of its term whether effected pursuant to a right which the Contract creates or for a breach.
 - (q) Title: all ownership, title, licenses, rights and interest, including, but not limited to, perpetual use, of and to the Goods or Services.
2. Contracting Vehicle. The Solicitation may involve an invitation to bid, request for proposals, request for information or request for quotes, each of which may be governed by different statutory, regulatory and administrative procedures. ALTHOUGH THIS CONTRACT MAY USE THE TERMS "SOLICITATION" AND "BID" IT'S USE OF THOSE TERMS IS INTENDED ONLY FOR PURPOSES OF CONVENIENCE AND SHALL NOT BE DEEMED TO BE A CONTROLLING STATEMENT AS TO THE TYPE OF SOLICITATION USED OR THE RESPECTIVE RIGHTS AND OBLIGATIONS OF THE PARTIES. THE IDENTIFICATION IN THE SOLICITATION OF THE PARTICULAR PROCUREMENT VEHICLE THE STATE IS

USING TO SOLICIT GOODS OR SERVICES SHALL CONTROL. Therefore, if the Solicitation identifies the procurement vehicle as something other than an invitation to Bid, the terms "Solicitation" and "Bid," as used in this Contract shall be read to mean "Request for Proposals," "Proposal" and "Proposer" or to mean such other terms as are consistent with the Solicitation in order to preserve the integrity of the statutory, regulatory and procedural distinctions among the various procurement vehicles and their corresponding principles.

3. Term of Contract; Effective Date. The Contract will be in effect for five (5) years from the date the Contract is approved by the Attorney General. W RWA
4. Description of Goods or Services and Additional Terms and Conditions. The Contractor shall perform as set forth in Exhibit A. For purposes of this Contract, to perform and the performance in Exhibit A is referred to as "Perform" and the "Performance."
5. Price Schedule, Payment Terms and Billing.
 - (a) Payment terms under this Contract are set forth in Exhibit B. Payment shall be made only after the Agency receives and accepts the Goods or Services and after it receives a properly completed invoice. Unless otherwise specified in the Contract, payment for all accepted Goods or Services shall be due within forty-five (45) days after acceptance of the Goods or Services, or thirty (30) days if the Contractor is a certified small contractor or minority business enterprise as defined in Conn. Gen. Stat. § 4a-60g. The Contractor shall submit an invoice to the Agency for the Performance. The invoice shall include detailed information for Goods or Services, delivered and Performed, as applicable, and accepted. Any late payment charges shall be calculated in accordance with the Connecticut General Statutes.
 - (b) Notwithstanding any language regarding Contractor price increases herein, the Price Schedule will be adjusted to reflect any increase in the minimum wage rate that may occur during the term of this Contract as mandated by State law and in accordance with the terms of this section. Contractor shall provide documentation, in the form of certified payroll or other documentation acceptable to the State, substantiating the amount of any increase in Contractor labor costs as a result of changes to the minimum wage rate within ninety (90) days of the statutorily identified effective date of any increase in the minimum wage. Upon receipt, and verification of Contractor documentation DAS shall adjust the Price Schedule accordingly through a supplement to this Contract.
 - (c) Price Adjustments: See Exhibit A; (2.) Additional Terms and Conditions; Section 2.13 - Price Escalation/Economic Price Adjustment.
6. Rejected Items; Abandonment.
 - (a) The Contractor may deliver, cause to be delivered, or, in any other way, bring or cause to be brought, to any State premises or other destination, Goods, as samples or otherwise, and other supplies, materials, equipment or other tangible personal property. The State may, by written notice and in accordance with the terms and conditions of the Contract, direct the Contractor to remove any or all such Goods ("the "Rejected Goods") and any or all other supplies, materials, equipment or other tangible personal property (collectively, the "Contractor Property") from and out of State premises and any other location which the Agency or State manages, leases or controls. The Contractor shall remove the Rejected Goods and the Contractor Property in accordance with the terms and conditions of the written notice. Failure to remove the Rejected Goods or the Contractor Property in accordance with the terms and conditions of the written notice shall mean, for itself and all Contractor Parties, that:
 - (1) they have voluntarily, intentionally, unconditionally, unequivocally and absolutely abandoned and left unclaimed the Rejected Goods and Contractor Property and relinquished all ownership,

title, licenses, rights, possession and interest of, in and to (collectively, "Title") the Rejected Goods and Contractor Property with the specific and express intent of (A) terminating all of their Title to the Rejected Goods and Contractor Property, (B) vesting Title to the Rejected Goods and Contractor Property in the State of Connecticut and (C) not ever reclaiming Title or any future rights of any type in and to the Rejected Goods and Contractor Property;

(2) there is no ignorance, inadvertence or unawareness to mitigate against the intent to abandon the Rejected Goods or Contractor Property;

(3) they vest authority, without any further act required on their part or the Agency's part, in the Agency and the State to use or dispose of the Rejected Goods and Contractor Property, in the Agency's sole discretion, as if the Rejected Goods and Contractor Property were the Agency's or State's own property and in accordance with law, without incurring any liability or obligation to the Contractor or any other party;

(4) if the Agency or State incur any costs or expenses in connection with disposing of the Rejected Goods and Contractor Property, including, but not limited to, advertising, moving or storing the Rejected Goods and Contractor Property, auction and other activities, the Agency shall invoice the Contractor for all such cost and expenses and the Contractor shall reimburse the State no later than thirty (30) days after the date of invoice; and

(5) they do remise, release and forever discharge the Agency and all State employees, departments, commissions, boards, bureaus, agencies, instrumentalities or political subdivisions and their respective successors, heirs, executors and assigns (collectively, the "State and Its Agents") of and from all Claims which they and their respective successors or assigns, jointly or severally, ever had, now have or will have against the Agency and the State and Its Agents arising from the use or disposition of the Rejected Goods and Contractor Property.

(b) The Contractor shall secure from each Contractor Party, as appropriate, such document or instrument as necessary or appropriate as will vest in the Contractor plenary authority to bind the Contractor Parties to the full extent necessary or appropriate to give full effect to all of the terms and conditions of this section. The Contractor shall provide, no later than fifteen (15) days after receiving a request from the Agency, such information as the Agency may require to evidence, in the Agency's sole determination, compliance with this section.

7. Order and Delivery. The Contract shall bind the Contractor to furnish and deliver the Goods or Services in accordance with Exhibit A and at the prices set forth in Exhibit B. Subject to the sections in this Contract concerning Force Majeure, Termination and Open Market Purchases, the Contract shall bind the Agency to order the Goods or Services from the Contractor, and to pay for the accepted Goods or Services in accordance with Exhibit B.

8. Contract Amendments. No amendment to or modification or other alteration of the Contract shall be valid or binding upon the State unless made in writing, signed by both parties and, if applicable, approved by the Connecticut Attorney General.

9. Assignment. The Contractor shall not assign any of its rights or obligations under the Contract, voluntarily or otherwise, in any manner without the prior written consent of the Agency. The Agency may void any purported assignment in violation of this section and declare the Contractor in breach of Contract. Any Termination by the Agency for a breach is without prejudice to the Agency's or the State's rights or possible Claims.

10. Termination.

- (a) Notwithstanding any provisions in this Contract, the Agency, through a duly authorized employee, may Terminate the Contract whenever the Agency makes a written determination that such Termination is in the best interests of the State. The Agency shall notify the Contractor in writing of Termination pursuant to this section, which notice shall specify the effective date of Termination and the extent to which the Contractor must complete its Performance under the Contract prior to such date.
- (b) Notwithstanding any provisions in this Contract, the Agency, through a duly authorized employee, may, after making a written determination that the Contractor has breached the Contract, Terminate the Contract in accordance with the provisions in the Breach section of this Contract.
- (c) The Agency shall send the notice of Termination via certified mail, return receipt requested, to the Contractor at the most current address which the Contractor has furnished to the Agency for purposes of correspondence, or by hand delivery. Upon receiving the notice from the Agency, the Contractor shall immediately discontinue all services affected in accordance with the notice, undertake all commercially reasonable efforts to mitigate any losses or damages, and deliver to the Agency all Records. The Records are deemed to be the property of the Agency and the Contractor shall deliver them to the Agency no later than thirty (30) days after the Termination of the Contract or fifteen (15) days after the Contractor receives a written request from the Agency for the Records. The Contractor shall deliver those Records that exist in electronic, magnetic or other intangible form in a non-proprietary format, such as, but not limited to, ASCII or .TXT.
- (d) Upon receipt of a written notice of Termination from the Agency, the Contractor shall cease operations as the Agency directs in the notice, and take all actions that are necessary or appropriate, or that the Agency may reasonably direct, for the protection, and preservation of the Goods and any other property. Except for any work which the Agency directs the Contractor to Perform in the notice prior to the effective date of Termination, and except as otherwise provided in the notice, the Contractor shall terminate or conclude all existing subcontracts and purchase orders and shall not enter into any further subcontracts, purchase orders or commitments.
- (e) The Agency shall, within forty-five (45) days of the effective date of Termination, reimburse the Contractor for its Performance rendered and accepted by the Agency in accordance with Exhibit A, in addition to all actual and reasonable costs incurred after Termination in completing those portions of the Performance which the notice required the Contractor to complete. However, the Contractor is not entitled to receive and the Agency is not obligated to tender to the Contractor any payments for anticipated or lost profits. Upon request by the Agency, the Contractor shall assign to the Agency, or any replacement contractor which the Agency designates, all subcontracts, purchase orders and other commitments, deliver to the Agency all Records and other information pertaining to its Performance, and remove from State premises, whether leased or owned, all of Contractor's property, equipment, waste material and rubbish related to its Performance, all as the Agency may request.
- (f) For breach or violation of any of the provisions in the section concerning Representations and Warranties, the Agency may Terminate the Contract in accordance with its terms and revoke any consents to assignments given as if the assignments had never been requested or consented to, without liability to the Contractor or Contractor Parties or any third party.
- (g) Upon Termination of the Contract, all rights and obligations shall be null and void, so that no party shall have any further rights or obligations to any other party, except with respect to the sections which survive Termination. All representations, warranties, agreements and rights of the parties under the Contract shall survive such Termination to the extent not otherwise limited in the

Contract and without each one of them having to be specifically mentioned in the Contract.

(h) Termination of the Contract pursuant to this section shall not be deemed to be a breach of contract by the Agency.

11. Cost Modifications. The parties may agree to a reduction in the cost of the Contract at any time during which the Contract is in effect. Without intending to impose a limitation on the nature of the reduction, the reduction may be to hourly, staffing or unit costs, the total cost of the Contract or the reduction may take such other form as the State deems to be necessary or appropriate.

12. Breach. If either party breaches the Contract in any respect, the non-breaching party shall provide written notice of such breach to the breaching party and afford the breaching party an opportunity to cure the breach within ten (10) days from the date that the breaching party receives such notice. Any other time provided for in the notice shall trump such ten (10) days. Such right to cure period shall be extended if the non-breaching party is satisfied that the breaching party is making a good faith effort to cure but the nature of the breach is such that it cannot be cured within the right to cure period. The notice may include an effective Contract Termination date if the breach is not cured by the stated date and, unless otherwise modified by the non-breaching party in writing prior to the Termination date, no further action shall be required of any party to effect the Termination as of the stated date. If the notice does not set forth an effective Contract Termination date, then the non-breaching party may Terminate the Contract by giving the breaching party no less than twenty four (24) hours' prior written notice. If the Agency believes that the Contractor has not performed according to the Contract, the Agency may withhold payment in whole or in part pending resolution of the Performance issue, provided that the Agency notifies the Contractor in writing prior to the date that the payment would have been due in accordance with Exhibit B.

13. Waiver.

(a) No waiver of any breach of the Contract shall be interpreted or deemed to be a waiver of any other or subsequent breach. All remedies afforded in the Contract shall be taken and construed as cumulative, that is, in addition to every other remedy provided in the Contract or at law or in equity.

(b) A party's failure to insist on strict performance of any provision of the Contract shall only be deemed to be a waiver of rights and remedies concerning that specific instance of Performance and shall not be deemed to be a waiver of any subsequent rights, remedies or breach.

14. Open Market Purchases. Failure of the Contractor to Perform within the time specified in the Contract, or failure to replace rejected or substandard Goods or fulfill unperformed Services when so requested and as the Contract provides or allows, constitutes a breach of the Contract and as a remedy for such breach, such failure shall constitute authority for the Agency, if it deems it to be necessary or appropriate in its sole discretion, to Terminate the Contract and/or to purchase on the open market, Goods or Services to replace those which have been rejected, not delivered, or not Performed. The Agency shall invoice the Contractor for all such purchases to the extent that they exceed the costs and expenses in Exhibit B and the Contractor shall pay the Agency's invoice immediately after receiving the invoice. If the Agency does not Terminate the Contract, the Agency will deduct such open market purchases from the Contract quantities. However, if the Agency deems it to be in the best interest of the State, the Agency may accept and use the Goods or Services delivered which are substandard in quality, subject to an adjustment in price to be determined by the Agency.

15. Purchase Orders.

- (a) The Contract itself is not an authorization for the Contractor to ship Goods or begin Performance in any way. The Contractor may begin Performance only after it has received a duly issued purchase order against the Contract for Performance.
- (b) The Agency shall issue a purchase order against the Contract directly to the Contractor and to no other party.
- (c) All purchase orders shall be in written or electronic form, bear the Contract number (if any) and comply with all other State and Agency requirements, particularly the Agency's requirements concerning procurement. Purchase orders issued in compliance with such requirements shall be deemed to be duly issued.
- (d) A Contractor making delivery without a duly issued purchase order in accordance with this section does so at the Contractor's own risk.
- (e) The Agency may, in its sole discretion, deliver to the Contractor any or all duly issued purchase orders via electronic means only, such that the Agency shall not have any additional obligation to deliver to the Contractor a "hard copy" of the purchase order or a copy bearing any hand-written signature or other "original" marking.

16. Indemnification.

- (a) The Contractor shall indemnify, defend and hold harmless the State and its officers, representatives, agents, servants, employees, successors and assigns from and against any and all (1) Claims arising, directly or indirectly, in connection with the Contract, including the acts of commission or omission (collectively, the "Acts") of the Contractor or Contractor Parties; and (2) liabilities, damages, losses, costs and expenses, including but not limited to, attorneys' and other professionals' fees, arising, directly or indirectly, in connection with Claims, Acts or the Contract. The Contractor shall use counsel reasonably acceptable to the State in carrying out its obligations under this section. The Contractor's obligations under this section to indemnify, defend and hold harmless against Claims includes Claims concerning confidentiality of any part of or all of the Contractor's bid, proposal or any Records, any intellectual property rights, other proprietary rights of any person or entity, copyrighted or uncopyrighted compositions, secret processes, patented or unpatented inventions, articles or appliances furnished or used in the Performance.
- (b) The Contractor shall not be responsible for indemnifying or holding the State harmless from any liability arising due to the negligence of the State or any other person or entity acting under the direct control or supervision of the State.
- (c) The Contractor shall reimburse the State for any and all damages to the real or personal property of the State caused by the Acts of the Contractor or any Contractor Parties. The State shall give the Contractor reasonable notice of any such Claims.
- (d) The Contractor's duties under this section shall remain fully in effect and binding in accordance with the terms and conditions of the Contract, without being lessened or compromised in any way, even where the Contractor is alleged or is found to have merely contributed in part to the Acts giving rise to the Claims and/or where the State is alleged or is found to have contributed to the Acts giving rise to the Claims.
- (e) The Contractor shall carry and maintain at all times during the term of the Contract, and during the time that any provisions survive the term of the Contract, sufficient general liability insurance to satisfy its obligations under this Contract. The Contractor shall cause the State to be named as an

additional insured on the policy and shall provide (1) a certificate of insurance, (2) the declaration page and (3) the additional insured endorsement to the policy to the Agency prior to the Effective Date of the Contract evidencing that the State is an additional insured. The Contractor shall not begin Performance until the delivery of these 3 documents to the Agency. The Agency shall be entitled to recover under the insurance policy even if a body of competent jurisdiction determines that the Agency or the State is contributorily negligent.

(f) This section shall survive the Termination of the Contract and shall not be limited by reason of any insurance coverage.

17. Forum and Choice of Law. The parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

18. Contractor Guaranties. Contractor shall:

- (a) Perform fully under the Contract;
- (b) Guarantee the Goods or Services against defective material or workmanship and to repair any damage or marring occasioned in transit or, at the Agency's option, replace them;
- (c) Furnish adequate protection from damage for all work and to repair damage of any kind, for which its workers are responsible, to the premises, Goods, the Contractor's work or that of Contractor Parties;
- (d) With respect to the provision of Services, pay for all permits, licenses and fees and give all required or appropriate notices;
- (e) Adhere to all Contractual provisions ensuring the confidentiality of Records that the Contractor has access to and are exempt from disclosure under the State's Freedom of Information Act or other applicable law; and
- (f) Neither disclaim, exclude nor modify the implied warranties of fitness for a particular purpose or of merchantability.

19. Implied Warranties. The Agency does not disclaim, exclude or modify the implied warranty of fitness for a particular purpose or the warranty of merchantability.

20. Goods, Standards and Appurtenances. Any Goods delivered must be standard new Goods, latest model, except as otherwise specifically stated in the Contract. Remanufactured, refurbished or reconditioned equipment may be accepted but only to the extent allowed under the Contract. Where the Contract does not specifically list or describe any parts or nominal appurtenances of equipment for the Goods, it shall be understood that the Contractor shall deliver such equipment and appurtenances as are usually provided with the manufacturer's stock model.

21. Delivery.

- (a) Delivery shall be made as ordered and in accordance with the Contract. Unless otherwise specified in the Contract, delivery shall be to a loading dock or receiving platform. The Contractor or Contractor's shipping designee shall be responsible for removal of Goods from the carrier and placement on the Agency loading dock or receiving platform. The receiving personnel of the Agency are not required to assist in this process. The decision of the Agency as to reasonable compliance with delivery terms shall be final and binding. The burden of proof of proper receipt of the order shall rest with the Contractor.
- (b) In order for the time of delivery to be extended, the Agency must first approve a request for extension from the time specified in the Contract, such extension applying only to the particular item or shipment.
- (c) Goods shall be securely and properly packed for shipment, according to accepted standard commercial practice, without extra charge for packing cases, baling or sacks. The containers shall remain the property of the Agency unless otherwise stated in the Contract.

- PWA*
- ~~(d) All risk of loss and damage to the Goods transfers to the Agency upon Title vesting in the Agency.~~
 - (d) All risk of loss and damage to the Goods transfers to the Agency upon delivery to the Agency or its designee. Should the Agency not accept any Goods and the Goods are removed from the Agency property, the Contractor shall assume the risk of loss and damage while the Goods are under its control.

22. Goods Inspection. The Agency shall determine the manner and prescribe the inspection of all Goods and the tests of all samples submitted to determine whether they comply with all of the specifications in the Contract. If any Goods fail in any way to meet the specifications in the Contract, the Agency may, in its sole discretion, either reject it and owe nothing or accept it and pay for it on an adjusted price basis, depending on the degree to which the Goods meet the specifications. Any decision pertaining to any such failure or rejection shall be final and binding.

23. Emergency Standby for Goods and/or Services. If any Federal or State official, having authority to do so, declares an emergency or the occurrence of a natural disaster within the State of Connecticut, the Agency may request the Goods and Services on an expedited and prioritized basis. Upon receipt of such a request the Contractor shall make all necessary and appropriate commercially reasonable efforts to reallocate its staffing and other resources in order to give primary preference to Performing this Contract ahead of or prior to fulfilling, in whole or in part, any other contractual obligations that the Contractor may have. The Contractor is not obligated to make those efforts to Perform on an expedited and prioritized basis in accordance with this paragraph if doing so will make the Contractor materially breach any other contractual obligations that the Contractor may have. Contractor shall acknowledge receipt of any request made pursuant to this paragraph within 2 hours from the time that the Contractor receives it via purchase order or through a request to make an expedited or prioritized purchase through the State of Connecticut Purchasing Card (MasterCard) Program (the "P-Card Program"). If the Contractor fails to acknowledge receipt within 2 hours, confirm its obligation to Perform or actually Perform, as set forth in the purchase order or through the P-Card Program, then the Agency may procure the Performance from another source without further notice to Contractor and without creating any right of recourse at law or in equity against the Agency.

24. Setoff. In addition to all other remedies available hereunder, the State, in its sole discretion, may setoff (1) any costs or expenses that the State incurs resulting from the Contractor's unexcused nonperformance under the Contract and under any other agreement or arrangement that the Contractor has with the State and (2) any other amounts that are due or may become due from the State to the Contractor, against amounts otherwise due or that may become due to the Contractor

under the Contract, or under any other agreement or arrangement that the Contractor has with the State. The State's right of setoff shall not be deemed to be the State's exclusive remedy for the Contractor's or Contractor Parties' breach of the Contract, all of which shall survive any setoffs by the State.

25. Force Majeure. The Agency and the Contractor shall not be excused from their obligation to Perform in accordance with the Contract except in the case of Force Majeure events and as otherwise provided for in the Contract. In the case of any such exception, the nonperforming party shall give immediate written notice to the other, explaining the cause and probable duration of any such nonperformance.
26. Advertising. The Contractor shall not refer to sales to the State for advertising or promotional purposes, including, but not limited to, posting any material or data on the Internet, without the Agency's prior written approval.
27. Americans With Disabilities Act. The Contractor shall be and remain in compliance with the Americans with Disabilities Act of 1990 ("Act"), to the extent applicable, during the term of the Contract. The Agency may Terminate the Contract if the Contractor fails to comply with the Act.
28. Representations and Warranties. The Contractor, represents and warrants to Agency for itself and Contractor Parties, that:
 - (a) if they are entities, they are duly and validly existing under the laws of their respective states of organization and authorized to conduct business in the State of Connecticut in the manner contemplated by the Contract. Further, as appropriate, they have taken all necessary action to authorize the execution, delivery and Performance of the Contract and have the power and authority to execute, deliver and Perform their obligations under the Contract;
 - (b) they will comply with all applicable State and Federal laws and municipal ordinances in satisfying their obligations to the Agency under and pursuant to the Contract, including, but not limited to (1) Connecticut General Statutes Title 1, Chapter 10, concerning the State's Codes of Ethics and (2) Title 4a concerning State purchasing, including, but not limited to Section 22a-194a concerning the use of polystyrene foam;
 - (c) the execution, delivery and Performance of the Contract will not violate, be in conflict with, result in a breach of or constitute (with or without due notice and/or lapse of time) a default under any of the following, as applicable: (1) any provision of law; (2) any order of any court or the State; or (3) any indenture, agreement, document or other instrument to which it is a party or by which it may be bound;
 - (d) they are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any governmental entity;
 - (e) as applicable, they have not, within the three years preceding the Contract, in any of their current or former jobs, been convicted of, or had a civil judgment rendered against them or against any person who would Perform under the Contract, for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a transaction or contract with any governmental entity. This includes, but is not limited to, violation of Federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (f) they are not presently indicted for or otherwise criminally or civilly charged by any governmental entity with commission of any of the offenses listed above;

- (g) they have not within the three years preceding the Contract had one or more contracts with any governmental entity Terminated;
- (h) they have not employed or retained any entity or person, other than a bona fide employee working solely for them, to solicit or secure the Contract and that they have not paid or agreed to pay any entity or person, other than a bona fide employee working solely for them, any fee, commission, percentage, brokerage fee, gifts, or any other consideration contingent upon or resulting from the award or making of the Contract or any assignments made in accordance with the terms of the Contract;
- (i) to the best of their knowledge, there are no Claims involving the Contractor or Contractor Parties that might reasonably be expected to materially adversely affect their businesses, operations, assets, properties, financial stability, business prospects or ability to Perform fully under the Contract;
- (j) they shall disclose, to the best of their knowledge, to the Agency in writing any Claims involving them that might reasonably be expected to materially adversely affect their businesses, operations, assets, properties, financial stability, business prospects or ability to Perform fully under the Contract, no later than ten (10) Days after becoming aware or after they should have become aware of any such Claims. For purposes of the Contractor's obligation to disclose any Claims to the Agency, the ten (10) Days in the section of this Contract concerning Disclosure of Contractor Parties Litigation shall run consecutively with the ten (10) Days provided for in this representation and warranty;
- (k) their participation in the Solicitation process is not a conflict of interest or a breach of ethics under the provisions of Title 1, Chapter 10 of the Connecticut General Statutes concerning the State's Code of Ethics;
- (l) the Bid was not made in connection or concert with any other person or entity, including any affiliate (as defined in the Tangible Personal Property section of this Contract) of the Contractor, submitting a bid for the same Goods or Services, and is in all respects fair and without collusion or fraud;
- (m) they are able to Perform under the Contract using their own resources or the resources of a party who is not a Contractor;
- (n) the Contractor shall obtain in a written contract all of the representations and warranties in this section from any Contractor Parties and to require that provision to be included in any contracts and purchase orders with Contractor Parties;
- (o) they have paid all applicable workers' compensation second injury fund assessments concerning all previous work done in Connecticut;
- (p) they have a record of compliance with Occupational Health and Safety Administration regulations without any unabated, willful or serious violations;
- (q) they owe no unemployment compensation contributions;
- (r) they are not delinquent in the payment of any taxes owed, or, that they have filed a sales tax security bond, and they have, if and as applicable, filed for motor carrier road tax stickers and have paid all outstanding road taxes;
- (s) all of their vehicles have current registrations and, unless such vehicles are no longer in service, they shall not allow any such registrations to lapse;

- (t) each Contractor Party has vested in the Contractor plenary authority to bind the Contractor Parties to the full extent necessary or appropriate to ensure full compliance with and Performance in accordance with all of the terms and conditions of the Contract and that all appropriate parties shall also provide, no later than fifteen (15) days after receiving a request from the Agency, such information as the Agency may require to evidence, in the Agency's sole determination, compliance with this section;
- (u) except to the extent modified or abrogated in the Contract, all Title shall pass to the Agency upon complete installation, testing and acceptance of the Goods or Services and payment by the Agency;
- (v) if either party Terminates the Contract, for any reason, they shall relinquish to the Agency all Title to the Goods delivered, accepted and paid for (except to the extent any invoiced amount is disputed) by the Agency;
- (w) with regard to third party products provided with the Goods, they shall transfer all licenses which they are permitted to transfer in accordance with the applicable third party license;
- (x) they shall not copyright, register, distribute or claim any rights in or to the Goods after the Effective Date of the Contract without the Agency's prior written consent;
- (y) they either own or have the authority to use all Title of and to the Goods, and that such Title is not the subject of any encumbrances, liens or claims of ownership by any third party;
- (z) the Goods do not infringe or misappropriate any patent, trade secret or other intellectual property right of a third party;
- (aa) the Agency's use of any Goods shall not infringe or misappropriate any patent, trade secret or other intellectual property right of a third party;
- (bb) if they procure any Goods, they shall sub-license such Goods and that the Agency shall be afforded the full benefits of any manufacturer or subcontractor licenses for the use of the Goods; and
- (cc) they shall assign or otherwise transfer to the Agency, or afford the Agency the full benefits of any manufacturer's warranty for the Goods, to the extent that such warranties are assignable or otherwise transferable to the Agency.

29. Representations and Warranties Concerning Motor Vehicles. If in the course of Performance or in any other way related to the Contract the Contractor at any time uses or operates "motor vehicles," as that term is defined by Conn. Gen. Stat. §14-1 (including, but not limited to such services as snow plowing, sanding, hauling or delivery of materials, freight or merchandise, or the transportation of passengers), the Contractor, represents and warrants for itself and the Contractor Parties, that:

- (a) It is the owner of record or lessee of record of each such motor vehicle used in the Performance of the Contract, and each such motor vehicle is duly registered with the Connecticut Department of Motor Vehicles ("ConnDMV") in accordance with the provisions of Chapter 246 of the Connecticut General Statutes. Each such registration shall be in valid status, and shall not be expired, suspended or revoked by ConnDMV, for any reason or cause. If such motor vehicle is not registered with ConnDMV, then it shall be duly registered with another state or commonwealth in accordance with such other state's or commonwealth's applicable statutes. Each such registration shall be in valid status, and shall not be expired, suspended or revoked by such other state or commonwealth for any reason or cause.

- (b) Each such motor vehicle shall be fully insured in accordance with the provisions of Sections 14-12b, 14-112 and 38a-371 of the Connecticut General Statutes, as amended, in the amounts required by the said sections or in such higher amounts as have been specified by ConnDMV as a condition for the award of the Contract, or in accordance with all substantially similar provisions imposed by the law of the jurisdiction where the motor vehicle is registered.
- (c) Each Contractor Party who uses or operates a motor vehicle at any time in the Performance of the Contract shall have and maintain a motor vehicle operator's license or commercial driver's license of the appropriate class for the motor vehicle being used or operated. Each such license shall bear the endorsement or endorsements required by the provisions of Section 14-36a of the Connecticut General Statutes, as amended, to operate such motor vehicle, or required by substantially similar provisions imposed by the law of another jurisdiction in which the operator is licensed to operate such motor vehicle. The license shall be in valid status, and shall not be expired, suspended or revoked by ConnDMV or such other jurisdiction for any reason or cause.
- (d) Each motor vehicle shall be in full compliance with all of the terms and conditions of all provisions of the Connecticut General Statutes and regulations, or those of the jurisdiction where the motor vehicle is registered, pertaining to the mechanical condition, equipment, marking and operation of motor vehicles of such type, class and weight, including, but not limited to, requirements for motor vehicles having a gross vehicle weight rating of 18,000 pounds or more or motor vehicles otherwise described by the provisions of Conn. Gen. Stat. § 14-163c(a) and all applicable provisions of the Federal Motor Carrier Safety Regulations, as set forth in Title 49, Parts 382 to 399, inclusive, of the Code of Federal Regulations.
30. Disclosure of Contractor Parties Litigation. The Contractor shall require that all Contractor Parties, as appropriate, disclose to the Contractor, to the best of their knowledge, any Claims involving the Contractor Parties that might reasonably be expected to materially adversely affect their businesses, operations, assets, properties, financial stability, business prospects or ability to Perform fully under the Contract, no later than ten (10) Days after becoming aware or after they should have become aware of any such Claims. Disclosure shall be in writing.
31. Entirety of Contract. The Contract is the entire agreement between the parties with respect to its subject matter, and supersedes all prior agreements, proposals, offers, counteroffers and understandings of the parties, whether written or oral. The Contract has been entered into after full investigation, neither party relying upon any statement or representation by the other unless such statement or representation is specifically embodied in the Contract.
32. Exhibits. All exhibits referred to in and attached to this Contract are incorporated in this Contract by such reference and shall be deemed to be a part of it as if they had been fully set forth in it.
33. Executive Orders. This Contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the Contract as if they had been fully set forth in it. The Contract may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services and to Executive Order No. 49 of Governor Dannel P. Malloy, promulgated May 22, 2015, mandating disclosure of certain gifts to public employees and contributions to certain candidates for office. If Executive Order 14 and/or Executive Order 49 are applicable, they are deemed to be incorporated into and are made a part of the Contract as if they had been fully set forth in it. At the Contractor's request, the Client Agency or DAS shall provide a copy of these orders to the Contractor.

34. Non-discrimination.

(a) For purposes of this Section, the following terms are defined as follows:

- (1) "Commission" means the Commission on Human Rights and Opportunities;
- (2) "Contract" and "contract" include any extension or modification of the Contract or contract;
- (3) "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor;
- (4) "Gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender-related identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose.
- (5) "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;
- (6) "good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements;
- (7) "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced;
- (8) "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders;
- (9) "minority business enterprise" means any small contractor or supplier of materials fifty-one percent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of Connecticut General Statutes § 32-9n; and
- (10) "public works contract" means any agreement between any individual, firm or corporation and the State or any political subdivision of the State other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the State, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.

For purposes of this Section, the terms "Contract" and "contract" do not include a contract where each contractor is (1) a political subdivision of the state, including, but not limited to, a municipality, (2) a

quasi-public agency, as defined in Conn. Gen. Stat. Section 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. Section 1-267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

(b)

(1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut; and the Contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by the Contractor that such disability prevents performance of the work involved; (2) the Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission; (3) the Contractor agrees to provide each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which the Contractor has a contract or understanding, a notice to be provided by the Commission, advising the labor union or workers' representative of the Contractor's commitments under this section and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the Contractor agrees to comply with each provision of this Section and Connecticut General Statutes §§ 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes §§ 46a-56, 46a-68e and 46a-68f; and (5) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor as relate to the provisions of this Section and Connecticut General Statutes § 46a-56. If the contract is a public works contract, the Contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works projects.

(c) Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: The Contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.

(d) The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.

(e) The Contractor shall include the provisions of subsection (b) of this Section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to

any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes §46a-56; provided if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

(f) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this Contract and as they may be adopted or amended from time to time during the term of this Contract and any amendments thereto.

(g)

(1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the Contractor agrees to provide each labor union or representative of workers with which such Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such Contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the Contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) the Contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes § 46a-56; and (4) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor which relate to the provisions of this Section and Connecticut General Statutes § 46a-56.

(h) The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes § 46a-56; provided, if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

35. Tangible Personal Property.

(a) The Contractor on its behalf and on behalf of its Affiliates, as defined below, shall comply with the provisions of Conn. Gen. Stat. §12-411b, as follows:

(1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the

Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;

- (2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;
 - (3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;
 - (4) The Contractor and its Affiliates are not liable for use tax billed by them but not paid to them by a customer; and
 - (5) Any Contractor or Affiliate who fails to remit use taxes collected on behalf of its customers by the due date specified in the Contract shall be subject to the interest and penalties provided for persons required to collect sales tax under chapter 219 of the general statutes.
- (b) For purposes of this section of the Contract, the word "Affiliate" means any person, as defined in section 12-1 of the general statutes, that controls, is controlled by, or is under common control with another person. A person controls another person if the person owns, directly or indirectly, more than ten per cent of the voting securities of the other person. The word "voting security" means a security that confers upon the holder the right to vote for the election of members of the board of directors or similar governing body of the business, or that is convertible into, or entitles the holder to receive, upon its exercise, a security that confers such a right to vote. "Voting security" includes a general partnership interest.
- (c) The Contractor represents and warrants that each of its Affiliates has vested in the Contractor plenary authority to so bind the Affiliates in any agreement with the State of Connecticut. The Contractor on its own behalf and on behalf of its Affiliates shall also provide, no later than 30 days after receiving a request by the State's contracting authority, such information as the State may require to ensure, in the State's sole determination, compliance with the provisions of Chapter 219 of the Connecticut General Statutes, including, but not limited to, §12-411b.
36. Whistleblowing. This Contract may be subject to the provisions of Section 4-61dd of the Connecticut General Statutes. In accordance with this statute, if an officer, employee or appointing authority of the Contractor takes or threatens to take any personnel action against any employee of the Contractor in retaliation for such employee's disclosure of information to any employee of the contracting state or quasi-public agency or the Auditors of Public Accounts or the Attorney General under the provisions of subsection (a) of such statute, the Contractor shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of this Contract. Each violation shall be a separate and distinct offense and in the case of a continuing violation, each calendar day's continuance of the violation shall be deemed to be a separate and distinct offense. The State may request that the Attorney General bring a civil action in the Superior Court for the Judicial District of Hartford to seek imposition and recovery of such civil penalty. In accordance with subsection (f) of such statute, each large state contractor, as defined in the statute, shall post a notice of the provisions of the statute relating to large state contractors in a conspicuous place which is readily available for viewing by the employees of the Contractor.
37. Notice. All notices, demands, requests, consents, approvals or other communications required or permitted to be given or which are given with respect to this Contract (for the purpose of this section collectively called "Notices") shall be deemed to have been effected at such time as the

notice is placed in the U.S. mail, first class and postage pre-paid, return receipt requested or placed with a recognized, overnight express delivery service that provides for a return receipt. All such Notices shall be in writing and shall be addressed as follows:

If to the Agency:

State of Connecticut Department of Transportation

ADDRESS 2800 Berlin Turnpike
Newington, CT 06131-7546

Attention: Mary Matuszak

If to the Contractor:

NAME GILLIG LLC
ADDRESS 25800 CLAWITER ROAD
HAYWARD, CA 94545

Attention: JOSEPH POLICARPIO, VICE PRESIDENT

38. **Insurance.** Before commencing Performance, the Contractor shall obtain and maintain at its own cost and expense for the duration of the Contract, the following insurance as described in (a) through (d) below. Contractor shall assume any and all deductibles in the described insurance policies. The Contractor's insurers shall have no right of recovery or subrogation against the State and the described Contractor's insurance shall be primary coverage. Any failure to comply with the claim reporting provisions of the policy shall not affect coverage provided to the State.
- (a) Commercial General Liability: \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. Coverage shall include, Premises and Operations, Independent Contractors, Products and Completed Operations, Contractual Liability and Broad Form Property Damage coverage. If a general aggregate is used, the general aggregate limit shall apply separately to the project or the general aggregate limit shall be twice the occurrence limit.
 - (b) Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury. Coverage extends to owned, hired and non-owned automobiles. If the vendor/contractor does not own an automobile, but one is used in the execution of the contract, then only hired and non-owned coverage is required. If a vehicle is not used in the execution of the contract then automobile coverage is not required.
 - (c) Workers' Compensation and Employers Liability: Statutory coverage in compliance with the Compensation laws of the State of Connecticut. Coverage shall include Employer's Liability with minimum limits of \$100,000 each accident, \$500,000 Disease - Policy limit, \$100,000 each employee.

39. Headings. The headings given to the sections in the Contract are inserted only for convenience and are in no way to be construed as part of the Contract or as a limitation of the scope of the particular section to which the heading refers.
40. Number and Gender. Whenever the context so requires, the plural or singular shall include each other and the use of any gender shall include all genders.
41. Parties. To the extent that any Contractor Party is to participate or Perform in any way, directly or indirectly in connection with the Contract, any reference in the Contract to "Contractor" shall also be deemed to include "Contractor Parties," as if such reference had originally specifically included "Contractor Parties" since it is the parties' intent for the terms "Contractor Parties" to be vested with the same respective rights and obligations as the term "Contractor."
42. Contractor Changes. The Contractor shall notify the Agency in writing no later than ten (10) Days from the effective date of any change in:
- (a) its certificate of incorporation or other organizational document;
 - (b) more than a controlling interest in the ownership of the Contractor; or
 - (c) the individual(s) in charge of the Performance.

This change shall not relieve the Contractor of any responsibility for the accuracy and completeness of the Performance. The Agency, after receiving written notice by the Contractor of any such change, may require such agreements, releases and other instruments evidencing, to the Agency's satisfaction, that any individuals retiring or otherwise separating from the Contractor have been compensated in full or that provision has been made for compensation in full, for all work performed under terms of the Contract. The Contractor shall deliver such documents to the Agency in accordance with the terms of the Agency's written request. The Agency may also require, and the Contractor shall deliver, a financial statement showing that solvency of the Contractor is maintained. The death of any Contractor Party, as applicable, shall not release the Contractor from the obligation to Perform under the Contract; the surviving Contractor Parties, as appropriate, must continue to Perform under the Contract until Performance is fully completed.

43. Further Assurances. The parties shall provide such information, execute and deliver any instruments and documents and take such other actions as may be necessary or reasonably requested by the other party which are not inconsistent with the provisions of this Contract and which do not involve the vesting of rights or assumption of obligations other than those provided for in the Contract, in order to give full effect to the Contract and to carry out the intent of the Contract.
44. Audit and Inspection of Plants, Places of Business and Records.
- (a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract.
 - (b) The Contractor shall maintain, and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.

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- (c) ~~The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. Request for any audit or inspection shall be in writing, at least five (5) days prior to the requested date.~~ If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.
- (d) All audits and inspections shall be at the State's expense.
- (e) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Contract, or (ii) the expiration or earlier termination of this Contract, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.
- (f) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.
- (g) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.

45. Background Checks. The State may require that the Contractor and Contractor Parties undergo criminal background checks as provided for in the State of Connecticut Department of Emergency Services and Public Protection Administration and Operations Manual or such other State document as governs procedures for background checks. The Contractor and Contractor Parties shall cooperate fully as necessary or reasonably requested with the State and its agents in connection with such background checks.

46. Continued Performance. The Contractor and Contractor Parties shall continue to Perform their obligations under the Contract while any dispute concerning the Contract is being resolved.

47. Working and Labor Synergies. The Contractor shall be responsible for maintaining a tranquil working relationship between the Contractor work force, the Contractor Parties and their work force, State employees, and any other contractors present at the work site. The Contractor shall quickly resolve all labor disputes which result from the Contractor's or Contractor Parties' presence at the work site, or other action under their control. Labor disputes shall not be deemed to be sufficient cause to allow the Contractor to make any claim for additional compensation for cost, expenses or any other loss or damage, nor shall those disputes be deemed to be sufficient reason to relieve the Contractor from any of its obligations under the Contract.

48. Contractor Responsibility.

- (a) The Contractor shall be responsible for the entire Performance under the Contract regardless of whether the Contractor itself performs. The Contractor shall be the sole point of contact concerning the management of the Contract, including Performance and payment issues. The Contractor is solely and completely responsible for adherence by the Contractor Parties to all applicable provisions of the Contract.
- (b) The Contractor shall exercise all reasonable care to avoid damage to the State's property or to property being made ready for the State's use, and to all property adjacent to any work site. The Contractor shall promptly report any damage, regardless of cause, to the State.

49. Severability. If any term or provision of the Contract or its application to any person, entity or circumstance shall, to any extent, be held to be invalid or unenforceable, the remainder of the Contract or the application of such term or provision shall not be affected as to persons, entities or circumstances other than those as to whom or to which it is held to be invalid or unenforceable. Each remaining term and provision of the Contract shall be valid and enforced to the fullest extent possible by law.

50. Confidential Information. The Agency will afford due regard to the Contractor's request for the protection of proprietary or confidential information which the Agency receives. However, all materials associated with the Bid and the Contract are subject to the terms of the Connecticut Freedom of Information Act ("FOIA") and all corresponding rules, regulations and interpretations. In making such a request, the Contractor may not merely state generally that the materials are proprietary or confidential in nature and not, therefore, subject to release to third parties. Those particular sentences, paragraphs, pages or sections that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Convincing explanation and rationale sufficient to justify each exemption consistent with the FOIA must accompany the request. The rationale and explanation must be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. To the extent that any other provision or part of the Contract, especially including the Bid, the Records and the specifications, conflicts or is in any way inconsistent with this section, this section controls and shall apply and the conflicting provision or part shall not be given effect. If the Contractor indicates that certain documentation is submitted in confidence, by specifically and clearly marking said documentation as "CONFIDENTIAL," the Agency will endeavor to keep said information confidential to the extent permitted by law. The Agency, however, has no obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief to prevent disclosure of any information that is sought pursuant to a FOIA request. The Contractor shall have the burden of establishing the availability of any FOIA exemption in any proceeding where it is an issue. In no event shall the Agency or the State have any liability for the disclosure of any documents or information in its possession which the Agency believes are required to be disclosed pursuant to the FOIA or other requirements of law.

51. References to Statutes, Public Acts, Regulations, Codes and Executive Orders.

All references in this Contract to any statute, public act, regulation, code or executive order shall mean such statute, public act, regulation, code or executive order, respectively, as it has been amended, replaced or superseded at any time. Notwithstanding any language in this Contract that relates to such statute, public act, regulation, code or executive order, and notwithstanding a lack of a formal amendment to this Contract, this Contract shall always be read and interpreted as if it contained the most current and applicable wording and requirements of such statute, public act, regulation, code or executive order as if their most current language had been used in and requirements incorporated into this Contract at the time of its execution.

52. Cross-Default.

(a) If the Contractor or Contractor Parties breach, default or in any way fail to Perform satisfactorily under the Contract, then the Agency may, in its sole discretion, without more and without any action whatsoever required of the Agency, treat any such event as a breach, default or failure to perform under any or all other agreements or arrangements ("Other Agreements") that the Contractor or Contractor Parties have with the Agency. Accordingly, the Agency may then exercise at its sole option any and all of its rights or remedies provided for in the Contract or Other Agreements, either selectively or collectively and without such election being deemed to prejudice any rights or remedies of the Agency, as if the Contractor or Contractor Parties had suffered a breach, default or failure to perform under the Other Agreements.

- (b) If the Contractor or Contractor Parties breach, default or in any way fail to Perform satisfactorily under any or all Other Agreements with the Agency or the State, then the Agency may, in its sole discretion, without more and without any action whatsoever required of the Agency, treat any such event as a breach, default or failure to Perform under the Contract. Accordingly, the Agency may then exercise at its sole option any and all of its rights or remedies provided for in the Other Agreements or the Contract, either selectively or collectively and without such election being deemed to prejudice any rights or remedies of the Agency or the State, as if the Contractor or Contractor Parties had suffered a breach, default or failure to Perform under the Contract.
53. Disclosure of Records. This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related to the performance of the governmental function, and (b) indicate that such records and files are subject to FOIA and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of sections 1-205 and 1-206 of the Connecticut General Statutes.
54. Summary of State Ethics Laws. Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the Contract as if the summary had been fully set forth in the Contract.
55. Sovereign Immunity. The parties acknowledge and agree that nothing in the Solicitation or the Contract shall be construed as a modification, compromise or waiver by the State of any rights or defenses of any immunities provided by Federal law or the laws of the State of Connecticut to the State or any of its officers and employees, which they may have had, now have or will have with respect to all matters arising out of the Contract. To the extent that this section conflicts with any other section, this section shall govern.
56. Time of the Essence. Time is of the essence with respect to all provisions of this Contract that specify a time for performance; provided, however, that this provision shall not be construed to limit or deprive a party of the benefits of any grace or use period allowed in this Contract.
57. Certification as Small Contractor or Minority Business Enterprise. The Contractor shall be in breach of this Contract if the Contractor is certified as a "small contractor" or a "minority business enterprise" under Conn. Gen. Stat. § 4a-60g and that certification lapses during the term of this Contract.
58. Campaign Contribution Restriction. For all State contracts as defined in Conn. Gen. Stat. § 9-612(g)(1) having a value in a calendar year of \$50,000 or more or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this Contract expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," attached as Exhibit C.
59. Health Insurance Portability and Accountability Act.

- (a) If the Contactor is a Business Associate under the requirements of the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), the Contractor must comply with all terms and conditions of this Section of the Contract. If the Contractor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contractor for this Contract.
- (b) The Contractor is required to safeguard the use, publication and disclosure of information on all applicants for, and all clients who receive, services under the Contract in accordance with all applicable federal and state law regarding confidentiality, which includes but is not limited to HIPAA, more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E; and
- (c) The Agency is a "covered entity" as that term is defined in 45 C.F.R. § 160.103; and
- (d) The Contractor, on behalf of the Agency, performs functions that involve the use or disclosure of "individually identifiable health information," as that term is defined in 45 C.F.R. § 160.103; and
- (e) The Contractor is a "business associate" of the Department, as that term is defined in 45 C.F.R. § 160.103; and
- (f) The Contractor and the Agency agree to the following in order to secure compliance with the HIPAA, the requirements of Subtitle D of the Health Information Technology for Economic and Clinical Health Act (the HITECH Act), (Pub. L. 111-5, sections 13400 to 13423), and more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E.
- (g) Definitions. For the purposes of this Section of the Contract:
 - (1) "Breach" shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(1)).
 - (2) "Business Associate" shall mean the Contractor or Contractor Parties.
 - (3) "Covered Entity" shall mean the Agency.
 - (4) "Designated Record Set" shall have the same meaning as the term "designated record set" in 45 C.F.R. § 164.501.
 - (5) "Electronic Health Record" shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(5)).
 - (6) "Individual" shall have the same meaning as the term "individual" in 45 C.F.R. § 160.103 and shall include a person who qualifies as a personal representative as defined in 45 C.F.R. § 164.502(g).
 - (7) "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 C.F.R. part 160 and part 164, subparts A and E.
 - (8) "Protected Health Information" or "PHI" shall have the same meaning as the term "protected health information" in 45 C.F.R. § 160.103, limited to information created or received by the Business Associate from or on behalf of the Covered Entity.
 - (9) "Required by Law" shall have the same meaning as the term "required by law" in 45 C.F.R. § 164.103.

(10) "Secretary" shall mean the Secretary of the Department of Health and Human Services or his designee.

(11) "More stringent" shall have the same meaning as the term "more stringent" in 45 C.F.R. § 160.202.

(12) "This Section of the Contract" refers to the HIPAA Provisions stated herein, in their entirety.

(13) "Security Incident" shall have the same meaning as the term "security incident" in 45 C.F.R. § 164.304.

(14) "Security Rule" shall mean the Security Standards for the Protection of Electronic Protected Health Information at 45 C.F.R. part 160 and part 164, subpart A and C.

(15) "Unsecured protected health information" shall have the same meaning as the term as defined in § 13402(h)(1)(A) of HITECH. Act. (42 U.S.C. §17932(h)(1)(A)).

(h) Obligations and Activities of Business Associates.

(1) Business Associate agrees not to use or disclose PHI other than as permitted or required by this Section of the Contract or as Required by Law.

(2) Business Associate agrees to use appropriate safeguards to prevent use or disclosure of PHI other than as provided for in this Section of the Contract.

(3) Business Associate agrees to use administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of electronic protected health information that it creates, receives, maintains, or transmits on behalf of the Covered Entity.

(4) Business Associate agrees to mitigate, to the extent practicable, any harmful effect that is known to the Business Associate of a use or disclosure of PHI by Business Associate in violation of this Section of the Contract.

(5) Business Associate agrees to report to Covered Entity any use or disclosure of PHI not provided for by this Section of the Contract or any security incident of which it becomes aware.

(6) Business Associate agrees to insure that any agent, including a subcontractor, to whom it provides PHI received from, or created or received by Business Associate, on behalf of the Covered Entity, agrees to the same restrictions and conditions that apply through this Section of the Contract to Business Associate with respect to such information.

(7) Business Associate agrees to provide access, at the request of the Covered Entity, and in the time and manner agreed to by the parties, to PHI in a Designated Record Set, to Covered Entity or, as directed by Covered Entity, to an individual in order to meet the requirements under 45 C.F.R. § 164.524.

(8) Business Associate agrees to make any amendments to PHI in a Designated Record Set that the Covered Entity directs or agrees to pursuant to 45 C.F.R. § 164.526 at the request of the Covered Entity, and in the time and manner agreed to by the parties.

(9) Business Associate agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created or

received by, Business Associate on behalf of Covered Entity, available to Covered Entity or to the Secretary in a time and manner agreed to by the parties or designated by the Secretary, for purposes of the Secretary determining Covered Entity's compliance with the Privacy Rule.

- (10) Business Associate agrees to document such disclosures of PHI and information related to such disclosures as would be required for Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (11) Business Associate agrees to provide to Covered Entity, in a time and manner agreed to by the parties, information collected in accordance with clause h. (10) of this Section of the Contract, to permit Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder. Business Associate agrees that at the Covered Entity's direction to provide an accounting of disclosures of PHI directly to an individual in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (12) Business Associate agrees to comply with any state or federal law that is more stringent than the Privacy Rule.
- (13) Business Associate agrees to comply with the requirements of the HITECH Act relating to privacy and security that are applicable to the Covered Entity and with the requirements of 45 C.F.R. sections 164.504(e), 164.308, 164.310, 164.312, and 164.316.
- (14) In the event that an individual requests that the Business Associate (a) restrict disclosures of PHI; (b) provide an accounting of disclosures of the individual's PHI; or (c) provide a copy of the individual's PHI in an electronic health record, the Business Associate agrees to notify the covered entity, in writing, within two business days of the request.
- (15) Business Associate agrees that it shall not directly or indirectly receive any remuneration in exchange for PHI of an individual without (1) the written approval of the covered entity, unless receipt of remuneration in exchange for PHI is expressly authorized by this Contract and (2) the valid authorization of the individual, except for the purposes provided under section 13405(d)(2) of the HITECH Act, (42 U.S.C. § 17935(d)(2)) and in any accompanying regulations
- (16) Obligations in the Event of a Breach
 - (A) The Business Associate agrees that, following the discovery of a breach of unsecured protected health information, it shall notify the Covered Entity of such breach in accordance with the requirements of section 13402 of HITECH (42 U.S.C. § 17932(b) and the provisions of this section of the contract.
 - (B) Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the breach is discovered by the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to section 13402 (g) of HITECH (42 U.S.C. § 17932(g)) . A breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate. The notification shall include the identification and last known address, phone number and email address of each individual (or the next of kin of the individual if the individual is deceased) whose

unsecured protected health information has been, or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such breach.

- (C) The Business Associate agrees to include in the notification to the Covered Entity at least the following information:
1. A brief description of what happened, including the date of the breach and the date of the discovery of the breach, if known.
 2. A description of the types of unsecured protected health information that were involved in the breach (such as full name, Social Security number, date of birth, home address, account number, or disability code).
 3. The steps the Business Associate recommends that individuals take to protect themselves from potential harm resulting from the breach.
 4. A detailed description of what the Business Associate is doing to investigate the breach, to mitigate losses, and to protect against any further breaches.
 5. Whether a law enforcement official has advised either verbally or in writing the Business Associate that he or she has determined that notification or notice to individuals or the posting required under section 13402 of the HITECH Act would impede a criminal investigation or cause damage to national security and contact information for said official.
- (D) Business Associate agrees to provide appropriate staffing and have established procedures to ensure that individuals informed by the Covered Entity of a breach by the Business Associate have the opportunity to ask questions and contact the Business Associate for additional information regarding the breach. Such procedures shall include a toll-free telephone number, an e-mail address, a posting on its Web site and a postal address. Business Associate agrees to include in the notification of a breach by the Business Associate to the Covered Entity, a written description of the procedures that have been established to meet these requirements. Costs of such contact procedures will be borne by the Contractor or Contractor Parties.
- (E) Business Associate agrees that, in the event of a breach, it has the burden to demonstrate that it has complied with all notifications requirements set forth above, including evidence demonstrating the necessity of a delay in notification to the Covered Entity.

(i) Permitted Uses and Disclosure by Business Associate.

(1) General Use and Disclosure Provisions Except as otherwise limited in this Section of the Contract, Business Associate may use or disclose PHI to perform functions, activities, or services for, or on behalf of, Covered Entity as specified in this Contract, provided that such use or disclosure would not violate the Privacy Rule if done by Covered Entity or the minimum necessary policies and procedures of the Covered Entity.

(2) Specific Use and Disclosure Provisions.

(A) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI for the proper management and administration of Business Associate or to carry out the legal responsibilities of Business Associate.

(B) Except as otherwise limited in this Section of the Contract, Business Associate may disclose PHI for the proper management and administration of Business Associate, provided that disclosures are Required by Law, or Business Associate obtains reasonable assurances from the person to whom the information is disclosed that it will remain confidential and used or further disclosed only as Required by Law or for the purpose for which it was disclosed to the person, and the person notifies Business Associate of any instances of which it is aware in which the confidentiality of the information has been breached.

(C) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI to provide Data Aggregation services to Covered Entity as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).

(j) Obligations of Covered Entity.

(1) Covered Entity shall notify Business Associate of any limitations in its notice of privacy practices of Covered Entity, in accordance with 45 C.F.R. § 164.520, or to the extent that such limitation may affect Business Associate's use or disclosure of PHI.

(2) Covered Entity shall notify Business Associate of any changes in, or revocation of, permission by Individual to use or disclose PHI, to the extent that such changes may affect Business Associate's use or disclosure of PHI.

(3) Covered Entity shall notify Business Associate of any restriction to the use or disclosure of PHI that Covered Entity has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Business Associate's use or disclosure of PHI.

(k) Permissible Requests by Covered Entity. Covered Entity shall not request Business Associate to use or disclose PHI in any manner that would not be permissible under the Privacy Rule if done by the Covered Entity, except that Business Associate may use and disclose PHI for data aggregation, and management and administrative activities of Business Associate, as permitted under this Section of the Contract.

(l) Term and Termination.

(1) Term. The Term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with clause h. (10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this Section.

(2) Termination for Cause Upon Covered Entity's knowledge of a material breach by Business Associate, Covered Entity shall either:

(A) Provide an opportunity for Business Associate to cure the breach or end the violation and terminate the Contract if Business Associate does not cure the breach or end the violation within the time specified by the Covered Entity; or

(B) Immediately terminate the Contract if Business Associate has breached a material term of this Section of the Contract and cure is not possible; or

(C) If neither termination nor cure is feasible, Covered Entity shall report the violation to the Secretary.

(3) Effect of Termination.

(A) Except as provided in (l)(2) above, upon termination of this Contract, for any reason, Business Associate shall return or destroy all PHI received from Covered Entity, or created or received by Business Associate on behalf of Covered Entity. Business Associate shall also provide the information collected in accordance with clause h. (10) of this Section of the Contract to the Covered Entity within ten business days of the notice of termination. This provision shall apply to PHI that is in the possession of subcontractors or agents of Business Associate. Business Associate shall retain no copies of the PHI.

(B) In the event that Business Associate determines that returning or destroying the PHI is infeasible, Business Associate shall provide to Covered Entity notification of the conditions that make return or destruction infeasible. Upon documentation by Business Associate that return or destruction of PHI is infeasible, Business Associate shall extend the protections of this Section of the Contract to such PHI and limit further uses and disclosures of PHI to those purposes that make return or destruction infeasible, for as long as Business Associate maintains such PHI. Infeasibility of the return or destruction of PHI includes, but is not limited to, requirements under state or federal law that the Business Associate maintains or preserves the PHI or copies thereof.

(m) Miscellaneous Provisions.

(1) Regulatory References. A reference in this Section of the Contract to a section in the Privacy Rule means the section as in effect or as amended.

(2) Amendment. The Parties agree to take such action as is necessary to amend this Section of the Contract from time to time as is necessary for Covered Entity to comply with requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191.

(3) Survival. The respective rights and obligations of Business Associate shall survive the termination of this Contract.

(4) Effect on Contract. Except as specifically required to implement the purposes of this Section of the Contract, all other terms of the Contract shall remain in force and effect.

(5) Construction. This Section of the Contract shall be construed as broadly as necessary to implement and comply with the Privacy Standard. Any ambiguity in this Section of the Contract shall be resolved in favor of a meaning that complies, and is consistent with, the Privacy Standard.

(6) Disclaimer. Covered Entity makes no warranty or representation that compliance with this Section of the Contract will be adequate or satisfactory for Business Associate's own purposes. Covered Entity shall not be liable to Business Associate for any claim, civil or criminal penalty, loss or damage related to or arising from the unauthorized use or disclosure of PHI by Business Associate or any of its officers, directors, employees, contractors or agents, or any third party to whom Business Associate has disclosed PHI contrary to the provisions of this Contract or applicable law. Business Associate is solely responsible for all decisions made, and

actions taken, by Business Associate regarding the safeguarding, use and disclosure of PHI within its possession, custody or control.

(7) Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties, awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, as amended or the HITECH Act, including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.

60. Protection of Confidential Information.

- (a) Contractor and Contractor Parties, at their own expense, have a duty to and shall protect from a Confidential Information Breach any and all Confidential Information which they come to possess or control, wherever and however stored or maintained, in a commercially reasonable manner in accordance with current industry standards.
- (b) Each Contractor or Contractor Party shall develop, implement and maintain a comprehensive data - security program for the protection of Confidential Information. The safeguards contained in such program shall be consistent with and comply with the safeguards for protection of Confidential Information, and information of a similar character, as set forth in all applicable federal and state law and written policy of the Agency or State concerning the confidentiality of Confidential Information. Such data-security program shall include, but not be limited to, the following:
 - (1) A security policy for employees related to the storage, access and transportation of data containing Confidential Information;
 - (2) Reasonable restrictions on access to records containing Confidential Information, including access to any locked storage where such records are kept;
 - (3) A process for reviewing policies and security measures at least annually;
 - (4) Creating secure access controls to Confidential Information, including but not limited to passwords; and
 - (5) Encrypting of Confidential Information that is stored on laptops, portable devices or being transmitted electronically.
- (c) The Contractor and Contractor Parties shall notify the Agency and the Connecticut Office of the Attorney General as soon as practical, but no later than twenty-four (24) hours, after they become aware of or suspect that any Confidential Information which Contractor or Contractor Parties have come to possess or control has been subject to a Confidential Information Breach. If a Confidential Information Breach has occurred, the Contractor shall, within three (3) business days after the notification, present a credit monitoring and protection plan to the Commissioner

of Administrative Services, the Agency and the Connecticut Office of the Attorney General, for review and approval. Such credit monitoring or protection plan shall be made available by the Contractor at its own cost and expense to all individuals affected by the Confidential Information Breach. Such credit monitoring or protection plan shall include, but is not limited to reimbursement for the cost of placing and lifting one (1) security freeze per credit file pursuant to Connecticut General Statutes § 36a-701a. Such credit monitoring or protection plans shall be approved by the State in accordance with this Section and shall cover a length of time commensurate with the circumstances of the Confidential Information Breach. The Contractors' costs and expenses for the credit monitoring and protection plan shall not be recoverable from the Agency, any State of Connecticut entity or any affected individuals.

- (d) The Contractor shall incorporate the requirements of this Section in all subcontracts requiring each Contractor Party to safeguard Confidential Information in the same manner as provided for in this Section.
- (e) Nothing in this Section shall supersede in any manner Contractor's or Contractor Party's obligations pursuant to HIPAA or the provisions of this Contract concerning the obligations of the Contractor as a Business Associate of Covered Entity.

61. Audit Requirements for Recipients of State Financial Assistance. For purposes of this paragraph, the word "contractor" shall be deemed to mean "nonstate entity," as that term is defined in Section 4-230 of the Connecticut General Statutes. The contractor shall provide for an annual financial audit acceptable to the Agency for any expenditure of state-awarded funds made by the contractor. Such audit shall include management letters and audit recommendations. The State Auditors of Public Accounts shall have access to all records and accounts for the fiscal year(s) in which the award was made. The contractor will comply with federal and state single audit standards as applicable.

IN WITNESS WHEREOF, the parties have executed this Contract by their duly authorized representatives with full knowledge of and agreement with its terms and conditions.

GILLIG LLC

STATE OF CONNECTICUT
Department Of [Agency Name]

By: 

By: 

JOSEPH POLICARPIO
Print or Type Name

RICHARD W. ANDRESKI
Print or Type Name

Title: VICE PRESIDENT

Title: BUREAU CHIEF, PUBLIC TRANSPORTATION

Date: APRIL 12, 2016

Date: 4/19/16

Approved as to form:


Attorney General Robert W. Clark
State of Connecticut

Date: 4/08/16

EXHIBIT A

DESCRIPTION OF GOODS AND SERVICES

1. DESCRIPTION OF GOODS AND SERVICES:

1.1. See Exhibit A.1, "Technical Specifications"

1.2. INTERCHANGEABILITY

Unless otherwise agreed, all units and components procured under this Contract, whether provided by suppliers or manufactured by the Contractor will be duplicates in design, manufacture, and installation to assure interchangeability among buses in this procurement. This interchangeability will extend to the individual components as well as to their locations in the buses.

1.3 QUALITY ASSURANCE PROVISIONS

The Contractor, the Contractor's manufacturing plant and organization shall be certified to the appropriate QS-9000/ISO 9000 series of standards.

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.

CTDOT 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.

No less than thirty (30) days prior to the beginning of bus manufacture, the primary resident inspector shall meet with the Contractor's quality assurance manager and shall conduct a pre-production audit meeting. They shall review the inspection procedures and finalize inspection checklists which shall be in a format agreeable to both CTDOT and the Contractor. The resident inspectors may begin monitoring bus construction activities two (2) weeks prior to the start of bus fabrication.

Records and data maintained by the quality assurance organization shall be available for review by the resident inspectors. Inspection and test records for this procurement shall be available for a minimum of one (1) year after final inspections and tests are completed.

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.

Discrepancies noted by the resident inspector during assembly shall be entered by the Contractor's 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, CTDOT shall approve the modification, repair, or method of correction to the extent that the contract specifications are affected.

The primary resident inspector shall remain in the Contractor's plant for the duration of bus assembly work under this contract. The Contractor shall provide office space for the resident inspectors in close proximity to the final assembly area. This office space shall be equipped with desks, outside and interplant telephones, file cabinets, chairs, and clothing lockers sufficient to accommodate the resident staff. Only the primary resident inspector or designee shall be authorized to release the buses for delivery. The resident inspectors shall be authorized to approve the pre-delivery acceptance tests. Upon request to the quality assurance supervisors, the resident inspectors shall have access to the Contractor's quality assurance files related to this procurement. These files shall include drawings, assembly procedures, material standards, parts lists, inspection processing and reports, and records of defects.

Fully-documented tests shall be conducted on each production bus following manufacture to determine its acceptance to CTDOT. These acceptance tests shall include pre-delivery inspections and testing by the Contractor and inspections and testing by CTDOT after the buses have been delivered.

The Contractor shall conduct acceptance tests at its plant on each bus following completion of manufacture and before delivery to CTDOT. These pre-delivery tests shall include visual and measured inspections, as well as testing the total bus operation. The tests shall be conducted and documented in accordance with written test plans, approved by CTDOT.

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 of the contract. CTDOT may, prior to commencement of production, demand that the Contractor demonstrate compliance with any requirement, if there is evidence that prior tests have been invalidated by Contractor's change of supplier or change in manufacturing process. Such demonstration shall be by actual test or by supplying a report of a previously performed test on similar or like components and configuration. Any additional testing shall be recorded on appropriate test forms provided by the Contractor and shall be conducted before acceptance of the bus.

The pre-delivery tests shall be scheduled and conducted with thirty (30) days' notice so that they may be witnessed by the resident inspectors, who may accept or reject the results of the tests. The results of pre-delivery tests, and any other tests, shall be filed with the assembly inspection records for each bus. The under floor equipment shall be available for inspection by the resident inspectors, using a pit or bus hoist provided by the Contractor. A hoist, scaffold, or elevated platform shall be provided by the Contractor to easily and safely inspect bus roofs.

Delivery of each bus shall require written authorization of the primary resident inspector. Authorization forms for the release of each bus for delivery shall be provided by the Contractor. An executed copy of the authorization shall accompany the delivery of each bus.

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.

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 fifteen (15) miles during the road tests. Observed defects shall be recorded on the test forms. The bus shall be retested 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.

CTDOT may conduct acceptance tests on each delivered bus. These tests shall be completed within fifteen (15) days after bus delivery and shall be conducted in accordance with written test plans. The purpose of these tests is to identify defects that have become apparent between the time of bus release and delivery to CTDOT. The post-delivery tests shall include visual inspection and bus operations. No post-delivery test shall apply criteria that are different from the criteria applied in an analogous pre-delivery test (if any).

Buses that fail to pass the post-delivery tests are subject to non-acceptance. CTDOT 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 (5) days after completion of the tests. The defects detected during these tests shall be repaired according to procedures defined previously in this document.

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.

Road tests will be used for total bus operation similar to those conducted at the Contractor's plant. In addition, CTDOT may elect to perform chassis dynamometer tests. Operational deficiencies of each bus shall be identified and recorded.

1.4 TRAINING, MANUALS AND PARTS AVAILABILITY

RWA 1/27
The Contractor shall deliver the following training videos to ~~CTDOT participants~~ on CD or DVD with periodic updates and changes to all manuals prior to the delivery of the first coach:

Front Suspension	Rear Suspension	Entrance Door Operation
Air Brake System	Electric System	HVAC Diagnostic Reader
Multiplex System	Engine Troubleshooting	Transmission Troubleshooting
Pneumatic System	AC Maintenance	Driver's Orientation
Hybrid Beltless Alternator	Warranty	

The Contractor shall also provide eighty (80) hours of maintenance training to CTDOT within 180 calendar days of delivery of the first bus at a time and location specified by CTDOT. The training program should cover (but not be limited to) the following:

A. Orientation Module

1. History of Contractor
2. Advantages and strong points of the bus
3. Visuals of production system of the bus
4. Compartment by compartment tour of the bus
5. Special components or features of the bus

B. Electrical and Electronics

1. Location of all key electrical components on the bus.
2. Explanation of the wiring diagram and wiring codes.
3. Explanation of the charging system and basic troubleshooting of the system.
4. Explanation of the exterior and interior lighting system along with basic troubleshooting of the system.
5. Explanation of the safety shutdown system, including the warning indicators and basic troubleshooting of the system.
6. Operation of the multiplex system
7. Hybrid beltless alternator
8. Electric cooling fan system
9. Multiplex system
10. Decals of electrical schematics on all electric panels

C. Engine and Accessories

1. Explanation of the engine and location of key components.
2. Explanation of the engine driven accessories.
3. Explanation of the fuel, air and water system.
4. Explanation of engine tune-up procedures.
5. Basic troubleshooting procedures for the engine.
6. Engine overhaul/rebuilding
7. Hybrid drive propulsion system

D. Transmission and Controls

1. Explanation of the transmission or hybrid drive unit.
2. Explanation of the electronic control system.
3. Basic troubleshooting of the transmission.
4. Transmission overhaul/rebuilding

E. Air Conditioning

1. Explanation of the air conditioning system and the location of all key air conditioning components.
2. Explanation of the air conditioning electrical system.
3. Explanation of the air conditioning compressor along with basic troubleshooting and preventative maintenance of the air conditioning compressor.
4. Basic troubleshooting of the air conditioning system.
5. Preventive maintenance of the air conditioning system.

F. Wheelchair Ramp/Lift System

1. Explanation of the Ramp/Lift system and the location of all Ramp/Lift components.
2. Explanation of the Ramp/Lift electrical system.
3. Proper Ramp/Lift adjustment procedures.
4. Basic troubleshooting of the Ramp/Lift system.

G. Brakes

1. Explanation of the brake system.
2. Basic brake system repair including brake adjustment.
3. ABS & traction control.

H. Air System

1. Explanation of the air system with the location of all system components.
2. Basic troubleshooting of the air system.
3. Preventive maintenance of the air system.

I. Suspension, Steering and Axles

1. Explanation of the suspension system.
2. Basic repairs to the suspension system.
3. Basic troubleshooting of the suspension system.
4. Explanation of the steering system.
5. Basic troubleshooting of the steering system.
6. Explanation of the axles.
7. Ride height adjustment procedures

J. Body

1. Explanation of the body & attachment method of exterior body panels to vehicle structure.

2. Basic repair of the exterior panels.

K. Door System

1. Explanation of door system and location of components.
2. Explanation of the door electrical system.
3. Proper door adjustment procedures.
4. Rebuilding of door motors.
5. Basic troubleshooting of the door systems.

L. Parts

1. Explanation of the parts manual and how it is organized.
2. Explanation of the parts numbering system.
3. Orientation to the bus and components on the bus.
4. Practice in finding parts in the parts manual.
5. Explanation & training on warranty program.

M. Driving Instruction (For Maintenance Employees)

1. Operator Compartment
 - a. Controls and switches
 - b. Warning indicators and gauges
 - c. Seat adjustment
 - d. Door control
2. Walk Around Inspection
 - a. Compartment-by-compartment explanation
 - b. Mirror adjustment
 - c. Climate control system
3. Driving Instruction
 - a. Turns
 - b. Braking
 - c. Transmission shifting patterns and driving with the retarder
 - d. Backing

RWA

The Contractor will provide formal training at CTDOT the operating transit facility on the Contractor's procedures for identifying, documenting and submitting claims for warranty reimbursement. The training shall include a description of the warranty provided on the buses, components and sub-components and warranty processing.

The Contractor will provide with the delivery of the first coach to CTDOT a training session for the designated Train the Trainer Supervisors who will in turn orient Bus Operators on how to inspect, safely drive the coach, and operate all the subsystems found on the coach. The training session for the operators will include classroom and driving sessions as necessary. The program shall include, but not be limited to the following:

1. Operator Compartment
 - a. Controls and Switches
 - b. Warning Indicators and Gauges
 - c. Seat Adjustment
 - d. Door Control
2. Walk Around Inspection
 - a. Compartment-by-compartment explanation
 - b. Mirror adjustments
 - c. Climate control systems
3. Driving Instruction
 - a. Turns

- b. Braking
- c. Transmission shifting patterns
- d. Backing

The driver Train the Trainer program shall consist of a four (4) hour module on the bus. Each trainee shall be given the opportunity to operate the bus with the Contractor's instructor on board.

The Contractor shall, at its own expense, have a competent engineering service representative(s) available on request to assist CTDOT's staff in the solution of engineering or design problems within the scope of the specifications that may arise during the warranty period.

The Contractor shall provide current maintenance manuals, parts manuals and parts price list, standard operator's manuals, OEM major equipment manuals and electrical and pneumatic system schematics as part of this Contract as specified in the table below.

Item	Quantity per Property
Maintenance Manuals	3
Operators Manuals	5 for every bus
Parts Manuals	3
Parts Price List	3
OEM Destination Sign Manuals	3
OEM Video System Manuals	3
OEM Engine Manuals	4
OEM Transmission Manuals	4
Bus Electrical Schematics	5
Bus Pneumatic Schematics	5

Detailed and well organized maintenance, parts, and operator manuals covering all items as built on the coach shall be supplied by the Contractor prior to acceptance of first coach. Manuals shall be delivered in three-ring binders and with the sections separated with sturdy plastic divider pages with tabs, and on CD or DVD. Manuals shall contain data required for preventive and corrective maintenance of all parts of the buses including but not limited to the following:

- Operating and Repair Publications
- General vehicle information and specifications.
- A complete, well-developed troubleshooting guide covering all mechanical, electrical and electronic components, including engine, transmission, and HVAC units.
- All preventive maintenance, lubrication and adjustment requirements.
- Complete wiring and schematic diagrams and schedules for wire and cable sizes and ratings including actual cable lay-out, plus locations in the coach of all electric and electronic components.
- All CAN wiring diagrams.
- All ground points control area network.
- Complete air and hydraulic diagrams showing locations in the coach of all air and hydraulic components. The air system diagram shall be 11 in. x 17 in. CAD drawing with color coding, using actual printed colors to match systems.
- Illustrative drawings, such as isometrics, exploded views or photographs identifying components in relationship to each other as mounted in the buses.
- Components shown in exploded views with all parts clearly identified including Contractor part number.
- Rebuilding procedures for all rebuildable components.
- Detailed, well-illustrated procedures for component change-out plus servicing, adjusting, testing, and run-in information as required.
- Body and structural information and material specifications for major accident repair.

- Seating and stanchion layouts and window diagrams.
- 11 in. x 17 in. scale drawing of driver's compartment, detailing all driver switches, controls, control panels and equipment locations (to be approved by CTDOT).
- Repair and calibration instructions and values.
- List of special test equipment and tools required to maintain and repair systems down to the component level including part number and supplier source.
- Three-dimensional drawings of bus and graphics and part number for all graphics.

Serial Numbers

Upon delivery of each bus, the Contractor shall provide a complete electronic list of serialized units installed on each bus to facilitate warranty tracking. The list shall include, but is not limited to the following:

- engine
- transmission
- all major subcomponents of the hybrid drive system
- alternator
- starter
- A/C compressor and condenser / evaporator unit
- drive axle
- power steering unit
- fuel cylinders (if applicable)
- air compressor
- mobility device/wheelchair ramp
- engine electronic control module
- transmission electronic control unit
- radiator
- muffler
- hydraulic pump
- steering box
- front/rear axle
- axle bunk right/left
- tires
- overhead driver keyboard
- driver's seat
- roof panel front/rear

The Contractor shall provide updated serial numbers resulting from warranty campaigns. The format of the list shall be approved by the CTDOT prior to delivery of the first production bus. Illustrated parts manuals shall contain exploded views that show all parts used on buses as built under this contract, and no other parts. The exploded views will show all fasteners and miscellaneous hardware. The manuals shall contain data arranged so that part numbers can be readily found and identified in the illustration for each system and subsystem component, assembly, subassembly or piece part from an orderly breakdown of the complete coach. It shall contain a ready reference part number index and part name index and be sufficiently well illustrated to identify items requiring repair, replacement, and storage for use in the maintenance of the buses. All subassemblies (such as wiper motors, starter motors, etc.) shall have the original manufacturer's part number displayed at the beginning of the appropriate parts listing section. Lists shall include at least the following information for all parts as built:

- Generic description and specifications
- Contractor part number

- Brand name, where applicable
- Original manufacturers part number (provide in separate cross reference binder)
- Indication if the part is custom manufactured only on request
- Standard hardware described by size, type, material and grade
- All original manufacturer names and addresses, all special tools, test and diagnostic equipment and their original manufacturer names and addresses.

All manuals shall be provided in three-ring binders and on CD or DVD. Format and features shall include index and search by name, part number, assembly and subassembly. CTDOT reserves the right to copy all information for future use.

The parts pricing list shall list all parts by alpha order starting with "A" and ending with "Z" and then in numerically ascending order starting with "A0" and ending with "Z9". The parts list shall supply the purchase price (including freight), and a description of the part. Updated price lists will note all part number supersede since last general issue at the price list. Unit of sale will be noted. e.g. each, minimum 5, per foot, etc.

Maintenance and parts manuals must be updated to include all changes made to the coach during production and post-delivery retrofits authorized or requested by the Contractor and to correct all errors and omissions found by CTDOT. Changes required to the parts and maintenance manuals due to warranty and/or post-delivery retrofits shall be completed within ninety (90) days from the date of modification approval. Manuals shall be available from the Contractor for fifteen (15) years following acceptance of the last coach. Revised parts price lists will also be supplied as price changes. Parts shall be interchangeable with the original equipment and be manufactured in accordance with the quality assurance provisions of this contract. Prices shall not exceed the Contractor's then current published catalog prices. Software updates to maintenance and parts manuals shall be available for fifteen (15) years following acceptance of the last coach.

Unless otherwise agreed, all units and components procured under this Contract, whether provided by suppliers or manufactured by the Contractor, shall be duplicates in design, manufacture, and installation to assure interchangeability among buses in this procurement. This interchangeability shall extend to the individual components as well as to their locations in the buses.

1.5 ACCEPTANCE OF BUS

Within fifteen (15) working (weekend & holidays not included) days after arrival at the designated point of delivery, the bus will undergo CTDOT tests as specified. If the bus passes these tests or if CTDOT does not notify Contractor of non-acceptance within fifteen (15) working days after delivery, acceptance of the bus by CTDOT occurs on the fifteenth day after delivery. Acceptance may occur earlier if CTDOT notifies the Contractor of early acceptance or places the bus in revenue service. If the bus fails these tests, it will not be accepted until the repair procedures defined in "Repairs After Non-Acceptance" have been carried out and the bus retested until it passes.

1.6 REPAIRS AFTER NONACCEPTANCE

The Contractor or its designated representative will perform the repairs after non-acceptance. If the Contractor fails or refuses to make the repairs within five (5) working days, then the work may be done by CTDOT's personnel with reimbursement by the Contractor.

1.7 REPAIRS BY CONTRACTOR

After non-acceptance of the bus, the Contractor must begin work within five (5) working days after receiving notification from CTDOT of failure of acceptance tests. CTDOT will make the bus available to complete repairs timely with the Contractor repair schedule.

The Contractor will provide, at its own expense, all spare parts, tools, and space required to complete the repairs. At CTDOT's option, the Contractor may be required to remove the bus from CTDOT's property while repairs are being

affected. If the bus is removed from CTDOT's property, repair procedures must be diligently pursued by the Contractor's representatives, and the Contractor will assume risk of loss while the bus is under its control.

Quality Assurance

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.

1. 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.
2. Authority and Responsibility. The quality assurance organization shall have the authority and responsibility for reliability, quality controls inspection planning, establishment of the quality control system, and acceptance / rejection of materials and manufactured articles in the production of the transit buses.
3. Quality Assurance Organization Functions and Minimum Functions. The quality assurance organization shall include the following minimum functions:
 - Work instructions: The quality assurance organization shall verify inspection operation instructions to ascertain that the manufactured product meets all prescribed requirements.
 - 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 three years after inspections and tests are completed.
 - Corrective action: The quality assurance organization shall detect and promptly ensure 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.

Based on the outcome of thorough root cause investigations, the QAO is responsible to develop and implement appropriate Corrective Action(s). Potential Corrective Actions include but are not limited to: addressing vendor quality issues, employee training / retraining, revision / clarification of workshop procedures, development of improved tooling / fixtures, etc.

Root cause investigation and Corrective Actions shall be appropriately documented and shall be reported to the Authority in a timely manner.

4. Basic Standards and Facilities. The following standards and facilities shall be basic in the quality assurance process:
 - 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.
 - 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. These devices shall be calibrated at established periods against certified measurement standards that have known, valid relationships to national standards.
 - 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.

- 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.
- Safety Practices and General Workshop Procedures: The Contractor shall provide the Authority with all appropriate Safety Practices and General Workshop Procedures which will be in effect throughout this program. Examples include but are not limited to: rooftop equipment hoisting, fall restraints, vehicle jacking and securement, high voltage safety, etc.

5. Maintenance of Control. The Contractor shall maintain quality control of purchases:

- Supplier control: The Contractor shall require each Supplier to maintain a quality control program for the services and supplies that it provides. The Contractor's quality assurance organization shall inspect and test materials provided by Suppliers for conformance to specification requirements. Materials that have been inspected, tested and approved shall be identified as acceptable to the point of use in the manufacturing or assembly processes. Controls shall be established to prevent inadvertent use of nonconforming materials. At the Authority's request, the Contractor shall coordinate communications, conference calls, or meetings between the Authority, the Contractor, and any sub-suppliers. The Contractor shall coordinate and/or participate in source inspection(s) of sub-supplier parts, processes, and facilities as appropriate and at any time requested by the Authority.
- Purchasing data: The Contractor shall verify that all applicable specification requirements are properly included or referenced in purchase orders of articles to be used on transit buses.

6. Manufacturing Control.

- 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.
- 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.
- 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.
- Statistical techniques: Statistical analysis, tests and other quality control procedures may be used when appropriate in the quality assurance processes.
- 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.

7. Inspection System. 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. As a minimum, it shall include the following controls:

- 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.
- 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, then the Authority shall approve the modification, repair or method of correction to the extent that the Contract specifications are affected.

- Quality assurance audits: The quality assurance organization shall establish and maintain a quality control audit program. Records of this program shall be subject to review by the Authority.

8. Inspection and 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, 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.

9. Resident Inspectors and Resident Inspector's Role. The Authority shall be represented at the Contractor's plant by resident inspectors, as required by FTA. Resident inspectors may be Authority employees or outside contractors. The Authority shall provide the identity of each inspector and shall also identify his or her level of authority in writing. 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 the requirements of this procurement. The Authority shall designate a primary resident inspector, whose duties and responsibilities are delineated in "Pre-Production Meetings," "Authority" and "Pre-Delivery Tests," below. Contractor and resident inspector relations shall be governed by the guidelines included as Attachment A to this section.

10. Pre-Production and Design Review Meetings. The primary resident inspector shall participate in Pre-Production and Design Review Meetings with the Authority. At these meetings, quality assurance procedures shall be addressed, the configuration of the buses and the manufacturing processes shall be finalized, and all Contract documentation provided to the inspector.

No less than thirty (30) days prior to the beginning of bus manufacture, the primary resident inspector may meet with the Contractor's quality assurance manager and may conduct a Pre-Production audit meeting. They shall review the inspection procedures and finalize inspection checklists. The resident inspectors may begin monitoring bus construction activities two weeks prior to the start of bus fabrication.

11. Authority. During the project kickoff meeting the Contractor shall present and provide a copy of the manufacturers' formal quality assurance program. The Authority reserves the right to perform a quality assurance audit of the Contractor's quality assurance system to achieve a better understanding of these processes and confirm compliance to these processes. Records and data

maintained by the quality assurance organization shall be available for review by the resident inspectors. Inspection and test records for this procurement shall be available for a minimum of one year after inspections and tests are completed.

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.

Discrepancies noted by the resident inspector during assembly shall be entered by the Contractor's 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, then the Contractor shall submit for Authority review and approval the modification, repair or method of correction.

The primary resident inspector shall remain in the Contractor's plant for the duration of bus assembly Work under this Contract. Only the primary resident inspector or designee shall be authorized to release the buses for delivery. The resident inspectors shall be authorized to approve the pre-delivery acceptance tests. Upon request to the quality assurance supervisors, the resident inspectors shall have access to the Contractor's quality assurance files related to this procurement. These files shall include drawings, assembly procedures, material standards, parts lists, inspection processing and reports, and records of Defects.

12. Support Provisions. The Contractor shall provide office space for the resident inspectors in close proximity to the final assembly area. This office space shall be equipped with desks, outside and interplant telephones, Internet access, file cabinet and chairs. Specific MBTA facility requirements are outlined in the contract documents.
13. Compliance with Safety Requirements. At the time of the Pre-Production Meeting, the Contractor shall provide all safety and other operational restrictions that govern the Contractor's facilities. These issues will be discussed and the parties will agree which rules / restrictions will govern the Authority's inspector(s) and any other Authority representatives during the course of the Contract.
14. Acceptance Tests and Responsibility. Fully documented tests shall be conducted on each production bus following manufacture to determine its acceptance to the Authority. These acceptance tests shall include pre-delivery inspections and testing by the Contractor and inspections and testing by the Authority after the buses have been delivered.
15. Pre-Delivery Tests. The Contractor shall conduct acceptance tests at its plant on each bus following completion of manufacture and before delivery to the Authority. These pre-delivery tests shall include visual and measured inspections, as well as testing the total bus operation. The tests shall be conducted and documented in accordance with written test plans approved by the Authority.

Additional tests may be conducted at the Contractor's discretion to ensure that the completed buses have attained the required quality and have met the requirements in "Section TS: Technical Specifications." The Authority may, prior to commencement of production, demand that the Contractor demonstrate compliance with any requirement in that section if there is evidence that prior tests have been invalidated by the Contractor's change of Supplier or change in manufacturing process. Such demonstration shall be by actual test or by supplying a report of a previously performed test on similar or like components and configuration. Any additional testing shall be recorded on appropriate test forms provided by the Contractor and shall be conducted before acceptance of the bus.

The pre-delivery tests shall be scheduled and conducted with thirty (30) days' notice so that they may

be witnessed by the resident inspectors, who may accept or reject the results of the tests. The results of pre-delivery tests, and any other tests, shall be filed with the assembly inspection records for each bus. The underfloor equipment shall be available for inspection by the resident inspectors, using a pit or bus hoist provided by the Contractor. A hoist, scaffold or elevated platform shall be provided by the Contractor to easily and safely inspect bus roofs. Delivery of each bus shall require written authorization of the primary resident inspector. Authorization forms for the release of each bus for delivery shall be provided by the Contractor. An executed copy of the authorization shall accompany the delivery of each bus.

16. Water Test Inspection. The pre-delivery tests shall include a water test inspection. The water test inspection checks the integrity of the vehicle's body seams, window frame seals and other exterior component closeouts for their ability to keep rainwater, road splash, melting snow and slush, and other exterior water from entering the inside of the vehicle. The vehicle's interior is inspected for signs of moisture and water leaks. To perform the leak inspection, interior ceiling and side panels are removed, and access doors are opened. If any moisture or water is detected, then the source of the leak will be located and repaired by the manufacturer, and the vehicle will be tested again.
17. Visual and Measured Inspections. Visual and measured inspections shall be conducted with the bus in a static condition. The purpose of the inspection testing includes verification of overall dimension and weight requirements, that required components are included and are ready for operation, and that components and subsystems designed to operate with the bus in a static condition do function as designed.
18. 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 fifteen (15) miles during the road tests. If requested, computerized diagnostic printouts showing the performance of each bus shall be produced and provided to the Authority. Observed Defects shall be recorded on the test forms. The bus shall be retested when Defects are corrected and adjustments are made. This process shall continue until Defects or required adjustments are no longer detected.
19. Post Delivery Tests. The Authority may conduct acceptance tests on each delivered coach. These tests shall be completed within 15 (fifteen) days after coach delivery and shall be conducted in accordance with written test plans. The purpose of these tests is to identify Defects that have become apparent between the time of coach release and delivery to the Authority. The post-delivery tests shall include visual inspection and coach operations.

Coaches that fail to pass the post-delivery tests are subject to non-acceptance. The Authority shall record details of all Defects on the appropriate test forms and shall notify the Contractor of non-acceptance of each coach within five days after completion of the tests. The Defects detected during these tests shall be repaired according to procedures defined in the Warranty Requirements Section: WR.
20. Visual Inspection. The post-delivery inspection is similar to the inspection at the Contractor's plant and shall be conducted with the coach in a static condition. Any visual delivery damage shall be identified and recorded during the visual inspection of each coach.
21. Coach Operation. Road tests will be used for total coach operation similar to those conducted at the Contractor's plant. In addition, the Authority may elect to perform chassis dynamometer tests. Operational deficiencies of each coach shall be identified and recorded.
22. Coach History Book. The Contractor shall provide a Coach History Book for each bus at time of delivery. Each Coach History Book shall contain the following information at a minimum:

- List of defects noted and the disposition of each
- Listing of all serial-numbered components
- Shipping documents
- Shipping exceptions and unresolved / open issues
- Summary detail of each test performed on the coach or any part of the coach
- Complete record of inspection findings

During the pre-production meeting the Contractor shall provide a proposed Coach History Book for the Authority's review and approval.

At the Authority's discretion, additional documentation may be added to the requirements of the Coach History Book.

1.8 REPAIRS BY CTDOT OR OTHER AGENCY

1. Parts Used. If CTDOT performs the repairs after non-acceptance of the bus, it will correct or repair the defect and any related defects using Contractor-specified parts available from its own stock or those supplied by the Contractor specifically for this repair. Monthly, or at a period to be mutually agreed upon, reports of all repairs covered by this procedure will be submitted by CTDOT to the Contractor for reimbursement or replacement of parts. The Contractor will provide forms for these reports.
2. Contractor Supplied Parts. If the Contractor supplies parts for repairs being performed by CTDOT after non-acceptance of the bus, these parts will be shipped prepaid to CTDOT from any source selected by the Contractor within ten (10) working days after receipt of the request for said parts.
3. Return of Defective Components. The Contractor may request that parts covered by this provision be returned to the manufacturing plant. The total costs for this action will be paid by the Contractor.
4. Reimbursement for Labor. CTDOT will be reimbursed by the Contractor for labor. The amount will be determined by multiplying the number of person-hours actually required to correct the defect by a per hour technician, current straight wage rate, plus 40 percent fringe benefits, plus the cost of towing in the bus if such action was necessary. These wage and fringe benefit rates will not exceed the rates in effect in CTDOT's service garage at the time the defect correction is made.
5. Reimbursement for Parts. CTDOT will be reimbursed by the Contractor for defective parts that must be replaced to correct the defect. The reimbursement will include taxes where applicable and 22.5 percent handling costs.

1.9 PARTS AVAILABILITY GUARANTY

The Contractor hereby guarantees to provide, within reasonable periods of time, the spare parts, software and all equipment necessary to maintain and repair the buses supplied under this Contract for a period of at least fifteen (15) years after the date of award. Parts will be interchangeable with the original equipment and be manufactured in accordance with the quality assurance provisions of this Contract. Prices will not exceed the Contractor's then current published catalog prices.

Where the parts ordered by CTDOT are not received within two (2) working days of the agreed upon time/date and a bus procured under this Contract is out-of-service due to the lack of said ordered parts, then the Contractor will provide CTDOT, within eight (8) hours of CTDOT's verbal or written request, the original suppliers' and/or manufacturers' parts numbers, company names, addresses, telephone numbers and contract persons' names for all of the specific parts not received by CTDOT.

Where the Contractor fails to honor this parts guaranty or parts ordered by CTDOT are not received within thirty (30) days of the agreed upon delivery date, then the Contractor will provide to CTDOT, within seven (7) days of CTDOT's verbal or written request, the design and manufacturing documentation for those parts

manufactured by the Contractor and the original suppliers' and/or manufacturers' parts numbers, company names, addresses, telephone numbers and contact persons' names for all of the specific parts not received by CTDOT. Contractor's design and manufacturing documentation provided to CTDOT will be for its sole use in regard to the buses procured under this Contract and for no other purpose. If parts are not received warranty on bus will be extended.

1.10 OPTIONAL SPARE PARTS PURCHASE

The Contractor shall provide pricing of major parts and components that may be purchased during the contract period. See attached Exhibit B, Price Schedule.

1.11 CONSUMABLE SPARE PARTS

The Contractor shall submit a list of recommended Consumable Spare Parts within six (6) months after NTP. This list must detail parts required to maintain the fleet, identifying the vendor's name and address, vendor part number, full part description, unit cost, anticipated lead time, and estimated annual usage and include both inventory and non-inventory items.

1.12 RENEWAL PARTS INVENTORY LIST AND PARTS SEMINAR

The Contractor shall provide a Renewal Parts Inventory List and a Renewal Parts Inventory Seminar to familiarize material management personnel with the coach components. The Contractor shall submit a complete suggested parts inventory list, required to support this fleet with price detail to determine the total cost required. This list must include parts that are not in inventory, as well as parts needed to support this fleet. The required parts inventory information must be provided no later than thirty (30) days prior to delivery of each Pilot Bus.

The seminar shall be for one class not to exceed twenty-five (25) people held during daylight hours at a location to be designated by the Authority. The course shall not exceed thirty (30) hours but be no less than twelve (12), and shall include both classroom and field instruction. The seminar shall be conducted within one month of delivery of the each Pilot Bus. The Contractor's materials documentation shall include a Renewal Parts Inventory List, a parts number index, and pricing. The Contractor shall provide current parts pricing within ninety (90) days after the Authority's written approval of the draft parts manual.

1.13 WARRANTY PROVISIONS

The complete bus, propulsion system, components, major subsystems and body and chassis structure are to be warranted free from defects and related defects for eighteen (18) months or 50,000 miles, whichever comes first, beginning on the date of revenue service. The warranty is based on regular operation of the bus under the operating conditions prevailing in CTDOT's locale.

Body, body structure, structural elements of the suspension and engine cradle are warranted to be free from defects and related defects for three (3) years or 150,000 miles, whichever comes first.

Primary load-carrying members of the bus structure, including structural elements of the suspension, are warranted against corrosion failure and/or fatigue failure sufficient to cause a Class 1 or Class 2 failure for a period of twelve (12) years or 500,000 miles, whichever comes first.

Propulsion system components, specifically the engine, transmission or drive motors, and generators (for hybrid technology) and drive and non-drive axles shall be warranted to be free from defects and related defects for the standard two (2) years or 100,000 miles, whichever comes first. An extended warranty to a maximum of five (5) years or 300,000 miles, whichever comes first, may be purchased at an additional cost.

The warranty shall include towing, travel, and all related expenses.

Contractor warrants the ECS for five (5) years or 150,000 miles, whichever comes first. The ECS shall include, but is not limited to, the following components:

- Complete exhaust system, including catalytic converter (if required)
- After-treatment device
- Components identified as emission control devices

Major subsystems shall be warranted to be free from defects and related defects for two (2) years or 100,000 miles, whichever comes first. Items included as major subsystems are listed below:

- Brake system
- Destination signs
- Heating, ventilating
- AC unit and compressor
- Door systems
- Air compressor
- Air dryer
- Wheelchair lift and ramp system
- Starter
- Alternator
- Charge air cooler
- Fire suppression
- Power plant driven or mounted fan drive and power steering hydraulic or electric systems
- Cooling systems
 - Radiator
 - Transmission cooler
- Passenger seating (excluding fabric)
- Fuel system and delivery system
- Surveillance system including cameras and video recorders.
- Communications Equipment
- Hybrid drive system including battery storage and controls
- Beltless alternator
- Paint and decal provisions
- Corrosion protection
- Electric fan system
- Multiplex system

If, during the warranty period, repairs or modifications on any bus are made necessary by defective design, materials or workmanship are not completed due to lack of material or inability to provide the proper repair for 30 (thirty) calendar days, the applicable warranty period shall be extended by the number of days equal to the delay period.

The warranties shall not apply to the failure of any part or component of the bus that directly results from misuse, negligence, accident, or repairs not conducted in accordance with the Contractor-provided maintenance manuals and with workmanship performed by adequately trained personnel in accordance with recognized standards of the industry. The warranty also shall be void if CTDOT fails to conduct normal inspections and scheduled preventive maintenance procedures as recommended in the Contractor's maintenance manuals and that if that omission caused the part or component failure. CTDOT shall maintain documentation, auditable by the Contractor, verifying service activities in conformance with the Contractor's maintenance manuals.

The warranties shall not apply to the following items: scheduled maintenance items, normal wear-out items and items furnished by CTDOT.

The Contractor shall pass on to CTDOT any warranty, offered by a component supplier, that is superior to that required herein. The Contractor shall provide a list to CTDOT noting the conditions and limitations of the superior warranty not later than start of production. The superior warranty shall not be administered by the Contractor.

A fleet defect is defined as cumulative failures of 20 percent (20%) in the same components in the same or similar application where such items are covered by warranty. A fleet defect shall only apply to the warranty period.

For the purpose of fleet defects, each option order shall be treated as a separate bus fleet. In addition, should there be a change in a major component within either the base order or an option order, the buses containing the new major component shall become a separate bus fleet for the purposes of fleet defect.

The Contractor shall correct a fleet defect under the warranty provisions defined in this document. After correcting the defect, CTDOT and the Contractor shall mutually agree to and the Contractor shall promptly undertake and complete a work program reasonably designed to prevent the occurrence of the same defect in all other buses and spare parts purchased under this contract. Where the specific defect can be solely attributed to particular identifiable part(s), the work program shall include redesign and/or replacement of only the defectively designed and/or manufactured part(s). In all other cases, the work program shall include inspection and/or correction of all of the buses in the fleet via a mutually agreed-to arrangement.

The fleet defect warranty provisions shall not apply to CTDOT-supplied items, such as radios, fare collection equipment, communication systems and tires. In addition, fleet defects shall not apply to interior and exterior finishes, hoses, fittings and fabric.

The Contractor is responsible for all warranty-covered repair work. To the extent practicable, CTDOT will allow the Contractor or its designated representative to perform such work. At its discretion, CTDOT may perform such work if it determines it needs to do so based on transit service or other requirements. Such work shall be reimbursed by the Contractor.

If CTDOT detects a defect within the warranty period, it shall, within twenty (20) working days, notify the Contractor's representative. The Contractor or its designated representative shall, if requested, begin work on warranty-covered repairs within five (5) working days after receiving notification of a defect from CTDOT. CTDOT shall make the bus available to complete repairs timely with the Contractor's repair schedule.

The Contractor shall provide at its own expense all spare parts, tools and space required to complete repairs. At the option of CTDOT, the Contractor may be required to remove the bus from the property of CTDOT while repairs are being affected. If the bus is removed from CTDOT's property, repair procedures must be diligently pursued by the Contractor's representative.

If CTDOT performs the warranty-covered repairs, it shall correct or repair the defect and any related defects utilizing parts supplied by the Contractor specifically for this repair. At its discretion, CTDOT may use Contractor-specified parts available from its own stock if deemed in its best interests.

CTDOT may require that the Contractor supply parts for warranty-covered repairs being performed by the CTDOT. Those parts may be remanufactured but shall have the same form, fit and function and warranty. The parts shall be shipped prepaid to CTDOT from any source selected by the Contractor within ten (10) working days of receipt of the request for said parts and shall not be subject to a CTDOT handling charge.

The Contractor may request that parts covered by the warranty be returned to the manufacturing plant. The freight costs for this action shall be paid by the Contractor.

The Contractor shall, upon specific request of CTDOT, provide a failure analysis of fleet defect or safety-related parts, or major components, removed from buses under the terms of the warranty that could affect fleet operation. Such reports shall be delivered within sixty (60) days of the receipt of failed parts.

CTDOT shall be reimbursed by the Contractor for labor. The amount shall be determined by CTDOT for a technician at a straight time wage rate plus fringe benefits and overhead adjusted for CTDOT's most recently published rate in effect at the time the work is performed, plus the cost of towing the bus if such action was necessary and if the bus was in the normal service area. These wage and fringe benefit rates shall not exceed the rates in effect in CTDOT's service garage at the time the defect correction is made.

CTDOT shall be reimbursed by the Contractor for defective parts and for parts that must be replaced to correct the defect. The reimbursement shall be at the current price at the time of repair and shall include taxes where applicable, plus 22.5 percent handling costs. Handling costs shall not be paid if the part is supplied by Contractor and shipped to CTDOT.

The Contractor shall reimburse/respond to the warranty claim with an accept/reject decision including necessary failure analysis no later than sixty (60) days after CTDOT submits the claim and defective part(s), when requested. The parties should reconcile all outstanding warranty claims at least once per quarter throughout the entire warranty period.

If any component, unit or subsystem is repaired, rebuilt or replaced by the Contractor or by CTDOT with the concurrence of the Contractor, the component, unit or subsystem shall have the unexpired warranty period of the original. Repairs shall not be warranted if Contractor-provided or authorized parts are not used for the repair, unless the Contractor has failed to respond within five (5) working days.

If an item is declared to be a fleet defect, the warranty stops with the declaration of the fleet defect. Once the fleet defect is corrected, the item(s) shall have remaining time and/or miles of the original warranty. This remaining warranty period shall begin on the repair/replacement date for corrected items on each bus if the repairs are completed by the Contractor or on the date the Contractor provides all parts to CTDOT.

The following list represents requirements by CTDOT to the Contractor for processing warranty claims. One (1) failure per bus per claim is allowed.

1. Bus number and VIN
2. Total vehicle life mileage at time of repair
3. Date of failure/repair
4. Acceptance/in-service date
5. Contractor part number and description
6. Component serial number
7. Description of failure
8. All costs associated with each failure/repair (invoices may be required for third party costs)
 - a. Towing
 - b. Road calls
 - c. Labor
 - d. Materials
 - e. Parts
 - f. Handling
 - g. Troubleshooting time

CTDOT's standardized forms will be accepted if all of the above information is included. Electronic submittal may be used if available between the Contractor and CTDOT.

CTDOT must include the following when returning defective parts to the Contractor.

1. Part needs to be tagged with
 - a. Bus number and VIN
 - b. Claim number
 - c. Part number
 - d. Serial number (if available)

Each claim must be submitted no more than thirty (30) days from the date of failure and/or repair, whichever is later. All defective parts must be returned to the Contractor, when requested, no more than forty-five (45) days from date of repair.

2. ADDITIONAL TERMS AND CONDITIONS:

2.1. TVM CERTIFICATION

The Contractor agrees to comply with all the requirements of 49 CFR 23.67, as they apply to the procurement of transit vehicles under this contract, including but not limited to, furnishing the vehicle purchaser with a certification that it is in full compliance with all the regulatory requirements of 49 CFR 23.67.

2.2. DBE CERTIFICATION

Pursuant to Title 49, Code of Federal Regulations, part 23.67, a Proposer, as a condition of being authorized to bid this procurement, must certify by completing "DBE APPROVAL CERTIFICATION", that it has on file with the FTA an approved or not disapproved annual DBE subcontracting participation goal

2.3 COMPLIANCE WITH CONN. GEN. STATUTES SECTIONS 33-922, 33-636 AND 33-953:

Prior to the award of any contract, corporations which are incorporated in states other than Connecticut (foreign corporations) must have on file with the Connecticut Secretary of State's Office, an approved Certificate of Authority and corporations incorporated in Connecticut (domestic corporations) must have on file an approved Certificate of Incorporation. All required annual reports for both types of corporations, including the organizational report for domestic corporations must also be on file with the Connecticut Secretary of State's Office. See Conn. General Statutes Sections 33-922, 33-636 and 33-953. Any questions regarding these filing requirements may be directed to the Connecticut Secretary of State's Office at (860) 509-6002.

2.4 INTEREST OF MEMBERS OF, OR DELEGATES TO, CONGRESS

No member of, or delegate to, the Congress of the United States will be admitted to any share or part of this Contract or to any benefit arising there from. (41U.S.C. § 22.)

2.5 PROHIBITED INTEREST

No member officer or employee of CTDOT or of a local public body during his tenure or one (1) year thereafter will have any interest, direct or indirect, in this Contract or the proceeds thereof.

2.6 SUBCONTRACTORS

CTDOT must approve any and all subcontractors utilized by the Contractor prior to any such subcontractor commencing any work. Contractor acknowledges that any work provided under the Contract to any state entity is work conducted on behalf of the State and that the Commissioner of CTDOT or his/her designee may communicate directly with any subcontractor as the State deems to be necessary or appropriate. Contractor shall be responsible for all payment of fees charged by the subcontractor(s). A performance evaluation of any subcontractor shall be provided promptly by the Contractor to CTDOT upon request.

Contractor must provide the majority of services described in the specifications.

2.7 SINGLE PROPOSAL RESPONSE

If only one (1) proposal is received in response to this RFP, a detailed cost proposal may be requested of the single Proposer. A cost/price analysis and evaluation and/or audit may be performed of the cost proposal in order to determine if the price is fair and reasonable.

2.8 PURCHASE ORDERS:

Purchase Orders will be issued by CTDOT's Division of Purchasing and Materials Management. Contractors are cautioned not to perform services without receiving a purchase order number. Questions regarding Purchase Orders should be directed to CTDOT's Division of Purchasing & Materials Management; Processing Unit at telephone number (860) 594-2070.

Before a Contractor is used, a Certificate of Insurance, as detailed elsewhere in this document, must be on file at CTDOT's Division of Purchasing & Materials Management.

2.9 SECURITY AND/OR PROPERTY ENTRANCE POLICIES AND PROCEDURES

Contractor shall adhere to established security and/or property entrance policies and procedures. It is the responsibility of each Contractor to understand and adhere to those policies and procedures prior to any attempt to enter any premises for the purpose of carrying out the scope of work described in this Contract.

2.10 DELIVERY

Unless otherwise specified, the buses shall be delivered to the Hartford division of CTTransit at 100 Leibert Road, Hartford CT 02141, washed and with a full tank of fuel at a rate not to exceed ten (10) buses per week. Delivery shall be completed within time frame specified in the executed contract documents. Hours of delivery shall be 8:00 am through 4:00 pm, Monday through Friday.

Delivery of buses shall be determined by signed receipt of CTDOT's designated agent at the point of delivery and may be preceded by a cursory inspection of the bus.

2.11 CERTIFICATE OF ORIGIN

The awarded vendor must furnish a certificate of origin to the State of Connecticut unless otherwise specified. The certificate of origin must be mailed or delivered to the State of Connecticut, Department of Transportation, 2800 Berlin Turnpike, Room 2442, Newington, CT, Attention: Asset Management/Inventory Section, along with the invoice number. All information on the certificate must be completed accurately and serial numbers and odometer reading must match the bus that was delivered. Failure to provide the proper certificate of origin will result in the delay of payment.

The Certificate of Origin will be completed as follows:

- Name of Purchaser: State of Connecticut, Department of Transportation
- Address: 2800 Berlin Turnpike, Newington, CT 06131-7546
- Odometer Reading: To be completed by the Contractor
- Signature: Of authorized representative transferring ownership to the State

2.12 PURCHASE ORDER PAYMENTS

Payments will be processed by the Accounts Payable Unit through the State Comptroller's Office. Payments will be made in arrears and after receipt of a properly completed invoice. All billing must reference the State Purchase Order number, vendor invoice number and vendor's Federal Identification Number.

Invoices are to be mailed to:
State of Connecticut, Department of Transportation
Attn: Philip T. Scarrozzo, Transit Manager
Bureau of Public Transportation
2800 Berlin Turnpike
P.O. Box 317546
Newington, CT 06131-7546

State of Connecticut payment terms are net forty-five (45) days.

Note: State of Connecticut General Statutes prohibits any state agency from making prepayments for repair or maintenance service. All payments will be made in arrears.

2.13 LIQUIDATED DAMAGES

It is mutually understood and agreed by and between the parties to the Contract that time is of the essence with respect to the completion of the Work and that in case of any failure on the part of the Contractor to complete the Work within the time specified in the contract or any extension thereof, CTDOT will be damaged thereby. The amount of said damages, being difficult if not impossible of definite ascertainment and proof, it is hereby agreed that

the amount of such damages due CTDOT shall be fixed at \$150.00 per calendar day per bus not delivered in substantially as good condition as inspected by CTDOT at the time released for shipment.

The Contractor hereby agrees to pay the aforesaid amounts as fixed, agreed and liquidated damages, and not by way of penalty, to CTDOT and further authorizes CTDOT to deduct the amount of the damages from money due the Contractor under the Contract, computed as aforesaid. If the monies due the Contractor are insufficient or no monies are due the Contractor, the Contractor shall pay CTDOT the difference or the entire amount, whichever may be the case, within thirty (30) calendar days after receipt of a written demand by the Contracting Officer.

The payment of aforesaid fixed, agreed and liquidated damages shall be in lieu of any damages for any loss of profit, loss of revenue, loss of use, or for any other direct, indirect, special or consequential losses or damages of any kind whatsoever that may be suffered by CTDOT arising at any time from the failure of the Contractor to fulfill the obligations referenced in this clause in a timely manner.

CTDOT specifically reserves the right, without limitation of any other rights, to terminate the Contract in accordance with SP-50; Contract Document (10.) "Termination".

2.14 PRICE ESCALATION/ECONOMIC PRICE ADJUSTMENT

CTDOT reserves the right to order buses and equipment over the five (5) year period beginning upon the day of contract award. The base price for buses furnished shall be the price agreed upon by the parties on that award date. The prices shall remain firm/fixed for any orders issued by CTDOT within a period of 365 days of contract award. The price(s) of any buses/equipment ordered by CTDOT after the initial 365 days firm/fixed price period shall be, the agreed upon base price adjusted to reflect any change which will be calculated based on the percentage change in the PPI category ~~WPS141106~~ WPU1413 "Transportation Equipment", "Trucks, over 14,000 lbs. GVW". The percentage change in this price index shall be used to adjust the Base Order Prices. However, in no event will the price(s) for any purchase order be adjusted by more or less than 5 percent of the price(s) that would have been in effect twelve (12) months prior to the date of the release, in accordance with the terms and conditions set forth above. If significant non-cardinal modifications are made to the technical specifications, the parties will enter into negotiations to determine the final unit price for subsequent orders.

2.15 ASSIGNMENT OF CONTRACT BY STATE

At any time during the continuance of the contract, CTDOT shall have the right to sell, assign and transfer the contract or all or part of the specified deliverables under the contract both the base and/or the option quantities with all its right, title, and interest therein, to any person, firm, or corporation, and the assignee thereof shall acquire all the rights granted to the State and shall be subject to any obligations that CTDOT may have under the contract.

2.16 BUSINESS OPERATIONAL CHANGES

In the event that the awarded Contractor moves or updates telephone numbers, it is the responsibility of the Contractor to advise CTDOT's Division of Purchasing & Materials Management of such changes in writing. The State will not be held responsible for payments or Purchase Orders that are delayed due to additional routing caused by the lack of notification on the Contractor's part. Change of address or telephone updates must be forwarded to:

State of Connecticut, Department of Transportation
Division of Purchasing & Materials Management
2800 Berlin Turnpike
P.O Box 317546
Newington, CT 06131-7546

Attn: Mary Matuszak, Fiscal Administrative Supervisor
mary.matuszak@ct.gov

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EXHIBIT A.1

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

General Requirements

This procurement is for 30', 35' and 40' low floor heavy duty transit buses. . They all are required to have a minimum expected life of 15 years or 500,000 miles whichever comes first and are intended for the widest possible spectrum of passengers, including children, adults, the elderly, and persons with disabilities. Options are also requested for hybrid drive design versions of each of these different size buses.

These buses shall be designed to operate the "Transit Bus Duty Cycle" as described in the American Public Transportation Association "Standard Bus Procurement Guidelines". All Definitions and abbreviations listed in the APTA "Standard Bus Procurement Guidelines" shall also apply to this procurement.

The contractor(s) shall comply with all applicable Federal, state and local regulations. The bus shall meet all applicable FMVSS and shall accommodate all applicable FMCSR regulations in effect at the date of manufacture.

The contractor(s) shall ensure that the application and installation of major bus sub-components and systems are compliant with all such sub-component vendors' requirements and recommendations. Components used in the vehicle shall be of heavy-duty design and proven in transit service. Each contractor is required to provide information necessary for the evaluation committee to access the equivalency of components or systems.

Each bus facility which procures vehicles through this procurement shall receive a complete set of separate severe duty notebook computer preloaded with software for each of the applications listed below:

- Engine programming and diagnostics
- Transmission programming and diagnostics
- Multiplex system programming and diagnostics
- HVAC system programming and diagnostics
- Anti-Lock Brake / Electronic Stability Control diagnostics
- Electronic Destination Sign programming and diagnostics
- Video Security System programming and diagnostics
- Electronic Fan System and Beltless Alternator System
- Electronic Communication, Radio System, Passenger Counter and ITS

Towing adapters, jacking adapters, wheel alignment tools, compartment access door keys and any other special tools required to maintain the bus shall be listed in the proposal and supplied to each transit facility receiving buses in this procurement. The number of each item to be provided is listed in the following table:

Item	1-20 Buses	21 - 40 Buses	41+ Buses
Towing Adapters	1	2	3
Jacking Adapters	1	2	3
Wheel Alignment Tools	1	2	3
Compartment Keys	5	8	10
Other Required Tools	# as appropriate based upon # buses received		

Test ports shall be provided for commonly checked functions on the bus such as air intake, exhaust, hydraulic, pneumatic, charge-air and engine cooling systems.

The Contractor(s) shall provide a manual listing the times required for typical repair and service items on the bus.

All systems or components subject to periodic maintenance or that are subject to periodic failures shall be readily accessible for service and inspection. To the extent practicable, removal or physical movement of components unrelated to the specific maintenance and/or repair tasks involved shall be unnecessary.

Components with identical functions shall be interchangeable to the extent practicable. These components shall include, but not limited to, passenger window hardware, interior trim, lamps, lamp lenses, and seat assemblies. Components with non-identical functions shall not be, or appear to be, interchangeable. A component shall not be used in an application for which it was neither designed nor intended.

The bus shall achieve normal operation in ambient temperature ranges of -10° F to +115° F, at relative humidity between 5 percent and 100 percent, and at altitudes up to 3,000 feet above sea level. Degradation of performance due to atmospheric conditions shall be minimized at temperatures below -10° F, above +115° F, or at altitudes above 3,000 feet.

All the Connecticut bus transit systems in this procurement operate in a high corrosion environment due to the winter sand and salt and due to the close proximity to the Long Island Sound. The CTTRANSIT Waterbury operation is also extremely hilly with high road crowns. The buses proposed should address these issues.

In the design and manufacture of the bus the Contractor(s) shall make every effort to reduce the amount of potentially hazardous waste generated by the Procuring Agency when maintaining the bus in accordance with the procedures contained in the manufacturer's maintenance manuals. The manufacturer shall use, whenever possible, all LED lighting, cleanable filters, and non-asbestos brake blocks and gaskets. In accordance with Section 6002 of the Resource Conservation and Recovery Act the Contractor(s) shall use, whenever possible and allowed by the specifications, recycled materials in the manufacture of the bus.

The contractor(s) shall comply with all applicable Federal requirements defined in the Americans with Disabilities Act, 49 CFR Part 38, and all state regulations regarding mobility-impaired persons.

Basic Body

The bus shall have a clean, smooth, modern design. The bus height shall not exceed 130 inches. The exterior and body features, including grilles and louvers, shall be shaped to facilitate cleaning by automatic bus washers without snagging washer brushes. Water and dirt shall not be retained in or on anybody feature to freeze or bleed out onto the bus after leaving the washer. The body and windows shall be sealed to prevent leaking of air, dust, or water under normal operating conditions and during cleaning in automatic bus washers for the service life of the bus. Exterior panels shall be sufficiently stiff to minimize vibration, drumming or flexing while the bus is in service. When panels are lapped, the upper and forward panels shall act as a watershed. However if entry of moisture into interior of vehicle is prevented by other means, then rear cap panels may be lapped otherwise. The windows, hatches, and doors shall be able to be sealed. Accumulation on any window of the bus of spray and splash generated by the bus's wheels on a wet road shall be minimized.

All body panel connections to frame shall have body adhesives and sealants applied to the entire contact surface of panel to preclude corrosion between panel and structure. The bus body and roof structure shall withstand a static load equal to 150 percent of the curb weight evenly distributed on the roof with no more than a 6-inch reduction in any interior dimension. Windows shall remain in place and shall not open under such a load. These requirements must be met without components such as roof mounted air conditioning installed.

The bus shall withstand a 25-mph impact by a 4,000-pound automobile at any point, excluding doorways, along either side of the bus with no more than 3 inches of permanent structural deformation at seated passenger hip height. This impact shall not result in sharp edges or protrusions in the bus interior.

Exterior panels below 35 inches from ground level shall withstand a static load of 2,000 pounds applied perpendicular to the bus by a pad no larger than 5 inches square. This load shall not result in deformation that prevents installation of new exterior panels to restore the original appearance of the bus.

Body materials shall be selected and the body fabricated to reduce maintenance, extend durability, and provide consistency of appearance throughout the service life of the bus. Detailing shall be kept simple; add-on devices and trim, where necessary, shall be minimized and integrated into the basic design. The body material surfaces shall be protected against graffiti and vandalism.

The bus flooring, sides, roof, understructure, axle suspension components shall resist corrosion or deterioration from atmospheric conditions and road salts for a period of 15 years or 500,000 miles whichever comes first. The bus shall maintain structural integrity and nearly maintain original appearance throughout its service life, provided that it is maintained by the Procuring Agency in accordance with the procedures specified in the Contractor's service manual. With the exception of periodically inspecting the visible coatings applied to prevent corrosion and reapplying these coatings in limited spots, the Contractor shall not require the complete reapplication of corrosion compounds over the life of the bus.

The vehicle shall be constructed using only stainless steel or other approved inherently corrosion-resistant materials and fasteners of sufficient type and quality to minimize deterioration over the specified period. The structure shall not require corrosion-preventive coatings or after-treatments to be applied either during construction or throughout the service life of the vehicle.

All materials that are not inherently corrosion resistant shall be protected with corrosion-resistant coatings. All joints and connections of dissimilar metals shall be corrosion-resistant and shall be protected from galvanic corrosion. Representative samples of all materials and connections shall withstand a 2-week (336-hour) salt spray test in accordance with ASTM Procedure B-117 with no structural detrimental effects to normally visible surfaces, and no weight loss of over 1 percent.

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.

The passenger and engine compartments shall be separated by a bulkhead(s) that shall, by incorporation of fireproof materials in its construction, be a firewall. The engine compartment shall include areas where the engine and exhaust systems are housed including the muffler, if mounted above the horizontal shelf. This firewall shall preclude propagation of an engine compartment fire into the passenger compartment and shall be in accordance with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993. Only necessary openings shall be allowed in the firewall, and these shall be fireproofed. 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. Wiring may pass through the bulkhead only if connectors or other means are provided to prevent or retard fire propagation through the firewall. 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.

The bus, loaded to GVWR and under static conditions, shall not exhibit deflection or deformation that impairs the operation of the steering mechanism, doors, windows, passenger escape mechanisms and service

doors. Static conditions shall include the vehicle at rest with any one wheel or dual set of wheels on a 6-inch curb or in a 6-inch deep hole.

Prior to acceptance of first bus, the structure of the bus shall have undergone appropriate structural testing and/or analysis, including FTA required Altoona testing, to ensure adequacy of design for the urban transit service. Any items that required repeated repairs or replacement must undergo the corrective action with supporting test and analysis. A report clearly describing and explaining the failures and corrective actions taken to ensure any and all such failures will not occur shall be submitted to the Procuring Agency.

Towing devices shall be provided on each end of the bus. Towing devices should accommodate wheel lift, flat-bedding or flat-towing. Each towing device shall withstand, without permanent deformation, tension loads up to 1.2 times the curb weight of the bus within 20 degrees of the longitudinal axis of the bus. The rear towing device(s) shall not provide a foothold for unauthorized riders.

The front towing devices shall allow attachment of adapters for a rigid tow bar and shall permit lifting and towing of the bus, at curb weight, until the front wheels are clear off the ground.

The rear towing devices shall permit lifting and towing of the bus for a short distance, such as in cases of an emergency, to allow access to provisions for front towing of bus. The method of attaching the tow bar or adapter shall require the specific approval of the Procuring Agency. Each towing device shall accommodate a crane hook with a 1-inch throat for towing and recovery.

It shall be possible to safely jack up the bus, at curb weight, with a common 10-ton floor jack or pneumatic bag (MatJack) with or without special adapter, when a tire or dual set is completely flat and the bus is on a level, hard surface, without crawling under any portion of the bus. Jacking from a single point shall permit raising the bus sufficiently high to remove and reinstall a wheel and tire assembly. Jacking pads located on the axle or suspension near the wheels shall permit easy and safe jacking with the flat tire or dual set on a 6-inch-high run-up block not wider than a single tire. Jacking and changing any one tire shall be completed by a mechanic in less than 30 minutes from the time the bus is approached. The bus shall withstand such jacking at any one or any combination of wheel locations without permanent deformation or damage. Jacking pads shall be painted safety yellow or orange for ease of identification primary and secondary jack points.

The bus axles or jacking plates shall accommodate the lifting pads of a 2-post hoist system. Jacking plates, if used as hoisting pads, shall be designed to prevent the bus from falling off the hoist. Other pads or the bus structure shall support the bus on jack stands independent of the hoist.

Where the floor meets the walls of the bus, as well as other vertical surfaces, such as, platform risers, the surface edges shall be blended with a circular section of radius not less than 1 inch. Similarly, a molding or cove shall prevent debris accumulation between the floor and wheel housings. The vehicle floor in the area of the entrance and exit doors shall have a lateral slope not exceeding 2° to allow for drainage.

The floor seam must lap up the sidewall. The floor deck may be integral with the basic structure or mounted on the structure securely to prevent chafing or horizontal movement and designed to last the life of the bus. Sheet metal screws shall not be used to retain the floor and all floor fasteners shall be serviceable from one side only. The use of adhesives to secure the floor to the structure shall be allowed only in combination with the use of bolt or screw fasteners and its effectiveness shall last throughout life of the coach. Tapping plates, if used for the floor fasteners, shall be no less than the same thickness as a standard nut and all floor fasteners shall be secured and protected from corrosion for the service life of the bus. The floor deck shall be reinforced as needed to support passenger loads. At GVWR, the floor shall have an elastic deflection of no more than 0.60 inches from the normal plane. The floor shall withstand the application of 2.5 times gross load weight without permanent detrimental deformation. Floor, with coverings applied, shall withstand a static load of at least 150 pounds applied through the flat end of a ½ inch-diameter rod, with 1/32-inch radius, without permanent visible deformation.

The floor shall consist of the subfloor and the floor covering. The floor, as assembled, including the sealer, attachments and covering shall be waterproof, non-hygroscopic, and impervious to mold growth. The subfloor shall be Space-age Synthetics Thermo-Lite or equal composite flooring material that will provide a minimum 150 pound weight savings per bus to the standard 3/4" marine plywood subfloor product. The composite material shall be waterproof and will not rot, warp, mildew, allow mold growth, split, soften or delaminate, will accept standard tooling and hardware, cannot be damaged by insects and should last the life of a 15 year bus.

The operator's platform height shall not exceed 12 inches. Trim shall be provided along top edges of platforms unless integral nosing is provided. Except where otherwise indicated, covering of platform surfaces and risers shall be same material as specified for floor covering. Trim installed along edges of platforms shall be constructed of stainless steel.

The operator's platform shall be of a height that, in a seated position, the operator can see an object located at an elevation of 42" above the road surface, 24" from the leading edge of the bumper. Notwithstanding this requirement, the platform height shall not position the operator such that the operator's vertical upward view is less than 15 degrees.

If the operator's platform is higher than 12 inches, then the farebox is to be mounted on platform of suitable height to provide accessibility for operator without compromising passenger's access.

If the vehicle is of a bi-level floor design, an intermediate platform shall be provided along the center aisle of the bus to facilitate passenger traffic between the upper and lower floor levels. This intermediate platform shall be cut into the rear platform and shall be approximately the aisle width, 18 inches deep and approximately one half the height of the upper level relative to the lower level. The horizontal surface of this platform shall be covered with yellow Hypalon or equal ribbed rubber or skid-resistant material and shall be sloped slightly for drainage. A warning decal or sign shall be provided at the immediate platform area to alert passengers to the change in floor level. All stair risers shall be laminated.

Sufficient clearance and air circulation shall be provided around the tires, wheels, and brakes to preclude overheating when the bus is operating on the design operating profile. The Waterbury buses shall be designed and constructed to allow the use of full-tire snow chains. Tire chain clearance shall be provided in accordance with SAE J683. Wheel well chain guards shall be provided as an option.

Interference between the tires and any portion of the bus shall not be possible in maneuvers up to the limit of tire adhesion with weights from curb weight to GVWR. Wheel housings shall be adequately reinforced where seat pedestals are installed. Wheel housings shall have sufficient sound insulation to minimize tire and road noise and meet all requirements. Wheel housing shall withstand a direct tire blowout.

Design and construction of front wheel housings shall allow for the installation of radio/electronic equipment storage compartment on interior top surface or its use as a luggage rack.

The exterior finish of the front wheel housings shall be scratch-resistant and complement interior finishes of the bus to minimize the visual impact of the wheel housing. If fiberglass wheel housings are provided, then they shall be color-impregnated to match interior finishes. The lower portion extending to approximately 12 inches above floor shall be equipped with additional more resistant coating or stainless steel trim.

Wheel housings shall be constructed of corrosion-resistant, fire-resistant material. Wheel housings, as installed and trimmed, shall withstand impacts of a 2-inch steel ball with at least 200 foot-pounds of energy without penetration.

Exterior protrusions, greater than 1/2 inch and within 80 inches of the ground, shall have a radius no less than the amount of the protrusion. The exterior rearview mirrors and required lights and reflectors are exempt from the protrusion requirement. Grilles, doors, bumpers and other features on the sides and rear of the bus shall be designed to minimize the ability of unauthorized riders to secure toeholds or handholds.

Exterior panels below the lower daylight opening and within 35 inches above ground level shall be divided into sections that are repairable or replaceable by a mechanic in less than 30 minutes for a section up to 5 feet long (excludes painting).

Lower exterior panels within 28 inches above ground level shall be equipped with removable resilient, impact resistant panels for protection against minor impacts and scratches. The panels shall withstand impacts of 200 foot-pounds of energy from a steel-faced spherical missile no less than 9 inches in diameter without any visible damage to it or underlying panel and structure. The panels shall be no greater than 8 feet in length and shall be easily replaced by a mechanic in less than 10 minutes. The panels shall be color impregnated to complement color and paint scheme.

Rain gutters shall be provided to prevent water flowing from the roof onto the passenger doors, operator's side window, and exterior mirrors. When the bus is decelerated, the gutters shall not drain onto the windshield, or operator's side window, or into the door boarding area. Cross sections of the gutters shall be adequate for proper operation. A rain gutter shall also be provided above passenger side windows.

Provisions shall be made to recess mount standard size U.S. license plates per SAE J686 on the front and rear of the bus. These provisions shall recess the license plates so that they can be cleaned by automatic bus washing equipment without being caught by the brushes. License plates shall be mounted at the lower center or lower street side of the bus and shall not allow a toehold or handhold for unauthorized riders.

Features to minimize water spray from the bus in wet conditions shall be included in wheel housing design. Any fender skirts provided shall be easily replaceable. They shall be flexible if they extend beyond the allowable body width. Wheels and tires shall be removable with the fender skirts in place.

Splash aprons, composed of 1/4-inch-minimum composition or rubberized fabric, shall be installed behind and/or in front of wheels as needed to reduce road splash and protect underfloor components. The splash aprons shall extend downward to within 4 inches of the road surface at static conditions. Apron widths shall be no less than tire widths, except for the front apron that shall extend across the width of the bus. Splash aprons shall be bolted to the bus understructure. Splash aprons and their attachments shall be inherently weaker than the structure to which they are attached. The flexible portions of the splash aprons shall not be included in the road clearance measurements. Other splash aprons shall be installed where necessary to protect bus equipment.

Conventional or pantograph hinged doors shall be used for the engine compartment and for all auxiliary equipment compartments. Access openings shall be sized for easy performance of tasks within the compartment including tool operating space. Access doors shall be of rugged construction and shall maintain mechanical integrity and function under normal operations throughout the service life of the bus. They shall close flush with the body surface. All doors shall be hinged at the top or on the forward edge and shall be prevented from coming loose or opening during transit service or in bus washing operations. Doors with top hinges shall have safety props stored behind the door or on the doorframe. All access doors shall be retained in the open position by props or counterbalancing with over-center or gas-filled springs and shall be easily operable by one person. Springs and hinges shall be corrosion resistant. Latch handles shall be flush with, or recessed behind, the body contour and shall be sized to provide an adequate grip for opening. Access doors, when opened, shall not restrict access for servicing other components or systems. Access doors larger in area than 100 square inches shall be equipped with latches. The latches shall be standardized and shall be openable without the use of a key or tool.

Batteries shall be securely mounted on a stainless steel or equivalent tray that can accommodate the size and weight of the batteries. The battery tray shall pull out easily and properly support the batteries while they are being serviced. The tray shall allow each battery cell to be easily serviced and filled. A locking device shall retain the battery tray in the stowed position. A decal showing battery diagram and voltage shall be attached to the interior side of each battery compartment door.

The battery compartment or enclosure shall be vented and self-draining. It shall be accessible only from outside the bus. Batteries shall not be located within the engine compartment. All components within the battery compartment, and the compartment itself, shall be protected from damage or corrosion from the electrolyte and gases emitted by the battery, and from snow, slush, salt spray, mud, etc. generated from environmental conditions outside the vehicle. The inside surface of the battery compartment's access door shall be electrically insulated, as required, to prevent the battery terminals from shorting on the door if the door is damaged in an accident or if a battery comes loose.

Lights shall be provided in the engine and all other compartments, where service may be required, to generally illuminate the area for night emergency repairs or adjustments. Sealed lamp assemblies (LED type preferred) shall be provided in the engine compartment and shall be controlled by a switch located near the rear start controls in the engine compartment. Necessary lights, located in other service compartments, shall be provided with switches on the light fixture or convenient to the light.

Bumpers shall provide impact protection for the front and rear of the bus with the top of the bumper being 28 ½ inches above the ground. Bumper height shall be such that when one bus is parked behind another, a portion of the bumper faces will contact each other.

No front part of the bus, including the bumper, shall be damaged as a result of a 5-mph impact of the bus at curb weight with a fixed, flat barrier perpendicular to the bus's longitudinal centerline. The bumper shall return to its pre-impact shape within 10 minutes of the impact. The bumper shall protect the bus from damage as a result of 6.5 mph impacts at any point by the Common Carriage with Contoured Impact Surface defined in Figure 2 of FMVSS 301 loaded to 4,000 pounds parallel to the longitudinal centerline of the bus and 5.5-mph impacts into the corners at a 30 degree angle to the longitudinal centerline of the bus. The energy absorption system of the bumper shall be independent of every power system of the bus and shall not require service or maintenance in normal operation during the service life of the bus.

No rear part of the bus, including the bumper, shall be damaged as a result of a 2-mph impact with a fixed, flat barrier perpendicular to the longitudinal centerline of the bus. The bumper shall return to its pre-impact shape within 10 minutes of the impact. When using a yard tug with a smooth, flat plate bumper 2 feet wide contacting the horizontal centerline of the rear bumper, the bumper shall provide protection at speeds up to 5 mph, over pavement discontinuities up to 1 inch high, and at accelerations up to 2 mph/sec. The rear bumper shall protect the bus, when impacted anywhere along its width by the Common Carriage with Contoured Impact Surface defined in Figure 2 of FMVSS 301 loaded to 4,000 pounds, at 4 mph parallel to, or up to a 30degree angle to, the longitudinal centerline of the bus. The rear bumper shall be shaped to preclude unauthorized riders from standing on the bumper. The bumper shall be independent of all power systems of the bus and shall not require service or maintenance in normal operation during the service life of the bus.

Bumper material shall be corrosion-resistant and withstand repeated impacts of the specified loads without sustaining damage. Visible surfaces shall be black or color coordinated with the bus exterior. These bumper qualities shall be sustained throughout the service life of the bus.

All exterior lights shall be designed to prevent entry and accumulation of moisture or dust, and each lamp shall be replaceable in less than 5 minutes by a mechanic. Commercially available LED (Light Emitting Diode)-type lamps shall be used wherever possible. Lights mounted on the engine compartment doors shall be protected from the impact shock of door opening and closing. Lamps, lenses and fixtures shall be interchangeable to the extent practicable. Two hazard lamps at the rear of the bus shall be visible from

behind when the engine service doors are opened. Light lenses shall be designed and located to prevent damage when running the vehicle through an automatic bus washer. Lights located on the roof and sides (directionals) of the bus shall have protective shields or be of the flush mount type to protect the lens against minor impacts.

Visible and audible warning shall inform following vehicles or pedestrians of reverse operation. Visible reverse operation warning shall conform to SAE Standard J593. Audible reverse operation warning shall conform to SAE Recommended Practice J994 Type C or D.

Lamps at the front and rear passenger doorways shall comply with all ADA requirements and shall activate only when the doors open. These lamps shall illuminate the street surface to a level of no less than 1 foot-candle for a distance of 3 feet outward from the outboard edge of the door threshold. The lights may be positioned above or below the lower daylight opening of the windows and shall be shielded to protect passengers' eyes from glare. Turn-signal lights shall be provided on all sides of the bus.

Materials shall be selected on the basis of maintenance, durability, appearance, safety, flammability, and tactile qualities. Trim and attachment details shall be kept simple and unobtrusive. Materials shall be strong enough to resist everyday abuse and vandalism; they shall be resistant to scratches and graffiti. Interior trim shall be secured to avoid resonant vibrations under normal operational conditions.

Interior surfaces more than 10 inches below the lower edge of the side windows or windshield shall be shaped so that objects placed on them fall to the floor when the coach is parked on a level surface. The entire interior shall be cleanable with a hose, using a liquid soap attachment. Water and soap should not normally be sprayed directly on the instrument and switch panels. An anti-graffiti/vandalism surface treatment for interior surfaces shall be provided.

The entire front end of the bus shall be sealed to prevent debris accumulation behind the dash and to prevent the operator's feet from kicking or fouling wiring and other equipment. The front end shall be free of protrusions that are hazardous to passengers standing or walking in the front of the bus during rapid decelerations. Paneling across the front of the bus and any trim around the operator's compartment shall be formed metal or plastic material. Plastic dash panels shall be reinforced, as necessary, vandal-resistant, and replaceable. All colored, painted, and plated parts forward of the operator's barrier shall be finished with a dull matte surface to reduce glare.

The rear bulkhead and rear interior surfaces shall be material suitable for exterior skin, painted and finished to exterior quality, or paneled with melamine-type material, and trimmed with stainless steel, aluminum, or plastic.

Interior side trim panels shall be Arborite Vogue P-925-S or equal material. The operator's barrier shall be smoke color acrylic type material. Panels shall be easily replaceable and tamper-resistant. They shall be reinforced, as necessary, to resist vandalism and other rigors of transit bus service. Individual trim panels and parts shall be interchangeable to the extent practicable. Untrimmed areas shall be painted and finished to the quality described in Section 5.4.3.10. All materials shall comply with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993.

A suitable hanger shall be installed in a convenient approved location for the operator's overcoat and shall not interfere with location of fire extinguisher or any other safety equipment.

A rugged device shall be provided to securely hold the operator's drink container, which may vary widely in diameter. It must be mounted within easy reach of the operator and must have sufficient vertical clearance for easy removal of the container. When the container is in the device, the operator's view of the road must not be obstructed and leakage from the container must not fall on any switches, gauges or controls

A barrier or bulkhead between the operator and the street-side front passenger seat shall be provided. The barrier shall minimize glare and reflections in the windshield directly in front of the barrier from interior lighting during night operation.

An Operator's Barrier shall extend continually from floor to ceiling and from the bus wall to first stanchion immediately behind the Operator to provide security to the Operator and limit passenger conversation. Location and shape must permit full seat travel possibilities and accommodate the shoulders of a 95th percentile male. The partition shall have a side return and stanchion to prevent passengers from standing behind the Operator's seat; lower area between seat and panel must be accessible to the Operator. The partition must be strong enough in conjunction with entire partition assembly for mounting of such equipment as flare kits, fire extinguishers (1.2kg), microcomputer, public address amplifier, etc. The partition shall start 25mm (1") above floor and dark or black panels are preferred. The panel should be attached with rubber grommets.

An enclosed Operator storage area shall be provided with a positive latching door and lock; minimum approximate size: 355 mm x 355 mm x 355 mm (14" x 14" x 14").

Sturdy divider panels constructed of durable, unpainted, corrosion-resistant material complementing the interior trim shall be provided to act as both a physical and visual barrier for seated passengers. Modesty panels shall be located at doorways to protect passengers on adjacent seats, and along front edge of rear upper level. Design and installation of modesty panels located in front of forward facing seats shall include a handhold/grab handle along its top edge. These dividers shall be mounted on the sidewall and shall project toward the aisle no farther than passenger knee projection in longitudinal seats or the aisle side of the transverse seats. Modesty panels shall extend no higher than the lower daylight opening of the side windows and those forward of transverse seats shall extend downward to a level between 1-1/2 and 1 inches above the floor. Panels forward of longitudinal seats shall extend to below the level of the seat cushion. Dividers positioned at the doorways shall provide no less than a 2-1/2-inch clearance between the modesty panel and the opened door to protect passengers from being pinched. Modesty panels installed at doorways shall be equipped with grab rails (see Section 5.4.5.2). The modesty panel and its mounting shall withstand a static force of 250 pounds applied to a four-inch by four-inch area in the center of the panel without permanent visible deformation. A clear Plexiglas wind screen shall be provided on the modesty panel located in front of the curb side seats directly behind the rear door.

The rear bulkhead paneling shall be hard surface, graffiti resistant, contoured to fit the ceiling, side walls, and seat backs so that any litter, such as a cigarette package or newspaper, will tend to fall to the floor or seating surface when the bus is on a level surface. Any air vents in this area shall be louvered to reduce airflow noise and to reduce the probability of trash or litter being thrown or drawn through the grille. If it is necessary to remove the panel to service components located on the rear bulkhead, the panel shall be hinged or shall be able to be removed and replaced by a mechanic in 5 minutes. Grilles where access to or adjustment of equipment is required shall be heavy duty and designed to minimize damage. Rear bulkhead shall not be covered in carpeting or fabric material.

Engine

The propulsion system and drive train shall provide power to enable the bus to meet the defined acceleration, top speed, and gradability requirements, and operate all propulsion-driven accessories. Power requirements are based on heavy, heavy-duty diesel (HHDD) engines certified for use in all 50 states using actual road test results or computerized vehicle performance data. The buses shall be capable of achieving a top speed of 68 M.P.H. on a straight, level road at GVWR with all accessories operating.

Gradability requirements shall be met on grades with a dry commercial asphalt or concrete pavement at GVWR with all accessories operating. The propulsion system and drive train shall enable the bus to achieve and maintain a speed of 40 mph on a 2-1/2 percent ascending grade and 7 m.p.h. on a 16 percent ascending grade.

The bus acceleration shall meet the requirements as listed in the APTA "Standard Bus Procurement Guidelines" and the FTA Altoona Bus Testing Standards. The operating range of each bus when run on the transit coach duty cycle shall be at least 350 miles.

The engine shall be tuned when delivered to provide optimized performance as specified above, including fuel economy. All related components and configuration that affect fuel economy, such as, fan control/operation, transmission, axle ratio, etc., shall be selected accordingly. The bus shall achieve a minimum average fuel economy of 4.00 miles per gallon when run on the Transit Coach Duty Cycle loaded to SLW. Reference SAE J1376, Fuel Economy Measurement Test (Engineering Type) for Trucks and Buses.

The HHDD engine shall be designed to operate for not less than 300,000 miles without major failure or significant deterioration. Components of the fuel injector and/or control system shall be designed to operate for not less than 150,000 miles without replacement or major service.

The engine shall be designed to be capable of operating without any damage on both Nos. 1 and 2 ultra-low sulfur diesel fuels and up to 20% Biodiesel in accordance with ASTM D975. The engine shall be equipped with an electronically controlled management system.

The engine control system shall have onboard diagnostic capabilities able to monitor vital engine functions; store and time stamp out of parameter conditions in memory, and communicate faults and vital conditions to service personnel. Diagnostic reader device connector ports, suitably protected against dirt and moisture, shall be provided in operator's area and near or inside engine compartment.

The engine starter system shall be protected by an interlock that prevents its engagement when the engine is running and of a design that forces its disengagement once the engine starts. The engine shall be equipped with an operator-controlled fast idle device. The fast idle control shall be a two-way toggle mounted on the dash or side console and shall activate only with the transmission in neutral and the parking brake applied.

The engine control system shall protect the engine against progressive damage. The system shall monitor conditions critical for safe operation and automatically derate power and/or speed and initiate engine shutdown as needed. The on-board diagnostic system shall trigger a visual and audible alarm to the operator when the engine control unit detects a malfunction and the engine protection system is activated.

Automatic shutdown shall only occur when the parameters established for the following functions below are exceeded: Coolant Level, Coolant Temperature, Oil Pressure, Oil Temperature and fire suppression.

The optional hybrid drive propulsion system shall be provided for each bus size when specifically included in the relevant purchase order. The hybrid propulsion system shall be an Allison E40, BAE HybriDrive, ISE Thundervolt/Siemans or equal design. It must have been installed and operating on a minimum 100 transit buses for a minimum of one year at the time of proposal submission. The traction electrical storage shall use nickel metal hydride, Lithium Ion or Lithium Polymer batteries or Ultra capacitors. Lead acid batteries for traction storage will not be accepted.

The cooling systems shall be electric hybrid fans using the latest technology and of sufficient size to maintain all engine and transmission fluids and engine intake air at safe, continuous operating temperatures during the most severe operations possible and in accordance with engine and transmission manufacturers' cooling system requirements. The cooling system fan/fans control should sense the temperatures of the operating fluids and the intake air and if either is above safe operating conditions the cooling fan should be engaged. The fan control system shall be designed with a fail-safe mode of "fan on." The cooling system in new condition shall have an ambient capacity of at least 110° F with water as

coolant and sea level operation. Hybrid fan system shall provide a self-cleaning function, activated on initial start-up of the engine as well as manually as necessary.

The engine shall be cooled by a dedicated/isolated water-based, pressure type cooling system that does not interact or share coolant with the passenger compartment heating / defrosting system. The engine cooling system will be designed so as not to allow aeration or air pockets to form in any area of the engine or EGR system, nor shall it permit boiling or coolant loss during the operations described above. The passenger heater/defroster system shall be controlled and supplied by a source that is not connected to the engine or dependent on engine temperature. This is necessary to eliminate damage to the engine and EGR cooler caused by aerated coolant returning from the heater cores. Engine thermostats shall be easily accessible for replacement. Shutoff valves shall allow filter replacement without coolant loss. Valves shall permit complete shutoff of lines for the heating and defroster units, and water booster pumps. The water boost pump shall be a magnetically coupled, brushless and seal less design. 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. A sight glass to determine satisfactory engine coolant level shall be provided and shall be accessible by opening the engine compartment door. A spring-loaded, push button type valve to safely release pressure or vacuum in the cooling system shall be provided with both it and the water filler no more than 48 inches above the ground and both shall be accessible through the same access door.

The engine shall meet all applicable emission standards. Exhaust gases and waste heat shall be discharged from the roadside rear corner of the roof. The exhaust pipe shall be of sufficient height to prevent exhaust gases and waste heat from discoloring or causing heat deformation to the bus roof. The entire exhaust system shall be adequately shielded to prevent heat damage to any bus component. The exhaust outlet shall be designed to minimize rain, snow or water generated from high-pressure washing systems from entering into the exhaust pipe and causing damage to the catalyst.

All wiring and hose clamps in high temperature areas shall be resistant to heat and mechanical fatigue.

The power plant shall be mounted in a compartment in the rear of the bus. All power plant mounting shall be mechanically isolated to minimize transfer of vibration to the body structure. Mounts shall control movement of the power plant so as not to affect performance of belt driven accessories or cause strain in piping and wiring connections to the power plant.

The power plant shall be arranged so that accessibility for all routine maintenance is assured. No special tools, other than dollies and hoists, shall be required to remove the power plant. Two mechanics shall be able to remove and replace the engine and transmission assembly in less than 12 total combined man-hours. The muffler, exhaust system, air cleaner, air compressor, starter, alternator, radiator, all accessories, and any other component requiring service or replacement shall be easily removable and independent of the engine and transmission removal. An engine oil pressure gauge and coolant temperature gauge shall be provided in the engine compartment. These gauges shall be easily read during service and mounted in an area where they shall not be damaged during minor or major repairs.

Engine oil and the radiator filler caps shall be hinged to the filler neck and closed with spring pressure or positive locks. All fluid fill locations shall be properly labeled to help ensure correct fluid is added and all fillers shall be easily accessible with standard funnels, pour spouts, and automatic dispensing equipment. All lubricant sumps shall be fitted with magnetic-type, external, hex head, self-sealing drain plugs. All fluid fillers shall not be higher than 48 inches above the ground.

The engine and transmission shall be equipped with sufficient heavy-duty fuel and oil filters for efficient operation and to protect the engine and transmission between scheduled filter changes. To the extent practicable, the filters shall be of the spin-on, disposable type or integral with the engine and transmission. All filters shall be easily accessible and the filter bases shall be plumbed to assure correct

reinstallation. The engine shall be equipped with a fuel-priming pump or a check valve fitted in the fuel suction line to aid restarting after fuel filter changes.

A Spinner II Model 976 or equal centrifugal, non-disposable bypass engine oil filter shall be provided as an option only.

An air cleaner with a dry filter element and a graduated air filter restriction indicator shall be provided. The filter shall be removable by a mechanic in 10 minutes or less. The location of the air intake system shall be designed to minimize the entry of dust and debris and maximize the life of the air filter. The engine air duct shall be designed to minimize the entry of water into the air intake system. Drainage provisions shall be included to allow any water/moisture to drain prior to entry into air filter.

Engine-driven accessories shall be mounted for quick removal and repair. Accessory drive systems shall operate without unscheduled adjustment for not less than 50,000 miles on the design operating profile. These accessories shall be driven at speeds sufficient to assure adequate system performance during extended periods of idle operation and low route speed portion of the design operating profile. Belt guards shall be provided as required for safety and shall be sturdy in design and installation and readily removable and hinged design.

Any accessory may be driven hydraulically or electrically at buyer's option. The hydraulic system shall demonstrate a mean time between repairs in excess of 50,000 miles. Hydraulic system service tasks shall be minimized and scheduled no more frequently than those of other major coach systems. All elements of the hydraulic system shall be easily accessible for service or unit replacement. Critical points in the hydraulic system shall be fitted with service ports so that portable diagnostic equipment may be connected or sensors for an off-board diagnostic system permanently attached to monitor system operation. A tamper-proof priority system shall prevent the loss of power steering during operation of the bus if other devices are also powered by the hydraulic system. Sensors in the hydraulic system, excluding those in the power steering system, shall indicate on the operator's on-board diagnostic panel conditions of low hydraulic fluid level.

All fluid lines and air piping shall be rigidly supported and isolated to prevent chafing damage, vibration, fatigue failures, and tension strain. Lines passing through a panel, frame, or bulkhead shall be protected by grommets (or similar device) that fit snugly to both the line and the perimeter of the hole that the line passes through to prevent chafing and/or wear.

Flexible fuel and oil lines shall be kept at a minimum and shall be as short as practicable. Flexible lines shall be routed or shielded so that failure of a line shall not allow fuel or oil to spray or drain onto any component operable above the auto-ignition temperature of the fluid. Flexible lines shall be Teflon hoses with braided stainless steel jackets except in applications where premium hoses are required and shall have standard SAE or JIC brass or steel, swivel, end fittings. Flexible hoses over 1 inch in diameter need not be Teflon with braided stainless steel jacket but shall be in conformance with SAE Standard J100R5. Flexible hoses and fluid lines shall not touch one another, or any part of the bus. Fuel lines shall have shut off valve for service and repair.

Lines shall have a maximum length of six (6) feet unless demonstrated inappropriate for a given application. Hoses/lines shall be secured with heavy-duty stainless steel, full silicone rubber clamps.

Compression fittings shall be standardized as much as practicable to prevent the intermixing of components. Compression fitting components from more than one manufacturer shall not be mixed even if the components are known to be interchangeable.

The vehicle engine compartment shall be equipped with an Amerex ABC dry chemical pre-engineered fire suppression system V(H)30, or equal, or a wet system at the buyer's option. The system shall be approved and listed for use at any ambient temperature within the range of -65⁰ F to +150⁰ F by Factory Mutual Research Corp. The automatic actuation system shall provide 24-hour fire detection supported by

a 24-hour battery backup system, NiMH-type preferred. The system shall also be capable of being activated manually by depressing an electric switch button with a pull pin labeled "FIRE" mounted in the driver's area. An inspection door will be provided by the OEM on the bus body or the bus interior to allow for visual site inspection of the agent cylinder gauge. The fire suppression system shall include the following;

- A minimum 32lb capacity agent cylinder of the stored pressure type shall be furnished. The cylinder will be constructed of welded steel and must conform to DOT spec 4BW, and be rated for 12 year minimum hydrostatic testing. The cylinder shall be outfitted with a gauge and a forged brass valve assembly.
- A minimum of three (3) FMRC approved temperature sensitive weather proof miniature thermostats, constructed of stainless steel material, shall be located in the engine compartment.
- A modular control panel shall be provided to electrically supervise the following automatic fire suppression system wiring circuits; power, heat detection, and system actuation. The monitor shall provide a display indicating normal, fire, or fault conditions and the panel will shut the engine down within 15 seconds of detecting a fire. An engine shutdown reset button on panel will be included and will have the capacity to provide a minimum of 7 diagnostic flash codes for ease of troubleshooting.
- A minimum of five (5) brass nozzles shall be located in the engine compartment, fitted with dust caps, which upon actuation are displaced to allow full ABC fire suppression powder flow for a minimum of 20 seconds. Each nozzle shall displace a minimum of 6 lbs. of ABC agent +/- .5 lbs.

The bus OEM (contractor) shall provide a written sign-off, including full documentation, photos, etc., supplied by the fire suppression equipment manufacturer, which confirms that all installation requirements have been met on the pilot bus fire suppression system.

Fuel lines shall be rated and sized to prevent freezing and plugging due to condensation and/or fuel gelling in extreme winter. The fuel lines forward of the engine bulkhead shall be in conformance with SAE Standard J1149 Type 1 for copper tubing, corrosion-resistant stainless steel tubing or SAE Standard J844 for nylon tubing color coded orange.

The fuel tank(s) shall be equipped with an external, hex head, brass drain plug. It shall be at least a 3/8-inch size and shall be located at the lowest point of the tank(s). The fuel tank(s) shall have an inspection plate or easily removable filler neck to permit cleaning and inspection of the tank(s) without removal from the bus. The tank(s) shall be baffled internally to prevent fuel-sloshing regardless of fill level. The baffles or fuel pickup location shall assure continuous full power operation on a 6 percent upgrade for 15 minutes starting with no more than 25 gallons of fuel over the unusable amount in the tank(s). The bus shall operate at idle on a 6 percent downgrade for 30 minutes starting with no more than 10 gallons of fuel over the unusable amount in the tank(s).

The fuel tank(s) shall be made of corrosion resistant stainless steel or other durable and inert material and shall be securely mounted to the bus to prevent movement during bus maneuvers, but shall be capable of being removed and reinstalled by a mechanic for cleaning or replacement in 1.5 hours or less.

The capacity, date of manufacture, manufacturer name, location of manufacture, and certification of compliance to Federal Motor Carrier Safety Regulation shall be permanently marked on the fuel tank(s). The markings shall be readily visible and shall not be covered with an undercoating material.

The fuel filler shall be located 7 to 25 feet behind the centerline of the front door on the curbside of the bus. The filler cap shall be retained to prevent loss and shall be recessed into the body so that spilled fuel will not run onto the outside surface of the bus.

The fuel lines forward of the engine bulkhead shall be in conformance to the SAE Standards. Automatic and manual fuel shutoffs shall be provided.

The fuel filler shall be an Emco Wheaton or equal system and accommodate a nozzle that forms a locked and sealed connection during the refueling process to eliminate spills. Fuel shall not be allowed to flow into the tank unless the nozzle has been properly coupled, locked and sealed to the filler. With the nozzle open, fuel shall enter the tank at a fill rate of not less than 40 gallons per minute of foam-free fuel without causing the nozzle to shut off before the tank is full. The nozzle shall automatically shut off when the tank is essentially full. Once disconnected, fuel shall not be allowed to flow through the nozzle at any time. Any pressure over 3 psi shall be relieved from the fuel tank automatically. An audible signal shall indicate when the tank is essentially full.

The DEF filler shall be an Emco Wheaton Posi/Lock Blue or equal system. Filler must be accessible and located as to prevent spills on other bus components.

Oil and hydraulic lines shall be compatible with the fluid they carry. The lines shall be designed and intended for use in the environment which they are installed, i.e., high temperatures in engine compartment, road salts, oils, etc. Lines shall be capable of withstanding maximum system pressures. Lines within the engine compartment shall be composed of steel tubing where practicable except in locations where flexible lines are specifically required. Hydraulic lines of the same size and with the same fittings as those on other piping systems of the bus, but not interchangeable, shall be tagged or marked for use on the hydraulic system only.

Transmission

The transmission shall be cooled by a separate heat exchanger sized to maintain operating fluid within the transmission manufacturer's recommended parameters of flow, pressure and temperature. The transmission cooling system shall be matched to retarder and engine cooling systems to ensure that all operating fluids remain within recommended temperature limits established by each component manufacturer.

The transmission shall be an Allison B330R, B400R, B500R or equal sized appropriately for the buses in this procurement. All transmissions shall be factory filled with Castrol Transynd synthetic transmission fluid or equal fluid. The transmission shall be multiple-speed, automatic shift with torque converter, retarder and electronic controls. Gross input power, gross input torque and rated input speed shall be compatible with the engine. A mechanic, with optional assistance, shall be able to remove and replace the transmission assembly for service in less than 16 total combined man-hours. The transmission shall be designed to operate for not less than 300,000 miles on the design operating profile without replacement or major service.

The electronic controls shall be capable of transmitting and receiving electronic inputs and data from other drivetrain components and broadcasting that data to other vehicle systems. Electronic controls shall be compatible with either 12 or 24 volt power distribution, provide consistent shift quality, and compensate for changing conditions such as variations in vehicle weight and engine power. A brake pedal application of 15 to 20 psi shall be required by the operator to engage forward or reverse range from the neutral position to prevent sudden acceleration of the bus from a parked position.

The electronically controlled transmission shall have on-board diagnostic capabilities, be able to monitor functions, store and time stamp out-of-parameter conditions in memory, and communicate faults and vital conditions to service personnel. The transmission shall contain built-in protection software to guard against severe damage. A diagnostic reader device connector port, suitably protected against dirt and moisture, shall be provided in the operator's area. The on-board diagnostic system shall trigger a visual alarm to the operator when the electronic control unit detects a malfunction.

An electronic transmission fluid level monitoring and protection system shall be provided. This system shall allow a mechanic to accurately determine transmission fluid levels during checking or oil change and shall be in addition to the manual dipstick. This system shall also provide protection against any damage resulting from improper fluid level conditions.

The transmission shall have an auto neutral feature that shall cause it to automatically and immediately shift to "Neutral" whenever the transmission is left in gear and either (a) the parking brake is applied, (b) no bus operator is sitting in the operator's seat, or (c) both Conditions (a) and (b) apply. This system shall also automatically shift the transmission to "Neutral," after a 5-minute delay, whenever the exit door brake interlock is applied.

The transmission shall be equipped with an integral hydraulic retarder designed to extend brake lining service life. The application of the retarder shall cause a smooth blending of both retarder and service brake functions without exceeding jerk requirements. Brake lights shall illuminate when the retarder is activated.

The retarder shall become partially engaged (approximately 1/4 to 1/3 of its total application, with a resulting deceleration of no greater than 0.03 g) when the throttle is completely released (e.g., zero throttle). Maximum retarder shall be achieved when brake pedal is depressed prior to engagement of service brakes with a maximum resulting deceleration of approximately 0.13g. The resulting decelerations specified include the effects of engine braking, wind resistance and rolling resistance.

The thermostatically controlled cooling fan shall be activated when the retarder is engaged and the coolant temperature exceeds the maximum limit established by the engine and transmission manufacturers.

RWA | ~~The retarder on/off switch shall be located in the engine compartment at a location approved during pre-production.~~ The retarder on/off switch shall be located behind the driver on the lower left panel. *W*

Jerk, the rate of change of acceleration measured at the centerline, floor level of the bus shall be minimized throughout the shifting of each transmission range and retarder application and shall be no greater than 0.3 g/sec. for duration of a quarter-second or more.

Axle(s)

The front axle shall be a MAN or equal solid beam, non-driving with a load rating sufficient for the bus loaded to GVWR and shall be equipped with oil lubricated front wheel bearings and seals. All friction points on the front axle shall be equipped with replaceable bushings or inserts and lubrication fittings easily accessible from a pit or hoist.

Fatigue life of all steering components shall exceed 1,000,000 miles. No element of the steering system shall sustain a Class I failure when one of the tires hits a curb or strikes a severe road hazard. Inadvertent alternations of steering as a result of striking road hazards are steering failures.

The bus shall be driven by a single heavy-duty MAN or equal axle at the rear with a load rating sufficient for the bus loaded to GVWR. Transfer of gear noise to the bus interior shall be minimized. The drive axle shall be designed to operate for not less than 300,000 miles on the design operating profile without replacement or major repairs. The lubricant drain plug shall be magnetic type, external hex head. If a planetary gear design is employed, the oil level in the planetary gears shall be easily checked through the plug or sight gauge. The drive shaft shall be guarded to prevent it striking the floor of the coach or the ground in the event of a tube or universal joint failure. Drive shaft universal joint should be clamp type, serviceable to yoke. Both front and rear axle shall have a five (5) year warranty.

Suspension System

Both the front and rear suspensions shall be pneumatic type. The basic suspension system shall last the service life of the bus without major overhaul or replacement. Normal replacement items, such as one suspension bushing, shock absorbers, or air spring shall be replaceable by a mechanic in 30 minutes or less. Adjustment points shall be minimized and shall not be subject to a loss of adjustment in service. Necessary adjustments shall be easily accomplished without removing or disconnecting the components.

The bus approach, departure and front break over angle shall be a minimum 9 degrees.

The suspension system shall permit a minimum wheel travel of 3 inches jounce-upward travel of a wheel when the bus hits a bump (higher than street surface), and 3 inches rebound-downward travel when the bus comes off a bump and the wheels fall relative to the body. Elastomeric bumpers shall be provided at the limit of jounce travel. Rebound travel may be limited by elastomeric bumpers or hydraulically within the shock absorbers. Suspensions shall incorporate appropriate devices for automatic height control so that regardless of load the bus height relative to the centerline of the wheels does not change more than $\pm 1/2$ inch at any point.

Vertical damping of the suspension system shall be accomplished by hydraulic shock absorbers mounted to the suspension arms or axles and attached to an appropriate location on the chassis. Damping shall be sufficient to control coach motion to 3 cycles or less after hitting road perturbations. Shock absorbers shall maintain their effectiveness for at least 50,000 miles. Each unit shall be replaceable by a mechanic in less than 15 minutes. The shock absorber bushing shall be made of elastomeric material that will last the life of the shock absorber.

All elements of steering, suspension, and drive systems requiring scheduled lubrication shall be provided with grease fittings conforming to SAE Standard J534. These fittings shall be located for ease of inspection, and shall be accessible with a standard grease gun without flexible hose end from a pit or with the bus on a hoist. Each element requiring lubrication shall have its own grease fitting with a relief path. Lubricant specified shall be standard for all elements on the bus serviced by standard fittings.

A kneeling system shall lower the entrance(s) of the bus a minimum of 2.5 inches during loading or unloading operations regardless of load up to GVWR, measured at the longitudinal centerline of the entrance door(s), by the driver using a three position, spring loaded to center switch. Downward direction will lower the bus. Release of switch at any time will completely stop lowering motion and hold height of the bus at that position. Upward direction of the switch will allow the system to go to floor height without the driver having to hold the switch up. The kneeling system shall only function with doors in closed position.

An optional reverse kneeling feature shall be provided at buyer's option that is capable of adjusting the exit heights of both front and rear doors to 15.5 inches. When a reverse kneeling feature is provided, the three-position, spring loaded to center switch shall be modified such that release of the switch will completely stop motion and hold the height of the bus *whether the bus is being lowered or being raised*.

Brake and Throttle interlock shall prevent movement when the bus is kneeled. The kneeling control shall be disabled when the bus is in motion. The bus shall kneel at a maximum rate of 1.25 inches per second at essentially a constant rate. After kneeling, the bus shall rise within 2 seconds to a height permitting the bus to resume service and shall rise to the correct operating height within 7 seconds regardless of load up to GVWR. During the lowering and raising operation, the maximum acceleration shall not exceed 0.2g and the jerk shall not exceed 0.3g/sec. Brake and Throttle interlock will release in conjunction with application of service brake.

An indicator visible to the driver shall be illuminated until the bus is raised to a height adequate for safe street travel. An audible warning alarm will sound simultaneously with the operation of the kneeler to

alert passengers and bystanders. A warning light mounted near the curbside of the front door, minimum 3" diameter, amber lens shall be provided that will blink when the kneel feature is activated. Kneeling shall not be operational while the wheelchair ramp or lift is deployed or in operation.

Wheels and Tires

Wheels and rims shall be hub-piloted powder coated painted steel and shall resist rim flange wear. All wheels shall be interchangeable and shall be removable without a puller. Wheels shall be compatible with tires in size and load-carrying capacity. Front wheels and tires shall be balanced as an assembly per SAE J1986.

Tires shall be provided and installed by the contractor, and shall be suitable for the conditions of transit service and sustained operation at the maximum speed capability of the bus. Load on any tire at GVWR shall not exceed the tire supplier's rating. A spare tire on a rim shall be provided with every bus. Tires should be branded and serialized per buyer's direction.

The buses in this procurement shall be equipped with a standard hub odometer mounted at the curbside of the rear axle or current FLEETWATCH or fuel management system at the buyer's option. The hub odometer shall have a capacity reading no less than 999,999 miles in full mile increments (no tenths of a mile).

Automatic Tire Chain System shall be provided as an option.

Steering

Hydraulically assisted power steering shall be provided. Electric power steering shall be provided as an option. The steering gear shall be an integral type with flexible lines eliminated or the number and length minimized. The torque required to turn the steering wheel 10 degrees shall be no less than 5 foot pounds and no more than 10 foot pounds. Steering torque may increase to 70 foot pounds when the wheels are approaching the steering stops, as the relief valve activates. Steering effort shall be measured with the bus at GVWR, stopped with the brakes released, the engine at normal idling speed on clean, dry, level, commercial asphalt pavement, the tires inflated to recommended pressure and the front wheels positioned straight ahead. Power steering failure shall not result in loss of steering control. With the bus in operation the steering effort shall not exceed 55 pounds at the steering wheel rim and perceived free play in the steering system shall not materially increase as a result of power assist failure. Gearing shall require no more than seven turns of the steering wheel lock-to-lock.

Caster angle shall be selected to provide a tendency for the return of the front wheels to the straight position with minimal assistance from the driver.

The steering wheel diameter shall be no less than 18" and no more than 20"; the rim diameter shall be 7/8" to 1 1/4" and shaped for firm grip with comfort for long periods of time. The steering wheel shall be hard plastic with no foam, black in color and a rounded three spoke design.

Steering wheel spokes and wheel thickness should be such as to insure that visibility is within the range of a 95-percentile range as described in SAE 1050a, section 4.2.2 and 4.2.3. Placement of steering column must be as far forward as possible, but either in-line or behind the instrument cluster.

The steering column shall have full tilt and telescoping capability allowing the operator to easily adjust the location of the steering wheel. The steering wheel shall have a rearward tilt adjustment range of no less than 40 degrees as measured from the horizontal and upright position. The steering wheel shall be removable with a standard or universal puller, and shall be manufactured of hard plastic.

Brakes

Service brakes shall be controlled and actuated by a compressed air system. Force to activate the brake pedal control shall be an essentially linear function of the bus deceleration rate and shall not exceed 50 pounds at a point 7 inches above the heel point of the pedal to achieve maximum braking. The heel point is the location of the driver's heel when foot is rested flat on the pedal and the heel is touching the floor or heel pad of the pedal. A microprocessor controlled Automatic Braking System (ABS) shall be provided. The microprocessor for the ABS system shall be protected yet in an accessible location to allow for ease of service. The total braking effort shall be distributed among all wheels in such a ratio as to ensure equal friction material wear rate at all wheel locations

Microprocessor controlled Automatic Traction Control (ATC) shall be provided. Actuation of ABS and/or ATC shall override the operation of the brake retarder.

The entire service brake system, including friction material, shall have a minimum overhaul or replacement life of 50,000 miles with a brake retarder on the design operating profile. Brakes shall be self-adjusting throughout this period. Visible stroke indicators shall be provided to allow service personnel to easily identify when the brakes are not in correct adjustment. The brake linings shall be made of non-asbestos material. In order to aid maintenance personnel in determining extent of wear, a provision such as a scribe line or chamfer indicating the thickness at which replacement becomes necessary, shall be provided on each brake lining.

Replaceable wheel bearing seals shall run on replaceable wear surfaces or be of an integral wear surface sealed design. Oil lubricated wheel bearings and hub seals shall not leak or weep lubricant for 100,000 miles when running on the design operating profile.

The bus shall be equipped with disc brakes. The manufacturer shall provide an electronic as well as a mechanical visible wear indicator on the disc brake calipers. The brake system material and design shall be selected to absorb and dissipate heat quickly so the heat generated during braking operation does not glaze brake linings. The heat generated shall not increase the temperature of tire beads and wheel contact area to more than that allowed by the tire manufacturer.

The parking brake shall be a spring-operated system, actuated by a valve that exhausts compressed air to apply the brakes. The parking brake may be manually enabled when the air pressure is at the operating level per FMVSS 121. An emergency brake release shall be provided to release the brakes in the event of automatic emergency brake application. The parking brake valve button will pop out when air pressure drops below requirements of FMVSS 121. The driver shall be able to manually depress and hold down the emergency brake release valve to release the brakes and maneuver the bus to safety. Once the operator releases the emergency brake release valve, the brakes shall engage to hold the bus in place.

A chock block retainer shall be provided so that it neatly and conveniently stores the standard CTTRANSIT chock block on the front of the curb side front wheel well.

Cooling

The radiator, and charge air cooler shall be modular and of durable corrosion-resistant construction with bolted-on removable tanks. The radiator shall be designed so a mechanic can gain access to a substantial portion of the side facing the engine for the purpose of cleaning the radiator in five minutes or less.

Radiators with a fin density greater than 12 fins per inch, and louvered/slit designs, are more susceptible to clogging and deteriorating cooling performance over time and shall not be used.

No heat producing components or climate control system components shall be mounted between the engine cooling air intake aperture and the radiator. The radiator and charge air cooler shall be designed to withstand thermal fatigue and vibration associated with the installed configuration.

The engine cooling system shall be equipped with a properly sized water filter with a spin-on element and an automatic system for releasing supplemental coolant additives as needed to replenish and maintain protection properties.

The cooling fan shall be temperature controlled, allowing the engine to reach operating temperature quickly. The temperature-controlled fan shall not be driven when the coolant temperature falls below the minimum level recommended by the engine manufacturer.

The charge air cooling system also referred to as after-coolers or inter-coolers shall provide maximum air intake temperature reduction with minimal pressure loss. The charge air radiator shall be sized and positioned to meet engine manufacturer's requirements. The charge air radiator shall not be stacked ahead or behind the engine radiator and shall be positioned as close to the engine as possible unless integrated with the radiator. Air ducting and fittings shall be protected against heat sources, and shall be configured to minimize restrictions and maintain sealing integrity.

Radiator piping shall be stainless steel or brass tubing and, if practicable, hoses shall be eliminated. Necessary hoses shall be of a premium, silicone rubber type that is impervious to all bus fluids. All hoses shall be as short as practicable. All hoses shall be secured with premium, stainless steel clamps that provide a complete 360° degree seal. The clamps shall maintain a constant tension at all times, expanding and contracting with the hose in response to temperature changes and aging of the hose material.

Pneumatic Systems

The bus air system shall operate the air-powered accessories and the braking system with reserve capacity. New buses shall not leak down more than 5psi as indicted on the instrument panel mounted air gauges, within 15 minutes from the point of governor cut-off.

Provision shall be made to supply shop air to the bus air systems using a standard tire inflation type valve. Lincoln Air Quick Disconnect #11659 or equal quick disconnect fittings, shall be easily accessible and shall be located in the engine compartment and near the front bumper area for towing. Retained caps shall be installed to protect fitting against dirt and moisture when not in use. Air for the compressor shall be filtered through the main engine air cleaner system. The air system shall be protected by a pressure relief valve set at 150psi and shall be equipped with check valve and pressure protection valves to assure partial operation in case of line failures.

The engine-driven air compressor or electric compressor shall be sized to charge the air system from 40psi to the governor cutoff pressure in less than 3 minutes while not exceeding the fast idle speed setting of the engine.

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J1149 for copper tubing with standard, brass, flared or ball sleeve fittings, or SAE Standard J844 for nylon tubing if not subject to temperatures over 300 degrees F. Nylon tubing shall be installed in accordance with the following color-coding standards:

Green.	Indicates primary brakes and supply
Red.	Indicates secondary brakes
Brown.	Indicates parking brake
Yellow.	Indicates compressor governor signal
Black.	Indicates accessories

Line supports shall prevent movement, flexing, tension strain, and vibration. Copper lines shall be supported to prevent the lines from touching one another or any component of the bus. To the extent practicable and before installation, the lines shall be pre-bent on a fixture that prevents tube flattening or excessive local strain. Copper lines shall be bent only once at any point, including pre-bending and installation. Rigid lines shall be supported at no more than 5-foot intervals. Nylon lines may be grouped and shall be supported at 2-foot intervals or less. Service air ports shall be available at front and rear of vehicle. Glad-hand coupler shall be available in the front of the vehicle as an option.

The compressor discharge line between power plant and body-mounted equipment shall be flexible convoluted copper or stainless steel line, or may be flexible Teflon hose with a braided stainless steel jacket. Other lines necessary to maintain system reliability shall be flexible Teflon hose with a braided stainless steel jacket. End fittings shall be standard SAE or JIC brass or steel, flanged, swivel type fittings. Flexible hoses shall be as short as practicable and individually supported. They shall not touch one another or any part of the bus except for the supporting grommets. Flexible lines shall be supported at 2-foot intervals or less.

Air lines shall be clean before installation and shall be installed to minimize air leaks. All air lines shall be sloped toward a reservoir and routed to prevent water traps. Grommets or insulated clamps shall protect the air lines at all points where they pass through understructure components.

All air reservoirs shall meet the requirements of FMVSS Standard 121 and SAE Standard J10 and shall be equipped with clean-out plugs and guarded or flush type drain valves. Major structural members shall protect these valves and any automatic moisture ejector valves from road hazards. Reservoirs shall be sloped toward the drain valve. All air reservoirs shall have brass drain valves which discharge below floor level with lines routed to eliminate the possibility of water traps and/or freezing in the drain line.

An air dryer shall prevent accumulation of moisture and oil in the air system. The air dryer system shall include a replaceable desiccant bed, electrically heated drain, and activation device. A mechanic shall be able to replace the desiccant in less than 15 minutes. An oil separator shall be provided between the compressor and dryer.

Charge air piping and fittings shall be designed to minimize air restrictions and leaks. Piping shall be as short as possible and the number of bends shall be minimized. Bend radii shall be maximized to meet the pressure drop and temperature rise requirements of the engine manufacturers. The cross section of all charge air piping shall not be less than the cross section of the intake manifold inlet. Any change in pipe diameter shall be gradual to ensure a smooth passage of air and to minimize restrictions. Piping shall be routed away from exhaust manifolds and other heat sources, and shielded as required to meet the temperature rise requirements of the engine manufacturer.

Charge air piping shall be constructed of stainless steel, aluminized steel or anodized aluminum, except between the air filter and turbocharger inlet where piping may be constructed of fiberglass. Connections between all charge air piping sections shall be sealed with a short section of reinforced hose and secured with stainless steel, constant tension clamps that provide a complete 360° seal.

Heating, Ventilating and Air Conditioning Equipment

The HVAC unit shall be a Thermo King T-Series or equal incorporating a bus rear-mount with a screw type compressor design. An all-electric option will be considered.

With the bus running at the design operating profile with corresponding door opening cycle, and carrying a number of passengers equal to 150 percent of the seated load, the HVAC system shall maintain an average passenger compartment temperature within a range between 65° and 80°F, while controlling the relative humidity to a value of 50 percent or less. The system shall maintain these conditions while subjected to any outside ambient temperatures within a range of -10° to +95° F and at any ambient relative humidity levels between 5 and 100 percent.

When the bus is operated in outside ambient temperatures of 95° to 115°F, the interior temperature of the bus shall be permitted to rise one degree for each degree of exterior temperature in excess of 95°F. When bus is operated in outside ambient temperatures in the range of -10° to +10°F, the interior temperature of the bus shall not fall below 55°F while bus is running on the Design Operating Profile.

The air conditioning portion of the HVAC system shall be capable of reducing the passenger compartment temperature from 110 degrees to 90 degrees F in less than 20 minutes after engine start-up. Engine temperature shall be within the normal operating range at the time of start-up of the cool-down test and the engine speed shall be limited to fast idle that may be activated by an operator-controlled device. During the cool-down period the refrigerant pressure shall not exceed safe high-side pressures and the condenser discharge air temperature, measured 6 inches from the surface of the coil, shall be less than 45°F above the condenser inlet air temperature. The appropriate solar load as recommended in the APTA "Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System," representing 4 P.M. on August 21, shall be used. There shall be no passengers on board, and the doors and windows shall be closed.

The air conditioning system shall meet performance requirements using: HFC R134a or a current EPA-approved refrigerant of the buyer's choice.

The climate control blower motors and fan shall be designed such that their operation complies with the interior noise level requirements as specified.

The HVAC system excluding the operator's heater/defroster shall be centrally controlled with an advanced electronic/diagnostic control system with provisions for extracting/reading data.

After manual selection and/or activation of climate control system operation mode, all interior climate control system requirements for the selected mode shall be attained automatically to within ± 2 degrees F of specified temperature control set-point.

The climate control system shall have the provision to allow operator to adjust the temperature control set-point at a minimum of between 68 degrees and 72 degrees F. From then on, all interior climate control system requirements shall be attained automatically, unless re-adjusted by operator.

The operator shall have full control over the defroster and operator's heater. The operator shall be able to adjust the temperature in the operator's area through air distribution and fans. The interior climate control system shall switch automatically to the ventilating mode if the refrigerant compressor or condenser fan fails.

Interior temperature distribution shall be uniform to the extent practicable to prevent hot and/or cold spots. After stabilization with doors closed, the temperatures between any two points in the passenger compartment in the same vertical plane, and 6 inches to 72 inches above the floor, shall not vary by more than 5°F with doors closed. The interior temperatures, measured at the same height above the floor, shall not vary more than ± 5 °F, from the front to the rear, from the average temperature determined in accordance to APTA Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System. Variations of greater than ± 5 °F will be allowed for limited, localized areas provided the majority of the measured temperatures fall within the specified requirement.

The cooling mode of the interior climate control system shall introduce air into the bus at or near the ceiling height at a minimum rate of 25 cubic feet per minute (cfm) per passenger based on the standard configuration bus carrying a number of passengers equal to 150 percent of the seated load. Airflow shall be evenly distributed throughout the bus with air velocity not exceeding 100 feet per minute on any passenger. The ventilating mode shall provide air at a minimum flow rate of 20 cfm per passenger.

Airflow may be reduced to 15 cfm per passenger (at 150 percent of seated load) when operating in the heating mode. The fans shall not activate until the heating element has warmed sufficiently to assure at least 70 degrees F air outlet temperature. The heating air outlet temperature shall not exceed 120 degrees F under any normal operating conditions.

The bus interior climate control system shall deliver at least 100 cfm of air to the operator's area when operating in the ventilating and cooling modes. Adjustable nozzles shall permit variable distribution or shutdown of the airflow. Airflow in the heating mode shall be reduced proportionally to the reduction of airflow into the passenger area. The windshield defroster unit shall meet the requirements of SAE Recommended Practice J382, Windshield Defrosting Systems Performance Requirements, and shall have the capability of diverting heated air to the operator's feet and legs. The defroster or interior climate control system shall maintain visibility through the operator's side window.

There shall be an operator control for the auxiliary heater in rear engine compartment. The auxiliary heater dash indicator lights shall include a green light for when system is operating and yellow light for system failure.

The controls for the operator's compartment for heating, ventilation, and cooling systems shall be integrated and shall meet the following requirements. The heat/defrost system fan shall be controlled by a separate switch that has an "Off" position and at least two positions for speed control. All switches and controls shall preclude the possibility of clothing becoming entangled.

A manually operated control valve shall control the coolant flow through the heater core. If a cable operated manual control valve is used, the cable length shall be kept to a minimum to reduce cable seizing. Heater water control valves shall be "positive" type, closed or open.

A separate heating, ventilation, and defroster system for the operator's area shall be provided and shall be controlled by the operator. The system shall meet the following requirements:

The heater and defroster system shall provide heating for the operator and heated air to completely defrost and defog the windshield, operator's side window, and the front door glasses in all operating conditions. Fan(s) shall be able to draw air from the bus body interior and/or the exterior through a control device and pass it through the heater core to the defroster system and over the operator's feet. A minimum capacity of 100cfm shall be provided. The operator shall have complete control of the heat and fresh airflow for their area.

The defroster supply outlets shall be located at the lower edge of the windshield. These outlets shall be unbreakable and shall be free of sharp edges that can catch clothes during normal daily cleaning. The system shall be such that foreign objects such as coins or tickets cannot fall into the defroster air outlets. Adjustable ball vents shall be provided at the left of the operator's position to allow direction of air onto the side windows. Two additional ball vents shall be located on the vertical front dash panel adjacent to the front door to allow direction of air onto the door windows and/or entrance area

A ventilation system shall be provided to ensure operator comfort and shall be capable of providing fresh air in both the foot and head areas. Vents shall be controllable by the operator from the normal driving position. Decals shall be provided indicating "operating instructions" and "open" and "closed" positions as well. When closed, vents shall be sealed to prevent the migration of water or air into the bus.

Air shall be filtered before discharge into the passenger compartment. The filter shall meet the ANSI/ASHRAE 52.1 requirement for 5 percent or better atmospheric dust spot efficiency, 50 percent weight arrestance, and a minimum dust holding capacity of 120 gram per 1,000 cfm cell. More efficient air filtration may be provided to maintain efficient heater and/or evaporator operation. Air filters shall be easily removable for service. Air filters shall be of the disposable type.

Two roof ventilators shall be provided in the roof of the bus, one approximately over or just forward of the front axle and the other, approximately over the rear axle. A single roof ventilator is required for the 30' bus.

Each ventilator shall be motorized to open and close remotely via a push-button driver control switch. Each ventilator shall operate independently of the other. Selecting the "open" switch fully opens the ventilator to provide maximum airflow to the bus interior. Selecting the "close" switch position fully closes and automatically locks the ventilator hatch. The ventilators shall meet FMVSS217 requirements for non-school bus applications. When open with the bus in motion, the ventilators shall provide fresh air inside the bus. Each ventilator shall cover an opening area no less than 425 square inches and shall be capable of being positioned as a scoop with either the leading or trailing edge open no less than 4 inches, or with all four edges raised simultaneously to a height of no less than 3-1/2 inches. An escape hatch shall be incorporated into the roof ventilator. Roof ventilator(s) shall be sealed to prevent entry of water when closed.

Manually controlled shutoff valves in the refrigerant lines shall allow isolation of the compressor and dehydrator filter for service. To the extent practicable, self-sealing couplings utilizing O-ring seals shall be used to break and seal the refrigerant lines during removal of major components, such as the refrigerant compressor. Shut-off valves may be provided in lieu of self-sealing couplings. The condenser shall be located to efficiently transfer heat to the atmosphere, and shall not ingest air warmed above the ambient temperature by the bus mechanical equipment, or to discharge air into any other system of the bus. The location of the condenser shall preclude its obstruction by wheel splash, road dirt or debris. HVAC components located within 6 inches of floor level shall be constructed to resist damage and corrosion.

Heat shall be supplied to the entrance and exit areas to prevent accumulation of snow, ice, or slush with bus operating under design operating profile and corresponding door opening cycle.

Sufficient floor level heaters shall be provided that evenly supply heated forced air through floor ducts across the length of bus. Floor ducts may be discontinued at the upper level but additional provisions to prevent cold floor and ensure temperature uniformity shall be included. Control of the floor level heating shall be through the main heating system electronic control.

Interior Lighting

The passenger interior lighting system shall be DINEX LED lighting system or 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.

Step lighting for the intermediate platform between lower and upper floor levels shall be provided and shall illuminate in all engine run positions. The step lighting shall be low-profile to minimize tripping and snagging hazard for passengers and shall be shielded as necessary to protect passengers' eyes from glare.

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, Philips or 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 clear polycarbonate. Lens shall be designed to effectively "mask" all individual LED's to make them invisible and there shall be no "hot spot" or "dark spot". Lens shall be sealed to inhibit incursion of dust and insects yet be 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, and shall be reverse polarity protected 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 fade 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.

Emergency backup system shall keep the light fixtures over the front and rear doors illuminated at minimum light output under a separated battery power for 10 to 15 minutes allowing passengers visibility and timely evacuation from the vehicle during emergency conditions.

A light fixture shall be mounted in the ceiling above the farebox location. The fixture shall be capable of projecting a concentrated beam of light on the farebox. This light will automatically come on whenever the front doors are opened and the run switch is in the "night run" or "night park" position.

Lighting shall be programmable to minimize windshield glare at night.

Doors

Two doorways shall be provided for low floor buses in the curbside of the bus for passenger ingress and egress. The front doorway shall be forward of the front wheels and located so that the operator will be able to collect or monitor the collection of fares. Passenger doors and doorways shall comply with ADA requirements.

The rear doorway centerline shall be rearward of the point midway between the front door centerline and the rearmost seat back.

The door style for the low floor buses shall be slide glide.

Structure of the doors, their attachments, inside and outside trim panels, and any mechanism exposed to the elements shall be corrosion-resistant. Door panel construction shall be of corrosion-resistant metal or reinforced non-metallic composite materials. The doors, when fully opened, shall provide a firm support and shall not be damaged if used as an assist by passengers during ingress or egress. The front leaves of the passenger doors shall overlap the rear leaves. At the buyer's option, a two-thirds front leaf/one-third rear leaf door may be provided at the front door position.

The front door clear width shall be no less than 31.75 inches with the doors fully opened. The rear door clear width shall be no less than 24 inches with the doors fully opened. When open, the doors shall leave an opening no less than 76 inches in height.

Both front and rear low floor bus doors shall have grab rails and be a "Full Glass" glazing design to provide passengers and vehicle operators an unobstructed view. In the case where the front doorway exceeds the width of the wheelchair ramp, an additional guide rail may be required that prevents wheelchairs from moving sideways off the ramp. The doors shall be Vapor Bus International Ameriview or equal. The doors shall be tamper resistant but parts shall be designed for quick and easy replacement by a trained mechanic.

The front door panel glazing material shall have a nominal ¼ inch or 6 mm thick laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 2 and the Recommended Practices defined in SAE J673. Glazing material in the rear doorway door panels shall be the same material, thickness and color as the side windows defined in Section 5.4.7.4.2.

It shall be possible to open and close either passenger door without its contact with **an 8-inch-high curb**¹. This condition is to be met when (1) the bus loaded to GVWR, (2) is **not knelt**, (3) is parked with only the tires touching that curb, and (4) is on a street sloping toward the curb such that the street side wheels are 5 inches higher than the curb side wheels.

Closing door edge speed shall not exceed 19 inches per second. Power close rear doors shall be equipped with a sensitive edge or other obstruction sensing system such that if an obstruction is struck by a closing door edge, the doors will stop and/or reverse direction prior to imparting a 10-pound force on 1 square inch of that obstruction. Doors closed by return spring or counterweight-type device need not be equipped with an obstruction sensing device but shall be capable of being pushed to the point where the door starts to open with a force not to exceed 20 pounds applied to the center edge of the forward door panel. Whether or not the obstruction sensing system is present or functional it shall be possible to withdraw a 1-1/2 inch diameter cylinder from between the center edges of a closed and locked door with an outward force not greater than 35 pounds.

Door actuators shall be adjustable so that the door opening and closing speeds can be independently adjustable. Actuators and the complex door mechanism shall be concealed from passengers but shall be easily accessible for servicing. The door actuators shall be rebuildable. If powered by compressed air, exhaust from the door system shall be routed below the floor of the bus to prevent accumulation of any oil that may be present in air system and to muffle sound.

In the event of an emergency, it shall be possible to open the doors manually from inside the bus using a force of no more than 25 pounds after actuating an unlocking device at each door. The unlocking devices shall be clearly marked as an emergency-only device and shall require two distinct actions to actuate. The respective door emergency unlocking device shall be accessible from the entrance and exit areas. When the rear door emergency device is actuated, the door interlock throttle system shall return the engine to idle and the door interlock brake system shall apply to stop the bus. When the front door emergency device is actuated, only the door interlock throttle system shall be actuated. Locked doors shall require a force of more than 100 pounds to open manually. When the locked doors are manually forced to open, damage shall be limited to the bending of minor door linkage with no resulting damage to the doors, engines, and complex mechanism.

¹ If the buses are ordered with a reverse kneeling feature, the words "not knelt" shall be replaced by "raised by the reverse kneeler to its highest position," and the term "an 8-inch-high curb" shall be replaced by the term "a 15-inch high-level platform or curb" in this paragraph.

Access doors for the door actuator compartments shall be secured with hand screws or latches, and shall prevent entry of mechanism lubricant into the bus interior. All fasteners that retain access panels shall be captive in the cover.

Fare Collection

Space, as far forward as practicable and structural provisions, shall be made for installation of a farebox of the type designated by the Procuring Agency for that type of bus. Location of the fare collection device shall not restrict traffic in the vestibule, including wheelchairs if a front door loading device is used, and shall allow the operator to easily reach the farebox controls and to view the fare register. The fare box shall not restrict access to the operator area, shall not restrict operation of operator controls and shall not, either by itself or in combination with stanchions, transfer mounting, cutting, and punching equipment and route destination signs, restrict operator's field of view per SAE Recommended Practice J1050 (See Section 5.4.7.2.) Location and mounting of the fare collection device shall allow use, without restriction, by passengers. Fare box location shall permit accessibility to the vault for easy manual removal or attachment of suction devices. Meters and counters on the fare box shall be readable on a daily basis. The floor under the fare box shall be reinforced, as necessary, to provide a sturdy mounting platform and to prevent shaking of the fare box.

Each transit system in this procurement will supply and install its own farebox and transfer/ticket issuing equipment of the type designated when the bus is delivered in Connecticut. The bus manufacturer is required to provide enough space for this equipment installation and to meet all ADA requirements, as well as driver access to the Bus Operator Work Station. A stanchion around the farebox and any related equipment is not required.

A switch type 15-amp minimum protected circuit shall be available to power the fare box. The switch is to be located overhead of driver to reboot or shut off farebox. This power service shall include a grounded lead with both wires enclosed in a flexible conduit. The farebox and transfer issuing equipment will be provided and installed by each transit system after the bus is delivered to Connecticut.

Windows

The windshield shall permit an operator's field of view as referenced in SAE Recommended Practice J1050. The vertically upward view shall be a minimum of 15 degrees, measured above the horizontal and excluding any shaded band. The vertically downward view shall permit detection of an object 3-1/2 feet high no more than 2 feet in front of the bus. The horizontal view shall be a minimum of 90 degrees above the line of sight. Any binocular obscuration due to a center divider may be ignored when determining the 90-degree requirement, provided that the divider does not exceed a 3-degree angle in the operator's field of view. Windshield pillars shall not exceed 10 degrees of binocular obscuration. The windshield shall be designed and installed to minimize external glare as well as reflections from inside the bus.

The windshield shall be a two piece windshield design and easily replaceable by removing zip-locks from the windshield retaining moldings. Bonded-in-place windshield shall not be used. The windshield glazing material shall have a 1/4-inch or 6-mm nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 1A and the Recommended Practices defined in SAE J673. The glazing material shall have single density tint. The upper portion of the windshield above the operator's field of view shall have a dark, shaded band with a minimum luminous transmittance of 6 percent when tested in accordance to ASTM D-1003.

The operator's side window shall be the sliding type, requiring only the rear half of sash to latch upon closing and shall open sufficiently to permit the seated operator to easily adjust the street side outside rearview mirror. When in an open position, the window shall not rattle or close during braking. The entire assembly shall be hinged and have a single release for Emergency Egress. This window section shall slide in tracks or channels designed to last the service life of the bus. The operator's side window

shall not be bonded in place and shall be easily replaceable. The glazing material shall have a single density tint.

Design must prevent sections from freezing closed in the winter. Light transmittance shall be 75% on the glass area below 53" from the operator platform floor.

The operator's view, perpendicular through operator's side window glazing, should extend a minimum of 840 mm (33 inches) to the rear of the Heel Point on the accelerator, and in any case must accommodate a 95th percentile male operator. The view through the glazing at the front of the assembly should begin not more than 560 mm (26 inches) above the operator's floor to ensure visibility of an under-mounted convex mirror. Operator's window construction shall maximize ability for full opening of the window.

The operator's side window glazing material shall have a 1/4 inch nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 2 and the Recommended Practices defined in SAE J673.

All side windows, except windows in passenger doors and those smaller than 500 square inches, shall have window panels that are openable by passengers. Openable window panels shall be equipped with latches that secure the window in the fully open and fully closed positions.

Each openable side window shall incorporate an upper transom portion. The transom shall be between 25 and 35 percent of the total window area. The lower portion of the window shall be fixed. The transom portion shall be hinged along the lower edge and open inward.

All side windows shall be easily replaceable without disturbing adjacent windows and shall be mounted so that flexing or vibration from engine operation or normal road excitation is not apparent.

The windows shall be designed and constructed to enable a mechanic to remove and replace two windows in less than 10 minutes.

Emergency exit and window operation instructions must be a metal plate and a fixed to the bus sidewall. The instruction must be in both English and Spanish and be mounted within six inches of the emergency handle.

Side windows glazing material shall have 1/4-inch nominal thickness laminated safety glass. The material shall conform to applicable requirements of ANSI Z26.1 and the Recommended Practices defined in SAE J673.

Windows on the bus sides and in the rear door shall be tinted gray in color, complementary to the bus exterior with a 76% light transmission. Windows over the destination signs shall not be tinted. The side window sash frames including the Driver's window frame will be made of black anodized aluminum. An optional 3-min window tear-off protection system shall be added at the Procuring Agency's discretion.

Mirrors

The bus shall be equipped with 8" x 15" 2/1 split view or equal corrosion-resistant, outside rearview mirror on each side of the bus. The upper part of the mirror is flat and the lower portion is convex. Mirrors shall permit the operator to view the roadway along both sides of the bus, including the rear wheels.

The bus shall be equipped with 2 outside mirrors of unit magnification (flat), each with not less than 50 sq. in. of reflective surface. The mirrors shall be corrosion-resistant and be installed with stable supports on each side of the bus. The mirrors shall be located so as to provide the operator a view to the rear along both sides of the bus and shall be adjustable both in the horizontal and vertical directions to view the

rearward scene. The rearview mirrors shall be mounted so that its lower edge is no less than 80 inches above the street surface and equipped with a permanent high quality weather resistant orange reflective decal.

The operator shall be able to adjust both mirrors remotely while seated in the driving position. The control for remote positioning of the mirror shall be a single switch or device.

Driver side and curbside mirrors shall have directional signals in the mirror head.

All exterior mirrors shall be electrically heated. The heaters shall be energized whenever the operator's heater and/or defroster are activated.

Mirrors shall be firmly attached to the bus to minimize vibration and prevent loss of adjustment, but not so firmly attached that the bus or its structure is damaged when the mirror is struck in an accident. Mirrors shall retract or fold sufficiently to allow bus washing operations.

Mirror stops shall be provided to prevent outside mirrors from striking side glass or windshield.

Interior mirrors shall be provided for the operator to observe passengers throughout the bus without leaving his/her seat and without shoulder movement. The operator shall be able to observe passengers in the front/entrance and rear/exit areas, anywhere in the aisle, and in the rear seats.

Seats

The bus shall be designed and manufactured in accordance with all applicable fire safety and smoke emission regulations. These provisions shall include the use of fire-retardant/low-smoke materials, fire detection systems, firewalls, and facilitation of passenger evacuation.

All materials used in the construction of the Passenger Compartment of the bus shall be in accordance with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993. Materials entirely enclosed from the passenger compartment, such as insulation within the sidewalls, need not comply. In addition, smaller components and items, such as seat grab rails, switch knobs and small light lenses, and shall be exempt from this requirement.

The passenger seating arrangement in the bus shall be such that seating capacity is maximized and in compliance with the following requirements. The Procuring Agency recognizes that ramp location, foot room, hip-to-knee room, doorway type and width, seat construction, floor level type, seat spacing requirements, etc. ultimately affect seating capacity and layout.

Passenger seats shall be arranged in a transverse, forward facing configuration, except at the wheel housings where aisle-facing seats may be arranged as appropriate with due regard for passenger access and comfort. Other areas where aisle-facing seats may be provided are at wheelchair securement areas and platforms (such as for fuel tank storage space).

Passenger seating capacity with this arrangement shall be no less than 38 for a forty foot bus, 30 for a thirty-five foot bus and 25 in a thirty foot bus not including the operator with an emphasis on flexibility in design to maximize seating capacity, with the specified seating arrangement. Rearward facing seats are discouraged.

Passenger seats to be American Seating InSight model, or approved equal, with plush padded cushion seats forward of the rear door and standard vandal resistant padded cushion seats behind the rear door. The plush padded cushion is defined as at least 1 ¼" thick for the seat cushion and ½" for the seat back. Color of seat frame and back will be determined at the pre-build meeting. All applicable seat dimensions specified below shall be measured with pad fully depressed. The padded seat inserts shall be affixed to

the seat body with industrial heavy duty Velcro. A provision, such as a small grommeted hole, to allow drainage, shall be incorporated into seat insert.

Hip-to-knee room measured from the front of one seat back horizontally across the highest part of the seat to the seat or panel immediately in front, shall be no less than 28 inches. At all seating positions in paired transverse seats immediately behind other seating positions hip-to-knee room shall be no less than 28 inches.

In order to maximize seating capacity without unduly affecting passenger comfort, minor variations in the required hip-to-knee room will be allowed in limited areas. All such areas shall be identified to the Procuring Agency prior to bid for approval.

Foot room, measured at the floor forward from a point vertically below the front of the seat cushion, shall be no less than 14 inches. Seats immediately behind the wheel housings and modesty panels may have foot room reduced, provided the wheelhouse is shaped so that it may be used as a footrest or the design of modesty panel effectively allows for foot room.

Thickness of the transverse seat backs shall be minimized at the bottom to increase passenger knee room and passenger capacity. The area between the longitudinal seat backs and the attachment to the bus sidewalls shall be designed to prevent debris accumulation.

The aisle between the seats shall be no less than 20 inches wide at seated passenger hip height. Seat backs shall be shaped to increase this dimension to no less than 24 inches at standing passenger hip height.

All proposers shall submit a copy of their proposed seat layout consistent with these specifications showing hip-to-knee and foot room dimensions, stanchion layout and wheelchair maneuverability layout with your proposal.

Armrests shall be padded with material that is the same as or similar to, the seat back padding and handhold. Seats, back cushions and other pads shall be securely attached and shall be detachable by means of a simple release mechanism employing a special tool so that they are easily removable by maintenance personnel but not by passengers. To the extent practicable, seat pads shall be interchangeable throughout the bus. Materials shall have high resistance to tearing, flexing, and wetting. The seat fabric shall be Holdsworth product numbers BHD480, BQV285 and BXE051, coated with Defender fabric treatment, or equal.

Formed plastic seats shall be provided as an option.

Powered USB 2.0 ports at all passenger seating locations shall be provided as an option.

Passenger Assists

Passenger assists in the form of full grip, vertical stanchions or handholds shall be provided for the safety of standees and for ingress/egress. Passenger assists shall be convenient in location, shape, and size for both the 95th-percentile male and the 5th-percentile female standee. Starting from the entrance door and moving anywhere in the bus and out the exit door, a vertical assist shall be provided either as the vertical portion of seat back assist and as a separate item so that a 5th-percentile female passenger may easily move from one assist to another using one hand and the other without losing support. All handholds and stanchions at front doorway, around farebox, and at interior steps for bi-level designs shall be powder-coated in high contrast yellow color. The forward-most vertical stanchions on either side of the aisle immediately behind the operator's area shall be powder-coated yellow.

Excluding those mounted on the seats and doors, the assists shall have a cross-sectional diameter between 1-1/4 and 1-1/2 inches or shall provide an equivalent gripping surface with no corner radii less than 1/4 inch. All passenger assists shall permit a full hand grip with no less than 1-1/2 inches of knuckle clearance around the assist. Passenger assists shall be designed to minimize catching or snagging of clothes or personal items and shall be capable of passing the NHTSA Drawstring Test.

Any joints in the assist structure shall be underneath supporting brackets and securely clamped to prevent passengers from moving or twisting the assists. Passenger assists shall be designed to minimize glare in the Operator's area to the extent possible (see Section 5.4.6.1.1). With the exception of seat and door handholds, all areas of the passenger assists that are handled by passengers including functional components used as passenger assists shall be of anodized aluminum or stainless steel. Seat handholds shall be of the same construction and finish as the seat frame. Door mounted passenger assists shall be of anodized aluminum, stainless steel, or powder coated metal. Connecting tees and angles shall be powder coated metal castings. Assists shall withstand a force of 300 pounds applied over a 12-inch lineal dimension in any direction normal to the assist without permanent visible deformation. All passenger assist components, including brackets, clamps, screw heads, and other fasteners used on the passenger assists shall be designed to eliminate pinching, snagging and cutting hazards and shall be free from burrs or rough edges.

Front and rear doors, or the entry area, shall be fitted with ADA compliant assists. Assists shall be as far outward as practicable, but shall be located no farther inboard than 6 inches from the outside edge of the entrance step and shall be easily grasped by a 5th-percentile female boarding from street level. Door assists shall be functionally continuous with the horizontal front passenger assist and the vertical assist and the assists on the wheel housing or on the front modesty panel.

The aisle side of the operator's barrier, the wheel housings, and when applicable the modesty panels shall be fitted with vertical passenger assists that are functionally continuous with the overhead assist and that extend to within 36 inches of the floor. These assists shall have sufficient clearance from the barrier to prevent inadvertent wedging of a passenger's arm.

A horizontal passenger assist shall be located across the front of the bus and shall prevent passengers from sustaining injuries on the fare collection device or windshield in the event of a sudden deceleration. Without restricting the vestibule space, the assist shall provide support for a boarding passenger from the front door through the fare collection procedure. Passengers shall be able to lean against the assist for security while paying fares. The assist shall be no less than 36 inches above the floor. The assists at the front of the bus shall be arranged to permit a 5th-percentile female passenger to easily reach from the door assist, to the front assist, to vertical assists on the operator's barrier, wheel housings, or front modesty panel.

Vertical assists that are functionally continuous with the overhead assist shall be provided at the aisle side of the transverse seat immediately forward of the rear door and on the aisle side of the rear door modesty panel(s). Passenger assists shall be provided on modesty panels that are functionally continuous with the rear door assists. Rear doors, or the exit area, shall be fitted with assists no less than 3/4 inch in width and shall provide at least 1-1/2 inches of knuckle clearance between the assists and their mounting. The assists shall be designed to permit a 5th-percentile female to easily move from one assist to another during the entire exiting process. The assists shall be located no farther inboard than 6 inches from the outside edge of the rear doorway.

Except forward of the standee line and at the rear door, a continuous, full grip, overhead assist shall be provided. This assist shall be convenient to standees anywhere in the bus and shall be located over the center of the aisle seating position of the transverse seats. The assist shall be no less than 70 inches above the floor.

Straps or other extensions as necessary shall be provided for sections where vertical assists are not available and for the use by passengers that cannot reach to 70 inches. Straps shall be provided in the front of the bus where the wheelchair securements are located and there is a large space between vertical assists.

Overhead assists shall simultaneously support 150 pounds on any 12-inch length. No more than 5 percent of the full grip feature shall be lost due to assist supports.

Longitudinal seats shall have vertical assists located between every other designated seating position, except for seats that fold/flip up to accommodate wheelchair securement. Assists shall extend from near the leading edge of the seat and shall be functionally continuous with the overhead assist. Assists shall be staggered across the aisle from each other where practicable and shall be no more than 52 inches apart or functionally continuous for a 5th percentile female passenger. The Contractor shall provide a safety barrier in the front of the first row of front facing seats to protect the passengers from being ejected from these seats on a hard brake incident. Arm rests with handles and hand rails will be provided for Parlor Seating or in other open positions where no other form of barrier protection can be provided.

RWA

Unless passenger seating is provided on top of wheel housing, passenger assists shall be mounted around the exposed sides of the wheel housings (and propulsion compartments if applicable) which shall also be designed to prevent passengers from sitting on wheel housings. Such passenger assists shall also effectively retain items, such as bags and luggage, placed on top of wheel housing.

Noise Levels

The bus interior and exterior noise levels shall meet or exceed the requirements of the APTA "Standard Bus Procurement Guidelines." 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 80 dab measured at the outside skin of the bus shall have a sound level of 65 dab or less at any point inside the bus. These conditions shall prevail with all openings, including doors and windows, closed and with the engine and accessories switched off.

Bus Interior

Ceiling panels shall be white melamine-type material suitable for exterior skin painted and finished to exterior quality. Headlining shall be supported to prevent buckling, drumming, or flexing and shall be secured without loose edges. Headlining materials shall be treated or insulated to prevent marks due to condensation where panels are in contact with metal members. Moldings and trim strips, as required to make the edges tamperproof, shall be stainless steel, aluminum, or plastic, colored to complement the ceiling material. Headlining panels covering operational equipment that is mounted above the ceiling shall be on hinges for ease of service but retained to prevent inadvertent opening.

Interior panels shall be attached so that there are no exposed unfinished or rough edges or rough surfaces. Panels and fasteners shall not be easily removable by passengers. Interior trim fasteners, where required, shall be rivets or cross-recessed head screws.

A frame shall be provided along both sides of the bus near the juncture of the bus ceiling and sidewall to retain advertising media 11 inches high and 0.09 inches thick. The retainers may be concave and shall support the media without adhesives. The media shall be illuminated by the ambient fluorescent light system on the interior of the bus.

Any insulation material used between the inner and outer panels shall be sealed or self-sealing to minimize entry and/or retention of moisture. Insulation properties shall be unimpaired during the service life of the bus. Any insulation material used inside the engine compartment shall not absorb or retain oils

or water and shall be designed to prevent casual damage that may occur during maintenance operations. All insulation materials shall comply with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993.

Access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior. Access doors shall be hinged with gas props or over-center springs, where practical, to hold the doors out of the mechanic's way. Panel fasteners shall be standardized so that only one tool is required to service all special fasteners within the bus.

The bus body shall be thoroughly sealed so that the operator or passengers cannot feel drafts during normal operations with the passenger doors closed.

The floor covering shall have a non-skid walking surface that remains effective in all weather conditions and complies with all ADA requirements. The floor covering, as well as transitions of flooring material to the main floor and to the entrance and exit area, shall be smooth and present no tripping hazards. The standee line shall be at least 2 inches wide and shall extend across the bus aisle. This line shall be the same color as the outboard edge of the entrance/exit areas. The flooring shall be Gerflor Apollo NT Self-adhesive material or equal, in a color/pattern as further specified by the Procuring Agency.

Any areas on floor, which are not intended for standees, such as areas "swept" during passenger door operation, shall be clearly and permanently marked. The floor in the operator's compartment shall be easily cleaned and shall be arranged to minimize debris accumulation.

A one-piece center strip shall extend from the vertical wall of the rear settee between the aisle sides of transverse seats to the standee line. If the floor is of a bi-level construction, then center strip shall be one-piece at each level. The covering between the center strip and the wheel housings may be separate pieces. At the rear door, however, a separate strip as wide as the door shall extend from the center strip to the outboard edge of the rear/exit area. The floor under the seats shall be covered with smooth surface flooring material. The floor covering shall closely fit the sidewall cove or extend to the top of the cove.

Access openings in the floor shall be sealed to prevent entry of fumes and water into the bus interior. Flooring material shall be flush with the floor and shall be edge-bound with stainless steel, or other material that is acceptable to the Procuring Agency, to prevent the edges from coming loose. Access openings shall be asymmetrical so that reinstalled flooring shall be properly aligned. Fasteners shall tighten flush with the floor. Interior access opening panels shall be provided for the driveshaft, the transmission, the engine and the suspension system.

Two 15 ¼" high by 10" wide by 14 ½" long black rubber waste baskets shall be provided in each bus. One will be secured on the curb side wheel well next to the schedule rack. The second one will be secured behind the curb side seat directly in front of the rear door.

Provisions shall be made on the rear of the operator's barrier for two frames to retain information that are sized 17 inches wide and 11 inches high posted by the transit system, such as notices and schedule changes. The frames shall be Transit Information Products MC TAB HOR or equal. Overall size is 18.490" by 11.875" by .25". The unit shall be fabricated from clear acrylic and display one 17" wide x 11" tall insert, and shall have openings at the bottom to reduce dust accumulation. All outside edges shall be flame polished. The unit installs with 9 flat head 4-40 screws.

A Transit Information Products OBIC-WW8-P metal or equal multi-pocket schedule holder shall be provided and secured on the bus front curb side wheel well.

A passenger "Stop Requested" signal system that complies with applicable ADA requirements defined in 49 CFR, Part 38.37 shall be provided. The system shall consist of a heavy-duty pull cable, chime, and interior sign message. The interior sign message shall be integrated into the bus stop enunciator display(s) included in any intelligent transportation system (ITS) provided at the factory or installed soon

after delivery. The pull cable shall be located the full length of the bus on the sidewalls at the level where the transom is located. If no transom window is required, height of pull cable shall approximate this transom level and shall be no greater than 63 inches as measured from floor surface. It shall be easily accessible to all passengers, seated or standing. Vertical pull cords shall also be provided between all windows in the front lower section of the bus. Pull cable(s) shall activate a solid state or magnetic proximity switch(es). At each wheelchair parking position and priority seating positions additional provisions shall be included to allow a passenger in a mobility aid to easily activate "Stop Requested" signal.

A heavy-duty passenger Stop Request signal button shall be installed on modesty panel stanchion immediately forward of rear door and clearly identified with the word "STOP" on the button.

Exit signals located in the wheelchair parking area shall be no higher than 4 feet above the floor. Instructions shall be provided to clearly indicate function and operation of these signals. No portion of the signal activator may be obstructed, and the activator shall be clearly visible to any passenger sitting in this area.

A single "Stop Requested" chime shall sound when the system is first activated. A double chime shall sound when the system is first activated from wheelchair passenger areas.

A "Stop Requested" message shall be illuminated when the passenger "Stop Requested" signal system is activated. The message shall remain visible until one or both passenger doors are opened. A message shall be visible to the seated operator and seated passengers.

The operator shall be able to deactivate the signal system from the operator's area. A green light shall be mounted above the rear door, approximately on center of the rear door actuator compartment access panel, to indicate when the rear doors have been unlocked.

Paint & Decals

The CTTRANSIT buses shall be painted in metallic blue (DUHS 16429) and metallic silver (DUHS 36352) paint to a dry-film thickness of between 3 and 4 mils, inclusive, measured at the extreme corners of the bus. This is a base coat/clear coat system. The clear coat contains an anti-graffiti additive. The paint and color scheme for the other transit systems in this procurement will be determined at preproduction. They should be costed out based upon the CTTRANSIT paint and color scheme.

Monograms, numbers and other special signing specified by the Procuring Agency shall be produced in a Frutiger font, unless otherwise indicated by the Procuring Agency and shall be applied to the inside and outside of the bus as required. Signs shall be best quality durable and fade-, chip-, and peel-resistant; they may be painted signs, decals, or pressure-sensitive appliques. Signs and decals shall be provided in compliance with the ADA requirements defined in 49 CFR Part, Subpart B, 38.27.

All decals, including reflecting stripes, shall be made from high quality 3M or equal cast vinyl material and screened using compatible inks. All decals shall be sealed with clear, waterproof sealant around all exposed edges if required by the decal supplier. A sample list of decals to be provided shall include all manufacturer safety related decals as well as the following:

Exterior Decals

- Handicapped Accessible Symbol
- Bus System Logo
Bus System URL
Bus System Telephone #
- "Seats xx"
CTDOT logo/Operated By ...

- Stand Back When Flashing ... Wheelchair Ramp Arrow
- Bus number (Front, Back and two on each side and large number on the roof)
Wide Right Turns ...
- For Your Safety ...
- Bike Rack (Standard safety and operating instruction decals on Bike Rack)
- Two Bike Maximum (only for buses with interior bike racks installed)

Interior Decals

- Wait for Light ... (English & Spanish)
- For your safety, ... (English & Spanish)
- No radios, smoking, etc... (English & Spanish)
- Video Camera ... (English & Spanish)
- Make seats available ...
- Bus number to be provided at four locations on the interior as determined at preproduction
- "Watch Your Step" on stanchions and rear platform step
- Handicapped Accessible Symbol
- Pull Cord Signal

All exterior surfaces shall be smooth and free of wrinkles and dents. Exterior surfaces to be painted shall be properly prepared as required by the paint system supplier, prior to application of paint to assure a proper bond between the basic surface and successive coats of original paint for the service life of the bus. Drilled holes and cutouts in exterior surfaces shall be made prior to cleaning, priming and painting to prevent corrosion. The bus shall be completely painted prior to installation of exterior lights, windows, mirrors and other items that are applied to the exterior of the bus. Body filler materials may be used for surface dressing, but not for repair of damaged or improperly fitted panels.

Paint shall be applied smoothly and evenly with the finished surface free of dirt and the following other imperfections:

- A. Blisters, orange peel or bubbles appearing in the topcoat film.
- B. Chips, scratches, or gouges of the surface finish.
- C. Cracks in the paint film.
- D. Craters where paint failed to cover due to surface contamination.
- E. Overspray.
- F. Peeling
- G. Runs or sags from excessive flow and failure to adhere uniformly to the surface.
- H. Chemical stains and water spots.

To the degree consistent with industry standards for commercial vehicle finishes, painted surfaces shall have gloss and orange peel shall be minimized. All exterior finished surfaces shall be impervious to diesel fuel, gasoline and commercial cleaning agents. Finished surfaces shall resist damage by controlled applications of commonly used graffiti-removing chemicals.

Wheelchair Ramp/Lift/ Securement

The design and construction of the bus shall be in accordance with all requirements defined in 49 CFR, Part 38, and Subpart B: ADA Accessibility Specifications for Transportation Vehicles - Buses, Vans and Systems. A front door wheelchair ramp system shall be provided in the low floor buses. The ramp when deployed in the street shall conform to all provisions of the then-current ADA requirements. The Contractor shall provide a plan submitted with their proposal, including layout drawings for entry, maneuvering, parking, and exiting of wheelchair passengers, to show compliance with ADA regulations.

An automatically-controlled, power-operated ramp system compliant to requirements defined in 49 CFR Part 38, Subpart B, §38.23c shall provide ingress and egress quickly, safely, and comfortably, both in forward and rearward directions, for a passenger in a wheelchair from a level street or curb into the low floor buses.

The ramp shall be a, simple hinged, fold over type design. The weight of the wheelchair loading system shall not exceed 200lb. The ramp shall be equipped with a finish flange that permits the installer to trim-out the ramp to vehicle floor interface with a simple lap joint. The wheelchair loading system including all pumps, motors and hydraulics, must be completely self-contained and be replaceable within 30 minutes by a mechanic.

The unit shall be cam driven and all components shall be constructed of stainless steel including all exposed surfaces. When the system is not in use, the passageway shall appear normal. In the stored position of the ramp, no tripping hazards shall be presented and any resulting gaps shall be minimized. The controls shall be simple to operate with no complex phasing operations required, and the loading system operation shall be under the surveillance and complete control of the operator. The bus shall be prevented from moving during the loading or unloading cycle by a throttle and brake interlock system. The wheelchair loading system shall not present a hazard, nor inconvenience customer passage. The loading system shall be inhibited from retracting or folding when a passenger is on the ramp/platform. A passenger departing or boarding via the ramp shall be able to easily obtain support by grasping the passenger assist located on the doors or other assists provided for this purpose. The platform shall be designed to protect the ramp from damage and persons on the sidewalk from injury during the extension/retraction or lowering/raising phases of operation. The loading platform shall be covered with a replaceable or renewable, nonskid material and shall be fitted with devices to prevent the wheelchair from rolling off the sides during loading or unloading. The stow and deploy speed of the ramp shall be adjustable. The device shall function without failure or adjustment for 500 cycles in all weather conditions on the design operating profile when activated once during the idle phase. A manual override system shall permit unloading a wheelchair and storing the device in the event of a primary power failure. The ramp assembly components shall be replaceable within 30 minutes by a mechanic. The ramp shall be constructed to permit the bus vendor to provide a substantial structural connection at the front edge of the ramp, between the doorposts to minimize damage to the ramp system resulting from impacts to the lower, front right hand corner of the bus. Fabrication and assembly of the wheelchair loading system shall be executed under the control of an ISO9001 registered quality assurance system. Installation must be approved by the ramp manufacturer prior to bus delivery.

Two forward-facing locations, as close to the wheelchair loading system as practical, shall provide parking space and securement system compliant with and exceeding ADA requirements for a passenger in a wheelchair. Restraint devices will be provided at the two (2) Personnel Mobility Aid Devices (PMAD) seating positions to restrain the wheelchairs and their occupants.

The American Seating Advanced Restraint Module A.R.M. or equal system will be provided. This will include the American Seating Dual Auto-Lok system or equal for the rear wheelchair securement belts.

The ADA securement system shall be an integral part of the vehicle seating. The seating shall be designed by means of fold-up, convertible seating units to minimize the amount of ambulatory passenger seating losses, provide a safe securement for mobility aid users and allow for a quick, easy to use system for transit supplies. The system shall include a three (3) point lap and shoulder occupant restraint belt and four (4) mobility aid securement belts optimally placed for stability and adaptable for the widest range of equipment. This system shall comply with the strength and free movement criteria of the Americans with Disabilities Act (ADA) accessibility guidelines for transportation vehicles; final guidelines per regulation 36 CFR part 1192 and conforming to all applicable Federal Motor Vehicle Safety Standards. (Note: ADA measurements are from the raised seat to the aisle and not from the bus wall to the aisle).

The system's recommended minimum spacing is fifty-three (53") inches in the longitudinal direction and thirty-five (35") inches from the wall (raised seat). The minimum securement area, as specified by ADA, is for mobility aid parking area only and does not take in to account the maneuvering room required by various types of mobility aids. Also, the area necessary for a driver or an assistant to access the tie-down equipment must be accounted for in the layout. The Procuring Agencies want to provide maximum space for customer and operator access. The proposed securement system, design and layout must be submitted with your proposal.

Maneuvering room inside the bus shall accommodate easy travel for a passenger in a wheelchair from the loading device through the bus to the designated parking area, and back out. No portion of the wheelchair or its occupant shall protrude into the normal aisle of the bus when parked in the designated parking space(s). As a guide, no width dimension should be less than 34 inches. From the aisle to the raised seat areas requiring 90-degree turns of wheelchairs should have a clearance arc dimension no less than 45 inches and in the parking area where 180-degree turns are expected, space should be clear in a full 60-inch-diameter circle. A vertical clearance of 12 inches above the floor surface should be provided on the outside of turning areas for wheelchair footrest.

ADA priority seating signs as required and defined by 49 CFR, Part 38.27 shall be provided to identify the seats designated for passengers with disabilities. Requirements for a public information system in accordance with 49 CFR, Part 38.35 shall be provided. Requirements for a stop-request passenger signal in accordance with 49 CFR, Part 38.37 shall be provided. Requirements for exterior destination signs in accordance with 49 CFR, Part 38.39 shall be provided.

External Route Display sign system

A Twin Vision all LED, automatic External Route Display sign system, or equal, shall be furnished and installed in the bus by the vendor.

The sign located near the front door shall not block the operator's critical horizontal line of sight. Display areas of destination signs shall be clearly visible in direct sunlight and/or at night. Signs shall be installed to allow replacement by a mechanic within 30 minutes. Parts shall be commercially available.

All signs shall be controlled via a single Human Machine Interface (HMI). In the absence of a single Mobile Data Terminal (MDT), the HMI shall be conveniently located for the bus operator in Area 5 of the Operator's Workstation Control and Instrument Array, mounted in such a manner that will not pose any safety hazard.-Color of LED bulbs provided shall be amber, or as otherwise directed by the Procuring Agency.

The system shall consist of:

- Front sign: 16 rows x 160 columns; display height minimum 7.9", display width 62.75" Side sign: 14 rows x 108 columns; display height minimum 4.25", display width 42.25" Rear sign: 16 rows x 48 columns; display height minimum 6.1", display width 17"; Block number sign (dash mounted): 14 rows x 36 columns; display height minimum 4.25", display width 14"; (It shall be capable of both automatic and direct entry programming)
- Operator Control Unit (OCU)
- Cables and Accessories

The Front Sign shall be mounted on the front of the Bus, near the top edge of the body, behind windshield protection, and in an enclosed but accessible compartment provided by the Bus manufacturer.

The Side Sign shall be located on the right side of the Bus near the front door either mounted near the top of an existing window or in a separate enclosed but accessible weather-proof compartment provided by the Bus manufacturer.

The Rear Sign (external) shall be mounted on TwinVision supplied brackets on the rear of the vehicle on an appropriate sized cutout provided by the Bus Manufacturer. An optional and additional LED third rear brake lamp indicating "STOP" that illuminates when brakes are applied shall be added at the discretion of the Procuring Agency.

The Block Number Sign shall be mounted on the front dash on the right side of the Bus near the front door and shall accommodate 5 digits.

The entire display area of all signs shall be readable in direct sunlight, at night, and in all lighting conditions between those two lighting extremes, with evenly distributed illumination appearance to the un-aided eye.

The system shall be microprocessor-based utilizing approved bi-directional serial communications, such as; S.A.E J1708 between system components, and shall utilize error detection techniques within the communication protocol.

The sign system shall be controlled by one primary controller located in the operator control unit. The system shall be capable of communicating with, and/or controlling additional information devices, such as interior information Signs, Voice Announcement devices, etc., and must be able to be controlled by any Intelligent Transportation System (ITS) otherwise provided on the bus. The system shall provide for destination and/or Public Relations (P/R) message entry.

Flash memory integrated circuits shall be capable of storing and displaying up to 10,000 message lines. Message memory shall be changeable by the use of a "USB Key" ("thumb drive") sized according to the message listing noted herein.

The System shall have the ability to sequentially display multi-line destination messages, with the route number portion remaining in a constant "on" mode at all times, if so programmed. It shall also be capable of accepting manual entry of Route Alpha/Numeric information on the dash sign up to 5 digits. Street side sign shall be provided as an option.

The various Signs shall be programmable to display independent messages or the same messages; up to two destination messages and one public relations message shall be pre-selectable. The operator shall be able to quickly change between the pre-selected messages without re-entering a message code. Public relations messages shall be capable of being displayed alternately with the regular text and route messages or displayed separately.

An emergency message shall be activated by a push button or toggle switch in a location to be approved by the Procuring Agency. The emergency message shall be displayed on signs facing outside the vehicle while signs inside the vehicle, including the OCU display, remain unchanged. The emergency message shall be canceled by entering a new destination code, or power cycling (after removal of the emergency signal).

The programming software shall provide means of adjusting the length of time messages are displayed in 0.1 second increments up to twenty-five seconds.

Power to the Sign system shall be controlled by the Master Coach Run Switch. The signs shall operate in all positions of this switch except off. The signs shall be internally protected against voltage transients and RFI interference to ensure proper operation in the local environment.

All Sign displays shall consist of pixels utilizing High Intensity Light Emitting Diodes ("LED"), for superior outdoor environmental performance, (of selected color with illumination appearance of light wavelength of 590 NM). LED should be made of AlInGaP II, superior UV resistant Epoxy lens and superior resistance to the effects of moisture. Each pixel shall have a dedicated LED for illumination of that pixel in all lighting conditions. The sign system shall have multi-level intensity changes, which adjust automatically as a function of ambient lighting conditions. There shall be no requirement for any fan or any specialized cooling or air circulation.

This LED shall be mounted such as to be visible directly to the observer positioned in the viewing cone, allowing for full readability 65 degrees either side of the destination sign centerline. The LEDs shall be the only means of illumination of the sign system. The LED illumination source shall have an operating life M.T.B.F. of not less than 100,000 hours. Each LED shall not consume more than 0.02 Watts.

Readability and color contrast of all characters formed by the System shall meet the requirements of the Americans with Disabilities Act (ADA) of 1990 Reference 49 CFR Section 38.39.

All Signs shall be enclosed in a manner such as to inhibit entry of dirt, dust, water and other contaminants during normal operation or cleaning. The front, side and block number signs shall be a solid framed design with an integral metal louvered arrangement for optimal optical viewing and maximum thermal dispersion. Access shall be provided to clean the inside of the Bus window(s) associated with the Sign and to remove or replace the Sign components. Access panels and display boards shall be mounted for ease of maintenance/replacement. Any exterior Rear Sign enclosure used shall be made of Polycarbonate material containing fiberglass reinforcement. The vehicle manufacturer shall comply with the Sign manufacturer's recommended mounting, mounting configuration, and installation procedures to assure optimum visibility and service accessibility of the Sign System and System components.

All electronic circuit boards used in the Sign System shall be uniformly coated to meet the requirements of military specification MIL-I-46058C. All Sign System light board components shall be certified to have been subjected to a "burn-in" test of a minimum of twelve (12) hours operation in a temperature of 150 degrees F. prior to final inspection.

The Front Sign message shall be readable by a person with 20/20 vision from a distance not less than 350 feet for signs of display height greater than 8 inches and from a distance not less than 275 feet for display heights less than 8 inches. The Front Sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

The Side Sign message shall be readable by a person with 20/20 vision, from a distance of not less than 110 feet. The Side Sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

The Rear Sign shall be capable of independently displaying alpha-numeric characters. Its message shall be readable by a person with 20/20 vision, from a distance of not less than 225 feet. The Rear Sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

The Block Number Sign shall be readable by a person with 20/20 vision from a distance not less than 65 feet and shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall

appear, to the naked eye, to be approximately uniform throughout the full viewing cone. The Block Number (Run Number) sign shall be capable of displaying up to four alpha-numeric characters (26 Upper Case letters and 0-9 numerals) which will be independently controlled from the Destination Sign System operator control unit (OCU keyboard) or through the J1708 command sequences. It will also be independent of the destination sign message code that is preprogrammed into the sign system.

The OCU Unit shall be used to view and update display messages. It shall be recess mounted on the Bus vehicle front Sign compartment access cover or door. The OCU shall utilize a multi-key conductive rubber pad keyboard and be designed for transit operating conditions.

The OCU Unit shall contain a display of at least two-lines of 20-character capability. The OCU Unit shall contain an audio annunciator that beeps indicating that a key is depressed. The OCU Unit shall continuously display the message associated with the selected destination readings (except the emergency message feature as noted above).

The OCU shall also contain the capability to manually select the Block Number Sign information (from 1 to 4 Alpha-Numeric characters) to be sent to the Block Number sign, independent of any pre-programmed destination sign message information.

An auxiliary J1939 port shall be made available on the OCU so that auxiliary J1939 commands may be provided to the Electronic Destination Sign System.

A WINDOWS® programming software package shall be supplied, under limited-use license, to generate message lists for the Sign system.

The program shall be designed for ease of deleting and adding messages to a destination Sign listing in a WINDOWS® 7 or later current Operating Environment. The Programming Software shall be intuitive, of design to facilitate ease of training, and use context-sensitive help features. Reasonable on-site training support shall be provided with the software.

This software will provide capability for both standard editing mode and freestyle editing mode. The software should be capable of entering one destination for all signs and automatically place the information in the correct positioning. It should also allow for creation of a custom displays by varying spacing between characters, words, or other message elements. This software also allows for creation of graphic displays with or without text: by selecting preprogrammed graphic sign images and by allowing use of multiple fonts within the same message and graphic symbols placed anywhere within the display area. The software should be backward compatible to support all other sign configurations within the fleet that were produced by the same manufacturer.

The Sign system shall be reprogrammable on the vehicle with the use of a USB Key. A key slot shall be provided on the OCU face for this purpose. The maximum reprogramming time for a 10,000 line listing shall be one minute.

Operator's Work Area

The operator's work area shall be designed to minimize glare to the extent possible. Objects within and adjacent to this area shall be matte black or dark gray in color wherever possible to reduce the reflection of light onto the windshield. The use of polished metal and light-colored surfaces within and adjacent to the operator's area shall be avoided. Such objects include dash panels, switches and controls, cowlings, windshield wipers and arms, barriers and modesty panels, fare stanchions, access panels and doors, fasteners, flooring, ventilation and heating ducting, window and door frames, and visors. Interior lighting located ahead of the standee line shall be controlled by the operator.

An adjustable roller type sunscreen shall be provided over the operator's windshield and the operator's side window. The sunscreen shall be capable of being lowered to the midpoint of the operator's window. When deployed, the screen shall be secure, stable and shall not rattle, sway or intrude into the operator's field of view due to the motion of the coach or as a result of air movement. Once lowered, the screen shall remain in the lowered position until returned to the stowed position by the operator.

All switches and controls necessary for the safe operation of the bus shall be conveniently located in the operator's area and shall provide for ease of operation. Switches and controls shall be divided into basic groups and assigned to specific areas, in conformance with SAE Recommended Practice J680, Revised 1988, Location and Operation of Instruments and Controls in Motor Truck Cabs, and be essentially within the hand reach envelope described in SAE Recommended Practice, J287, Driver Hand Control Reach. Operational controls, instrumentation, switches, and other system controls shall not be mixed with ventilation diffusers and non-operational controls or readouts. Controls shall be located so that boarding passengers may not easily tamper with control settings.

The door control, kneel ramp control, windshield wiper/washer controls, and run switch shall be in the most convenient operator locations. They shall be identifiable by shape, touch, and permanent markings. Doors shall be operated by a single control, conveniently located and operable in a horizontal plane by the operator's left hand. The kneeling ramp control shall also be located close to the door control so that it too can be operated by the Operator's left hand. The setting of these controls shall be easily determined by position and touch.

All panel-mounted switches and controls shall be marked with easily read identifiers. Text designating position (on/off) shall be a minimum of 9 points, identifying legends shall be a minimum of 11 points. Extremely condensed or italic type fonts shall not be used. Graphical symbols shall conform to SAE Recommended Practice J2402, Road Vehicles - symbols For Controls, Indicators, and Tell Tales, where available and applicable. Color of switches and controls shall be dark with contrasting typography or symbols. Red type on a black or gray field (or vice versa) shall not be used. Mechanical switches and controls shall be replaceable, and the wiring at these controls shall be serviceable from the vestibule or the operator's seat. Switches, controls, and instruments shall be dust and water resistant consistent with the bus washing practice described previously.

Operator Controls - The following list for Normal Bus Operation identifies bus controls used to operate the bus safely and efficiently. These controls are frequently used or they are critical to the operation of the bus. They should be located within easy reach of the operator. The operator should not be required to stand or turn his/her body to view or to actuate these controls that include:

Engine Start Switch or Button	Four Position Master Run Switch
Transmission Shift Select	Parking Brake
Door	High Beam
Turn Signals	Hazard Lights
Defroster	Kneel & Ramp Controls
Windshield Wiper	Instrument Panel Lighting Intensity

Accelerator and brake pedals shall be designed for ankle motion. Foot surfaces of the pedals shall be faced with wear-resistant, nonskid, replaceable material.

The Master Run Switch shall be a four-position rotary switch with the following functions:

OFF - All electrical systems off, except power available for the passenger interior lighting, stoplights, turn lights, hazard lights, radio, silent alarm, horn, fare box, fire detection equipment, engine compartment lights, auxiliary heater, if provided and electronic equipment that require continuous energizing. A timer circuit shall be provided to provide battery cut-off (except for the farebox) after two

hours. Electrical loads resulting from the Procuring Agency's devices, such as, farebox, GPS, radio, etc., shall not exceed 1.5 amps with the master run switch in the OFF position.

CL/ID - All electrical systems off, except those listed in OFF and power to destination signs, interior lights and marker lights.

RUN - All electrical systems and engine on, except the headlights, parking lights and marker lights. Daytime running lights (DRL) shall be provided and shall be on. (Daytime running lights only on when the engine is on).

NITE/RUN - All electrical systems and engine on.

The door control shall be located on the street side of the operator's area within the hand reach envelope described in SAE Recommended Practice, J287, Driver Hand Control Reach. The front door shall remain in commanded state position even if power is removed or lost. The rear door shall stay open until the Operator control is activated.

Operation of, and power to, the passenger doors shall be completely controlled by the operator. Power to rear doors shall be controlled by the operator.

A control or valve in the operator's compartment shall shut off the power to, and/or dump the power from, the front door mechanism to permit manual operation of the front door with the bus shut down. A master door switch which is not within reach of the seated operator when set in the "Off" position shall close the doors, deactivate the door control system, release the interlocks, and permit only manual operation of the doors.

The operator's area shall have a light to provide general illumination and it shall illuminate the half of the steering wheel nearest the operator to a level of 10 to 15 foot-candles. This light shall be operator controlled by a toggle switch located on the operator's control panel or other approved location.

(1) A three-position toggle switch, labeled "Interior Lights; on (at top), Off, Normal" shall control the lights.

- "On" turns on all lights in any Master Switch position
- "Off" turns off lights except as noted in (2) and (3)
- "Normal" turns on all lights in "Night Run" & "Night Park" except as noted in (2).

(2) The first light on each side (behind the Operator and the front door) is normally turned on only when the front door is opened, in "Night Run" and "Night Park." As soon as the door closes, these lights shall go out. These lights shall be turned on at any time if the toggle switch is in the "On" position.

(3) To help eliminate windshield reflection on suburban roads where street lighting is at a low level, the second light on each side, when "Night Run" or "Night Park" is selected, shall be controlled by the toggle switch; off in "Off" and on in "Normal." (These lights shall be turned on at any time if the toggle switch is in the "On" position.)

(4) All interior lighting shall be turned off whenever the transmission selector is in the reverse and engine run switch is in the "On" position.

Operator Controls - The following list of Special bus controls identifies the controls to initiate system diagnostics, aid the physically handicapped passenger, and control mirrors and speakers, etc. They are less often used than those in Normal Bus Operation. These controls should be within easy reach for viewing and actuation by the operator:

ABS Diagnostics Test

Engine Diagnostic Test

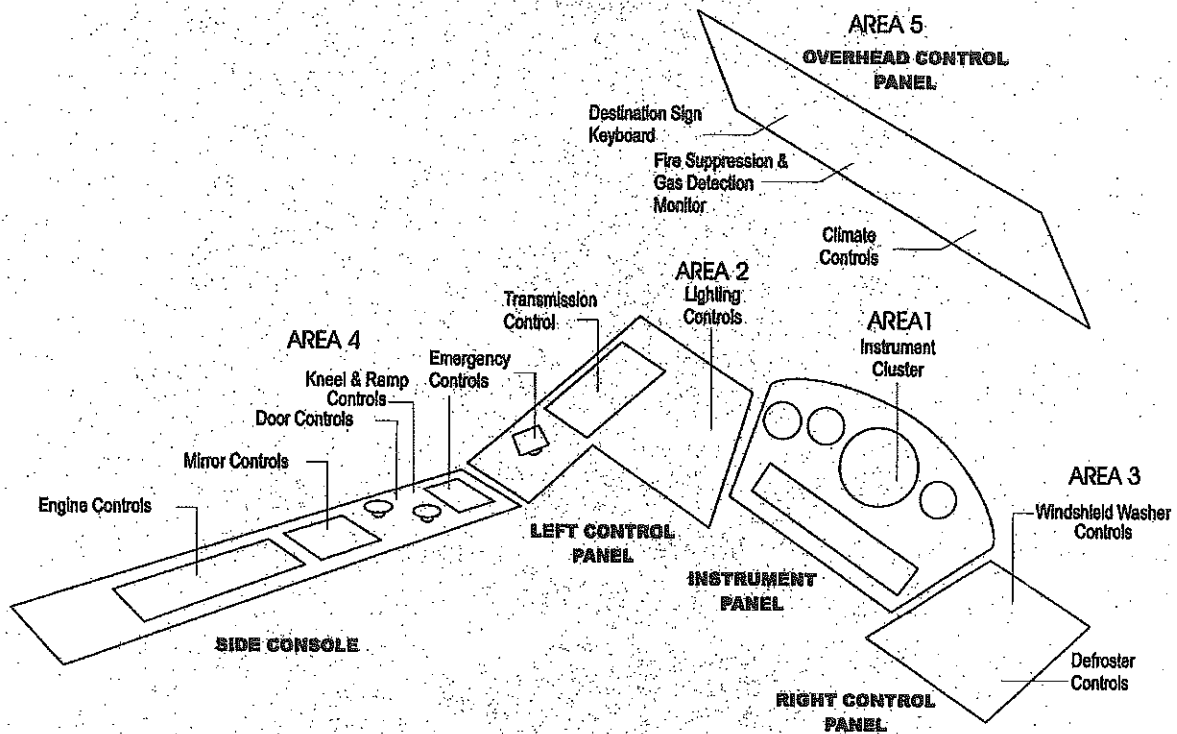
Stop Engine Override	Chime
Drivers Fan	Fast Idle
Mirror Heater (Opt.)	Public Address System
Drivers HVAC	Diagnostic Light Panel Test
Fire Suppression (Opt.)	Destination Sign On/Off (Opt.)
Hill Holder	Remote Mirror Control (Opt.)
Retarder	Kneel/Ramp Control
Heater Blower Interlock	

Operator Controls - The following list of Passenger Comfort Controls identifies the bus controls for the interior bus temperature, lighting, air circulation, etc. The settings of these controls are changed infrequently. The operator should be able to see and actuate these controls with minimal effort.

Climate Control	Temperature Select	Aisle Lights
Interior HVAC	Blower	
Interior Lights	Dome Lights	

The Figure below is provided as an illustrative guide to the desired instrument and control grouping:

- Area 1: Operational gauges - speedometer, air pressure (primary and secondary), voltmeter(s), fuel and diagnostics shall be located immediately in front of the operator's field of view.
- Area 2: Operational controls and switches, including but not limited to emergency controls and flashers, transmission controls, and lighting switches, located adjacent the left side of the instruments.
- Area 3: Operational controls and switches, including but not limited to washer controls, operator's climate controls, located adjacent the right side of the instruments.
- Area 4: Secondary operating controls including door, kneel and ramp switches, mirror and engine controls, located to the left of the operator ahead of the Seat Reference Point of the 5 percentile female.
- Area 5: System function controls, including destination sign keypad, cabin climate controls, fire suppression, located on the operator's centerline, above operator's upper sight cutoff line.
- Areas 1 & 2: Preferred location for all warning and visual indicator lights.



The angle of the accelerator pedal shall be determined from a horizontal plane regardless of the slope of the cab floor. The accelerator pedal shall be positioned at an angle of 27-35 degrees at the point of initiation of contact, and extend downward to an angle of 10-18 degrees at full throttle. The floor mounted accelerator pedal shall be 10" - 12" long and 3" - 4" wide. The force to depress the accelerator pedal shall be measured at the midpoint of the accelerator. The accelerator force shall be no less than 7 foot pounds and no more than 9 foot pounds.

To preclude movement of the bus, an accelerator interlock shall lock the accelerator in the closed position and a brake interlock shall engage the service brake system when the rear door control is activated. The braking effort shall be adjustable with hand tools. Rear doors shall not open unless the bus speed is below 2 m.p.h. An accelerator interlock shall lock the accelerator in the closed position whenever front doors are open.

The angle of the brake pedal shall be determined from a horizontal plane regardless of the slope of the cab floor. The brake pedal shall be positioned at an angle of 27-35 degrees at the point of initiation of contact, and extend downward to an angle of 20-28 degrees at full depression. The floor mounted brake pedal shall be 10" - 12" long and 3" - 4" wide. The force to depress the brake pedal shall be measured at the midpoint of the brake pedal. The brake pedal force shall be no less than 10 foot pounds and no more than 50 foot pounds.

The accelerator and brake pedals shall be positioned such that the spacing between them, measured at the heel of the pedals, is between 1" and 2". The location of the brake and accelerator pedals shall be determined by the manufacturer, based on space needs, visibility, lower edge of windshield, and vertical H-point. The brake pedal shall have a 0-degree lateral angle, and the accelerator shall have a 12-degree lateral angle to coincide with the position of the operator's leg as it moves outward to operate the accelerator pedal.

The angle of the turn signal platform shall be determined from a horizontal plane, regardless of the slope of the cab floor. The turn signal platform shall be angled at a minimum of 10 degrees and a maximum of

28 degrees. It shall be located no closer to the seat-front than the heel point of the accelerator pedal. Turn signal controls shall be floor-mounted, foot-controlled, waterproof, heavy-duty, momentary contact switches. High Beam, Hazard, and PA Controls shall be floor mounted with the same requirements as the Turn Signal controls.

The speedometer, air pressure gauge(s), and certain indicator lights shall be located in Area 1 Instrument Panel immediately ahead of the steering wheel. The steering wheel spokes or rim shall not obstruct the operator's vision of the instruments when the steering wheel is in the straight-ahead position. Illumination of the instruments shall be simultaneous with the marker lamps. Glare or reflection from the windshield, side window, or front door windows from the instruments, indicators, or other controls shall be minimized. Instruments shall be easily readable in direct sunlight or shielded in such a manner that sunlight does not adversely affect legibility. Instrument covers shall be non-reflective, without electrostatic qualities that attract and hold dust, and shall be resistant to scratching or hazing as a result of cleaning. Text shall be a minimum of 11 points. Extremely condensed or italic type fonts shall not be used. The color of the display field shall be dark with contrasting typography. Indicator lights or illuminated symbols or typography immediately in front of the operator shall be restricted to those concerned with the operation of the vehicle, as identified in the following table.

Visual Indicator	Audible Alarm	Condition
Back-Up	Backup Alarm	Reverse gear is selected
Hazard	Click	Four-way flashers activated
DRL	None	Daytime Running Lights
High Beam	None	Headlamp high beams activated
Kneel	Kneel Horn	Suspension kneeling system activated
Left Turn Signal	Click	Left turn signal activated
Parking Brake	None	Parking brake is activated
Rear Door	None	Rear passenger door is not closed and locked
Right Turn Signal	Click	Right turn signal activated
Stop Request	Chime	Passenger stop request has been activated
Wheelchair Request	Double Chime	Passenger wheelchair stop request activated
Seatbelt	Chime	Seatbelt not buckled
Seat Alarm	Chime	Driver out of seat, bus is in gear
Auxiliary Heater (Green)	None	Auxiliary heater is on
Auxiliary Heater (Yellow)	None	Auxiliary heater failure
Voltage Overcharge (Yellow)	None	Electrical system overcharged
Voltage Undercharge (Red)	None	Electrical system not charging

The instrument panel shall include an electronic speedometer indicating no more than 80 mph and calibrated in maximum increments of 5 mph. The speedometer shall be a rotating pointer type, with a dial deflection of 220 to 270 degrees and 40 mph near the top of the dial. The speedometer shall be sized and accurate in accordance with SAE Recommended Practice J678. The speedometer shall be equipped with an odometer with a capacity reading no less than 999,999 miles.

The instrument panel shall also include air brake reservoir pressure gauge(s) with indicators for primary and secondary air tanks and voltmeter(s) to indicate the operating voltage across the bus batteries. The instrument panel and wiring shall be easily accessible for service from the operator's seat or top of the panel. The diagnostic panel shall be separately removable and replaceable without damaging the instrument panel or gauges. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires.

The bus shall be equipped with visual and audible alarms linked to an on-board diagnostic system that will indicate conditions that require immediate action by the operator to avoid an unsafe condition or prevent further damage to the bus. The indicator panel shall be located in Area 1 of the Instrument Panel. The intensity of visual indicators shall permit easy determination of on/off status in bright sunlight or

shielded in such a manner that sunlight does not adversely affect legibility. Indicator illumination shall not cause a visibility problem at night. All indicators shall have a method of momentarily testing their operation. The audible alarm shall be tamper resistant and shall have an outlet level between 80 and 83 dBA when measured at the location of the operator's ear. Wherever possible, sensors shall be of the closed circuit type, so that failure of the circuit and/or sensor shall activate the malfunction indicator.

To avoid unnecessary confusion and anxiety on the part of the operator, on-board displays visible to the operator should be limited to indicating the status of those functions described herein that are necessary for the safe operation of the bus and protection of assets. All other indicators needed for diagnostics and their related interface hardware shall be concealed and protected from unauthorized access. Malfunction and other indicators listed in the following table shall be supplied on all buses.

Visual Indicator	Audible Alarm	Condition or Malfunction
ABS	None	ABS System Malfunction
A/C Stop	None	Compressor stopped due to high/low pressure or loss of refrigerant
Check Engine	None	Engine Electronic Control Unit detects a malfunction
Check Transmission	None	Transmission Electronic Control Unit detects a malfunction
Fire	Bell	Over-temperature condition in engine compartment
Alternator Fail	None	Loss of alternator output
Hot Engine	Buzzer	Excessive engine coolant temperature
Low Air	Buzzer	Insufficient air pressure in either primary or secondary reservoirs
Low Oil	Buzzer	Insufficient engine oil pressure
Low Coolant	Buzzer	Insufficient engine coolant level
Wheelchair Ramp	Beeper	Wheelchair ramp is not stowed and disabled

The bus shall be equipped with a variable speed electric windshield wiper for each half of the windshield. For non-synchronized wipers, separate controls for each side shall be supplied. A variable intermittent feature shall be provided to allow adjustment of wiper speed for each side, or a synchronized pair, ranging approximately 5 to 25 cycles per minute. No part of the windshield wiper mechanism shall be damaged by manual manipulation of the arms. At 60 mph, no more than 10 percent of the wiped area shall be lost due to windshield wiper lift. Both wipers shall park along the inner edges of the windshield glass. Windshield wiper motors and mechanisms shall be easily accessible for repairs or service and shall be removable as complete units. The fastener that secures the wiper arm to the drive mechanism shall be corrosion resistant.

The windshield washer system shall be a dry arm design to deposit washing fluid on the windshield and, when used with the wipers, shall evenly and completely wet the entire wiped area. If powered by compressed air, all fluid shall be purged from the lines after each use of the washers.

The windshield washer system shall have a minimum 3-gallon reservoir, located for easy refilling from outside of the bus and protected from freezing. Reservoir pumps, lines, and fittings shall be corrosion-resistant, and the reservoir itself shall be translucent for easy determination of fluid level.

The Bus Operators seat shall be a Recaro Ergo Metro (3-pt) or equal.

Three-point seat belts shall be provided across the operator's lap and diagonally across the operator's chest. The operator shall be able to use both belts by connecting a single buckle on the right side of the seat cushion. The belts shall be fastened to the seat and/or the bus structure so that the operator may adjust the seat without resetting the seat belt. An independent shoulder belt as well as an independent lap

RWA

RWA *JP*
belt shall be provided as an option. Seat belts shall be stored in automatic retractors. Seat belt webbing shall be of a high-visibility color, preferably "safety orange" or similar.

Seat belts shall be extended length to accommodate operators of all sizes and stored in a hard plastic housing. The seatbelt buckle shall have an easy top button design to provide the driver with quick and easy release.

The operator's seat shall be contoured to provide maximum comfort for extended period of time. Cushions shall be fully padded with at least 3 inches of closed-cell polyurethane foam or material with equal properties, in the seating areas at the bottom and back. The seat material shall be black high grade vinyl.

A four way adjustable headrest with six position vertical adjustment shall be provided.

Electrical

The electrical system and its electronic components shall be capable of operating in the area of the vehicle in which they will be installed. Electrical and electronic equipment shall not be located in an environment that will reduce the performance or shorten the life of the component or electrical system. No vehicle component shall generate, or be affected by, electromagnetic interference or frequency interference (EMI/RFI) that can disturb the performance of electrical/electronic equipment as defined in SAE J1113.

All electrical/electronic hardware shall be accessible and replaced by a mechanic in 30 minutes. Access to front electrical panel shall be unobstructed. It shall be mounted on an insulating panel to facilitate replacement. The mounting of the hardware shall not be used to provide the sole source ground, and all hardware shall be isolated from potential EMI/RFI. Static straps shall be mounted to the under frame of bus to discharge unwanted electro-static electricity to ground.

All electrical/electronic hardware mounted in the interior of the vehicle shall be inaccessible to passengers and hidden from view unless intended to be viewed. The hardware shall be mounted in such a manner as to protect it from splash or spray. All electrical/electronic hardware mounted on the exterior of the vehicle, that is not designed to be installed in an exposed environment, shall be mounted in a sealed enclosure. All electrical/electronic hardware and its mounting shall comply with the shock and vibration requirements of SAE J1455.

The system shall supply a nominal 12V and/or 24V of direct current (DC). Batteries, except those used for auxiliary power, shall be easily accessible for inspection and service from the outside of the vehicle only. All electrical and battery compartments shall have wiring diagram and identification on panel door.

Four low-voltage batteries (24V) Group 31 Series deep-cycling sealed non spillage maintenance-free absorbed glass mat (AGM) batteries Odyssey or approved equal shall be provided. Each battery shall have a minimum of 1150 cold cranking amps at 0° F. The batteries shall be designed and installed to withstand the operating environment. Batteries shall be tested not more than 3 days prior to bus shipment. Battery manufacturing dates must be not more than 3 months prior to bus shipment dates, and shall be fully maintained prior to shipment to the Buyer.

The battery terminal ends and cables shall be color-coded with red for the primary positive, black for negative, and another color for any intermediate voltage cables. Battery cables shall be flexible and sufficiently long to reach the batteries with tray in the extended position without stretching or pulling on any connection and shall not lie directly on top of the batteries. Except as interrupted by the master battery switch, battery and starter wiring shall be continuous cables with connections secured by bolted terminals; and shall conform to specification requirements of SAE Standard J1127 -Type SGT or SGX and SAE Recommended Practice J541.

Ultra capacitors (super capacitors) shall be used in conjunction with the AGM batteries to provide effective power storage and to ensure successful engine starting. Ultra capacitor technology is to be used for cranking applications and then employing AGM battery technology to manage auxiliary loads. Ultra capacitors shall deliver their storage electrical energy at a high crank rate in a variety of extreme temperatures to provide reliable and consistent starting. The ultra capacitors shall be rated at a minimum of 120 kJ for cold climates and 75 kJ for warmer climates. The batteries and ultra capacitors shall be designed and installed to withstand the operating environment.

A KBI EC501.2 KAPower Module super capacitor rated at 24Kw and 300 F or equal unit shall be installed in parallel with the batteries as an aid to engine start. The module shall be actuated upon engine start via the Multiplex system and through a solenoid. The solenoid shall be engaged for a period of one minute. Electrical cables shall be 4/0 and shall not exceed 10 ft in length. The module shall be enclosed within a stainless steel box, and the solenoid shall not be exposed to environmental hazards. A decal shall be installed on the outside of the box to indicate danger of high amp equipment.

A jump-start connector shall be provided in the engine compartment equipped with dust cap and adequately protected from moisture, dirt and debris.

A 110v ac to 12v dc unit with automatic battery disconnect shall be built into the bus so that when the bus is plugged in from outside power it can provide internal electrical power to the vehicle. The system would be similar to providing a shore power hookup connection to a boat.

A single master switch shall be provided near the battery compartment for the disconnecting of all battery positives (12V & 24V) except for safety devices such as fire suppression system and other systems as specified. The location of the master battery switch shall be clearly identified on the exterior access panel, be accessible in less than 10 seconds for de-activation, and prevent corrosion from fumes and battery acid when the batteries are washed off or are in normal service. Turning the master switch "OFF", with the power plant operating, shall not damage any component of the electrical system. The master switch shall be capable of carrying and interrupting the total circuit load. The batteries shall be equipped with a single switch for disconnecting both 12V & 24V power.

The power generating system shall maintain the charge on fully charged batteries, except when the vehicle is at standard idle with a total alternator load exceeding 70 percent of the alternator nameplate rating. Use of fast idle shall maintain a charge on fully charged batteries so long as the total alternator load does not exceed 90 percent of the alternator nameplate rating. Alternator over-voltage output protection shall be provided.

Power distribution to all equipment requiring dedicated power and ground wiring to the batteries shall be accomplished by using power bus bars consisting of either a solid copper bar or heavy-duty terminal strip. One bus bar for each voltage potential, including ground, shall be located as close to the source of the potential as possible. Cabling from the bus bars to the equipment must be sized to supply the total current requirements with no greater than a five percent volt drop across the length of the cable.

All branch circuits, except battery-to-starting motor and battery-to-generator/alternator circuits, shall be protected by circuit breakers or fuses sized to the requirements of the load. Electronic circuit protection for the cranking system shall be provided to prevent engaging of the system for not more than 30 seconds at a time to prevent overheating. The circuit breakers or fuses shall be easily accessible for authorized personnel. Fuses shall be used only where it can be demonstrated that circuit breakers are not practicable. Any manually re-settable circuit breakers shall provide visible indication of open circuits.

Circuit breakers or fuses shall be sized to a minimum of 15 percent larger than the total circuit load current. The current rating for the wire used for each circuit must exceed the size of the circuit protection being used.

The battery shall be grounded to the vehicle chassis/frame at one location only, as close to the batteries as possible. When using a chassis ground system, the chassis shall be grounded to the frame in multiple locations, evenly distributed throughout the vehicle to eliminate ground loops. No more than four ground connections shall be made per ground stud. Electronic equipment requiring an isolated ground to the battery (i.e., electronic ground) shall not be grounded to the chassis.

All power and ground wiring shall have double electrical insulation, shall be waterproof, and shall conform to specification requirements of SAE Recommended Practice J1127, J1128 and J1292. Double insulation shall be maintained as close to the junction box, electrical compartment, or terminals as possible.

Wiring shall be grouped, numbered, and color-coded. Wiring harnesses shall not contain wires of different voltage classes unless all wires within the harness are insulated for the highest voltage present in the harness. Kinking, grounding at multiple points, stretching, and exceeding minimum bend radius shall be prevented.

Strain-relief fittings shall be provided at points where wiring enters all electrical compartments. Grommets or other protective material shall be installed at points where wiring penetrates metal structures outside of electrical enclosures. Wiring supports shall be protective and non-conductive at areas of wire contact and shall not be damaged by heat, water, solvents, or chafing.

To the extent practicable, wiring shall not be located in environmentally exposed locations under the vehicle. Wiring and electrical equipment necessarily located under the vehicle shall be insulated from water, heat, corrosion, and mechanical damage. Where feasible, front to rear electrical harnesses should be installed above the window line of the vehicle.

All wiring harnesses over five feet long and containing at least five wires shall include 10 percent (minimum one [1]) excess wires for spares. This requirement for spare wires does not apply to data links and/or communication cables. Wiring length shall allow end terminals to be replaced twice without pulling, stretching, or replacing the wire. Except for large wires such as battery cables, terminals shall be crimped according to connector manufacturer's recommendations for techniques and tools to the wiring and may be soldered only if the wire is not stiffened above the terminal and no flux residue remains on the terminal. Battery cable connectors shall be crimped and soldered. All solder connections shall be made using noncorrosive rosin-core solder.

Terminals shall be crimped, corrosion-resistant and full ring type or interlocking lugs with insulating ferrules. When using pressure type screw terminal strips, stranded wire only shall be used. Insulation clearance shall ensure wires have a minimum of "visible clearance" and a maximum of two (2) times the conductor diameter or 1/16", whichever is less. When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands that can penetrate the insulation of the inner wires. Base nut shall be provided on all terminal binding posts and junction block studs where the terminal junction block has not been specifically designed to eliminate the need for a base nut.

Ultra-sonic and T-splices may be used with 7 AWG or smaller wire. When a T-splice is used it shall meet these additional requirements: include a mechanical clamp in addition to solder on the splice; the wire supports no mechanical load in the area of the splice; and the wire is supported to prevent flexing. All splicing shall be staggered in the harness so that no two splices are positioned in the same location within the harness.

For wiring harness connectors, pins shall be removable, crimp contact type of the correct size, and rated for the wire being terminated. All supply-side terminations shall end in a socket, not a pin. Unused pin positions shall be sealed with sealing plugs. Adjacent connectors shall either use opposing pin genders, different insert orientations, or different connectors to prevent incorrect connections. All cable connectors shall be placed to provide adequate space for ease of removal and disconnection. All electrical

connectors subjected to environmental exposure outside the passenger compartment shall be corrosion resistant and splash proof.

All electrical components, including switches, relays, flashers, and circuit breakers, shall be heavy-duty designs with either a successful history of application to heavy-duty vehicles, or design specifications for an equivalent environment. These components shall be replaceable in less than 5 minutes by a mechanic.

All electric motors shall be of a heavy-duty brushless type. All electric motors shall be easily accessible for servicing.

All relays, controllers, flashers, circuit breakers, and other electrical components shall be mounted in easily accessible electrical compartments. All compartments exposed to the outside environment shall be corrosion resistant and sealed. The components and circuits in each electrical compartment shall be identified and their location permanently recorded on a drawing attached to the inside of the access panel or door. The drawing shall be protected from oil, grease, fuel, and abrasion. The front compartment shall be completely serviceable from the operator's seat, vestibule, or from outside. A rear start and run control box shall be mounted in an accessible location in the engine compartment.

If an electronic component has an internal clock, it shall provide its own battery backup to monitor time when battery power is disconnected.

All electronic component suppliers shall ensure that their equipment is self-protecting in the event of shorts in the cabling, and also in over-voltage and reverse polarity conditions. If an electronic component is required to interface with other components, it shall not require external pull-up and/or pull-down resistors.

Kinking, grounding at multiple points, stretching, and exceeding minimum bend radius shall be prevented.

All wiring to I/O devices, either at the harness level or individual wires, shall be labeled, stamped or color-coded in a fashion that allows unique identification. Labels shall be resistant to rubbing (hot stamped tubing and protected printing are service-proven examples of acceptable labels). Wiring for each I/O device shall be bundled together. If the I/O terminals are the same voltages, then jumpers may be used to connect the common of each I/O terminal. All plug terminals and connections shall be compatible with dielectric grease.

All wiring that requires shielding shall meet the following minimum requirements. A shield shall be generated by connecting to a ground, which is sourced from a power distribution bus bar or chassis. A shield shall be connected at one location only, typically at one end of the cable. However certain standards or special requirements, such as SAE J1939 or RF applications, have separate shielding techniques that shall also be used as applicable. *Note: A shield grounded at both end forms a ground loop, which can cause intermittent control or faults.* When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands, which can penetrate the insulation of the inner wires. To prevent the introduction of noise, the shield shall not be connected to the common side of a logic circuit.

RF components, such as radios, video devices, cameras, global positioning systems (GPS), etc., shall use coaxial cable to carry the signal. All RF systems require special design consideration for losses along the cable. Connectors shall be minimized, since each connector and crimp has a loss, which will attribute to attenuation of the signal. Cabling should allow for the removal of antennas or attached electronics without removing the installed cable between them. The corresponding component vendors shall be consulted for proper application of equipment including installation of cables.

Cabling used for microphone level and line level signals shall be 22 AWG minimum with shielded twisted pair. Cabling used for amplifier level signals shall be 18 AWG minimum.

All vehicles shall be equipped with a multiplexing system. The primary purpose of the multiplexing system is control of components necessary to operate the vehicle. This is accomplished by processing information from input devices and controlling output devices through the use of an internal logic program.

Versatility and future expansion shall be provided for by expandable system architecture. The multiplex system shall be capable of accepting new inputs and outputs through the addition of new modules and/or the utilization of existing spare inputs and outputs. All like components in the multiplex system shall be modular and interchangeable with self-diagnostic capabilities. The modules shall be easily accessible for troubleshooting electrical failures and performing system maintenance. Multiplex input/output modules shall use solid-state devices to provide extended service life and individual circuit protection.

Ten percent (10%) of the total number of inputs and outputs (or at least one each) at each zone location shall be designated as spares. Zone locations are: (1) behind the rear bulkhead; (2) forward of the bulkhead above the window line; and (3) forward of the bulkhead below the window line.

The multiplex system shall have a proven method of determining its status (system health and input/output status) and detecting either active (Online) or inactive (Offline) faults through the use of on-board visual/audible indicators.

All sub-electrical systems including lighting, fare box, radio, and cameras shall shutdown when multiplex system goes into sleep mode. Parasitic loads shall be minimized so bus can be started on its own power after being in sleep mode for 80 hours.

In addition to the indicators, the system shall employ an advanced diagnostic and fault detection system, which shall be accessible via a notebook computer. The multiplex system shall have security provisions to protect its software from unwanted changes. This shall be achieved through any or all of the following procedures: password protection, limited distribution of the configuration software, limited access to the programming tools required to change the software, and hardware protection that prevents undesired changes to the software.

Provisions for programming the multiplex system shall be possible through a notebook computer. The multiplex system shall have proper revision control to insure that the hardware and software is identical on each vehicle equipped with the system. Revision control shall be provided by all of the following: hardware component identification where labels are included on all multiplex hardware to identify components; hardware series identification where all multiplex hardware displays the current hardware serial number and firmware revision employed by the module; and software revision identification where all copies of the software in service displays the most recent revision number, and a method of determining which version of the software is currently in use in the multiplex system.

Public Address System

In the absence of an ITS provided on the bus, the following will be provided at the discretion of the Procuring Agency:

A public address system shall be provided that complies with the ADA requirements of 49 CFR, Part 38.35 and enables the operator to address passengers either inside or outside the bus. Inside speakers shall broadcast, in a clear tone, announcements that are clearly perceived from all seat positions at approximately the same volume level. A speaker shall be provided so announcements can be clearly heard by passengers standing outside the bus near the front door. An operator-controlled switch shall select inside or outside announcements. A separate volume control shall be provided for the outside

system if volume adjustment would otherwise be necessary when switching from inside to outside. The system shall be muted when not in use.

As an option only, a hands-free Clever Devices Speakeasy II or equal microphone system shall be provided with foot-switch activation. The public address system speakers shall be Minneapolis Speaker Company model EN5WI-6WB 5" round solid basket, 8 ohm, and waterproof, mounted on an 8.25x8.25 square white grill, or equal.

The OEM shall provide a hand held microphone with two input jack ports and mounting clips in the operator's area. Locate one port for easy accessibility for driver and locate second port for easy accessibility for tour guide. An operator-controlled switch shall be provided to allow either input jack (but not both simultaneously) to be the input to the amplifier for broadcasting over the loudspeakers on the bus without the need for any wiring modification.

**PROVISIONS FOR INTELLIGENT TRANSPORTATION SYSTEMS (ITS),
including but not limited to, COMPUTER-AIDED
DISPATCH/AUTOMATIC VEHICLE LOCATION (CAD/AVL) AND
AUTOMATIC PASSENGER COUNTING (APC) SYSTEMS**

In this section, the term "OEM" refers to the bus manufacturer and "Contractor" refers to an installer designated by CTDOT and/or the systems manufacturer(s). If the OEM is not the Contractor, the OEM shall pre-wire each bus to accept later mounting and final installation of the systems in accordance with instructions issued by CTDOT and/or the systems manufacturer(s). Such instructions shall be provided as soon as possible after acceptance of the successful bid.

Contractor shall supply all necessary cabling provisions and components, to make fully operational; passenger counter, CAD/AVL and radio systems by Trapeze – TransitMaster on each bus. Trapeze ITS system provisions installed by the Contractor shall be fully compatible with the systems currently in use by CTDOT. CTDOT will be moving the following CAD/AVL equipment from retired vehicles to the new vehicles to complete the TransitMaster system once buses arrive at CTDOT:

- IVLU (Intelligent Vehicle Logic Unit)
- MDT (Mobile Data Terminal)
- Radio
- APC Analyzer
- APC Sensors

CTDOT will provide contractor one (1) set of the above TransitMaster systems components so that the complete system can be tested on each vehicle prior to delivery.

Contractor shall coordinate with CTDOT and Trapeze ITS to configure the various interfaces between CAD/AVL system and other devices/systems to ensure compatibility with the TransitMaster CAD/AVL system currently in use at CTDOT. Contractor shall coordinate with CTDOT and Trapeze ITS to determine location on bus for each component of the CAD/AVL and Radio system listed in this section.

The OEM (or Contractor, as may be agreed by the Procuring Agency) shall install the Trapeze TransitMaster system at a location agreed to by the OEM and the Procuring Agency. The OEM shall purchase the aforementioned system directly from Trapeze and coordinate directly with Trapeze on all aspects of product procurement, delivery, installation and testing.

All ITS systems must be compatible with the radio specified by the Procuring Agency for installation on each bus. Such radios may include a Motorola digital P-25 mobile radio or an analog Tait TM8105 mobile radio or other type designated by the Procuring Agency. Such radio may be purchased by the OEM, a separate Contractor, directly by the Procuring Agency, or as otherwise directed by that Agency.

Contactor shall clearly state all assumptions made in determining the cost of the CAD/AVL and Radio system.

The APC equipment shall include all sensors, logic, interfaces, wiring, cabling, calibration, profiling where applicable, and installation required to properly equip each bus for passenger counting at all passenger doors. Contractor shall integrate the APC equipment with the TransitMaster CAD/AVL system. Contractor shall work with the APC equipment supplier to ensure that the APC equipment is installed exactly as per the specifications and meets or exceeds the accuracy specifications from the manufacturer. Contractor shall work with CTDOT and APC equipment supplier to ensure compatibility between the APC equipment being installed and the TransitMaster CAD/AVL system.

Contractor shall provide all documentation and wiring diagrams for the APC, CAD/AVL and Radio system as a part of the overall maintenance manual package for the bus.

Video Security System

A Mobile Digital Video Recording system (MDVR) shall be provided in each bus. The MDVR system shall be a Seon type or equal. The MDVR shall be capable of recording up to thirteen (13) simultaneous or sequential continuous grayscale or color camera inputs, as well as up to eight (8) opto-isolated sensor channels. The MDVR shall have the capacity for up to twenty (20) additional J1708 and J1939-compatible devices and minimum of one (1) high definition (HD) 720 pixels camera. Inputs are switched by an internal multiplexing system.

The bus digital video security recording system shall not interfere electrically with the operation of the transit bus or with its onboard electronic equipment such as the radio, farebox, engine controls, transmission or other electronic equipment. Furthermore, the unit shall be Federal Communication Commission listed and approved. The digital video recorder shall be installed in an appropriate secure location approved by the Procuring Agency, preferably on the "driver's side", so as to minimize its physical exposure and also to reduce shock and impact.

The digital video camera system shall be a high performance video monitoring system designed specifically for installation in transit buses. Features of the system shall include digital recording, rugged camera enclosures, versatile equipment enclosures, and the latest video technologies for capturing and retaining high quality images. The on-board digital video camera system shall perform mobile monitoring and surveillance of transit buses utilizing an end-to-end digital recording approach. The system shall be activated through the transit bus's master switch. When the transit bus is started, the digital recorder acquires and stores data from cameras. On a routine basis, recording may stop following a pre-programmed period or when the transit bus master switch is off and the system stands idle.

The system shall be installed according to industry standards meeting Society of Automotive Engineers recommended practices. All cables, wiring, interconnections, switches, and circuit breakers/fuses shall be heavy-duty and specifically designed for their purposes and automotive application. The selected wire sizes and insulation shall be based on the current carrying capability voltage drop, mechanical strength temperature and flexibility requirements. Video and audio wires selected shall be gauged to minimize signal loss. The system shall be GPS ready to provide geo-fencing and inertia sensor.

The system shall have been successfully tested for a minimum of twelve months in actual documented field use in an urban mass transit bus environment.

A protective filtering device shall be installed to protect the video system and its memories from electrical fluctuation typically found in a transit bus including, but not limited to, over voltage, under voltage, transient, power surge/dip during engine or other transit bus equipment startup, alternator noises, etc. It is important that the filtering device provides sufficient and proper protection to the video camera equipment supplied under this contract.

The buses in this procurement shall each come equipped with operational high quality (600 line resolution) color, wide angle lens cameras installed in aesthetically pleasing enclosures. The number of such cameras shall be seven (7) for 30-ft buses or nine (9) for 35- or 40-ft buses. The cameras shall automatically switch from color to black & white in low light conditions. The enclosures shall be vandal resistant, secure, lockable, shock-resistant, dust resistant and weather and water-resistant and shall be made of impact-resistant non-toxic material. The cameras shall be installed as follows:

- Facing the front door
- Facing the rear door
- Facing out the windshield (driver eye view)
- Facing down the aisle from the front to the back of the bus
- Located abeam the back door facing the back bus platform
- On the outside curb side of the bus behind the rear door facing back to front
- On the outside driver side of the bus over the driver side window facing front to back
- Two (2) locations to be determined by the participants

RWA

Digital video recorders, multiplexers, power converters/inverters and all other required electronic equipment shall be enclosed within a low-profile enclosure. The equipment enclosure shall be mounted so that it does not obstruct customer traffic flow, interfere with the transit bus operator, or create a safety hazard. The equipment enclosure shall be made of impact-resistant non-toxic material, designed to withstand blows, impacts, shock and vibration. The enclosure shall be fully enclosed, lockable, vandal-resistant, dust-resistant, and water-resistant, and designed to allow for temperature compensation through the use of cooling fans or other means. All locks, enclosures and cabinets utilized throughout the video system shall be keyed alike.

The design of enclosure shall allow for the quick and easy installation and removal of electronic equipment from within the enclosure, and all connectors shall terminate at a bulkhead board (Termination Board). Enclosure shall be designed to allow for any type of mounting, floor mount, roof mount or wall mount. The design of the equipment enclosure and mounting locations shall be approved at pre-production.

The MDVR shall operate on 8-32 volt DC power, with a unit operational draw of 2.0 amperes @ 24 volts, not including cameras. Operational draw with cameras is between 3.0 and 5.0 amperes, depending on cameras. All cables and connectors to and from the MDVR shall conform to SAE standards.

The MDVR shall not exceed the physical dimensions of 3 inches high, 12 inches deep, and 12 inches wide, exclusive of enclosure and mounting brackets.

The MDVR shall not exceed 8 pounds, exclusive of removable hard drive.

The operating temperature of the MDVR shall be from - 20°F to +120°F. The MDVR shall withstand humidity to 90% condensing and meet an environmental rating of IP 67 or better.

The MDVR shall be capable of withstanding shock pulses of up to 20 G-forces per 11ms period operating and 40 G-forces per 11ms period non-operating.

The MDVR shall be capable of being mounted in any orientation without detriment to its operation.

The MDVR shall have three (3) Ethernet ports to allow external programming and system diagnostics. Built-in software shall perform full and continuous system diagnostics and is capable of reporting failures.

The MDVR clock shall operate independently of the main power supply and shall have a minimum five (5) year operational lifetime before battery change is required. Clock drift shall be no more than one (1) minute per six (6) months. The MDVR shall be capable of updating and synchronizing the entire fleet of onboard clocks through a GPS interface.

Dates are to be pre-programmed to the year 2040, and shall take into account all leap years and daylight savings time changes automatically without external intervention. The clock data is digitally inserted into the image/sensor data stream prior to storage to hard disk.

The MDVR shall require no operator interface other than the Master Switch operation to effectuate operation, initiate shutdown, maintain the system, service or program the system, or prepare the system for operation.

The MDVR shall be controlled using embedded processors in an industrial form factor to assure adequate shock and vibration resistance. PC motherboards are not acceptable without a documented mobile rating.

The MDVR operating system software shall be of an embedded type contained within a firmware chip. The operating system shall be written specifically for MDVR operation and allow for the largest available drives to be used. Consumer-based operating systems residing on internal hard drives are not acceptable because they are subject to frequent failure.

The MDVR shall have thirteen (13) NTSC video inputs for composite 1V PP signals (12 analog and 1 HD) and shall be capable of black-and-white or color recording.

The MDVR shall have a standard recording resolution of 720 × 480 pixels and 1280 x 720 pixels for HD.

The MDVR shall provide ten (10) channels of digitized synchronous 16-bit audio with ADPCM compression at 16 KHz sampling rate. Input frequency is between 20 Hz and 8 KHz. The audio will not be turned on or recorded for any Connecticut bus.

The MDVR shall be equipped with the following external ports:

- (2) RJ-45 type RS-232 Communications Ports
- (1) RS-232 Serial Communications Port
- (1) System Diagnostics Port
- (3) RJ-45 Ethernet Port
- (2) Universal Serial Bus (USB) version 2.0 Ports

The MDVR shall have a wave engine module that accepts up to twelve (12) analog color and 1 HD color camera inputs. Every time the MDVR boots, the cameras attached to the wave engine module are detected. This allows adjustable camera configurations. The wave engine module shall also have a separate input for an audio signal.

The MDVR shall be capable of directly digitizing, combining, compressing, encrypting, and storing NTSC video, audio sensors, and auxiliary sensor signals. Video and audio signals shall be encrypted using digital cryptographic methods that prevent alteration and tampering, restrict access and detect attempted alteration or tampering (authentication). Compressed, encrypted data is stored to mobile-rated removable disk storage media and is transmittable over a user's wired or wireless network.

In addition to accurate time and date, the MDVR shall append with image data the following ten (10) signal and alarm programmable analog vehicle parameters and the buses in this procurement shall be equipped and delivered recording these vehicle parameters:

- ◆ vehicle speed
- ◆ left signal (directional)
- ◆ door actuation
- ◆ right signal (directional)

- ◆ headlights
- ◆ event switch
- ◆ wheelchair lift
- ◆ brake operation
- ◆ throttle position
- ◆ passenger count

The MDVR combines the vehicle variables above with the other text data, such as time and date and vehicle identification number.

The MDVR shall be capable of supporting up to twenty (20) J-1708 and J1939 digital sensors and other devices. Proper operation of sensor input data can be reliant on the availability of appropriate interfaces and/or protocols being supplied by the vehicle owners and/or component manufacturers.

The MDVR shall have the ability to dynamically change video and audio settings during operation. Changes to the frame rate or image quality of any camera input can be changed based on time, sensor input, or J-1708/J1939 input in real time. Frame rates range up to 30 fps per camera. The MDVR shall be capable of recording multiple differing frame rates and differing levels of image quality per camera at the same time.

All data shall be recorded by the MDVR in a secure encrypted MPEG4 format that is not recognized or readable by standard digital video player software. Video recorded in standard AVI, MPEG, MOV, or MJPEG format is not acceptable. Video recorded and stored in standard AVI, MPEG, MOV, or MJPEG format is alterable by numerous off-the-shelf software packages and, as a result, provides insufficient data security to meet courtroom standards of admissibility.

The MDVR shall maintain a log file of its actions, which are stored on the removable hard drive. This information includes the time and date of the action and includes: ignition on/off, events start and stop, camera failure, drive errors, and other diagnostics.

The MDVR shall be capable of communicating utilizing the Society of Automotive Engineers (SAE) "Electronic Data Interchange Between Microcomputer Systems and Heavy-Duty Vehicle Applications" standard (SAE J1708 and SAE J1587) and "Recommended Practice for a Serial Control and Communications Vehicle Network" (SAE J1939). The MDVR is optionally capable of acquiring data from electronic vehicle systems, including engines, utilizing this data communication standard. The MDVR and all sub-systems shall comply with SAE J1455, "Recommended Environmental Practices for Electrical Equipment Design" for vibration and shock isolation, including Section 202F. The electronic standard is in place and accessible to an installed vehicle electronic control module (ECM) if output is available from a manufacturer's ECM.

The MDVR shall comply with all the requirements of the "Buy America Act" (49 CFR Part 661), at the component level.

The MDVR shall have the capability to interface with diagnostic software operated from either a workstation or portable computer for system troubleshooting and configuration purposes.

The MDVR shall interface with a remote LED panel and provide the status of MDVR start up, normal operation, not recording, events full, and camera failure. The LED shall be programmable to indicate green, red, yellow, flashing green, flashing red, or off for each status. The LED shall also have an Event switch.

The MDVR shall interface with an Event switch that will be hardwired to the vehicle's panic button. When a system input such as a panic button is activated the video recording unit shall tag the event. When retrieved, the tagged event shall be easily identifiable. The system shall be activated through the transit bus master switch. When the transit bus is started, the digital recorder shall acquire data from cameras and optional pre-selected sensor parameters. On a routine basis, recording may stop following a pre-programmed period or when the transit bus master switch is off and the system stands idle. As

available disk space is filled, new information overwrites old in a linear sequence. This linear sequence shall continue indefinitely until an event or incident occurs necessitating retrieval of stored data.

The MDVR shall have at least two (2) USB 2.0 ports. These ports shall allow up to two (2) additional 120GB hard drive canisters to be attached to the MDVR for additional video storage.

The MDVR shall have an internal power source that can supply the MDVR with power in the event of an unexpected loss of power. This internal power source must supply enough power for the MDVR to perform its normal shutdown processes. This power source must be maintenance free and have an expected life of at least eight years.

The MDVR shall have at least two (2) PCMCIA slots. These slots shall accept a standard Compact Flash (CF) card or cellular modem card. The CF cards can be used for solid-state storage of Event data. A cellular modem can be used to transfer live video and audio data via a cellular network.

The removable disk media conforms to mobile requirements for reliability and durability and also conforms to SAE and MILSPEC vibration standards. The canister protects the media and is capable of withstanding shock pulses of 200G-forces per 2 millisecond period operating, and 800G-forces per 1 millisecond period non-operating, without system failure.

The rated life (Mean Time Before Failure) on the disk drive shall be 40,000 hours. The average Mean Time Before Failure of the disk drive units shall be an average of not less than 4 years.

The removable drive shall be secured in place by a key lock mounted on the MDVR. Total storage capacity shall be at least 2 TB (terabytes).

One (1) spare removable hard disk drive per bus shall be provided to each transit system in this procurement. The spare disk drives provided are to be identical to the system drives and shall be individually wrapped and protected within a container supplied by the selected Proposer or manufacturer.

Duration is determined by video capture quality, drive size, and aggregate frame rate. The MDVR shall support a minimum of 72 hours with ten cameras at 300 fps aggregate at standard video quality. For this procurement seven cameras will be provided with an initial setting each of 15 fps.

Disk capacity/storage time shall be field-upgradeable with nominal changes to software and/or hardware.

The disk media shall be capable of withstanding continuous vibration (5Hz to 500Hz) and frequent shock pulses of moderate duration (up to 10ms). Recorded data must survive all typical traffic accidents as well as collisions up to 40G-forces.

Disk storage media shall be conveniently portable, easily removable and transportable.

All recorded data shall be created in a secure encrypted file format using digital cryptography. The encryption restricts access, prevents alteration and tampering, and supports the detection or attempts to alter or tamper with video images or sensor information.

Recorded data shall be viewable in read-only format on a standard PC workstation or PC laptop. Software is supplied for on-site data playback and is compatible with standard PC-based operating systems such as Windows7. Data can be easily downloaded for long-term storage to high capacity storage media.

The MDVR shall support wireless connectivity. Data from the hard drive canister shall be transferable via a compatible 802.11x wireless Ethernet Bridge or cellular modem and downloadable to a server via a wireless network. The transferred or downloaded data shall be reviewable by a workstation that has an

installed copy of the vendor's video reviewing software. The system shall also be capable of delivering video data and system health status information automatically to the server for review.

A desktop viewing station shall be provided to each transit system in this procurement and consist of a personal computer dedicated to playback and review of the MDVR's recorded data. Minimum system requirements for the desktop viewing station are as follows:

- Microsoft Windows 7 or later current Operating System
- 2GB² Dual Channel DDR2 SDRAM at 667MHz - 2 DIMMs
- 250GB⁴ or greater Serial ATA 3Gb/s Hard Drive (7200RPM) w/DataBurst Cache™
- ATI Mobility Radeon HD 2400 Video Card
- Integrated Gigabit Ethernet (10/100/1000Base-T)
- 32X Slot load CD/DVD burner (DVD+/-RW)
- Network interface card (NIC)
- 6 USB 2.0 ports
- Standard keyboard and mouse
- Audio with built-in speakers
- Storage devices to meet the user's requirements for archiving, including automated upload to a secure Internet server
- Removable drive adapter (docking station) that connects the MDVR's removable drive to the desktop computer via a USB 2.0 connection

- A Panasonic CF-53 or equivalent notebook computer shall be provided to each transit system in the procurement to act as a portable viewing station that will be dedicated to playback and review of the MDVR's recorded data. Storage devices to meet the user's requirements for archiving, including automated upload to a secure Internet server
- Removable drive adapter that connects the MDVR removable drive to the notebook via a USB 2.0 connection

The system's viewing software shall allow review of the data from the MDVR's removable drive canister. It shall allow for up to 13 simultaneous, synchronized playback windows as thumbnails, with one, two, four, eight, ten or twelve plus one larger windows displayed at one time in a tiled format.

It shall allow for a zoom function by means of a slide bar, double-clicking, or rubber banding. The screen shall display the Vehicle ID number, date of recorded video, display sensor information, and camera number. This option shall be capable of being turned on or off.

It shall allow for image enhancement consisting of sharpening, brightness, contrast, saturation, and hue. The MDVR shall allow all image enhancements to be applied to the motion video, but shall *not* modify the original video in any manner (i.e., enhancements to a video frame continue to play on subsequent frames, but are not saved to the removable drive canister).

The MDVR shall allow for archiving of all video, selected frames, or selected loops of video.

The MDVR shall allow for individual video frames or selected loops to be exported in JPEG, BMP, AVI or TIFF formats. The MDVR shall allow for thirteen (13) synchronized channels of audio playback with multiple filter-options.

The MDVR shall allow searching for specific video via time and date stamps. The MDVR shall allow the user to select the time and date for viewing. It is not necessary to load the entire hard drive to view a set time. Specific Events and Incidents shall also be selectable.

Each video frame shall be decoded and authenticated dynamically upon request. The MDVR shall display the status as each frame is validated.

The MDVR shall allow users to create custom reports.

The MDVR data must be able to be accepted as evidence in criminal proceedings and civil proceedings, and be deemed to have sufficient forensic integrity to meet authentication and encryption requirements expected by the courts.

All video systems shall be delivered with the manufacturer's standard manuals for each component for the model offered.

The vendor shall provide each transit property in this procurement with any special diagnostic equipment necessary to maintain this video system.

Training shall be provided to insure satisfactory operation, servicing and maintenance of the equipment furnished. Instructions shall also include manufacturers' recommendations of test frequency, limits and methods, including downloading and transferring to a CD or DVD. When methods of access, removal, dismantling or application of a component are not self-evident, the instruction shall also cover these matters.

Training shall be provided to each transit property personnel receiving this equipment in maintenance, engineering, dispatch, and supervisory staff. Training includes maintenance procedures, installation and un-installation procedures, disk retrieval, and playback and data transfer.

Digital video camera systems shall include all necessary equipment for total system functionality: cameras, digital video recorders, multiplexers, converters, hard drives, cabling, operating software, all connectors and mounting enclosures.

The system shall be field-upgradeable both in hardware and software with minimal time loss and expense and be backward compatible were feasible.

The total system shall have a one (1) year parts and labor warranty. Repair and/or replacement shall be provided at no charge, during the warranty period, for parts with manufacturing defects.

Telephone troubleshooting service shall be available between 8:00AM and 5:00PM Connecticut time, Monday through Friday via a toll free telephone line.

Bicycle rack

A two position SportWorks stainless steel or equivalent bicycle rack shall be provided and installed on the front of the bus using a quick release removal bracket. The standard safety and operating instruction decals are required on each bicycle rack. Depending on application a provision for interior or exterior bike rack is required. At the option of the Procuring Agency, an interior bicycle rack system accessible through the rear door shall be offered in lieu of an exterior bicycle rack system.

Radio

The radio to be installed on each bus shall be further specified by the Procuring Agency. Such radios may include a Motorola digital P-25 mobile radio or an analog Tait TM8105 mobile radio or other type designated by the Procuring Agency. Such radio may be purchased by the OEM, a separate Contractor, directly by the Procuring Agency, or as otherwise directed by that Agency.

The radio system includes an operator speaker, handset and cradle (Audiosears Corp model C10838-QOP05 or equal) to be provided and installed by the vendor. The radio will be provided by and installed by each transit system after the buses are delivered to Connecticut, unless directed otherwise by the Procuring Agency. A location convenient to the operator shall be provided for the radio control head, speaker, handset, and cradle. The location shall conform to SAE Recommended Practice J287 "Driver Hand Control Reach."

For ITS equipped buses use Trapeze Kit 36T0003-103, Handset Kit: 36T0003-103. Handset Alone: 25T0128-103

Provisions for attaching an antenna to the roof and routing an antenna lead to the radio compartment shall be provided. Antenna mounting shall conform to the electromagnetic suppression requirements of SAE J551. A roof mounted radio antenna requires a ground plane to prevent electronic noise being generated inside the vehicle. A metal roof can serve as a sufficient ground plane; however a fiberglass roof requires either a metallic surface, or an antenna with a virtual ground plane. To test and repair antenna connections, quick access shall be provided inside the vehicle at the point where the antenna is mounted to the roof and where the antenna cable attaches to the antenna.

A radio box is required that will be pre-wired by the bus manufacturer with power on ignition run switch and 12V and 24V power. The box shall be keyed with a 5/16" T.

A 762-870 MHZ 3DB LOW PROFILE MOBILE antenna, Motorola part number RAF4226A shall be provided by the vendor and installed on the bus roof at a location, by an installer, as approved at preproduction by the vendor and the Procuring Agency.

Emergency Alarm

The Covert Emergency Alarm is for the operators use in dangerous situations. The alarm shall be integrated with the radio, the External Route Display shall display "911," and the CCTV shall tag and save recordings. The alarm button shall be located on the Bus Operator Work Station lower left side wall. The driver should be able to take his/her left hand and reach over in a location near his/her knee to push it without moving or calling attention to his/her action. The alarm button shall be a Square D #9001KR2U push button or equal. For ITS equipped buses the Covert Switch Kit: 36T0033-003. Switch Alone: 24T0058-001.

An antenna cable shall be provided and installed as follows:

Run 2 Belden 8418 (20 AWG 8 Conductor shielded) audio cables from the top of the "Streetside Closeout air/electrical" to Radio Box leaving 24 inches extra in Radio Box. Mark "Handset/Speaker/Spectra Mic" and "Handset/Speaker/Spectra Mic Spare." Run RG58/U Belden 8240 Coax from Antenna Access hole to radio box leaving 24 inches extra in radio box and 12 inches extra in antenna access. Run 1-20 AWG Green and 1-20 AWG Black from Terminal block in Radio Box leaving 36 inches coiled in the bottom of the box for the 911 system, Marked for "Silent Alarm Code Plug".

GILLIG

EXHIBIT A.2

VEHICLE TECHNICAL INFORMATION

Exhibit A.2

VEHICLE TECHNICAL INFORMATION

The Proposer shall submit a completely filled-in Vehicle Technical Information form below as part of their proposal submission. A separate form shall be checked and filled out for each different bus model proposed.

- 30' Diesel Bus
 35' Diesel Bus
 40' Diesel Bus

- 30' Hybrid Bus
 35' Hybrid Bus
 40' Hybrid Bus

A. BUS MANUFACTURER

Bus Model

Gillig LLC

Low Floor

B. UNDERSTRUCTURE MANUFACTURER

Model Number

Gillig LLC

G27E102N2

C. BASIC BODY CONSTRUCTION

1. Type

Extruded Aluminum

2. Tubing or frame member Thickness, Dimensions & Material

a. Overstructure

1.57" X 3.00" Extruded Aluminum Wall 0.118"

b. Understructure

0.12" TO 0.25" ASTM A240 UNS 41003 Stainless Steel

3. Skin Thickness and Material

a. Roof

3MM (0.12") Fiberglass Kevlar

b. Sidewall

0.118" Aluminum

c. Skirt Panel

0.125" Aluminum

d. Front End

0.125" Fiberglass

e. Rear End

0.125" Fiberglass

D. DIMENSIONS

1. Overall Length

a. Over Bumpers

ft. 368.9 in.

b. Over Body

ft. 359.4 in.

2. Overall Width

a. Over Body excluding Mirrors

101.9 in.

b. Over Body including Mirrors - driving position

122 in.

c. Over Tires Front Axles

100 in.

d. Over Tires Rear Axles

100 in.

3. a. Over all Height (maximum)

122.9 in.

b. Overall Height (main roof line)

115.53 in.

4. Angle of Approach

8.7 deg.

5. Breakover Angle

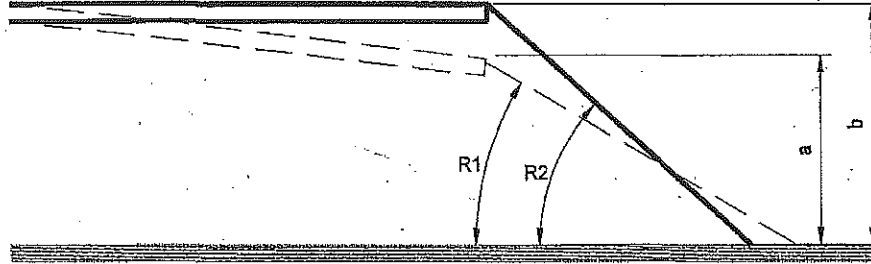
14.6 deg.

6. Angle of Departure

8.1 deg.

7. Doorway Dimensions		Front	Rear
a.	Width Between Door Posts	40 in.	34 in.
b.	Door Width Between Panels	34.5 in.	29 in.
c.	Clear Door Width	32.33 in.	29 in.
d.	Doorway Height	75 in.	79.67 in.
e.	Knuckle Clearance	1.5 in.	1.5 in.
f.	Door Protrusion Beyond Side Panels	0 in.	11.9 in.

8. Step Height from Ground (measured at center of doorway)



Front Doorway, Empty		Ramp Angle	Rear Doorway, Empty	
(Kneeled)	a. 11.9 in.	R1 9.3 deg.	a.	14.4 in.
(Unkneeled)	b. 15.3 in.	R2 13.6 deg.	b.	15.6 in.
(Reverse Kneeled)	c. 12.5 in.	R3 9.3 deg.	c.	12.0 in.

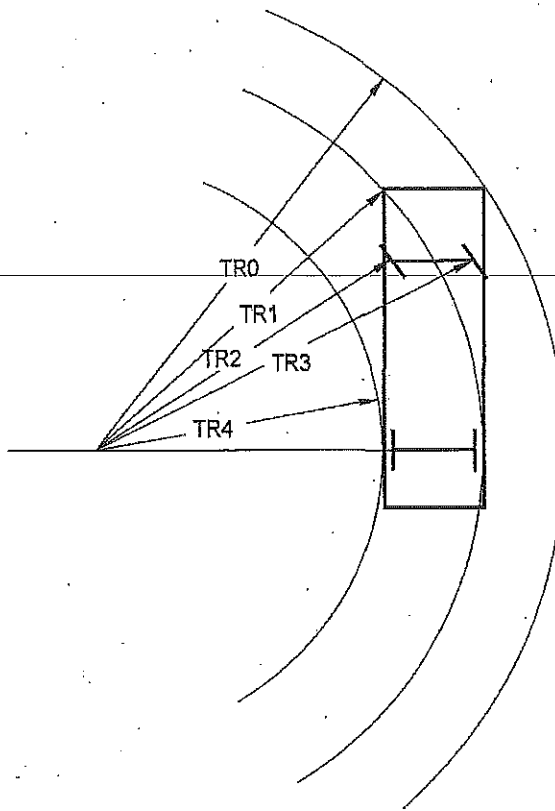
9. Interior Head Room (center of aisle)		
a.	Front Axle Location	95.4 in.
b.	Drive Axle Location	76.5 in.

10. Aisle Width Between Transverse Seats (minimum)	21.3 in.
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11. Floor Ride Height Above Ground (centerline of bus)		
a.	at Front door	15.9 in.
b.	at Front Axle	16 in.
c.	at Drive Axle	35.4 in.
d.	at Rear door	16.9 in.

12. Minimum Ground Clearance (between bus and ground, with bus unkneeled)		
a.	Excluding Axles	10.2 in.
b.	Including Axles	6.1 in.

13. Horizontal Turning Envelope (see diagram on following page)		
a.	Outside Body Turning Radius, TR0 (including bumper)	29 ft. 3 in.
b.	Front Inner Corner Radius, TR1 (including bumper)	----- ft. ----- in.
c.	Front Wheel Inner Turning Radius, TR2	18 ft. 1 in.
d.	Front Wheel Outer Turning Radius, TR3	25 ft. 0 in.
e.	Inside Body Turning Radius, TR4 (including bumper)	12 ft. 3 in.



14.	Wheelbase		<u>162.8</u>	in.
15.	Overhang, Centerline of Axle Over Bumper			
	a. Front	<u> </u>	ft. <u>90.1</u>	in.
	b. Rear	<u> </u>	ft. <u>116.8</u>	in.
16.	Floor			
	a. Interior Length	<u> </u>	ft. <u>286</u>	in.
	b. Interior Width (excluding coving)	<u> </u>	ft. <u>88</u>	in.
	c. Total Standee Area	<u>40</u>	sq. ft.	
	d. Minimum distance between Wheelhouses:			
	Front:		<u>36.1</u>	in.
	Rear:		<u>33</u>	in.
	e. Maximum interior floor slope (from horizontal)	<u>.27</u>	deg.	
17.	Passenger Capacity Provided			
	a. Total Maximum Seating	<u>26</u>		
	b. Standee Capacity	<u>47</u>		
	c. Minimum Knee to Hip Room		<u>32.1</u>	in.
	d. Minimum Foot Room		<u>14</u>	in.

E. WEIGHT OF BUS

	No. of People	Front Axle			Rear Axle			TOTAL BUS
		Left	Right	Total	Left	Right	Total	
Empty Bus Full Fuel and Farebox	0	3,280	3,280	6,560	8,600	8,600	17,200	23,760
Fully Seated Full Fuel and Farebox	<u>26</u> +Driver	4,050	4,050	7,910	9,950	9,950	19,900	27,810
Fully Loaded Standee and Fully Seated Full Fuel and Farebox	<u>73</u> +Driver	5,130	5,130	10,260	12,300	12,300	24,600	34,860
Crush Load (1.5xFully Loaded)	<u>111</u>	6,055	6,055	12,110	14,150	14,150	28,300	40,410
GVWR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35,000
GAWR	N/A	5,500	5,500	11,000	12,000	12,000	24,000	35,000

Continued on Next Page

F. ENGINE, MAIN

1.	Manufacturer	Cummins
2.	Model Number	4 Cycle Inline
3.	Type	ISL 280
4.	No. of Cylinders	6
5.	Bore	4.49 in.
6.	Stroke	5.69 in.
7.	Displacement	543 cu. in.
8.	Compression Ratio	16.6:1
9.	Injector Type and Size	Electronic
10.	Net S.A.E. Horsepower	280 HP at 2,200 rpm
11.	Net S.A.E. Torque	900 lb. ft. at 1,300 rpm
12.	Crankcase Oil Capacity	
	a. New Engine, dry	6.3 gal.
	b. New Engine, wet	--- gal.
13.	Turbocharger	
	a. Make	Wastegate
	b. Model Number	HX40
14.	Maximum Speed, no load	2,400 rpm
15.	Maximum Speed, full load	2,200 rpm
16.	Speed at Idle	700 rpm
17.	Speed at Fast Idle	1,000 rpm
18.	Engine Information/graphs to be attached with this form:	

- Engine speed vs. road speed*
- Torque vs. engine speed*
- Horsepower vs. engine speed*
- Fuel consumption vs. engine speed.*
- Vehicle speed vs. time (both loaded and unloaded)*
- Vehicle speed vs. grade (both loaded and unloaded)*
- Acceleration vs. time*
- Change of acceleration vs. time.*

19. Optional Hybrid Drive System

Allison ISE BAE OTHER _____

20. Optional Hybrid Drive Electricity Storage

Nickel Metal Hydride Lithium Ion Ultracap OTHER _____

G. TRANSMISSION

Allison B330R Allison B400R Allison B500R OTHER _____

1.	Manufacturer	Allison
2.	Model Number	B400R
3.	Type	Automatic Electronic
4.	Speeds	Six
5.	Gear Ratios	Forward 3.49:1 Reverse 5.03:1
6.	Shift Speeds	
	a. 1st - 2nd	10-22 mph
	b. 2nd - 3rd	20-22 mph
	c. 3rd - 4th	30-32 mph
	d. 4th - 5th (if applicable)	40 mph
	e. 5th - 6th (if applicable)	50 mph
7.	Fluid Capacity [including heat exchanger and filter(s)]	28 Qts.

H. VOLTAGE REGULATOR

1. Manufacturer Niehoff
2. Model Number A2-361

I. VOLTAGE EQUALIZER

1. Manufacturer Vanner
2. Model Number 60 Series 100 Amp

J. ALTERNATOR

1. Manufacturer Niehoff
2. Model Number C803
3. Type 28V Air Cooled
4. Output at Idle 325 Amps
5. Output at Maximum Speed 500 Amps
6. Maximum Warranted Speed 5,000 rpm
7. Speed at Idle 2,000 rpm
8. Drive Type Belt Driven

K. STARTER MOTOR

1. Manufacturer Delco Remy
2. Model Number HD Electric 24 Volt
3. Type 42MT Type 400

L. AIR COMPRESSOR

1. Manufacturer Cummins (Wabco)
2. Type Reciprocating Piston-Twin Cylinder
3. Rated Capacity 30.4 cfm
4. Capacity, at Idle 6.5 cfm
5. Capacity, at Maximum Speed 28.8 cfm
6. Maximum Warranted Speed 3,000 rpm
7. Speed Idle 700 rpm
8. Drive Type Gear Driven rpm
9. Governor
a) Cut-in Pressure 110 psi
b) Cut-Out Pressure 130 psi

M. AXLE, FRONT

MAN solid beam, non-driving
 Or equal as listed below:

1. Manufacturer Meritor (Rockwell)
2. Type Deep Drop
3. Model Number FH946
4. Gross Axle Weight Rating 11,000 lb.
5. Axle Load 6,560 lb.

N. AXLE, REAR

MAN heavy duty
 Or equal as listed below:

1. Manufacturer Meritor (Rockwell)
2. Model Number RS23160
3. Type Single Reduction
4. Gross Axle Weight Rating 24,000 lb.
5. Axle Load 17,200 lb.
6. Axle Ratio 5:13

O. SUSPENSION SYSTEM

1. Manufacturer	Neway	
2. Type:	Front Rear	Pneumatic Pneumatic
3. Springs:	Front Rear	Two Two

P. WHEELS AND TIRES

1. Wheels	
a. Make	Accuride
b. Size	22.5" x 8.25"
c. Capacity	7,300 lb.
d. Material	Steel

2. Tires	
a. Manufacturer	Michelin
b. Type	XINCITY Z
c. Size	275/70R22.5 (J)
d. Load Range/Air Press.	6940 @ 130 lb./psi.

Q. STEERING, POWER

1. Pump	
a. Manufacturer	Parker
b. Model Number	PGP 330
c. Type	Gear Driven
d. Relief Pressure	2,175 psi
2. Booster/Gear Box	
a. Manufacturer	TRW (Ross)
b. Model Number	TAS65
c. Type	Power Integral
d. Ratio	20.4:1
3. Power Steering Fluid Capacity	2.5 gal.
4. Maximum Effort at Steering Wheel (unloaded stationary coach on dry asphalt pavement)	10 lb.
5. Steering Wheel Diameter	20 in.

R. BRAKES

1. Make of Fundamental Brake System	Meritor (Rockwell) MGM
2. Brake Chambers Vendor's Size & Part No.	
a. Front	MGM Type 16
b. Rear	MGM MJB 2030ET
3. Brake Operation Effort	Piston
4. Slack Adjuster's Vendor's Type & Part No.	
a. Front	
1) Right	N/A
2) Left	N/A
b. Rear	
1) Right	N/A
2) Left	N/A
c. Length	
1) Front Take-up	N/A in.
2) Rear Take-up	N/A in.

5.	Brake Drums/Discs			
	a.	Front		
		1)	Manufacturer	Arvin-Meritor
		2)	Part Number	23647-002
		3)	Diameter	434mm in.
	b.	Rear		
		1)	Manufacturer	Arvin-Meritor
		2)	Part Number	23-123647-002
		3)	Diameter	434mm in.
6.	Brake Lining			
	a.	Front		
		1)	Manufacturer	Arvin-Meritor
		2)	Type	Bonded
	b.	Rear		
		1)	Manufacturer	Arvin-Meritor
		2)	Type	Bonded
7.	Brake Lining Identification			
	a.	Front		
		1)	Forward	MA703
		2)	Reverse	MA703
	b.	Rear		
		1)	Forward	MA703
		2)	Reverse	MA703
8.	Brake Linings Per shoe			
	a.	Front		1
	b.	Rear		1
9.	Brake Lining Widths			
	a.	Front		249.9 in.
	b.	Rear		249.9 in.
10.	Brake Lining Lengths			
	a.	Front		113.9 in.
	b.	Rear		113.9 in.
11.	Brake Lining Thickness			
	a.	Front		21mm in.
	b.	Rear		21mm in.
12.	Brake Lining Area Per Axle			
	a.	Front		781 sq. in.
	b.	Rear		781 sq. in.

S. COOLING SYSTEM

1.	Radiator/Charge Air Cooler			
	a.	Manufacturer		Modine /
	b.	Model Number		EPR0239690002// EPR239700002
	c.	Type		Side By Side /
	d.	Number of Tubes		276 / 22 /
	e.	Tubes Outer Diameter		2.980 in. / 2.980 in.
	f.	Fins Per in.		10 Fins/12 Fins
	g.	Fin Thickness		.003 in. / .006 in.
2.	Total Cooling and Heating System Capacity			23 gal.
3.	Radiator Fan Speed Control			Electric Type
4.	Surge Tank, Capacity			2.7 qt.
5.	Engine Thermostat Temperature Setting			
	a.	Initial Opening		180 ° F
	b.	Fully Closed		202 ° F
6.	Overheat Alarm Temperature Sending Unit Setting			225 ° F
7.	Shutdown Temperature Setting			235 ° F

T. AIR RESERVOIR CAPACITY

1.	Supply Reservoir	1,000	cu. in.
2.	Primary Reservoir	1,16	cu. in.
3.	Secondary Reservoir	2,095	cu. in.
4.	Parking Reservoir	-----	cu. in.
5.	Accessory Reservoir	1,090	cu. in.
6.	Other Reservoir Type	N/A	cu. in.

U. HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT

Thermo King T-Series Rear Mount with Screw Compressor

Or equal:

1.	Heating System Capacity	98,000	BTU
2.	Air Conditioning Capacity	86,000	BTU
3.	Ventilating Capacity	2,250	cfm
4.	Compressor		
	a. Manufacturer	Thermo King	
	b. Model Number	S391	
	c. No. of Cylinders	N/A	
	d. Drive Ratio	1.48:1	
	e. Maximum Warranted Speed	3,000	rpm
	f. Operating Speed	Varied Load	rpm
	g. Weight	119	lb.
	h. Oil Capacity		
	1) Dry	N/A	gal.
	2) Wet	8.9 Pints	gal.
	i. Refrigerant	R134A	Type 23 lb.
5.	Condenser		
	a. Manufacturer	Thermo King	
	b. Model Number	4112 D76 G01	
	c. No. of Rows	5	
	d. No. of Fins/in.	8	
	e. O.D. of Tube	.375	in.
	f. Fin Thickness	.008	in.
6.	Condenser Fan		
	a. Manufacturer	Thermo King	
	b. Model Number	4639 C03 G05	
	c. Fan Diameter	17.7	in.
	d. Speed Maximum	2,370	rpm
	e. Flow Rate (maximum)	5,200	cfm
7.	Receiver		
	a. Manufacturer	Thermo King	
	b. Model Number	8974 C82 ZG01	
	c. Capacity	5	lb.
8.	Condenser Fan Drive Motors		
	a. Manufacturer	Thermo King (Reliance)	
	b. Model Number	104644	
	c. Type	Brushless	
	d. Horse Power	1.7	HP
	e. Operating Speed	1,640	rpm
9.	Evaporator Fan Drive Motors		
	a. Manufacturer	Thermo King (Reliance)	
	b. Model Number	104645	
	c. Type	Brushless	
	d. Horse Power	1.7	HP
	e. Operating Speed	1,640	rpm

10.	Evaporator(s)	
a.	Manufacturer	Thermo King
b.	Model Number	4128 D15 G01
c.	Number of Rows	5
d.	No. of Fins/in.	9
e.	Outer Diameter of Tube	.375 in.
f.	Fin Thickness	.008 in.
g.	Number of Evaporator	1
11.	Expansion Valve	
a.	Manufacturer	Sporlan
b.	Model Number	1082 A30 G34
12.	Filter-Drier	
a.	Manufacturer	Sporlan
b.	Model Number	1080 A98 G09
13.	Heater Cores	
a.	Manufacturer	Thermo King
b.	Model Number	4112 D74 G01
c.	Capacity	90,000 BTU
d.	Number of Rows	2
e.	Number of Fins/in.	8
f.	Outer Diameter of Tube	.375 in.
g.	Fin Thickness	.008 in.
h.	Number of Heater Cores	1
14.	Floor Heater Blowers	
a.	Heater Blower Motors	
1)	Manufacturer	N/A
2)	Model Number	N/A
3)	Horsepower	N/A HP
4)	Speed(s)	N/A rpm
b.	Heater Blower Wheel	
1)	Manufacturer	N/A
2)	Model Number	N/A
3)	Capacity	N/A cfm
c.	Cores	
1)	Manufacturer	N/A
2)	Model Number	N/A
3)	Capacity	N/A BTU
4)	Number of Rows	N/A
5)	Number of Fins/in.	N/A Fins
6)	Outer Diameter of Tube	N/A in.
7)	Fin Thickness	N/A in.
8)	Number of Heater Cores	N/A
15.	Controls	
a.	Manufacturer	N/A
b.	Model Number	N/A
c.	Type	N/A
16.	Driver's Heat	
a.	Manufacturer	Mobile Climate Control
b.	Model Number	21-65539-060
c.	Capacity	62,000 BTU
17.	Ventilation System	
a.	Type	Recycled Interior Air
18.	Coolant Heater	
a.	Make	Spheros (Webasto)
b.	Model Number	Thermo 230
c.	Capacity(BTU)	80,000

V. INTERIOR LIGHTING
 Dinex with Nichia or Philips LED's
 Or equal as listed below:

1. Manufacturer	<u>I/O Controls Corporation</u>
2. Type	<u>LED</u>
3. Number of Fixtures	<u>8</u>
4. Size of Fixtures	<u>3', 6'</u>
5. Power Pack	<u>24 Volt</u>

W. DOORS
 Vapor Bus International Ameriview
 Or equal as listed below:

1. <u>Front</u>		
a. Manufacturer of Operating Equipment	<u>Vapor</u>	
b. Type of Door	<u>Slide Glide</u>	
c. Type of Operating Equipment	<u>Air Open / Air Close</u>	
2. <u>Rear</u>		
a. Manufacturer of Operating Equipment	<u>Vapor</u>	
b. Type door	<u>Swing</u>	
c. Type of Operating Equipment	<u>Air Open / Air Close</u>	

X. PASSENGER WINDOWS

1. Manufacturer	<u>Arow Global (Strom Tite)</u>
2. Model Number	<u>Traditional Frame Quick Change</u>
3. Type	<u>Upper Transom - Lower Fixed</u>
4. Number: (Side)	<u>8+1</u>
(Rear)	<u>0</u>
5. Sizes:	<u>30", 34", 46", 56", 58"</u>
6. Glazing:	
a. Type	<u>Laminated Safety Glass</u>
b. Thickness	<u>.250</u>
c. Color of Tint	<u>Gray</u>
d. Light Transmission	<u>39%-49% Transmissivity</u>

Y. MIRRORS

	<u>Size</u>	<u>Type</u>	<u>Manufacturer</u>	<u>Mfg. Part #</u>	<u>Model No.</u>
1. Right Side Exterior	<u>8"x15"</u>	<u>2 Piece</u>	<u>B&R (Hadley)</u>	<u>CS-17.5-D815HRFHRCX-TS</u>	
2. Left Side Exterior	<u>8"x15"</u>	<u>2 Piece</u>	<u>B&R (Hadley)</u>	<u>RS-7.5-U815HRFHRCX-TS</u>	
3. Left Side Exterior					
4. Center Rearview	<u>8.25"x16"</u>	<u>Flat</u>	<u>B&R (Hadley)</u>		<u>Rectangular</u>
5. Front Entrance Area					
6. Upper-Right Hand Corner	<u>6"</u>	<u>Convex</u>	<u>B&R (Hadley)</u>		<u>Round</u>
7. Rear Exit Area	<u>12"</u>	<u>Convex</u>	<u>Rosco</u>		<u>Round</u>

Z. SEATS

1. 30', 35' & 40' Bus Passenger Front Section Seats	
<input type="checkbox"/> American Seating Model 6466	
<input checked="" type="checkbox"/> Or equal as listed below:	
a. Manufacturer	<u>American Seating</u>
b. Model Number	<u>Insight</u>
2. 30', 35' & 40' Bus Passenger Rear Section Seats	
<input type="checkbox"/> American Seating Model 6468	
<input checked="" type="checkbox"/> Or equal as listed below:	
a. Manufacturer	<u>American Seating</u>
b. Model Number	<u>Insight</u>

3. Bus Operator Seat
 Recaro Ergo M (3-pt) (Fluorescent Color Belt)
 Or equal as listed below:
- a. Manufacturer
 - b. Model Number

Recaro
 Ergo Metro AM80

AA. PAINT

1. Manufacturer
2. Type
3. Minimum Total Paint Thickness

Axalta (Düpont)
 Elite Low VOC 2.8
 4 Mil

BB. WHEELCHAIR RAMP/LIFT EQUIPMENT

1. Manufacturer
2. Model Number
3. Type
4. Capacity
5. Dimensions
 - a. Width of Platform
 - b. Length of Platform
6. System Fluid Capacity
7. Type Fluid Used
8. Operating Hydraulic Pressure
9. Hydraulic Cylinders
 - a. Size
 - b. Number

Lift-U (Hogan)
 LU-18
 Electric Fold Over
 950 lb.
 30 in.
 48 in.
 N/A qt.
 N/A
 N/A
 N/A psi
 N/A
 N/A

CC. WHEELCHAIR SECUREMENT EQUIPMENT

- American Seating ARM & Dual Auto-Lok System
 Or equal as listed below:
1. Manufacturer
 2. Model Number

American Seating / Q'Straint
 Pivoting A.R.M., With Floor Pock

DD. DESTINATION SIGNS

- Twin Vision all LED
 Or equal:

1. Type
2. Character Length
 - a. Front Destination
 - b. Front Run Number
 - c. Side Destination
 - d. Rear Route
3. Character Height
 - a. Front Destination
 - b. Front Run Number
 - c. Side Destination
 - d. Rear Route
4. Number of Characters
 - a. Front Destination
 - b. Front Run Number
 - c. Side Destination
 - d. Rear Route
5. Message Width
 - a. Front Destination
 - b. Front Run Number
 - c. Side Destination
 - d. Rear Route

Smart Series III (LED)
 4.5 in.
 2.8 in.
 2.8 in.
 3.0 in.
 8.0 in.
 4.0 in.
 4.3 in.
 6.6 in.
 13 in.
 4 in.
 11 in.
 4 in.
 64.5 in.
 15.3 in.
 42.3 in.
 18.5 in.

LL. FUEL FILLER

Emco Wheaton

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

MM. AUXILIARY BUS AIR SYSTEM CONNECTION

Lincoln Air Quick Disconnect #11659

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

NN. BUS SUBFLOOR

Spaceage Synthetics Thermo-Lite Composite

Or equal as listed below:

- 1. Manufacturer Milwaukee Composites
- 2. Brand Milwaukee Composites
- 3. Description Safety Yellow

OO. INTERMEDIATE PLATFORM RIBBED YELLOW FLOOR COVERING

Hypalon

Or equal as listed below:

- 1. Manufacturer Altro TransFloor
- 2. Brand Chroma Windmill
- 3. Description Color: Eros TFCR27403, 2.7mm, With Safety Yellow Nosing.

PP. EXTERNAL REFLECTIVE GRAPHICS STRIPING

3M Cast Vinyl

Or equal as listed below:

- 1. Manufacturer _____
- 2. Brand _____
- 3. Description _____

QQ. INTERNAL SIDE TRIM PANELS

Arborite Vogue P-925-S

Or equal as listed below:

- 1. Manufacturer Wilsonart
- 2. Model Number N/A
- 3. Description 1500-60 Matte Gray, 4830-01 Gloss Satin, 1595-60 Black

RR. BUS FLOORING

Gerflor Apollo NT Self-adhesive

Or equal as listed below:

- 1. Manufacturer Altro TransFloor
- 2. Model Number Chroma Windmill
- 3. Description Color: Eros TFCR27403, 2.7mm

SS. PASSENGER SEAT FABRIC

Holdsworth 5621/6094/3267

Or equal as listed below:

- 1. Manufacturer Camira (Holdsworth)
- 2. Model Number BHD480, BQV285 Or BXE051
- 3. Description BHD480, BQV285 Or BXE051

TT. PASSENGER NOTICE SIGN FRAMES

Transit Information Products MC TAB HOR

Or equal as listed below:

1. Manufacturer _____
2. Model Number _____
3. Description _____

UU. SCHEDULE HOLDER

Transit Information Products OBIC-WW8-P

Or equal as listed below:

1. Manufacturer _____
2. Model Number _____
3. Description _____

VV. SUPERCAPACITOR ENGINE START AID

KAPower KBI EC501.2

Or equal as listed below:

1. Manufacturer _____
2. Model Number _____
3. Description _____

WW. RADIO HANDSET AND CRADLE

Audiosears Corp. 1001A00AEMJLUC-QHC

Or equal as listed below:

1. Manufacturer Trapeze
2. Model Number 36" Armored Cable
3. Description _____

XX. COVERT EMERGENCY ALARM BUTTON

Square D #9001KR2U Push Button

Or equal as listed below:

1. Manufacturer Trapeze
2. Model Number N/A
3. Description Push Button

YY. ITS SYSTEM

Trapeze TransitMaster

Or equal as listed below:

1. Manufacturer _____
2. Model Number _____
3. Description _____

GILLIG

EXHIBIT A.3

FEDERAL TRANSIT ADMINISTRATION (FTA)
FEDERALLY REQUIRED CONTRACT CLAUSES

Exhibit A.3

**FEDERAL TRANSIT ADMINISTRATION (FTA)
Federally Required Contract Clauses**

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1. FLY AMERICA REQUIREMENTS

49 U.S.C. § 40118

41 CFR Part 301-10

The Contractor agrees to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and subrecipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

2. BUY AMERICA REQUIREMENTS

49 U.S.C. 5323(j)

49 C.F.R. Part 661

Buy America - The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. Part 661, which provide that Federal funds may not be obligated unless steel, iron, and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. 661.7, and include final assembly in the United States for 15 passenger vans and 15 passenger wagons produced by Chrysler Corporation, and microcomputer equipment and software. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11. Rolling stock must be assembled in the United States and have a 60 percent domestic content.

A bidder or offeror must submit to the FTA recipient the appropriate Buy America certification (below) with all bids or offers on FTA-funded contracts, except those subject to a general waiver. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as nonresponsive. This requirement does not apply to lower tier subcontractors.

Buy America Certification

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 CFR Part 661.5.

Date _____

Signature _____

Company Name _____

Title _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

Certification requirement for procurement of buses, other rolling stock and associated equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date _____

Signature _____

Company Name _____

Title _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

3. [RESERVED]

4. CARGO PREFERENCE REQUIREMENTS
46 U.S.C. 1241
46 CFR Part 381

Cargo Preference - Use of United States-Flag Vessels

The Contractor agrees:

- a. to use privately owned United States-Flag commercial vessels to ship at least fifty (50) percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels;
- b. to furnish within twenty (20) working days following the date of loading for shipments originating within the United States or within thirty (30) working days following the date of leading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the contractor in the case of a subcontractor's bill-of-lading.)
- c. to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

5. [RESERVED]

6. ENERGY CONSERVATION REQUIREMENTS

42 U.S.C. 6321 et seq.

49 CFR Part 18

Energy Conservation - The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

7. CLEAN WATER REQUIREMENTS
33 U.S.C. 1251

Clean Water –

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

(2) The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

8. BUS TESTING
49 U.S.C. 5318(e)
49 CFR Part 665

Bus Testing - The Contractor [Manufacturer] agrees to comply with 49 U.S.C. A 5318(c) and FTA's implementing regulation at 49 CFR Part 665 and shall perform the following:

- 1) A Manufacturer of a new bus model or a bus produced with a major change in components or configuration shall provide a copy of the final test report to the recipient at a point in the procurement process specified by the recipient which will be prior to the recipient's final acceptance of the first vehicle.
- 2) A Manufacturer who releases a report under Paragraph 1 above shall provide notice to the operator of the testing facility that the report is available to the public.
- 3) If the Manufacturer represents that the vehicle was previously tested, the vehicle being sold should have the identical configuration and major components as the vehicle in the test report, which must be provided to the recipient prior to recipient's final acceptance of the first vehicle. If the configuration or components are not identical, the Manufacturer shall provide a description of the change and the Manufacturer's basis for concluding that it is not a major change requiring additional testing.
- 4) If the Manufacturer represents that the vehicle is "grandfathered" (has been used in mass transit service in the United States before October 1, 1988, and is currently being produced without a major change in configuration or components), the Manufacturer shall provide the name and address of the recipient of such a vehicle and the details of that vehicle's configuration and major components.

CERTIFICATION OF COMPLIANCE WITH FTA'S BUS TESTING REQUIREMENTS

The undersigned [Contractor/Manufacturer] certifies that the vehicle offered in this procurement complies with 49 U.S.C. A 5318(e) and FTA's implementing regulation at 49 CFR Part 665.

The undersigned understands that misrepresenting the testing status of a vehicle acquired with Federal financial assistance may subject the undersigned to civil penalties as outlined in the Department of Transportation's regulation on Program Fraud Civil Remedies, 49 CFR Part 31. In addition, the undersigned understands that FTA may suspend or debar a Manufacturer under the procedures in 49 CFR Part 29.

Date: _____

Signature: _____

Company Name: _____

Title: _____

9. PRE-AWARD AND POST DELIVERY AUDITS REQUIREMENTS

49 U.S.C. 5323

49 CFR Part 663

Pre-Award and Post-Delivery Audit Requirements - The Contractor agrees to comply with 49 U.S.C. § 5323(l) and FTA's implementing regulation at 49 C.F.R. Part 663 and to submit the following certifications:

(1) **Buy America Requirements:** The Contractor shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. If the Proposer certifies compliance with Buy America, it shall submit documentation which lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly.

(2) **Solicitation Specification Requirements:** The Contractor shall submit evidence that it will be capable of meeting the bid specifications.

(3) **Federal Motor Vehicle Safety Standards (FMVSS):** The Contractor shall submit 1) manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS or 2) manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

BUY AMERICA CERTIFICATE OF COMPLIANCE WITH FTA REQUIREMENTS FOR BUSES, OTHER ROLLING STOCK, OR ASSOCIATED EQUIPMENT

(To be submitted with a bid or offer exceeding the small purchase threshold for Federal assistance programs, currently set at \$100,000.)

Certificate of Compliance

The Proposer hereby certifies that it will comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C), Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, and the regulations of 49 C.F.R. 661.11:

Date: _____

Signature: _____

Company Name: _____

Title: _____

Submit documentation with your Proposal that lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly (attach a separate sheet).

Certificate of Non-Compliance

The Proposer hereby certifies that it cannot comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C) and Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, but may qualify for an exception to the requirements consistent with 49 U.S.C. Sections 5323(j)(2)(B) or (j)(2)(D), Sections 165(b)(2) or (b)(4) of the Surface Transportation Assistance Act, as amended, and regulations in 49 C.F.R. 661.7.

Date: _____

Signature: _____

Company Name: _____

Title: _____

10. LOBBYING
31 U.S.C. 1352
49 CFR Part 19
49 CFR Part 20

Byrd Anti-Lobbying Amendment, 31 U.S.C. 1352, as amended by the Lobbying Disclosure Act of 1995, P.L. 104-65 [to be codified at 2 U.S.C. § 1601, et seq.] - Contractors who apply or bid for an award of \$100,000 or more shall file the certification required by 49 CFR part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to the recipient.

APPENDIX A, 49 CFR PART 20--CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements
(To be submitted with each bid or offer exceeding \$100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq.*)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.]

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.*, apply to this certification and disclosure, if any.

Signature of Contractor's Authorized Official

Name and Title of Contractor's Authorized Official

Date

11. ACCESS TO RECORDS AND REPORTS

49 U.S.C. 5325

18 CFR 18.36 (i)

49 CFR 633.17

Access to Records - The following access to records requirements apply to this Contract:

1. Where the Purchaser is not a State but a local government and is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 C.F.R. 18.36(i), the Contractor agrees to provide the Purchaser, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions. Contractor also agrees, pursuant to 49 C.F.R. 633.17 to provide the FTA Administrator or his authorized representatives including any PMO Contractor access to Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311.
2. Where the Purchaser is a State and is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 C.F.R. 633.17, Contractor agrees to provide the Purchaser, the FTA Administrator or his authorized representatives, including any PMO Contractor, access to the Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311. By definition, a major capital project excludes contracts of less than the simplified acquisition threshold currently set at \$100,000.
3. Where the Purchaser enters into a negotiated contract for other than a small purchase or under the simplified acquisition threshold and is an institution of higher education, a hospital or other non-profit organization and is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 C.F.R. 19.48, Contractor agrees to provide the Purchaser, FTA Administrator, the Comptroller General of the United States or any of their duly authorized representatives with access to any books, documents, papers and record of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions.
4. Where any Purchaser which is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 U.S.C. 5325(a) enters into a contract for a capital project or improvement (defined at 49 U.S.C. 5302(a)1) through other than competitive bidding, the Contractor shall make available records related to the contract to the Purchaser, the Secretary of Transportation and the Comptroller General or any authorized officer or employee of any of them for the purposes of conducting an audit and inspection.
5. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.
6. The Contractor agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case Contractor agrees to maintain same until the Purchaser, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 CFR 18.39(i)(11).
7. FTA does not require the inclusion of these requirements in subcontracts.

Requirements for Access to Records and Reports by Types of Contract

Contract Characteristics	Contract	Operational Service Contract	Turnkey	Construction	Architectural Engineering	Acquisition of Rolling Stock	Professional Services
I. State Grantees	a. Contracts below SAT (\$100,000)	None	Those imposed on state pass thru to Contractor	None	None	None	None
	b. Contracts above \$100,000/Capital Projects	None unless ¹ non-competitive award	Those imposed on state pass thru to Contractor	Yes, if non-competitive award or if funded thru ² 5307/5309/5311	None unless non-competitive award	None unless non-competitive award	None unless non-competitive award
II. Non State Grantees	a. Contracts below SAT (\$100,000)	Yes ³	Those imposed on non-state Grantee pass thru to Contractor	Yes	Yes	Yes	Yes
	b. Contracts above \$100,000/Capital Projects	Yes ³	Those imposed on non-state Grantee pass thru to Contractor	Yes	Yes	Yes	Yes

Sources of Authority

1. 49 USC 5325 (a)
2. 49 CFR 633.17
3. 18 CFR 18.36 (f)

12. FEDERAL CHANGES
49 CFR Part 18

Federal Changes - Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between Purchaser and FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

13. [RESERVED]

14. CLEAN AIR
42 U.S.C. 7401 et seq
40 CFR 15.61
49 CFR Part 18

Clean Air - (1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

(2) The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

15. RECYCLED PRODUCTS

42 U.S.C. 6962

40 CFR Part 247

Executive Order 12873

Recovered Materials - The contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

16. [RESERVED]

17. [RESERVED]

18. [RESERVED]

19. NO GOVERNMENT OBLIGATION TO THIRD PARTIES

No Obligation by the Federal Government.

(1) The Purchaser and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to the Purchaser, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

(2) The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

**20. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS
AND RELATED ACTS**
31 U.S.C. 3801 et seq.
49 CFR Part 31 18 U.S.C. 1001
49 U.S.C. 5307

Program Fraud and False or Fraudulent Statements or Related Acts.

(1) The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

(2) The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.

(3) The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

21. TERMINATION
49 U.S.C. Part 18
FTA Circular 4220.1E

SEE CONTRACT DOCUMENT (SP-50); SECTION 10. (TERMINATION)

22. GOVERNMENT-WIDE DEBARMENT AND SUSPENSION (NONPROCUREMENT)

Suspension and Debarment

This contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Contractor is required to verify that none of the Contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945.

The Contractor is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting its Proposal, Proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by CTDOT. If it is later determined that the Proposer knowingly rendered an erroneous certification, in addition to remedies available to CTDOT, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The Proposer agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The Proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

23. [RESERVED]

24. CIVIL RIGHTS REQUIREMENTS

29 U.S.C. § 623, 42 U.S.C. § 2000

42 U.S.C. § 6102, 42 U.S.C. § 12112

42 U.S.C. § 12132, 49 U.S.C. § 5332

29 CFR Part 1630, 41 CFR Parts 60 et seq.

Civil Rights - The following requirements apply to the underlying contract:

1. **Nondiscrimination** - In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.
2. **Equal Employment Opportunity** - The following equal employment opportunity requirements apply to the underlying contract:
 - (a) **Race, Color, Creed, National Origin, Sex** - In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
 - (b) **Age** - In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. §§ 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
 - (c) **Disabilities** - In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
3. The Contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

25. BREACHES AND DISPUTE RESOLUTION

49 CFR Part 18

FTA Circular 4220.1E

SEE CONTRACT DOCUMENT (SP-50); SECTION 12. (BREACH)

Disputes - Disputes arising in the performance of this Contract which are not resolved by agreement of the parties shall be decided in writing by the authorized representative of CTDOT's Representative. This decision shall be final and conclusive unless within ten (10) days from the date of receipt of its copy, the Contractor mails or otherwise furnishes a written appeal to the Representative. In connection with any such appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the Representative of CTDOT shall be binding upon the Contractor and the Contractor shall abide by the decision.

Performance During Dispute - Unless otherwise directed by CTDOT, Contractor shall continue performance under this Contract while matters in dispute are being resolved.

Claims for Damages - Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the party or of any of his employees, agents or others for whose acts he is legally liable, a claim for damages therefor shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

Remedies - Unless this contract provides otherwise, all claims, counterclaims, disputes and other matters in question between CTDOT and the Contractor arising out of or relating to this agreement or its breach will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which CTDOT is located.

Rights and Remedies - The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by CTDOT or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

26. [RESERVED]

27. [RESERVED]

28. DISADVANTAGED BUSINESS ENTERPRISE (DBE)
49 CFR Part 26

Disadvantaged Business Enterprises

- a. This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, *Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs*. The national goal for participation of Disadvantaged Business Enterprises (DBE) is 10%. The agency's overall goal for DBE participation is 11.2 %. A separate contract goal has not been established for this procurement.
- b. The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted contract. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as CTDOT deems appropriate. Each subcontract the Contractor signs with a subcontractor must include the assurance in this paragraph (see 49 CFR 26.13(b)).
- c. The successful Contractor will be required to report its DBE participation obtained through race-neutral means throughout the period of performance.
- d. The Contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than thirty (30) days after the Contractor's receipt of payment for that work from CTDOT. In addition, the Contractor is required to return any retainage payments to those subcontractors within thirty (30) days after the subcontractor's work related to this contract is satisfactorily completed.
- e. The contractor must promptly notify CTDOT, whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete its work, and must make good faith efforts to engage another DBE subcontractor to perform at least the same amount of work. The Contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of CTDOT.

29. [RESERVED]

**30. INCORPORATION OF FEDERAL TRANSIT ADMINISTRATION (FTA) TERMS
FTA Circular 4220.1E**

Incorporation of Federal Transit Administration (FTA) Terms - The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220.1E, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any CTDOT requests which would cause CTDOT to be in violation of the FTA terms and conditions.

31. [RESERVED]

GILLIG

EXHIBIT A.3

**FEDERAL TRANSIT ADMINISTRATION (FTA)
CERTIFICATIONS**

Buy America Certification

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 CFR Part 661.5.

Date DECEMBER 1, 2015

Signature *J Policarpio*

Company Name GILLIG LLC

Title JOSEPH POLICARPIO, VICE PRESIDENT

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date -----

Signature _____

Company Name _____

Title _____

Certification requirement for procurement of buses, other rolling stock and associated equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C).

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date DECEMBER 1, 2015

Signature *J Policarpio*

Company Name GILLIG LLC

Title JOSEPH POLICARPIO, VICE PRESIDENT

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date -----

Signature _____

Company Name _____

Title _____

CERTIFICATION OF COMPLIANCE WITH FTA'S BUS TESTING REQUIREMENTS

The undersigned [Contractor/Manufacturer] certifies that the vehicle offered in this procurement complies with 49 U.S.C. A 5323(c) and FTA's implementing regulation at 49 CFR Part 665.

The undersigned understands that misrepresenting the testing status of a vehicle acquired with Federal financial assistance may subject the undersigned to civil penalties as outlined in the Department of Transportation's regulation on Program Fraud Civil Remedies, 49 CFR Part 31. In addition, the undersigned understands that FTA may suspend or debar a Manufacturer under the procedures in 49 CFR Part 29.

Date: DECEMBER 1, 2015

Signature: _____

J. Policarpio

Company Name: GILLIG LLC

Title: JOSEPH POLICARPIO, VICE PRESIDENT

NOTE: REFERENCE OUR ATTACHED CERTIFICATION

BUS TEST CERTIFICATION

This is to certify that the bus model proposed for your procurement complies with the bus testing regulations required by the Surface Transportation and Uniform Relocation Assistance Act of 1987 as defined in the Interim Final Rulemaking (IFR) by the FTA in the Federal Register 49 CFR Part 665, dated July 28, 1992.

This statement means that the proposed vehicle complies with one or more of the clauses below, as required by the above IFR:

- was in mass transportation service prior to September 30, 1988, or
- is the same vehicle model that has been previously tested in PTI (Altoona), and that
- any new component(s) has (have) been tested at PTI (Altoona), or
- the installation of any new component(s) did not result in significant structural modification to the vehicle; or
- the installation of the component(s) did not result in a significant change in the data obtained from previous testing of the vehicle model.

GILLIG LLC

By



JOSEPH POLICARPIO

TITLE VICE PRESIDENT

DATE DECEMBER 1, 2015

BUY AMERICA CERTIFICATE OF COMPLIANCE WITH FTA REQUIREMENTS FOR BUSES, OTHER ROLLING STOCK, OR ASSOCIATED EQUIPMENT

(To be submitted with a bid or offer exceeding the small purchase threshold for Federal assistance programs, currently set at \$100,000.)

Certificate of Compliance

The Proposer hereby certifies that it will comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C), Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, and the regulations of 49 C.F.R. 661.11:

Date: DECEMBER 1, 2015

Signature: 

Company Name: GILLIG LLC

Title: JOSEPH POLICARPIO, VICE PRESIDENT

Submit documentation with your Proposal that lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly (attach a separate sheet).

Certificate of Non-Compliance

The Proposer hereby certifies that it cannot comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C) and Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, but may qualify for an exception to the requirements consistent with 49 U.S.C. Sections 5323(j)(2)(B) or (j)(2)(D), Sections 165(b)(2) or (b)(4) of the Surface Transportation Assistance Act, as amended, and regulations in 49 C.F.R. 661.7.

Date: -----

Signature: _____

Company Name: _____

Title: _____

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
 NEWINGTON, CT
 PRE-AWARD BUY AMERICA CERTIFICATE
 FORTY FOOT LOW FLOOR TRANSIT BUSES (QTY: 60-75, OPTION: 537, S/N: TBD, BID/CONTRACT# RFP# 15DOT7002)
 30-Nov-15

GILLIG IS ONE OF THE MOST "AMERICAN" BUS MANUFACTURERS IN THE WORLD. Gillig is 100% U.S. owned and operated. ALL OF OUR FACILITIES are located in the U.S.A. ALL OF OUR MANUFACTURING is done in the U.S.A. and we have a policy that stresses the use of products produced in the U.S.A.

We certify full compliance with the FTA's "Buy America" regulations (Section 49 CFR Part 663) and submit the following abbreviated listing as evidence of this compliance.

COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENT OF TOTAL COST
A/C TRANSITION DUCTS	THERMAL STRUCTURES, INC	U.S.A.	0.09%
AIR CONDITIONING SYSTEM	THERMO KING	U.S.A.	5.95%
AIR DRYER ASSEMBLY	SKF USA, INC	U.S.A.	0.14%
ALTERNATOR	C E NIEHOFF	U.S.A.	0.73%
BIKE RACK	SPORTWORKS	U.S.A.	0.32%
BOOSTER PUMP	AMETEK TECHNICAL	U.S.A.	0.17%
BULKHEAD ASSEMBLY	ALVA GWYN	U.S.A.	0.14%
CEILING PANELS	WILSONART INTERNATIONAL	U.S.A.	0.35%
COMPOSITE FLOORING	MILWAUKEE COMPOSITES	U.S.A.	0.38%
DESTINATION SIGNS	LUMINATOR HOLDING L.P.	U.S.A.	1.60%
DOOR CONTROLS & PANELS - FRONT	VAPOR BUS INTERNATIONAL	U.S.A.	0.84%
DOOR CONTROLS & PANELS - REAR	VAPOR BUS INTERNATIONAL	U.S.A.	0.73%
DRIVER'S SEAT	RECARO NORTH AMERICA	U.S.A.	0.55%
ELECTRICAL HARNESES & CABLES	LACO INCORPORATED	U.S.A.	1.08%
ELECTRICAL HARNESES, CABLES & PANELS	COMPASS COMPONENTS	U.S.A.	4.24%
ENGINE & AFTERTREATMENT SYSTEM	CUMMINS, INC	U.S.A.	13.18%
EXTERIOR MIRRORS	HADLEY PRODUCTS, INC - B&R DIVISION	U.S.A.	0.24%
EXTRUSIONS	SAPA	U.S.A.	0.90%
FABRICATIONS	DIE & TOOL PRODUCTS	U.S.A.	1.11%
FABRICATIONS	GCM	U.S.A.	0.92%
FABRICATIONS	HOGAN MANUFACTURING	U.S.A.	4.29%
FABRICATIONS	IMPERIAL FABRICATING	U.S.A.	0.84%
FABRICATIONS	S.F. TUBE	U.S.A.	0.63%
FIRE SUPPRESSION SYSTEM	AMEREX CORPORATION	U.S.A.	0.34%
FRONT AND REAR AXLE ASSEMBLIES	MERITOR AUTOMOTIVE	U.S.A.	4.30%
FRONT AND REAR BUMPER ASSEMBLIES	DYNATECH RO-LAB INC.	U.S.A.	0.62%
FRONT CAP	AMTECH CORPORATION	U.S.A.	0.48%
INTERIOR LIGHTING KIT	I/O CONTROLS CORPORATION	U.S.A.	1.15%
MISCELLANEOUS	KD SPECIALTIES	U.S.A.	0.64%
PASSENGER SEAT ASSEMBLIES	AMERICAN SEATING	U.S.A.	6.18%
POWER SYSTEM	KBi	U.S.A.	0.91%
RADIATOR AND CHARGE AIR COOLER	MODINE MANUFACTURING COMPANY	U.S.A.	1.59%
REAR CAP ASSEMBLY	COMMERCIAL PATTERN	U.S.A.	0.19%
REAR SUSPENSION	SAF HOLLAND USA	U.S.A.	1.11%
ROOF HATCH	SPECIALTY MANUFACTURING INC	U.S.A.	0.11%
ROOF SKIN	CRANE COMPOSITES, INC.	U.S.A.	0.19%
TIRES	MICHELIN	U.S.A.	0.98%
TRANSMISSION	ALLISON TRANSMISSION	U.S.A.	4.39%
WHEELCHAIR RAMP	LIFT-U	U.S.A.	1.96%
WHEELWELL COVERS	AMTECH CORPORATION	U.S.A.	0.34%
WINDOW ASSEMBLIES	AROW GLOBAL (STORMTITE)	U.S.A.	2.31%
SPECIFICALLY IDENTIFIED U.S. COMPONENTS AS A % OF TOTAL MATERIALS			<u>67.21%*</u>
FINAL ASSEMBLY - ALL VEHICLE ASSEMBLY OPERATIONS, STARTING WITH THE UNDERSTRUCTURE THROUGH TO FINAL ROAD TEST ARE DONE IN HAYWARD, CA		GILLIG	<u>100.00%</u>



**GILLIG LLC
HAYWARD, CALIFORNIA**

**DESCRIPTION AND COST
OF FINAL ASSEMBLY**

Gillig LLC certifies that final assembly of its buses occurs at its manufacturing plant in Hayward, California. The final assembly process consists of the assembly of the chassis; the installation and interconnection of the engine, transmission, axles, including the cooling and braking systems; the installation and interconnection of the heating and air conditioning equipment; the installation of pneumatic and electrical systems; mounting of the body structure to the chassis; installation of door systems; painting of the vehicle; installation of destination signs, windows, passenger seats, passenger grab rails, and wheelchair lifts; wheel alignment, dynamometer and road testing; final inspection, repairs and preparation of the vehicles for delivery.

The cost of the above mentioned activities for this order has been determined to be \$14,906.53 per bus.

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
 NEWINGTON, CT
 PRE-AWARD BUY AMERICA CERTIFICATE
 THIRTY-FIVE FOOT LOW FLOOR TRANSIT BUSES (QTY: 60-75, OPTION: 537, S/N: TBD, BID/CONTRACT# RFP# 15DOT7002)
 30-Nov-15

GILLIG IS ONE OF THE MOST "AMERICAN" BUS MANUFACTURERS IN THE WORLD. Gillig is 100% U.S. owned and operated. ALL OF OUR FACILITIES are located in the U.S.A. ALL OF OUR MANUFACTURING is done in the U.S.A. and we have a policy that stresses the use of products produced in the U.S.A.

We certify full compliance with the FTA's "Buy America" regulations (Section 49 CFR Part 663) and submit the following abbreviated listing as evidence of this compliance.

COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENT OF TOTAL COST
A/C TRANSITION DUCTS	THERMAL STRUCTURES, INC	U.S.A.	0.10%
AIR CONDITIONING SYSTEM	THERMO KING	U.S.A.	6.05%
AIR DRYER ASSEMBLY	SKF USA, INC	U.S.A.	0.14%
ALTERNATOR	C E NIEHOFF	U.S.A.	0.75%
BIKE RACK	SPORTWORKS	U.S.A.	0.32%
BOOSTER PUMP	AMETEK TECHNICAL	U.S.A.	0.18%
BULKHEAD ASSEMBLY	ALVA GWYN	U.S.A.	0.15%
CEILING PANELS	WILSONART INTERNATIONAL	U.S.A.	0.32%
COMPOSITE FLOORING	MILWAUKEE COMPOSITES	U.S.A.	0.39%
DESTINATION SIGNS	LUMINATOR HOLDING L.P.	U.S.A.	1.62%
DOOR CONTROLS & PANELS - FRONT	VAPOR BUS INTERNATIONAL	U.S.A.	0.85%
DOOR CONTROLS & PANELS - REAR	VAPOR BUS INTERNATIONAL	U.S.A.	0.74%
DRIVER'S SEAT	RECARO NORTH AMERICA	U.S.A.	0.56%
ELECTRICAL HARNESSSES & CABLES	LACO INCORPORATED	U.S.A.	1.07%
ELECTRICAL HARNESSSES, CABLES & PANELS	COMPASS COMPONENTS	U.S.A.	4.32%
ENGINE & AFTERTREATMENT SYSTEM	CUMMINS, INC	U.S.A.	13.39%
EXTERIOR MIRRORS	HADLEY PRODUCTS, INC - B&R DIVISION	U.S.A.	0.24%
EXTRUSIONS	SAPA	U.S.A.	0.84%
FABRICATIONS	DIE & TOOL PRODUCTS	U.S.A.	1.09%
FABRICATIONS	GCM	U.S.A.	0.92%
FABRICATIONS	HOGAN MANUFACTURING	U.S.A.	0.28%
FABRICATIONS	IMPERIAL FABRICATING	U.S.A.	4.78%
FABRICATIONS	S.F. TUBE	U.S.A.	0.69%
FIRE SUPPRESSION SYSTEM	AMEREX CORPORATION	U.S.A.	0.34%
FRONT AND REAR AXLE ASSEMBLIES	MERITOR AUTOMOTIVE	U.S.A.	4.37%
FRONT AND REAR BUMPER ASSEMBLIES	DYNATECH RO-LAB INC.	U.S.A.	0.63%
FRONT CAP	AMTECH CORPORATION	U.S.A.	0.49%
INTERIOR LIGHTING KIT	I/O CONTROLS CORPORATION	U.S.A.	1.01%
MISCELLANEOUS	KD SPECIALTIES	U.S.A.	0.49%
PASSENGER SEAT ASSEMBLIES	AMERICAN SEATING	U.S.A.	5.39%
POWER SYSTEM	KBi	U.S.A.	0.93%
RADIATOR AND CHARGE AIR COOLER	MODINE MANUFACTURING COMPANY	U.S.A.	1.62%
REAR CAP ASSEMBLY	COMMERCIAL PATTERN	U.S.A.	0.20%
REAR SUSPENSION	SAF HOLLAND USA	U.S.A.	1.13%
ROOF HATCH	SPECIALTY MANUFACTURING INC	U.S.A.	0.11%
ROOF SKIN	CRANE COMPOSITES, INC.	U.S.A.	0.17%
TIRES	MICHELIN	U.S.A.	0.99%
TRANSMISSION	ALLISON TRANSMISSION	U.S.A.	4.46%
WHEELCHAIR RAMP	LIFT-U	U.S.A.	1.99%
WHEELWELL COVERS	AMTECH CORPORATION	U.S.A.	0.35%
WINDOW ASSEMBLIES	AROW GLOBAL (STORMTITE)	U.S.A.	2.00%
SPECIFICALLY IDENTIFIED U.S. COMPONENTS AS A % OF TOTAL MATERIALS			<u>66.44% *</u>
FINAL ASSEMBLY - ALL VEHICLE ASSEMBLY OPERATIONS, STARTING WITH THE UNDERSTRUCTURE THROUGH TO FINAL ROAD TEST ARE DONE IN HAYWARD, CA	GILLIG	U.S.A.	<u>100.00%</u>



**GILLIG LLC
HAYWARD, CALIFORNIA**

**DESCRIPTION AND COST
OF FINAL ASSEMBLY**

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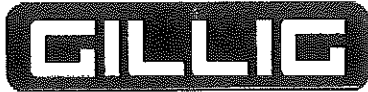
The cost of the above mentioned activities for this order has been determined to be \$14,906.53 per bus.

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
 NEWINGTON, CT
 PRE-AWARD BUY AMERICA CERTIFICATE
 TWENTY-NINE FOOT LOW FLOOR TRANSIT BUSES (QTY: 60-75, OPTION: 537, S/N: TBD, BID/CONTRACT# RFP# 15DOT7002)
 30-Nov-15

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We certify full compliance with the FTA's "Buy America" regulations (Section 49 CFR Part 663) and submit the following abbreviated listing as evidence of this compliance.

COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENT OF TOTAL COST
A/C TRANSITION DUCTS	THERMAL STRUCTURES, INC	U.S.A.	0.10%
AIR CONDITIONING SYSTEM	THERMO KING	U.S.A.	5.59%
AIR DRYER ASSEMBLY	SKF USA, INC	U.S.A.	0.14%
ALTERNATOR	C E NIEHOFF	U.S.A.	0.76%
BIKE RACK	SPORTWORKS	U.S.A.	0.32%
BOOSTER PUMP	AMETEK TECHNICAL	U.S.A.	0.18%
BULKHEAD ASSEMBLY	ALVA GWYN	U.S.A.	0.15%
CEILING PANELS	WILSONART INTERNATIONAL	U.S.A.	0.30%
COMPOSITE FLOORING	MILWAUKEE COMPOSITES	U.S.A.	0.57%
DESTINATION SIGNS	LUMINATOR HOLDING L.P.	U.S.A.	1.64%
DOOR CONTROLS & PANELS - FRONT	VAPOR BUS INTERNATIONAL	U.S.A.	0.86%
DOOR CONTROLS & PANELS - REAR	VAPOR BUS INTERNATIONAL	U.S.A.	0.75%
DRIVER'S SEAT	RECARO NORTH AMERICA	U.S.A.	0.57%
ELECTRICAL HARNESES & CABLES	LACO INCORPORATED	U.S.A.	1.12%
ELECTRICAL HARNESES, CABLES & PANELS	COMPASS COMPONENTS	U.S.A.	4.13%
ENGINE & AFTERTREATMENT SYSTEM	CUMMINS, INC	U.S.A.	13.57%
EXTERIOR MIRRORS	HADLEY PRODUCTS, INC - B&R DIVISION	U.S.A.	0.25%
EXTRUSIONS	SAPA	U.S.A.	0.77%
FABRICATIONS	DIE & TOOL PRODUCTS	U.S.A.	1.25%
FABRICATIONS	GCM	U.S.A.	0.71%
FABRICATIONS	HOGAN MANUFACTURING	U.S.A.	0.31%
FABRICATIONS	IMPERIAL FABRICATING	U.S.A.	5.15%
FABRICATIONS	S.F. TUBE	U.S.A.	0.50%
FIRE SUPPRESSION SYSTEM	AMEREX CORPORATION	U.S.A.	0.35%
FRONT AND REAR AXLE ASSEMBLIES	MERITOR AUTOMOTIVE	U.S.A.	3.83%
FRONT AND REAR BUMPER ASSEMBLIES	DYNATECH RO-LAB INC.	U.S.A.	0.64%
FRONT CAP	AMTECH CORPORATION	U.S.A.	0.49%
INTERIOR LIGHTING KIT	I/O CONTROLS CORPORATION	U.S.A.	0.89%
MISCELLANEOUS	KD SPECIALTIES	U.S.A.	0.57%
PASSENGER SEAT ASSEMBLIES	AMERICAN SEATING	U.S.A.	4.06%
POWER SYSTEM	KBi	U.S.A.	0.94%
RADIATOR AND CHARGE AIR COOLER	MODINE MANUFACTURING COMPANY	U.S.A.	1.64%
REAR CAP ASSEMBLY	COMMERCIAL PATTERN	U.S.A.	0.20%
REAR SUSPENSION	SAF HOLLAND USA	U.S.A.	0.52%
ROOF HATCH	SPECIALTY MANUFACTURING INC	U.S.A.	0.11%
ROOF SKIN	CRANE COMPOSITES, INC.	U.S.A.	0.14%
TIRES	MICHELIN	U.S.A.	1.01%
TRANSMISSION	ALLISON TRANSMISSION	U.S.A.	4.51%
VOLTAGE REGULATOR	VANNER, INC.	U.S.A.	0.13%
WHEELCHAIR RAMP	LIFT-U	U.S.A.	2.02%
WINDOW ASSEMBLIES	AROW GLOBAL (STORMTITE)	U.S.A.	1.61%
SPECIFICALLY IDENTIFIED U.S. COMPONENTS AS A % OF TOTAL MATERIALS			<u>63.35% *</u>
FINAL ASSEMBLY - ALL VEHICLE ASSEMBLY OPERATIONS, STARTING WITH THE UNDERSTRUCTURE THROUGH TO FINAL ROAD TEST ARE DONE IN HAYWARD, CA		GILLIG	<u>U.S.A. 100.00%</u>



**GILLIG LLC
HAYWARD, CALIFORNIA**

**DESCRIPTION AND COST
OF FINAL ASSEMBLY**

Gillig LLC certifies that final assembly of its buses occurs at its manufacturing plant in Hayward, California. The final assembly process consists of the assembly of the chassis; the installation and interconnection of the engine, transmission, axles, including the cooling and braking systems; the installation and interconnection of the heating and air conditioning equipment; the installation of pneumatic and electrical systems; mounting of the body structure to the chassis; installation of door systems; painting of the vehicle; installation of destination signs, windows, passenger seats, passenger grab rails, and wheelchair lifts; wheel alignment, dynamometer and road testing; final inspection, repairs and preparation of the vehicles for delivery.

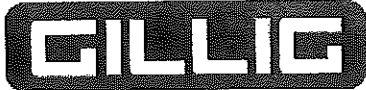
The cost of the above mentioned activities for this order has been determined to be \$14,379.77 per bus.

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
 NEWINGTON, CT
 PRE-AWARD BUY AMERICA CERTIFICATE
 FORTY FOOT HYBRID LOW FLOOR TRANSIT BUSES (QTY: 60-75, OPTION: 537, S/N: TBD, BID/CONTRACT# RFP# 15DOT7002)
 30-Nov-15

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We certify full compliance with the FTA's "Buy America" regulations (Section 49 CFR Part 663) and submit the following abbreviated listing as evidence of this compliance.

COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENT OF TOTAL COST
AIR CONDITIONING SYSTEM	THERMO KING	U.S.A.	4.07%
ALTERNATOR	VANNER, INC.	U.S.A.	0.71%
BIKE RACK	SPORTWORKS	U.S.A.	0.20%
CEILING PANELS	WILSONART INTERNATIONAL	U.S.A.	0.23%
COMPOSITE FLOORING	MILWAUKEE COMPOSITES	U.S.A.	0.24%
DESTINATION SIGNS	LUMINATOR HOLDING L.P.	U.S.A.	1.02%
DOOR CONTROLS & PANELS - FRONT	VAPOR BUS INTERNATIONAL	U.S.A.	0.54%
DOOR CONTROLS & PANELS - REAR	VAPOR BUS INTERNATIONAL	U.S.A.	0.47%
DRIVER'S SEAT	RECARO NORTH AMERICA	U.S.A.	0.35%
ELECTRIC DRIVE HYBRID PROPULSION SYSTEM	ALLISON	U.S.A.	32.82%
ELECTRICAL HARNESSSES & CABLES	LACO INCORPORATED	U.S.A.	0.66%
ELECTRICAL HARNESSSES, CABLES & PANELS	COMPASS COMPONENTS	U.S.A.	3.28%
ENGINE & AFTERTREATMENT SYSTEM	CUMMINS, INC	U.S.A.	4.91%
EXTRUSIONS	SAPA	U.S.A.	0.58%
FABRICATIONS	DIE & TOOL PRODUCTS	U.S.A.	0.72%
FABRICATIONS	GCM	U.S.A.	0.63%
FABRICATIONS	IMPERIAL FABRICATING	U.S.A.	3.10%
FABRICATIONS	S.F. TUBE	U.S.A.	0.39%
FIRE SUPPRESSION SYSTEM	AMEREX CORPORATION	U.S.A.	0.21%
FRONT AND REAR AXLE ASSEMBLIES	MERITOR AUTOMOTIVE	U.S.A.	2.74%
FRONT AND REAR BUMPER ASSEMBLIES	DYNATECH RO-LAB INC.	U.S.A.	0.39%
FRONT CAP	AMTECH CORPORATION	U.S.A.	0.31%
MISCELLANEOUS	KD SPECIALTIES	U.S.A.	0.21%
PASSENGER SEAT ASSEMBLIES	AMERICAN SEATING	U.S.A.	3.94%
REAR CAP ASSEMBLY	COMMERCIAL PATTERN	U.S.A.	0.12%
REAR SUSPENSION	SAF HOLLAND USA	U.S.A.	0.71%
TIRES	MICHELIN	U.S.A.	0.62%
WHEELCHAIR RAMP	LIFT-U	U.S.A.	1.25%
WINDOW ASSEMBLIES	AROW GLOBAL (STORMTITE)	U.S.A.	1.48%
SPECIFICALLY IDENTIFIED U.S. COMPONENTS AS A % OF TOTAL MATERIALS			<u>66.91% *</u>
FINAL ASSEMBLY - ALL VEHICLE ASSEMBLY OPERATIONS, STARTING WITH THE UNDERSTRUCTURE THROUGH TO FINAL ROAD TEST ARE DONE IN HAYWARD, CA	GILLIG	U.S.A.	<u>100.00%</u>



**GILLIG LLC
HAYWARD, CALIFORNIA**

**DESCRIPTION AND COST
OF FINAL ASSEMBLY**

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The cost of the above mentioned activities for this order has been determined to be \$15,760.07 per bus.

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
 NEWINGTON, CT
 PRE-AWARD BUY AMERICA CERTIFICATE
 THIRTY-FIVE FOOT HYBRID LOW FLOOR TRANSIT BUSES (QTY: 60-75, OPTION: 537, S/N: TBD, BID/CONTRACT# RFP# 15DOT7002)
 30-Nov-15

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We certify full compliance with the FTA's "Buy America" regulations (Section 49 CFR Part 663) and submit the following abbreviated listing as evidence of this compliance.

COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENT OF TOTAL COST
AIR CONDITIONING SYSTEM	THERMO KING	U.S.A.	4.11%
ALTERNATOR	VANNER, INC.	U.S.A.	0.72%
BIKE RACK	SPORTWORKS	U.S.A.	0.20%
COMPOSITE FLOORING	MILWAUKEE COMPOSITES	U.S.A.	0.35%
DESTINATION SIGNS	LUMINATOR HOLDING L.P.	U.S.A.	1.03%
DOOR CONTROLS & PANELS - FRONT	VAPOR BUS INTERNATIONAL	U.S.A.	0.54%
DOOR CONTROLS & PANELS - REAR	VAPOR BUS INTERNATIONAL	U.S.A.	0.47%
DRIVER'S SEAT	RECARO NORTH AMERICA	U.S.A.	0.36%
ELECTRIC DRIVE HYBRID PROPULSION SYSTEM	ALLISON	U.S.A.	33.16%
ELECTRICAL HARNESSES & CABLES	LACO INCORPORATED	U.S.A.	0.72%
ELECTRICAL HARNESSES, CABLES & PANELS	COMPASS COMPONENTS	U.S.A.	3.24%
ENGINE & AFTERTREATMENT SYSTEM	CUMMINS, INC	U.S.A.	4.96%
FABRICATIONS	DIE & TOOL PRODUCTS	U.S.A.	0.82%
FABRICATIONS	GCM	U.S.A.	0.54%
FABRICATIONS	IMPERIAL FABRICATING	U.S.A.	3.11%
FABRICATIONS	S.F. TUBE	U.S.A.	0.39%
FIRE SUPPRESSION SYSTEM	AMEREX CORPORATION	U.S.A.	0.22%
FRONT AND REAR AXLE ASSEMBLIES	MERITOR AUTOMOTIVE	U.S.A.	2.77%
FRONT AND REAR BUMPER ASSEMBLIES	DYNATECH RO-LAB INC.	U.S.A.	0.40%
FRONT CAP	AMTECH CORPORATION	U.S.A.	0.31%
PASSENGER SEAT ASSEMBLIES	AMERICAN SEATING	U.S.A.	3.42%
REAR CAP ASSEMBLY	COMMERCIAL PATTERN	U.S.A.	0.12%
REAR SUSPENSION	SAF HOLLAND USA	U.S.A.	0.72%
TIRES	MICHELIN	U.S.A.	0.63%
WHEELCHAIR RAMP	LIFT-U	U.S.A.	1.26%
WINDOW ASSEMBLIES	AROW GLOBAL (STORMTITE)	U.S.A.	1.27%
SPECIFICALLY IDENTIFIED U.S. COMPONENTS AS A % OF TOTAL MATERIALS			<u>65.84% *</u>
FINAL ASSEMBLY - ALL VEHICLE ASSEMBLY OPERATIONS, STARTING WITH THE UNDERSTRUCTURE THROUGH TO FINAL ROAD TEST ARE DONE IN HAYWARD, CA		GILLIG	<u>100.00%</u>



**GILLIG LLC
HAYWARD, CALIFORNIA**

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The cost of the above mentioned activities for this order has been determined to be \$15,760.07 per bus.

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 NEWINGTON, CT
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COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENT OF TOTAL COST
AIR CONDITIONING SYSTEM	THERMO KING	U.S.A.	3.81%
AIR DRYER ASSEMBLY	SKF USA, INC	U.S.A.	0.09%
ALTERNATOR	VANNER, INC.	U.S.A.	0.73%
BIKE RACK	SPORTWORKS	U.S.A.	0.20%
BOOSTER PUMP	AMETEK TECHNICAL	U.S.A.	0.11%
BULKHEAD ASSEMBLY	ALVA GWYN	U.S.A.	0.09%
CEILING PANELS	WILSONART INTERNATIONAL	U.S.A.	0.18%
COMPOSITE FLOORING	MILWAUKEE COMPOSITES	U.S.A.	0.20%
DESTINATION SIGNS	LUMINATOR HOLDING L.P.	U.S.A.	0.83%
DOOR CONTROLS & PANELS - FRONT	VAPOR BUS INTERNATIONAL	U.S.A.	0.55%
DOOR CONTROLS & PANELS - REAR	VAPOR BUS INTERNATIONAL	U.S.A.	0.47%
DRIVER'S SEAT	RECARO NORTH AMERICA	U.S.A.	0.36%
ELECTRIC DRIVE HYBRID PROPULSION SYSTEM	ALLISON	U.S.A.	33.43%
ELECTRICAL HARNESSES & CABLES	LACO INCORPORATED	U.S.A.	0.69%
ELECTRICAL HARNESSES, CABLES & PANELS	COMPASS COMPONENTS	U.S.A.	3.25%
ENGINE & AFTERTREATMENT SYSTEM	CUMMINS, INC	U.S.A.	5.00%
EXTERIOR MIRRORS	HADLEY PRODUCTS, INC - B&R DIVISION	U.S.A.	0.16%
EXTRUSIONS	SAPA	U.S.A.	0.47%
FABRICATIONS	DIE & TOOL PRODUCTS	U.S.A.	0.87%
FABRICATIONS	HOGAN MANUFACTURING	U.S.A.	2.74%
FABRICATIONS	S.F. TUBE	U.S.A.	0.33%
FIRE SUPPRESSION SYSTEM	AMEREX CORPORATION	U.S.A.	0.22%
FRONT AND REAR AXLE ASSEMBLIES	MERITOR AUTOMOTIVE	U.S.A.	2.42%
FRONT AND REAR BUMPER ASSEMBLIES	DYNATECH RO-LAB INC.	U.S.A.	0.40%
FRONT CAP	AMTECH CORPORATION	U.S.A.	0.31%
MISCELLANEOUS	KD SPECIALTIES	U.S.A.	0.32%
PASSENGER SEAT ASSEMBLIES	AMERICAN SEATING	U.S.A.	2.56%
REAR CAP ASSEMBLY	COMMERCIAL PATTERN	U.S.A.	0.13%
REAR SUSPENSION	SAF HOLLAND USA	U.S.A.	0.33%
TIRES	MICHELIN	U.S.A.	0.64%
WHEELCHAIR RAMP	LIFT-U	U.S.A.	1.27%
WINDOW ASSEMBLIES	AROW GLOBAL (STORMTITE)	U.S.A.	1.02%
SPECIFICALLY IDENTIFIED U.S. COMPONENTS AS A % OF TOTAL MATERIALS			<u>64.18%*</u>
FINAL ASSEMBLY - ALL VEHICLE ASSEMBLY OPERATIONS, STARTING WITH THE UNDERSTRUCTURE THROUGH TO FINAL ROAD TEST ARE DONE IN HAYWARD, CA	GILLIG	U.S.A.	<u>100.00%</u>



**GILLIG LLC
HAYWARD, CALIFORNIA**

**DESCRIPTION AND COST
OF FINAL ASSEMBLY**

Gillig LLC certifies that final assembly of its buses occurs at its manufacturing plant in Hayward, California. The final assembly process consists of the assembly of the chassis; the installation and interconnection of the engine, transmission, axles, including the cooling and braking systems; the installation and interconnection of the heating and air conditioning equipment; the installation of pneumatic and electrical systems; mounting of the body structure to the chassis; installation of door systems; painting of the vehicle; installation of destination signs, windows, passenger seats, passenger grab rails, and wheelchair lifts; wheel alignment, dynamometer and road testing; final inspection, repairs and preparation of the vehicles for delivery.

The cost of the above mentioned activities for this order has been determined to be \$14,947.27 per bus.

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
 NEWINGTON, CT
 PRE-AWARD BUY AMERICA CERTIFICATE
 FORTY FOOT HYBRID (BAE) LOW FLOOR TRANSIT BUSES (QTY: 60-75, OPTION: 537, S/N: TBD, BID/CONTRACT# RFP# 15DOT7002)
 30-Nov-15

GILLIG IS ONE OF THE MOST "AMERICAN" BUS MANUFACTURERS IN THE WORLD. Gillig is 100% U.S. owned and operated. ALL OF OUR FACILITIES are located in the U.S.A. ALL OF OUR MANUFACTURING is done in the U.S.A. and we have a policy that stresses the use of products produced in the U.S.A.

We certify full compliance with the FTA's "Buy America" regulations (Section 49 CFR Part 663) and submit the following abbreviated listing as evidence of this compliance.

COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENT OF TOTAL COST
A/C TRANSITION DUCTS	THERMAL STRUCTURES, INC	U.S.A.	0.06%
AIR CONDITIONING SYSTEM	THERMO KING	U.S.A.	4.23%
AIR DRYER ASSEMBLY	SKF USA, INC	U.S.A.	0.09%
BIKE RACK	SPORTWORKS	U.S.A.	0.21%
BOOSTER PUMP	AMETEK TECHNICAL	U.S.A.	0.11%
BULKHEAD ASSEMBLY	ALVA GWYN	U.S.A.	0.10%
CEILING PANELS	WILSONART INTERNATIONAL	U.S.A.	0.23%
COMPOSITE FLOORING	MILWAUKEE COMPOSITES	U.S.A.	0.89%
DESTINATION SIGNS	LUMINATOR HOLDING L.P.	U.S.A.	1.06%
DOOR CONTROLS & PANELS - FRONT	VAPOR BUS INTERNATIONAL	U.S.A.	0.56%
DOOR CONTROLS & PANELS - REAR	VAPOR BUS INTERNATIONAL	U.S.A.	0.48%
DRIVER'S SEAT	RECARO NORTH AMERICA	U.S.A.	0.37%
ELECTRIC DRIVE HYBRID PROPULSION SYSTEM	BAE SYSTEM CONTROLS, INC	U.S.A.	22.66%
ELECTRICAL HARNESSSES & CABLES	LACO INCORPORATED	U.S.A.	0.77%
ELECTRICAL HARNESSSES, CABLES & PANELS	COMPASS COMPONENTS	U.S.A.	3.10%
ENGINE & AFTERTREATMENT SYSTEM	CUMMINS, INC	U.S.A.	5.10%
EXTERIOR MIRRORS	HADLEY PRODUCTS, INC - B&R DIVISION	U.S.A.	0.16%
EXTRUSIONS	SAPA	U.S.A.	0.60%
FABRICATIONS	DIE & TOOL PRODUCTS	U.S.A.	0.94%
FABRICATIONS	GCM	U.S.A.	0.76%
FABRICATIONS	HOGAN MANUFACTURING	U.S.A.	3.88%
FABRICATIONS	IMPERIAL FABRICATING	U.S.A.	0.55%
FABRICATIONS	S.F. TUBE	U.S.A.	0.43%
FIRE SUPPRESSION SYSTEM	AMEREX CORPORATION	U.S.A.	0.22%
FRONT AND REAR AXLE ASSEMBLIES	MERITOR AUTOMOTIVE	U.S.A.	2.85%
FRONT AND REAR BUMPER ASSEMBLIES	DYNATECH RO-LAB INC.	U.S.A.	0.41%
FRONT CAP	AMTECH CORPORATION	U.S.A.	0.32%
INTERIOR LIGHTING KIT	I/O CONTROLS CORPORATION	U.S.A.	0.76%
MISCELLANEOUS	KD SPECIALTIES	U.S.A.	0.36%
PASSENGER SEAT ASSEMBLIES	AMERICAN SEATING	U.S.A.	4.10%
POWER SYSTEM	KBI	U.S.A.	0.60%
RADIATOR AND CHARGE AIR COOLER	MODINE MANUFACTURING COMPANY	U.S.A.	1.05%
REAR CAP ASSEMBLY	COMMERCIAL PATTERN	U.S.A.	0.13%
REAR SUSPENSION	SAF HOLLAND USA	U.S.A.	0.74%
ROOF FAIRINGS	PERFORMANCE COMPOSTIES	U.S.A.	1.27%
ROOF HATCH	SPECIALTY MANUFACTURING INC	U.S.A.	0.07%
ROOF SKIN	CRANE COMPOSITES, INC.	U.S.A.	0.12%
TIRES	MICHELIN	U.S.A.	0.65%
WHEELCHAIR RAMP	LIFT-U	U.S.A.	1.30%
WINDOW ASSEMBLIES	AROW GLOBAL (STORMTITE)	U.S.A.	1.53%
SPECIFICALLY IDENTIFIED U.S. COMPONENTS AS A % OF TOTAL MATERIALS			<u>63.82% *</u>
FINAL ASSEMBLY - ALL VEHICLE ASSEMBLY OPERATIONS, STARTING WITH THE UNDERSTRUCTURE THROUGH TO FINAL ROAD TEST ARE DONE IN HAYWARD, CA		GILLIG	<u>U.S.A. 100.00%</u>



**GILLIG LLC
HAYWARD, CALIFORNIA**

**DESCRIPTION AND COST
OF FINAL ASSEMBLY**

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The cost of the above mentioned activities for this order has been determined to be \$15,760.07 per bus.

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
 NEWINGTON, CT
 PRE-AWARD BUY AMERICA CERTIFICATE
 THIRTY-FIVE FOOT HYBRID (BAE) LOW FLOOR TRANSIT BUSES (QTY: 60-75, OPTION: 537, S/N: TBD, BID/CONTRACT# RFP# 15DOT7002)
 30-Nov-15

GILLIG IS ONE OF THE MOST "AMERICAN" BUS MANUFACTURERS IN THE WORLD. Gillig is 100% U.S. owned and operated. ALL OF OUR FACILITIES are located in the U.S.A. ALL OF OUR MANUFACTURING is done in the U.S.A. and we have a policy that stresses the use of products produced in the U.S.A.

We certify full compliance with the FTA's "Buy America" regulations.(Section 49 CFR Part 663) and submit the following abbreviated listing as evidence of this compliance.

COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENT OF TOTAL COST
A/C TRANSITION DUCTS	THERMAL STRUCTURES, INC	U.S.A.	0.06%
AIR CONDITIONING SYSTEM	THERMO KING	U.S.A.	4.28%
AIR DRYER ASSEMBLY	SKF USA, INC	U.S.A.	0.09%
BIKE RACK	SPORTWORKS	U.S.A.	0.21%
BOOSTER PUMP	AMETEK TECHNICAL	U.S.A.	0.12%
BULKHEAD ASSEMBLY	ALVA GWYN	U.S.A.	0.10%
CEILING PANELS	WILSONART INTERNATIONAL	U.S.A.	0.21%
COMPOSITE FLOORING	MILWAUKEE COMPOSITES	U.S.A.	0.29%
DESTINATION SIGNS	LUMINATOR HOLDING L.P.	U.S.A.	1.07%
DOOR CONTROLS & PANELS - FRONT	VAPOR BUS INTERNATIONAL	U.S.A.	0.56%
DOOR CONTROLS & PANELS - REAR	VAPOR BUS INTERNATIONAL	U.S.A.	0.49%
DRIVER'S SEAT	RECARO NORTH AMERICA	U.S.A.	0.37%
ELECTRIC DRIVE HYBRID PROPULSION SYSTEM	BAE SYSTEM CONTROLS, INC	U.S.A.	22.90%
ELECTRICAL HARNESSSES & CABLES	LACO INCORPORATED	U.S.A.	0.79%
ELECTRICAL HARNESSSES, CABLES & PANELS	COMPASS COMPONENTS	U.S.A.	4.01%
ENGINE & AFTERTREATMENT SYSTEM	CUMMINS, INC	U.S.A.	5.15%
EXTERIOR MIRRORS	HADLEY PRODUCTS, INC - B&R DIVISION	U.S.A.	0.16%
EXTRUSIONS	SAPA	U.S.A.	0.55%
FABRICATIONS	DIE & TOOL PRODUCTS	U.S.A.	0.91%
FABRICATIONS	GCM	U.S.A.	0.68%
FABRICATIONS	HOGAN MANUFACTURING	U.S.A.	3.67%
FABRICATIONS	IMPERIAL FABRICATING	U.S.A.	0.60%
FABRICATIONS	S.F. TUBE	U.S.A.	0.47%
FIRE SUPPRESSION SYSTEM	AMEREX CORPORATION	U.S.A.	0.23%
FRONT AND REAR AXLE ASSEMBLIES	MERITOR AUTOMOTIVE	U.S.A.	2.88%
FRONT AND REAR BUMPER ASSEMBLIES	DYNATECH RO-LAB INC.	U.S.A.	0.41%
FRONT CAP	AMTECH CORPORATION	U.S.A.	0.32%
INTERIOR LIGHTING KIT	I/O CONTROLS CORPORATION	U.S.A.	0.66%
MISCELLANEOUS	KD SPECIALTIES	U.S.A.	0.45%
PASSENGER SEAT ASSEMBLIES	AMERICAN SEATING	U.S.A.	3.56%
POWER SYSTEM	KBi	U.S.A.	0.61%
RADIATOR AND CHARGE AIR COOLER	MODINE MANUFACTURING COMPANY	U.S.A.	1.07%
REAR CAP ASSEMBLY	COMMERCIAL PATTERN	U.S.A.	0.13%
REAR SUSPENSION	SAF HOLLAND USA	U.S.A.	0.74%
ROOF FAIRINGS	PERFORMANCE COMPOSTIES	U.S.A.	1.23%
ROOF HATCH	SPECIALTY MANUFACTURING INC	U.S.A.	0.07%
ROOF SKIN	CRANE COMPOSITES, INC.	U.S.A.	0.11%
TIRES	MICHELIN	U.S.A.	0.66%
WHEELCHAIR RAMP	LIFT-U	U.S.A.	1.31%
WINDOW ASSEMBLIES	AROW GLOBAL (STORMTITE)	U.S.A.	1.32%
SPECIFICALLY IDENTIFIED U.S. COMPONENTS AS A % OF TOTAL MATERIALS			<u>63.49%*</u>
FINAL ASSEMBLY - ALL VEHICLE ASSEMBLY OPERATIONS, STARTING WITH THE UNDERSTRUCTURE THROUGH TO FINAL ROAD TEST ARE DONE IN HAYWARD, CA	GILLIG	U.S.A.	<u>100.00%</u>



**GILLIG LLC
HAYWARD, CALIFORNIA**

**DESCRIPTION AND COST
OF FINAL ASSEMBLY**

Gillig LLC certifies that final assembly of its buses occurs at its manufacturing plant in Hayward, California. The final assembly process consists of the assembly of the chassis; the installation and interconnection of the engine, transmission, axles, including the cooling and braking systems; the installation and interconnection of the heating and air conditioning equipment; the installation of pneumatic and electrical systems; mounting of the body structure to the chassis; installation of door systems; painting of the vehicle; installation of destination signs, windows, passenger seats, passenger grab rails, and wheelchair lifts; wheel alignment, dynamometer and road testing; final inspection, repairs and preparation of the vehicles for delivery.

The cost of the above mentioned activities for this order has been determined to be \$15,760.07 per bus.

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
NEWINGTON, CT

PRE-AWARD BUY AMERICA CERTIFICATE

TWENTY-NINE FOOT HYBRID (BAE) LOW FLOOR TRANSIT BUSES (QTY: 60-75, OPTION: 537, S/N: TBD, BID/CONTRACT# RFP# 15DOT7002)
30-Nov-15

GILLIG IS ONE OF THE MOST "AMERICAN" BUS MANUFACTURERS IN THE WORLD. Gillig is 100% U.S. owned and operated. ALL OF OUR FACILITIES are located in the U.S.A. ALL OF OUR MANUFACTURING is done in the U.S.A. and we have a policy that stresses the use of products produced in the U.S.A.

We certify full compliance with the FTA's "Buy America" regulations (Section 49 CFR Part 663) and submit the following abbreviated listing as evidence of this compliance.

COMPONENT	MANUFACTURER	COUNTRY OF ORIGIN	PERCENT OF TOTAL COST
A/C TRANSITION DUCTS	THERMAL STRUCTURES, INC	U.S.A.	0.06%
AIR CONDITIONING SYSTEM	THERMO KING	U.S.A.	3.96%
AIR DRYER ASSEMBLY	SKF USA, INC	U.S.A.	0.09%
BIKE RACK	SPORTWORKS	U.S.A.	0.21%
BOOSTER PUMP	AMETEK TECHNICAL	U.S.A.	0.12%
BULKHEAD ASSEMBLY	ALVA GWYN	U.S.A.	0.10%
CEILING PANELS	WILSONART INTERNATIONAL	U.S.A.	0.18%
COMPOSITE FLOORING	MILWAUKEE COMPOSITES	U.S.A.	0.21%
DESTINATION SIGNS	LUMINATOR HOLDING L.P.	U.S.A.	1.08%
DOOR CONTROLS & PANELS - FRONT	VAPOR BUS INTERNATIONAL	U.S.A.	0.57%
DOOR CONTROLS & PANELS - REAR	VAPOR BUS INTERNATIONAL	U.S.A.	0.49%
DRIVER'S SEAT	RECARO NORTH AMERICA	U.S.A.	0.37%
ELECTRIC DRIVE HYBRID PROPULSION SYSTEM	BAE SYSTEM CONTROLS, INC	U.S.A.	25.07%
ELECTRICAL HARNESSES & CABLES	LACO INCORPORATED	U.S.A.	0.72%
ELECTRICAL HARNESSES, CABLES & PANELS	COMPASS COMPONENTS	U.S.A.	3.38%
ENGINE & AFTERTREATMENT SYSTEM	CUMMINS, INC	U.S.A.	5.20%
EXTERIOR MIRRORS	HADLEY PRODUCTS, INC - B&R DIVISION	U.S.A.	0.16%
EXTRUSIONS	SAPA	U.S.A.	0.49%
FABRICATIONS	DIE & TOOL PRODUCTS	U.S.A.	0.91%
FABRICATIONS	GCM	U.S.A.	0.63%
FABRICATIONS	HOGAN MANUFACTURING	U.S.A.	2.85%
FABRICATIONS	IMPERIAL FABRICATING	U.S.A.	0.48%
FABRICATIONS	S.F. TUBE	U.S.A.	0.34%
FIRE SUPPRESSION SYSTEM	AMEREX CORPORATION	U.S.A.	0.39%
FRONT AND REAR AXLE ASSEMBLIES	MERITOR AUTOMOTIVE	U.S.A.	2.52%
FRONT AND REAR BUMPER ASSEMBLIES	DYNATECH RO-LAB INC.	U.S.A.	0.42%
FRONT CAP	AMTECH CORPORATION	U.S.A.	0.32%
INTERIOR LIGHTING KIT	I/O CONTROLS CORPORATION	U.S.A.	0.59%
MISCELLANEOUS	KD SPECIALTIES	U.S.A.	0.34%
PASSENGER SEAT ASSEMBLIES	AMERICAN SEATING	U.S.A.	2.66%
POWER SYSTEM	KBi	U.S.A.	0.62%
RADIATOR AND CHARGE AIR COOLER	MODINE MANUFACTURING COMPANY	U.S.A.	1.07%
REAR CAP ASSEMBLY	COMMERCIAL PATTERN	U.S.A.	0.13%
REAR SUSPENSION	SAF HOLLAND USA	U.S.A.	0.34%
ROOF FAIRINGS	PERFORMANCE COMPOSITES	U.S.A.	1.35%
ROOF HATCH	SPECIALTY MANUFACTURING INC	U.S.A.	0.07%
ROOF SKIN	CRANE COMPOSITES, INC.	U.S.A.	0.09%
TIRES	MICHELIN	U.S.A.	0.66%
WHEELCHAIR RAMP	LIFT-U	U.S.A.	1.33%
WINDOW ASSEMBLIES	AROW GLOBAL (STORMTITE)	U.S.A.	1.06%
SPECIFICALLY IDENTIFIED U.S. COMPONENTS AS A % OF TOTAL MATERIALS			<u>61.63%*</u>
FINAL ASSEMBLY - ALL VEHICLE ASSEMBLY OPERATIONS, STARTING WITH THE UNDERSTRUCTURE THROUGH TO FINAL ROAD TEST ARE DONE IN HAYWARD, CA	GILLIG	U.S.A.	<u>100.00%</u>



**GILLIG LLC
HAYWARD, CALIFORNIA**

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OF FINAL ASSEMBLY**

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FEDERAL MOTOR VEHICLE
SAFETY STANDARDS CERTIFICATION

This is to certify that the Gillig transit bus model(s) proposed, complies (comply) with all applicable Federal Motor Vehicle Safety Standard as required by the F.T.A. and the D.O.T., and described in Title 49 CFR Chapter V, part 571-FMVSS, last revised on October 1, 1998.

GILLIG LLC

By



JOSEPH POLICARPIO

TITLE VICE PRESIDENT

DATE DECEMBER 1, 2015

APPENDIX A, 49 CFR PART 20--CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements
(To be submitted with each bid or offer exceeding \$100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq.*)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.]

The Contractor, GILLIG LLC, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.*, apply to this certification and disclosure, if any.



Signature of Contractor's Authorized Official

JOSEPH POLICARPIO
VICE PRESIDENT

Name and Title of Contractor's Authorized Official

DECEMBER 1, 2015

Date

CERTIFICATION TO FEDERAL GOVERNMENT REQUIRED CLAUSES (FTA)

AFFIRMATION OF THE BIDDER'S AUTHORIZED REPRESENTATIVE

Name of Proposer: GILLIG LLC

Name and Relationship of Authorized Representative: JOSEPH POLICARPIO, VICE PRESIDENT

BY SIGNING BELOW, on behalf of the Proposer, I declare that the Proposer has duly authorized me to make this certification and bind the Proposer's compliance. Thus, the Proposer agrees to comply with all Federal statutes and regulations, and follow applicable Federal directives, and comply with the requirements of these clauses as indicated on the ensuing pages, Federal Government Required Clauses (FTA).

The Proposer affirms the truthfulness of this certification it has made, and acknowledges that the Program Fraud Civil Remedies Act of 1986, 31 U.S.C. 3801 *et seq.*, and implementing U.S. DOT regulations, "Program Fraud Civil Remedies," 49 CFR Part 31 apply to any certification, assurance or submission made to FTA. The criminal provisions of 18 U.S.C. 1001 apply to any certification, assurance, or submission made in connection with a Federal public transportation program authorized in 49 U.S.C. Chapter 53 or any other statute.

In signing this document, I declare that the foregoing certification and any other statements made by me on behalf of the Proposer are true and correct.

Signature: _____

J. Policarpio

Date: DECEMBER 1, 2015

Name (print) JOSEPH POLICARPIO, VICE PRESIDENT
Authorized Representative of Applicant

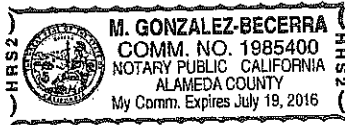
See Attached
(Signature of Notary
& SEAL)

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of ALAMEDA

Subscribed and sworn to (or affirmed) before me on this 1ST
day of DECEMBER, 2015, by JOSEPH POLICARPIO

proved to me on the basis of satisfactory evidence to be the
person(s) who appeared before me.



(Seal)

Signature M. Gonzalez-Becerra

My commission number: 1985400

My commission expires: JULY 19, 2016

DESCRIPTION OF ATTACHED DOCUMENT

Type or Title of Document: AFFIRMATION OF THE BIDDER'S AUTHORIZED REPRESENTATIVE

Signer's Name: JOSEPH POLICARPIO

Document Date: DECEMBER 1, 2015

DBE APPROVAL CERTIFICATION

I hereby certify that the Proposer has complied with the requirements of 49 CFR 26.49, Participation by Disadvantaged Business Enterprises in DOT Programs, and that our goals have not been disapproved by the Federal Transit Administration.

J. Policarpio Signature of the Proposer's Authorized Official

JOSEPH POLICARPIO
VICE PRESIDENT Name and Title of the Proposer's Authorized Official

DECEMBER 1, 2015 Date

NOTE: REFERENCE OUR ATTACHED CERTIFICATION

**DISADVANTAGED/MINORITY BUSINESS ENTERPRISE
(DBE/MBE) CERTIFICATION**

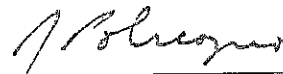
Gillig LLC, Box 3008, Hayward, California 94545, hereby certifies that Gillig LLC has complied with the requirements of 49 CFR Part 26 of the Transportation Assistance Act of 1982, and submitted the required documents to the Federal Transit Administration (FTA).

The FTA advised that Gillig has obtained 49 C.F.R. Part 26.49 certification and we are eligible to bid on federally funded contracts in FY2016. Transit customers may call the FTA for verification.

BRITNEY BERRY
FEDERAL TRANSIT ADMINISTRATION
Office of Civil Rights
1200 New Jersey Avenue SE
Washington, DC 20590
Phone: 202-366-1065
E-mail: britney.berry@dot.gov

GILLIG LLC

By



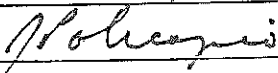
JOSEPH POLICARPIO

TITLE VICE PRESIDENT

DATE DECEMBER 1, 2015

COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT

The undersigned [Contractor/Manufacturer] certifies that all vehicles manufactured and delivered to the State of Connecticut, Department of Transportation are in full compliance with the Americans With Disabilities Act. 49 CFR 38

Company Name:	GILLIG LLC
Authorized Representative:	JOSEPH POLICARPIO
Title:	VICE PRESIDENT
Signature	
Date:	DECEMBER 1, 2015

**DISADVANTAGED BUSINESS ENTERPRISE &
EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATIONS**

(1) Transit Vehicle Manufacturer (TVM) Disadvantaged Business Enterprise

Pursuant to the provisions of Section 105(f) of the Surface Transportation Assistance Act of 1982, each Proposer for this contract must certify that it has complied with the requirements of 49 CFR Part 26.49, regarding the participation of disadvantaged business enterprises in FTA-assisted procurements of transit vehicles. Absent this certification, properly completed and signed, a Proposal shall be deemed non-responsive.

Certification: I hereby certify, for the Proposer named below, that it has complied with the provisions of 49 CFR Part 26.49 and that I am duly authorized by said Proposer to make this certification.

GILLIG LLC

Name of Proposer/Company Name

12/01/2015

(Date of Signature)

See Attached
(Signature of Notary
& SEAL)

J. Policarpio

(Signature of Representative)

JOSEPH POLICARPIO, VICE PRESIDENT

(Type or Print Name & Title of that Representative)

NOTE: REFERENCE OUR ATTACHED CERTIFICATION

(2) Equal Employment Opportunity

The Proposer, and any and all subcontractors of the Proposer, are required to comply with Executive Order 11246, entitled "Equal Employment Opportunity", as amended by Executive Order 11375, and supplemented in U.S. Department of Labor regulation (41 CFR Part 60).

Certification: I hereby certify, for the Proposer named above, that it has complied with the provisions of Executive Order 11246, as amended by Executive Order 11375, and supplemented in U.S. Dept. of Labor Regulation (41 CFR Part 60) and that I am duly authorized by said Proposer to make this certification.

12/01/15

(Date of Signature)

See Attached
(Signature of Notary
& SEAL)

J. Policarpio

(Signature of Representative)

JOSEPH POLICARPIO, VICE PRESIDENT

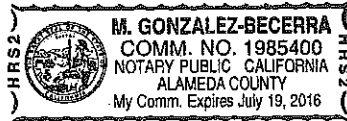
(Type or Print Name & Title of that Representative)

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of ALAMEDA

Subscribed and sworn to (or affirmed) before me on this 1ST
day of DECEMBER, 2015, by JOSEPH POLICARPIO

proved to me on the basis of satisfactory evidence to be the
person(s) who appeared before me.



(Seal)

Signature M. Gonzalez-Becerra

My commission number: 1985400

My commission expires: JULY 19, 2016

DESCRIPTION OF ATTACHED DOCUMENT

Type or Title of Document: TRANSIT VEHICLE MANUFACTURER (TVM)
DISADVANTAGED BUSINESS ENTERPRISE

Signer's Name: JOSEPH POLICARPIO

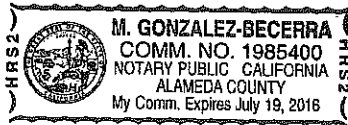
Document Date: DECEMBER 1, 2015

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County of ALAMEDA

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day of DECEMBER, 2015, by JOSEPH POLICARPIO

proved to me on the basis of satisfactory evidence to be the
person(s) who appeared before me.



(Seal)

Signature M Gonzalez-Becerra

My commission number: 1985400

My commission expires: JULY 19, 2016

DESCRIPTION OF ATTACHED DOCUMENT

Type or Title of Document: EQUAL EMPLOYMENT OPPORTUNITY

Signer's Name: JOSEPH POLICARPIO

Document Date: DECEMBER 1, 2015

**DISADVANTAGED/MINORITY BUSINESS ENTERPRISE
(DBE/MBE) CERTIFICATION**

Gillig LLC, Box 3008, Hayward, California 94545, hereby certifies that Gillig LLC has complied with the requirements of 49 CFR Part 26 of the Transportation Assistance Act of 1982, and submitted the required documents to the Federal Transit Administration (FTA).

The FTA advised that Gillig has obtained 49 C.F.R. Part 26.49 certification and we are eligible to bid on federally funded contracts in FY2016. Transit customers may call the FTA for verification.

BRITNEY BERRY
FEDERAL TRANSIT ADMINISTRATION
Office of Civil Rights
1200 New Jersey Avenue SE
Washington, DC 20590
Phone: 202-366-1065
E-mail: britney.berry@dot.gov

GILLIG LLC

By



JOSEPH POLICARPIO

TITLE VICE PRESIDENT

DATE DECEMBER 1, 2015

**CERTIFICATION OF COMPLIANCE WITH
FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS)**

The Proposer hereby certifies that vehicles to be provided under the resultant contract award comply with all stipulated and relevant Federal Motor Vehicle Safety Standards (FMVSS). In accordance with the Federal Government Required Clauses (FTA) of this contract, the Proposer shall ensure that all vehicles will be affixed with a bus "manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS".

GILLIG LLC

Name of Proposer/Company Name

J. Polcarpio

Signature of authorized representative

JOSEPH POLICARPIO
VICE PRESIDENT

Type or print name

See Attached

Signature of notary and
SEAL

REGULATIONS:

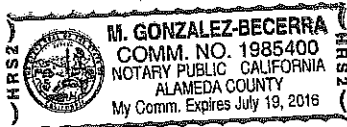
The Proposer understands through this certification that all vehicles provided under this contract shall conform to Federal and State regulations in effect at time of vehicle delivery.

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of ALAMEDA

Subscribed and sworn to (or affirmed) before me on this 1ST
day of DECEMBER, 2015, by JOSEPH POLICARPIO

proved to me on the basis of satisfactory evidence to be the
person(s) who appeared before me.



(Seal)

Signature M. Gonzalez-Becerra

My commission number: 1985400

My commission expires: JULY 19, 2016

DESCRIPTION OF ATTACHED DOCUMENT

Type or Title of Document: CERTIFICATION OF COMPLIANCE WITH
FEDERAL MOTOR VEHICLE SAFETY STANDARDS

Signer's Name: JOSEPH POLICARPIO

Document Date: DECEMBER 1, 2015

GILLIG

EXHIBIT B

PRICE SCHEDULE

**STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
PURCHASING & MATERIALS MANAGEMENT**

ConnDOT Purchasing Contact:
Mary Matuszak
Fiscal Admin. Supervisor

Telephone Number:
(860) 594-2342
e-mail: mary.matuszak@ct.gov

<p><u>EXHIBIT B</u> PRICE SCHEDULE <u>Contract Award</u> For RFP No. 15DOT7002</p> <p align="center"><u>IMPORTANT!</u> <u>RETURN ORIGINAL AND THREE COPIES</u></p>	PROPOSER NAME:
	GILLIG LLC
	SSN OR FEIN #
	26-3085364

Payment terms are net 45 days. Any deviation may result in RFP rejection.
RFP prices shall include all transportation charges FOB state agency.

DESCRIPTION OF COMMODITY AND/OR SERVICES	UNIT OF MEASURE	UNIT PRICE
<p align="center">MAKE AND MODEL</p> <p align="center">DATE OF DELIVERY After Receipt of Order (ARO)</p> <p><u>DIESEL</u></p> <p>1. 30' Low Floor: <u>Gillig LF</u> * days ARO</p>	each	\$ <u>443,525.00</u>
<p><u>HYBRID Electric</u></p> <p>2. 30' Low Floor: <u>Gillig Allison H40EP Hybrid</u> * days ARO</p>	each	\$ <u>669,903.00</u>
<p>EXPEDITED PAYMENT DISCOUNT: DISCOUNT SHALL BE LISTED BELOW AND MUST BE A MINIMUM OF TEN (10) DAYS. IF NONE, SO STATE: <u>NONE</u></p> <p>Discount Percentage: <u>0</u> %</p> <p>Discount Maximum Time Period: <u>0</u> Days</p> <p>Discount for optional reduced warranty provisions (See Attached)</p>	Per Bus	\$(<u>50,222.00</u>)
<p>* See Attached Delivery Schedule</p>		

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
PURCHASING & MATERIALS MANAGEMENT

EXHIBIT B
PRICE SCHEDULE
For RFP No. 15DOT7002

PROPOSER NAME:

GILLIG LLC

SSN OR FEIN #

26-3085364

PRICE SCHEDULE
DOT-16 Rev. 3/09

ConnDOT Purchasing Contact:
Mary Matuszak
Fiscal Admin. Supervisor

Telephone Number:
(860) 594-2342
e-mail: mary.matuszak@ct.gov

IMPORTANT!
RETURN ORIGINAL AND THREE COPIES

Payment terms are net 45 days. Any deviation may result in RFP rejection.
RFP prices shall include all transportation charges FOB state agency.

OPTIONAL SPARE PARTS AND EXTENDED WARRANTY PRICING

Item #	Quantity	Description of Item	801515 Unit Price
1	(1 to 10)	Diesel Bus Engine with filters, turbocharger, air compressor, ECM and hose lines ISI	\$ 48,302.00
2	(1 to 10)	Diesel Bus Transmission/Hybrid Drive ALLISON	\$ 138,116.00
3	(1 to 5)	Rear Axle Assembly	\$ 10,287.00
4	(1 to 5)	Differential Assembly	\$ 4,562.00
5	(1 to 5)	Driver's Seat RECARO	\$ 2,162.00
6	(1 to 5)	Radiator Assembly MODINE	\$ 7,888.00
7	(1 to 5)	Diesel Particulate Filter/SCR	\$ 11,100.00
8	(1 to 3)	Air Compressor	\$ 1,747.00
9	(1 to 3)	Alternator and Starter NIEHOFF/DELCO	\$ 3,312.00
10	(1 to 3)	Electronic Destination Sign	\$ 7,218.00
11	(1 to 3)	Multiplex System	\$ 6,250.00
12	(1 to 3)	Complete Video Recording System SEON	\$ 8,324.00
13	(1 to 1)	Electric Cooling Fans MODINE	\$ 238.00
14	(1 to 10)	Electric Cooling Fan Assembly MODINE	\$ 3,990.00

**OPTIONAL REDUCED WARRANTY PROVISIONS
STATE OF CONNECTICUT
RFP# 15DOT7002**

Basic Bus: 1yr/50,000 miles	(\$1,000.00)
Structural Integrity/Corrosion: 7yrs/350,000 miles	(\$1,500.00)
Cummins ISL 280HP Engine: 2yrs/UNL miles	(\$5,778.00)
Cummins ISB 280HP Engine: 2yrs/UNL miles	(\$4,888.00)
Allison B400R Transmission: 2yrs/UNL miles	(\$2,747.00)
Allison H40EP Hybrid: 2yrs/UNL	(\$19,309.00)
BAE HybriDrive: 2yrs/UNL	(\$15,000.00)

OPTIONAL REDUCED WARRANTY PROVISIONS TEMPLATE

Note:

Fill out this form ONLY if you would like to propose optional warranty provisions that are different from those specified on pages 43-45 of 50 of Exhibit A, and offer a reduced warranty discount on the appropriate line item on Exhibit B (Revised-Addendum #3), Price Schedule.

The complete bus, propulsion system, components, major subsystems and body and chassis structure are to be warranted free from defects and related defects for 12 months or 50,000 miles, whichever comes first, beginning on the date of revenue service. The warranty is based on regular operation of the bus under the operating conditions prevailing in CTDOT's locale.

Body, body structure, structural elements of the suspension and engine cradle are warranted to be free from defects and related defects for 3 years or 150,000 miles, whichever comes first.

Primary load-carrying members of the bus structure, including structural elements of the suspension, are warranted against corrosion failure and/or fatigue failure sufficient to cause a Class 1 or Class 2 failure for a period of 7 years or 350,000 miles, whichever comes first.

Propulsion system components, specifically the engine, transmission or drive motors, and generators (for hybrid technology) and drive and non-drive axles shall be warranted to be free from defects and related defects for the standard 2 years or UNL miles, whichever comes first. An extended warranty to a maximum of * years or * miles, whichever comes first, may be purchased at an additional cost.

*INCLUDED PER ADD #3, SEE ATTACHED OPTIONAL REDUCED WARRANTY PROVISIONS SHEET.
The warranty shall include towing, travel, and all related expenses.

Contractor warrants the ECS for N/A years or N/A miles, whichever comes first. The ECS shall include, but is not limited to, the following components:

- Complete exhaust system, including catalytic converter (if required)
- After-treatment device
- Components identified as emission control devices

Major subsystems shall be warranted to be free from defects and related defects for N/A years or N/A miles, whichever comes first. Items included as major subsystems are listed below:

- Brake system
- Destination signs
- Heating, ventilating
- AC unit and compressor
- Door systems
- Air compressor
- Air dryer
- Wheelchair lift and ramp system
- Starter
- Alternator
- Charge air cooler
- Fire suppression
- Power plant driven or mounted fan drive and power steering hydraulic or electric systems
- Cooling systems
- Radiator
- Transmission cooler

- Passenger seating (excluding fabric)
- Fuel system and delivery system
- Surveillance system including cameras and video recorders.
- Communications Equipment
- Hybrid drive system including battery storage and controls
- Beltless alternator
- Paint and decal provisions
- Corrosion protection
- Electric fan system
- Multiplex system

If, during the warranty period, repairs or modifications on any bus are made necessary by defective design, materials or workmanship are not completed due to lack of material or inability to provide the proper repair for 30 (thirty) calendar days, the applicable warranty period shall be extended by the number of days equal to the delay period.

The warranties shall not apply to the failure of any part or component of the bus that directly results from misuse, negligence, accident, or repairs not conducted in accordance with the Contractor-provided maintenance manuals and with workmanship performed by adequately trained personnel in accordance with recognized standards of the industry. The warranty also shall be void if CTDOT fails to conduct normal inspections and scheduled preventive maintenance procedures as recommended in the Contractor's maintenance manuals and that if that omission caused the part or component failure. CTDOT shall maintain documentation, auditable by the Contractor, verifying service activities in conformance with the Contractor's maintenance manuals.

The warranties shall not apply to the following items: scheduled maintenance items, normal wear-out items and items furnished by CTDOT.

The Contractor shall pass on to CTDOT any warranty, offered by a component supplier, that is superior to that required herein. The Contractor shall provide a list to CTDOT noting the conditions and limitations of the superior warranty not later than start of production. The superior warranty shall not be administered by the Contractor.

A fleet defect is defined as cumulative failures of 20 percent (20%) in the same components in the same or similar application where such items are covered by warranty. A fleet defect shall only apply to the warranty period.

For the purpose of fleet defects, each option order shall be treated as a separate bus fleet. In addition, should there be a change in a major component within either the base order or an option order, the buses containing the new major component shall become a separate bus fleet for the purposes of fleet defect.

The Contractor shall correct a fleet defect under the warranty provisions defined in this document. After correcting the defect, CTDOT and the Contractor shall mutually agree to and the Contractor shall promptly undertake and complete a work program reasonably designed to prevent the occurrence of the same defect in all other buses and spare parts purchased under this contract. Where the specific defect can be solely attributed to particular identifiable part(s), the work program shall include redesign and/or replacement of only the defectively designed and/or manufactured part(s). In all other cases, the work program shall include inspection and/or correction of all of the buses in the fleet via a mutually agreed-to arrangement.

The fleet defect warranty provisions shall not apply to CTDOT-supplied items, such as radios, fare collection equipment, communication systems and tires. In addition, fleet defects shall not apply to interior and exterior finishes, hoses, fittings and fabric.

The Contractor is responsible for all warranty-covered repair work. To the extent practicable, CTDOT will allow the Contractor or its designated representative to perform such work. At its discretion, CTDOT may perform such work if it determines it needs to do so based on transit service or other requirements. Such work shall be reimbursed by the Contractor.

If CTDOT detects a defect within the warranty period, it shall, within twenty (20) working days, notify the Contractor's representative. The Contractor or its designated representative shall, if requested, begin work on warranty-covered repairs within five (5) working days after receiving notification of a defect from CTDOT. CTDOT shall make the bus available to complete repairs timely with the Contractor's repair schedule.

The Contractor shall provide at its own expense all spare parts, tools and space required to complete repairs. At the option of CTDOT, the Contractor may be required to remove the bus from the property of CTDOT while repairs are being affected. If the bus is removed from CTDOT's property, repair procedures must be diligently pursued by the Contractor's representative.

If CTDOT performs the warranty-covered repairs, it shall correct or repair the defect and any related defects utilizing parts supplied by the Contractor specifically for this repair. At its discretion, CTDOT may use Contractor-specified parts available from its own stock if deemed in its best interests.

CTDOT may require that the Contractor supply parts for warranty-covered repairs being performed by the CTDOT. Those parts may be remanufactured but shall have the same form, fit and function and warranty. The parts shall be shipped prepaid to CTDOT from any source selected by the Contractor within ten (10) working days of receipt of the request for said parts and shall not be subject to a CTDOT handling charge.

The Contractor may request that parts covered by the warranty be returned to the manufacturing plant. The freight costs for this action shall be paid by the Contractor.

The Contractor shall, upon specific request of CTDOT, provide a failure analysis of fleet defect or safety-related parts, or major components, removed from buses under the terms of the warranty that could affect fleet operation. Such reports shall be delivered within sixty (60) days of the receipt of failed parts.

CTDOT shall be reimbursed by the Contractor for labor. The amount shall be determined by CTDOT for a technician at a straight time wage rate plus fringe benefits and overhead adjusted for CTDOT's most recently published rate in effect at the time the work is performed, plus the cost of towing the bus if such action was necessary and if the bus was in the normal service area. These wage and fringe benefit rates shall not exceed the rates in effect in CTDOT's service garage at the time the defect correction is made.

CTDOT shall be reimbursed by the Contractor for defective parts and for parts that must be replaced to correct the defect. The reimbursement shall be at the current price at the time of repair and shall include taxes where applicable, plus 22.5 percent handling costs. Handling costs shall not be paid if the part is supplied by Contractor and shipped to CTDOT.

The Contractor shall reimburse/respond to the warranty claim with an accept/reject decision including necessary failure analysis no later than sixty (60) days after CTDOT submits the claim and defective part(s), when requested. The parties should reconcile all outstanding warranty claims at least once per quarter throughout the entire warranty period.

If any component, unit or subsystem is repaired, rebuilt or replaced by the Contractor or by CTDOT with the concurrence of the Contractor, the component, unit or subsystem shall have the unexpired warranty period of the original. Repairs shall not be warranted if Contractor-provided or authorized parts are not used for the repair, unless the Contractor has failed to respond within five (5) working days.

If an item is declared to be a fleet defect, the warranty stops with the declaration of the fleet defect. Once the fleet defect is corrected, the item(s) shall have remaining time and/or miles of the original warranty. This remaining warranty period shall begin on the repair/replacement date for corrected items on each bus if the repairs are completed by the Contractor or on the date the Contractor provides all parts to CTDOT.

The following list represents requirements by CTDOT to the Contractor for processing warranty claims. One (1) failure per bus per claim is allowed.

1. Bus number and VIN
2. Total vehicle life mileage at time of repair
3. Date of failure/repair
4. Acceptance/in-service date
5. Contractor part number and description
6. Component serial number
7. Description of failure
8. All costs associated with each failure/repair (invoices may be required for third party costs)
 - a. Towing
 - b. Road calls
 - c. Labor
 - d. Materials
 - e. Parts
 - f. Handling
 - g. Troubleshooting time

CTDOT's standardized forms will be accepted if all of the above information is included. Electronic submittal may be used if available between the Contractor and CTDOT.

CTDOT must include the following when returning defective parts to the Contractor.

1. Part needs to be tagged with
 - a. Bus number and VIN
 - b. Claim number
 - c. Part number
 - d. Serial number (if available)

Each claim must be submitted no more than thirty (30) days from the date of failure and/or repair, whichever is later. All defective parts must be returned to the Contractor, when requested, no more than forty-five (45) days from date of repair.

**STATE OF CONNECTICUT
15DOT7002
DECEMBER 2015
PROPOSED DELIVERY SCHEDULE**

Based on Anticipated Award of January 2016

FIRST YEAR ORDER -- Anticipated Quantity of 60-75 Buses

Pilot Bus Start / Delivery -- 18 months ARO

Production Units Start at approximately 5 buses per week -- 20 months ARO

Delivery of First Production Bus -- 21 months ARO

Delivery of 59th Production Bus -- 23 months ARO

Additional quantities can be produced sequentially if on initial order

REMAINING FIRST YEAR COMMITMENT

To be negotiated at time of order placement pending exact quantity ordered and GILLIG backlog at time of order placement. However, production starts will not exceed 18 months ARO.

OPTION COMMITMENT

To be negotiated at time of order placement pending exact quantity ordered and GILLIG backlog at time of order placement. However, production starts will not exceed 18 months ARO.

NOTE: Delivery improvements may be possible if the initial order of 60 -75 buses includes multiple transit agency orders which would allow us to produce at 5 buses per week for different customers. We welcome the opportunity to discuss this further as this question was presented to CTDOT by Gillig on October 2, 2015 but never answered.

DELIVERY IMPORIVEMENTS ANTICIPATED: GILLIG anticipates moving into our new, state of the art, bus manufacturing facility located in Livermore, CA in 2017 which will allow GILLIG to improve production lead times over the life of this contract.

**STATE OF CONNECTICUT
BASE AND EQUIPMENT ALTERNATIVES
PRICE SHEET
RFP NO. 15DOT7002**

PROPULSION		
BASE	Cummins '17 ISL 280HP Diesel Engine with Allison B400R-5 Transmission Philips Temro Block Heater	BASE \$121.00
ELECTRIC HYBRID DRIVE SYSTEM		
BASE	29' Low Floor Allison H40EP Parallel Electric Drive System with Vanner HBA	\$669,903.00
	35' Low Floor Allison H40EP Parallel Electric Drive System with Vanner HBA	\$676,828.00
	40' Low Floor Allison H40EP Parallel Electric Drive System with Vanner HBA	\$681,028.00
BASE	35' Low Floor BAE Series HybriDrive APS1 w/A123 ESS (2017 Deliveries Only)	\$646,513.00
BASE	40' Low Floor BAE Series HybriDrive APS1 w/A123 ESS (2017 Deliveries Only)	\$650,713.00
	35' Low Floor BAE Series HybriDrive APS1 w/Next GEN ESS (Req'd starting 2018 Deliveries)	\$664,113.00
	40' Low Floor BAE Series HybriDrive APS1 w/Next GEN ESS (Req'd starting 2018 Deliveries)	\$668,313.00
	35' Low Floor BAE Series HybriDrive APS2 w/A123 ESS (2017 Deliveries Only)	\$658,400.00
	40' Low Floor BAE Series HybriDrive APS2 w/A123 ESS (2017 Deliveries Only)	\$662,600.00
	35' Low Floor BAE Series HybriDrive APS2 w/Next GEN ESS (Req'd starting 2018 Deliveries)	\$676,000.00
	40' Low Floor BAE Series HybriDrive APS2 w/Next GEN ESS (Req'd starting 2018 Deliveries)	\$680,200.00
	Electric Hydraulic Pump	TBD
	Electric Air Compressor	TBD
STYLING PACKAGES (base bus does not include bonded windows)		
BASE	Standard Low Floor Front Cap, Rear Cap and Engine Door Styling	BASE
	BRT Front Cap Styling Only	\$9,790.00
	BRT Front Cap, Rear Cap and Engine Door Styling	\$13,250.00
	BRT PLUS Front Cap, Rear Cap, Roof Line and Engine Door Styling	\$18,950.00
	BRT Roof Fairings, Front or Rear (each)	\$1,250.00
OIL SYSTEM		
BASE	Cummins Supplied Fleetguard	BASE
	Spinner II Auxilliary Filter	\$931.00
	Titan Probalizer OD-1014 Extraction Port (per fitting)	\$44.00
	Femco Auto Drain	\$69.00
COOLING SYSTEM		
BASE	Modine E-Cool Electric Cooling System without E-Coat	BASE
	EMP Electric Cooling System without E-Coat	\$1,744.00
	Add E-Coat to Diesel	\$834.00
	Add E-Coat to Hybrid	\$1,368.00
	Radiator Tank Guard	\$256.00
	Radiator Tank Guard, with Splash Shield	\$384.00
ALTERNATOR		
BASE	Niehoff C803 (500 Amp for Electric Radiator)	BASE
	EMP (450 Amp for EMP Electric Radiator)	\$0.00
	Delco 450-DN (450 Amp for Electric Radiator)	\$0.00
TRANSMISSION		
BASE	Allison B400R, GEN IV	BASE
	Voith D864.6	(\$2,106.00)
	Allison B3400R, xFE	\$776.00
	ZF 6AP1400 ECOLIFE	(\$1,777.00)
	Femco Auto Drain	\$69.00
	KP Push Button	\$59.00
	Transmission Temperature Gauge (Dash or Rear Run Box)	\$50.00
AXLE HUBS & SEALS		
BASE	Hub Piloted Wheels	BASE
BASE	Axles with Grease Seals (per axle)	BASE
	Axles with Chicago Rawhide Oil Seals	\$0.00
	Synthetic 75W90 Gear Oil for Rear Axle	\$187.00
	On Spot Tire Chain System (35' & 40' only)	\$1,744.00
HUBODOMETER		
BASE	Engler (Stemco) Mechanical without Tenths and without Guard	BASE
	Data Trac Pro 600-9999	\$0.00
	Veeder Root Mechanical without Tenths and without Guard	\$0.00
	S & A Fleetwatch 392 Electronic	\$352.00
	Hubodometer Guard	\$68.00

Alternative prices are subject to appropriate PPI increases per contract.
Confidential and Proprietary Information



STATE OF CONNECTICUT
BASE AND EQUIPMENT ALTERNATIVES
PRICE SHEET
RFP NO. 15DOT7002

TIRES		
BASE	Bus Builder Supply Michelin X InCity Z (J) Tires (305/85R22.5) - 35' & 40' only	BASE
	Procuring Agency Supply Tires	(\$3,857.00)
BASE	Bus Builder Supply Bridgestone 16H Tires (275/70R22.5) - 29' only	BASE
	Bus Builder Supply Michelin X InCity Tires (275/70R22.5) - 29' only	Quote
	Bus Builder Supply Goodyear G152 Tires (305/85R22.5)	Quote
	Bus Builder Supply Goodyear G152 Tires (305/70R22.5)	Quote
	Bus Builder Supply Goodyear G152 Tires (275/70R22.5) - 29' only	Quote
	Bus Builder Supply Firestone 18J Tires (315/80R22.5)	Quote
	Bus Builder Supply Firestone 18J Tires (315/80R22.5)	Quote
	Bus Builder Supply Firestone 16H Tires (305/70R22.5)	Quote
BRAKES		
BASE	Disc Brakes with Wabco ABS System	BASE
BASE	Automatic Traction Control	BASE
	S-Cam Drum Brakes with Wabco ABS System	(\$2,400.00)
STEERING SYSTEM		
BASE	Douglas Steering Column (Standard Steering Column)	BASE
	TRW Easy Steer, Electric Assisted Steering Column	\$2,494.00
	VIP Textured Steering Wheel	\$73.00
FUEL SYSTEM		
BASE	Emco Wheaton Posi Lock 105 (Flip Cap or Twist Cap)	BASE
	Standard Gravity Fuel Fill	(\$273.00)
	Dual Fill (Curbside and Streetside) with Emco Wheaton Posi Lock 105	\$996.00
	Dual Fill (Curbside and Streetside) with Standard Gravity Fill	\$769.00
BASE	Emco Wheaton DEF Fast Fill	BASE
	Delete Emco Wheaton DEF Fast Fill	(\$350.00)
BASE	Standard 120gal (35' / 40') or 75gal (29' LF) Net Useable Fuel Tank	BASE
	80 gal Net Useable Split Fuel Tanks (29' LF with No Rear Door)	\$1,270.00
BASE	Davco Fuel Pro 384, Heated	BASE
	Delete Davco Fuel Pro 384, Heated	(\$349.00)
	Diesel Fuel Gauge on Dash	\$171.00
	Fleetwatch TX-55	\$664.00
REAR RUN BOX		
BASE	Electrical Gauges - Engine Oil and Coolant Temp	BASE
	Mechanical Gauges - Murphy Oil Pressure and Coolant Temperature	\$60.00 each
	Delete Electrical Gauges	(\$50.00) each
	Rear Hand Throttle Control	\$144.00
AIR SYSTEM		
BASE	SKF, HCT 2000 Duraguard Air Dryer	BASE
	Kingston Auto Drain Valve at Ping Tank	\$0.00
	Cole Hersee #12063 Electrical Tow Connector	\$168.00
	Glad Hands Towing Connectors	\$106.00
	Curbside Rear Kneeling	\$525.00
BATTERIES		
BASE	(4) AGM Glass Matt Group 31 Top Post Connections w/KBI Super Capacitor	BASE
	Delete KBI Super Capacitor	(\$3,679.00)
	(2) DEKA 8D Side Lug or Top Post Connections	(\$646.00)
	(4) DEKA Group 31 Top Post Connections	(\$580.00)
	(2) AGM Glass Matt 8D Side Lug or Top Post Connections	(\$290.00)
BASE	(1) Anderson 350 Jump Start Connector at Engine Compartment	BASE
	Delete (1) Anderson 350 Jump Start Connector at Engine Compartment	(\$132.00)
	(1) Anderson 350 Jump Start Connector at Battery Compartment	\$95.00
FRAME		
	Engine Skid Protection w/Extended Tow Eyes	\$129.00
	Engine Skid Protection w/Extended Tow Eyes & 2" Thick x 2" Wide Wear Plate	\$377.00

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Confidential and Proprietary Information



**STATE OF CONNECTICUT
BASE AND EQUIPMENT ALTERNATIVES
PRICE SHEET
RFP NO. 15DOT7002**

WHEELCHAIR LIFT / RAMP		
BASE	Lift-U Ramp (LU-18), Front Door	BASE
	Lift-U Ramp (LU-18), Rear Door (requires 48" rear door selection) N/A w/29'	\$3,865.00
	Ricon (6:1) Fold Over	\$295.00
	Reinforced A-Post Skid Plates (per side)	\$67.00
HEATING / AIR CONDITIONING		
BASE	TK T-14 w/S391, EBM Brushless Motors	BASE
	TK T-14 w/X426 or X430	(\$700.00)
	TK T-14 w/S616	\$1,690.00
	TK T-14 with Permanent Magnet Motors	(\$2,285.00)
	20% Fresh Air	\$383.00
	TK All-Electric HVAC - Diesel & Hybrid (Allison H40EP)	\$13,730.00
	TK All-Electric HVAC - BAE Hybrid (must select APS 2 option)	\$1,330.00
	TK Pressure and Return Display Mounted to Unit	\$356.00
	MCC RM35 w/O5G, Brushless Motors	(\$4,565.00)
DRIVERS HEATERS & ADDITIONAL PASSENGER HEATERS		
BASE	MCC Drivers Heater - Brushless Motor, Left Foot Vent, 1/4 Turn Valves	BASE
	MCC Drivers Heater - Brush Motor, Left Foot Vent, 1/4 Turn Valves	(\$387.00)
BASE	Front Stepwell / Threshold Heater - MCC with Brushless Motor	BASE
	Delete Front Stepwell / Threshold Heater - MCC with Brushless Motor	(\$260.00)
	Streetside Underseat Heater - MCC with Brushless Motor	\$350.00
	Streetside Underseat Heater Mtd in Theater Step - MCC with Brushless Motor	\$458.00
BASE	Curbside Rear Stepwell Heater - MCC with Brushless Motor	BASE
	Delete Curbside Rear Stepwell Heater - MCC with Brushless Motor	(\$360.00)
AUXILIARY COOLANT HEATER		
BASE	Spheros Model Thermo 230 (80,000 btu) Coolant Heater	BASE
	Delete Spheros Model Thermo 230 (80,000 btu) Coolant Heater (diesel only)	(\$2,059.00)
	Proheat Model X45 (45,000btu) Coolant Heater	\$0.00
DRIVER'S AUXILIARY FAN & DASH AREA		
BASE	Drivers Fan Mounted to Dash (qty 2)	BASE
	Delete Drivers Fan Mounted to Dash (each)	(\$71.00)
REAR DOOR		
BASE	34" Rear Door - Air Open / Spring Close (Full Driver's Control)	BASE
	Delete Rear Door	(\$1,300.00)
	48" or 56" Rear Door (requires Air Open / Air Close Door)	\$2,601.00
	Vapor CLASS Control with Green LED Lamp (34" Door)	\$5,511.00
	Vapor vTouch Electronic Touch Bars with Green LED Lamp (34" Door)	\$728.00
	34" Rear Door - Vapor Electric Open / Electric Close (Full Driver's Control)	\$4,621.00
	Exterior Air Release Front Door Control Valve	\$162.00
ELECTRICAL EQUIPMENT CABINET		
BASE	44" Tall with Key Lock and (2) 5/16" Square Key Locks	BASE
	33" Tall with Key Lock and (2) 5/16" Square Key Locks	\$0.00
	44" Tall (33") with Key Lock and (2) 5/16" Square Key Locks & 11" Drivers Storage	\$120.00
	Storage Box on Curbside Forward Wheel Well (8.25"H x 20"W x 13"D)	\$470.00
ADVERTISING FRAMES - EXTERIOR		
BASE	Exterior, None	BASE
	Exterior, 21" X 40", Front Clear or Black Anodized, Powder Coated	\$175.00
	Exterior, 30" X 88", Curbside or Streetside	\$283.00
	Exterior, 30" X 144", Clear or Black Anodized, Powder Coated	\$335.00
	Exterior, 21" X 72", Rear	\$226.00
ADVERTISING FRAMES - INTERIOR		
	Transit Information Products OBIC-WW8-P (curbside wheel well)	BASE
	Delete Transit Information Products OBIC-WW8-P (curbside wheel well)	(\$225.00)
	Transit Information Products OBIC 2T-H MC (electrical equipment box)	BASE
	Delete Transit Information Products OBIC 2T-H MC (electrical equipment box)	(\$125.00)
	Interior, Innocom Schedule Racks 3.75" X 7" X 1.5"	\$17.00 each
	Interior, 22" X 21", Black, RH Load, Open Back	\$165.00

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**STATE OF CONNECTICUT
BASE AND EQUIPMENT ALTERNATIVES
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DRIVERS SEAT		
BASE	Recaro Ergo Metro with Headrest, 3-Point Belt (Lap & Shoulder) and seat alarm	BASE
	Add RH Armrest to Recaro Ergo Metro	\$116.00
	Add Adjustable D-Ring to Recaro Ergo Metro	\$244.00
	USSC 9100ALX with Headrest and 3-Point Belt (Lap & Shoulder)	(\$295.00)
	Add Seat Belt Alarm to USSC 9100ALX	\$44.00
	Add Seat Cushion Alarm to USSC 9100ALX	\$159.00
	Add RH Armrest to USSC 9100ALX	\$49.00
PASSENGER SEATING		
BASE	AMSECO Insight - 40' (SL-71164-186-BID)	BASE
BASE	Thermoplastic Grabhandles	BASE
BASE	Standard Wool Fabric or Vinyl	BASE
	AMSECO Insight Prime - 30' (SL-66631)	(\$868.00)
	AMSECO Insight Prime - 35' (SL-72735)	(\$1,093.00)
	AMSECO Insight Prime - 40' (SL-71164-186-BID)	(\$1,408.00)
	AMSECO Metropolitan	Quote to Spec
	AMSECO 6468	Quote to Spec
	AMSECO 6566	Quote to Spec
	AMSECO 2005	Quote to Spec
	4ONE Angel Seats	Quote to Spec
	4ONE CitiPro	Quote to Spec
	4ONE CitiSeats	Quote to Spec
	4ONE Gemini	Quote to Spec
	4ONE Aries	Quote to Spec
	4ONE Torino	Quote to Spec
	4ONE Patriot	Quote to Spec
	KIEL IDEO	Quote to Spec
	KIEL ESCS	Quote to Spec
WHEELCHAIR SECUREMENT		
BASE	AMSECO - A.R.M. System	BASE
	4ONE J2-VPRO	Quote to Spec
	AMSECO - Dual Autolok	Quote to Spec
	Q'Pod Assembly	Quote to Spec
	KIEL	Quote to Spec
PASSENGER SIGNALS		
BASE	Pull Cords (Neutral or Yellow) with Touch Pad at Wheelchair Location	BASE
	Touch Tape on Window Mullions	\$1,116.00
BASE	Stop Request Button at Rear Door Stanchion	BASE
	Delete Stop Request Button at Rear Door Stanchion	(\$50.00)
	Additional Amber Stop Request Lamp Mounted on Driver's Dash	\$35.00
DRIVER'S BARRIER		
BASE	Wrap Around Fiberglass (35' / 40' Low Floor)	BASE
	Wrap Around Fiberglass with (3) Schedule Rack Cutouts (35' & 40' Only)	\$61.00
BASE	Flat Melamine, One Piece (29' Only)	BASE
STANCHIONS & GRAB RAILS		
BASE	SSTL Door Handles, Vertical Stanchions, Hand Rails & Modesty Panel Tubes	BASE
	Powdercoated Door Handles, Vertical Stanchions, Hand Rails & Modesty Panel Tubes	\$600.00
	Powdercoated Vertical Stanchions Only	\$225.00
BASE	Modesty Panel Forward of Exit Door (required w/heater)	BASE
	Delete Modesty Panel Forward of Exit Door	(\$130.00)
BASE	Clear Upper Polycarbonate Panel at Exit Door Modesty Panel (aft of exit door)	BASE
	Delete Clear Upper Polycarbonate Panel at Exit Door Modesty Panel (aft of exit door)	(\$150.00)
BASE	Vinyl Grab Straps - Qty (7)	BASE
	Delete Vinyl Grab Straps - (each)	(\$10.00)
	SSTL Spring Loaded Grab Handle (each)	\$123.00

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BASE AND EQUIPMENT ALTERNATIVES
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WINDOWS		BASE
BASE	Arow Global Standard Frame - Transom	
	Arow Global Hidden Frame/Bonded - Transom	\$6,279.00
	Dura Passenger Windows	Quote to Spec
	Ricon Passenger Windows	Quote to Spec
	Add 3M Multi-Layer Film	Quote to Spec
	Add Plastic Liners	Quote to Spec
	Add Thermo Guard	Quote to Spec
HEADLAMPS		
BASE	(2) Dialite LED Headlights (Low Beam Only)	BASE
	(4) Dialite LED Headlights (High & Low Beam)	\$637.00
	Dual (4) Halogen Headlights	(\$341.00)
	Dinex STAR LED Headlight system (Low Beam Only)	\$132.00
	Dinex STAR LED Headlight system with Sound Alert (Low Beam Only)	\$334.00
AUXILIARY EXTERIOR LAMPS		
BASE	(2) Red LED Brake Lamps Mounted to Bottom of HVAC Door	BASE
	7" Tail Lights IPC 4"	\$0.00
	(1) Red LED "STOP" Sign Mounted to Bottom of HVAC Door	\$434.00
	(2) Amber LED Turn Lamps Mounted to Top of HVAC Door	\$100.00
	(1) Triangle Style Amber LED Yield Sign Mounted on Streetside of HVAC Door	\$600.00
	(2) Additional Turn Signals Mounted on each Side of Bus (total 4 per side)	\$115.00
PLEASURE RADIO		
BASE	None	BASE
	REI AM/FM/CD/MP3-USB/SD PLAYER,	\$320.00
	Driver's Speaker with Separate Volume Control	\$60.00
COMMUNICATION RADIO SYSTEM		
BASE	NONE	BASE
	Gillig Provide Power Circuit and Antenna Cable Only	\$0.00
	Customer Specific 2-Way Radio System	Quote to Spec
PUBLIC ANNOUNCEMENT SYSTEM		
BASE	REI Model 750040 PA System	BASE
	Clever Devices Speak Easy II	\$1,140.00
INTELLIGENT VEHICLE SYSTEM (On-Board Hardware Only)		
BASE	NONE	BASE
	Clever Devices IVN3 Complete ITS System	Quote to Spec
	Clever Devices DR700 Talking Bus	Quote to Spec
	AVAIL ITS System	Quote to Spec
	INIT ITS System	Quote to Spec
	Trapeze Transit Master ITS System	Quote to Spec
	Xerox ITS System	Quote to Spec
	Customer Specified ITS System	Quote to Spec
DESTINATION SIGNS		
BASE	Twin Vision SS3 100% AMBER LED Front, Curbside & Rear Signs	BASE
	Add Twin Vision Streetside 100% Amber LED Sign	\$1,250.00
	Luminator Horizon SMT 100% Amber LED Front, Curbside & Rear Signs	(\$525.00)
	Add Luminator Streetside 100% Amber LED Sign	\$1,250.00
	Hanover 100% Amber LED Front & Curbside Signs	(\$605.00)
	Add Hanover Amber LED Side Sign	\$906.00
	Heated/Defroster for Front Sign Glazing	\$214.00
BASE	Twin Vision Amber LED Dash Sign	BASE
	Delete Twin Vision Amber LED Dash Sign	(\$475.00)

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BASE AND EQUIPMENT ALTERNATIVES
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FARE COLLECTION		
BASE	No Farebox, Gillig provided Power Circuit & Grounding Strap	BASE
	Farebox Guard	\$187.00
	GFI 41" High Odyssey	\$16,063.00
	GFI Cents-A-Bill with TRIM Unit	Discontinued
	Diamond Model RV with Spare Vault	\$1,288.00
	Diamond Model H with Spare Vault	\$2,600.00
	Diamond Model SV with Spare Vault	\$1,601.00
	Denominator Manual Passenger Counter (Rows X Tallies X \$32)	
	Globe 60090 Transfer Cutter (each)	\$63.00
BASE	LED Fare Box Lamp, Ceiling Mounted	BASE
FLOORING		
BASE	Full Composite Flooring with Altro Transflor	BASE
	RCA Rubber Flooring	(\$600.00)
	Green Wood Plywood	(\$2,000.00)
ROOF HATCHES		
BASE	Front & Rear Electric Open/Close Hatches	BASE
	Transpec Manual Hatch at Forward Position Only	(\$566.00)
	Transpec Manual Hatch at Forward & Rear Position	(\$316.00)
	Upgrade Hatch to Transparent Skylight Hatch (per position, manual hatch only)	\$103.00
ELECTRICAL / MULTIPLEXING		
BASE	I/O Controls, Dinex G3 System	BASE
	USB Charging Ports at Upper & Lower Section Sidewalls	\$4,481.00
DRIVERS SUN SHADES		
BASE	Roller Style with Pull String Release	BASE
FIRE SUPPRESSION & METHANE DETECTION		
BASE	Amerex V30 System Fire Suppression	BASE
	Delete Amerex V30 System Fire Suppression (Diesel only)	(\$2,069.00)
BASE	Amerex V30 System Fire Suppression (Hybrid)	BASE
	Fogmaker Watermist System (6.5 liter)	\$427.00
SURVEILLANCE CAMERA SYSTEMS		
BASE	Seon Explorer DXHD, (9) Color Cameras, DVR & Audio	BASE
	Delete Seon Explorer DXHD, (9) Color Cameras, DVR & Audio	(\$6,243.00)
	Safety Vision 7000NVR Video Surveillance System	Quote to Spec
	Apollo Road Runner HDR8 Video Surveillance System	Quote to Spec
	March Networks NVR GT8 Video Surveillance System	Quote to Spec
	UTC Penta Video Surveillance System	Quote to Spec
	REI HD8000 Video Surveillance System	Quote to Spec
BICYCLE RACKS		
BASE	Sportworks DL2, Two Bikes, Stainless Steel	BASE
	Sportworks DL2, Two Bikes, Black Powdercoated	(\$262.00)
	Delete Sportworks DL2, Two Bikes, Stainless Steel	(\$986.00)
	Bike Rack Deployed Indicator Lamp on Driver's Dash	\$30.00
	Mounting Brackets and Pivot Plate Only	\$253.00
	Bike Rack Mounted Advertising Frame, 21" X 40"	\$274.00
SAFETY EQUIPMENT		
BASE	Fire Extinguisher and Safety Triangle Kit	BASE
	Twenty Four Unit First Aid Kit	\$65.00
	Blood Born Pathogen Kit	\$35.00
BASE	Wheel Chocks (per set)	BASE
	Delete Wheel Chocks (per set)	(\$25.00)

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STATE OF CONNECTICUT
 BASE AND EQUIPMENT ALTERNATIVES
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<u>DRIVER'S DASH</u>		
BASE	Air Pressure, Speedometer & (1) Aux Gauge	BASE
BASE	Diesel Exhaust Fluid (Required for Diesel and Hybrid)	BASE
	Delete Aux Gauge (each)	(\$50.00)
	Additional Gauges (each)	\$50.00
	Diesel Fuel Gauge	\$171.00
	I/O Multi Function Display (MFD)	\$3,258.00
	12v Power Port	\$110.00
	Big Gulp Cup Holder	\$35.00
	Euramatic Folding Style Cup Holder	\$25.00
BASE	Qty (2) Rubber Maid Waste Baskets with Removable Mount	BASE
	Delete Qty (2) Rubber Maid Waste Baskets with Removable Mount	(\$175.00)
	Trash Bag Holder	\$75.00
<u>ACCELERATOR / BRAKE FOOT CONTROLS</u>		
BASE	Williams Controls 45degree Throttle Pedal (non adjustable)	BASE
	Kongsberg Adjustable Throttle / Brake Pedal	\$1,130.00
<u>PAINT/DECALS</u>		
BASE	Two Paint Passes/Colors	BASE
	Add Each Paint Pass/Color	\$941.00
BASE	Clear Coat	BASE
	Delete Clear Coat	(\$800.00)
	Custom Paint and/or Decal Design	QUOTE
	Gillig Provide Design Services for Paint/Decal Layout	\$500.00
<u>ROOF NUMBERS</u>		
BASE	None	BASE
	Roof Numbers (Up to Four 24" High Decals)	\$125.00

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PRICE SHEET
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TROLLEY PACKAGE OPTIONS (Additional Cost Over Base Bus Price)			
	30'	35'	40'
Base Package (Diesel)	\$61,494.00	\$69,106.00	\$77,061.00
Roof Cupola Assembly	INCLUDED	INCLUDED	INCLUDED
Solid Brass SF Cable Car Bell	INCLUDED	INCLUDED	INCLUDED
Exterior Wood Like Trim Installed On: Cupola, Front & Rear Overhang Eaves, Arches, Window Mullions, Window Sills, Rub Rails, Skirt Panels, Front & Rear Door, Front & Rear Bumper. Reference Layout.	INCLUDED	INCLUDED	INCLUDED
Interior Trim Includes Solid American White Oak Trim on: Ceiling Panel Strips, Window Tops & Sills, Overhead Passenger Light Panels, Driver's Dash Area.	INCLUDED	INCLUDED	INCLUDED
Vintage Style Vinyl Graphics: Cupola Window & Exterior Window Graphic Motifs, Standard Gold Vinyl Pinstriping, Exterior Graphics Banner Package, Interior Graphics Banner at Rear I/O Enclosure, Exterior Bus Numbers, Gold Battery Disconnect Decal. Reference Layout	INCLUDED	INCLUDED	INCLUDED
Cow Catcher	\$3,036.00	\$3,036.00	\$3,036.00
Roof Accent LED Rope Lighting	\$3,036.00	\$3,149.00	\$3,261.00
Front Center Trolley Light	\$594.00	\$594.00	\$594.00
Exterior Roof Mounted Sign Boards (CS & RS)	\$3,624.00	\$3,624.00	\$3,624.00
Front Roof Hatch Accomodations	\$794.00	\$794.00	\$794.00
Allison H40EP Compatible Cupola Package	\$7,987.00	\$7,987.00	\$7,987.00
WOODEN TROLLEY PASSENGER SEAT OPTIONS			
	Base 30' (26) Passengers	Base 35' (31) Passengers	Base 40' (38) Passengers
Vintage Style Trolley Seating; Solid American White Oak Milled Wood Slats, Bull Nose Top & Bottom Roundover Edges.	\$9,817.00	\$8,147.00	\$8,209.00
Interior Vinyl Seat Cushions	\$3,374.00	\$3,881.00	\$4,363.00

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STATE OF CONNECTICUT
RFP NO. 15DOT7002
DECEMBER 2015
MAINTENANCE TRAINING COSTS

Gillig Maintenance Training - Onsite at Customer

Twenty Four (24) Hour Training Class

Three (8) Hour Days

Twelve (12) Students per Class

Cost per 24 Hour Class

\$3,500.00

Each 24 Hour Class will include: Door Systems, Air Systems, Hydraulics, Front & Rear Suspension and Body

Gillig I/O Control Dinex Multiplex System – Onsite at Customer

Twenty Four (24) Hour Training Class

Three (8) Hour Days

Twelve (12) Students per Class

Cost per 24 Hour Class

\$3,500.00

Cummins Engine Familiarization - At local Cummins Dealer

Twenty Four (24) Hour Training Class

Includes: Three (3) Eight (8) Hour Training Classes

Cost per Student

\$700.00

Cummins Troubleshooting - At local Cummins Dealer

Twenty Four (24) Hour Training Class

Includes: Three (3) Eight (8) Hour Training Classes

Cost per Student

\$700.00

Cummins Engine Overhaul Class - At local Cummins Dealer

Forty (40) Hour Training Class

Includes: Five (5) Eight (8) Hour Classes

Cost per Student

\$900.00

Allison Familiarization - At local Allison Dealer

Eight (8) Hour Training Class

Includes: One (1) Eight (8) Hour Training Class

Cost per Student

\$250.00

Allison Troubleshooting - At local Allison Dealer

Eight (8) Hour Training Class

Includes: One (1) Eight (8) Hour Training Class

Cost per Student

\$250.00

Allison Overhaul Class - At local Allison Dealer

Forty (40) Hour Training Class

Includes: Five (5) Eight (8) Hour Classes

Cost per Student

\$1,000.00

Thermoking – Onsite at Customer

Eight (8) Hour Class on HVAC System

Cost per Student

\$250.00

Lift-U W/C Ramp – Onsite at Customer

Four (4) Hour Class on Ramp System

Cost per Class

No Charge

Destination Sign System – Onsite at Customer

Eight (8) Hour Class on Destination Sign System

Cost per Class

No Charge

STATE OF CONNECTICUT
15DOT7002
DECEMBER 2015
TOOL LIST

The following equipment is not included in the per bus price quoted. This equipment can be purchased separately:

A. ELECTRICAL AND ELECTRONIC DIAGNOSTIC EQUIPMENT

One (1) Set of Diagnostics - Consisting of the following:

One (1)	Test Equipment, Circuit Tester	G3-MK-808-R2
One (1)	Test Equipment, Program Loader	G3-MK-CHARGER
One (1)	Test Equipment, Program	G3-MK-PROGRAM
One (1)	Test Equipment, ID Writer/Verification	G3-MK-IDWT
One (1)	Test Equipment 232	T2-MK-232
		Total for Section A: <u>\$4,690.00</u>

B. TOWING ADAPTER

One (1)	Set of Towing Adapters	Gillig Kit # 82-90178
		Total for Section B: <u>\$460.00</u>

C. ENGINE AND TRANSMISSION DOLLY

One (1)	Engine Dolly	Gillig # 55-28308-000
		Total for Section C: <u>\$4,530.00</u>

D. CUMMINS ENGINE TUNE-UP KIT

One (1)	Pressure Gauge	ST-1273
One (1)	Torque Wrench	3164796
One (1)	Oil Filter Wrench	3397929
One (1)	Engine Coolant and Fuel Wrench	3376807
One (1)	Belt Tension Gauge	3822524
One (1)	Belt Tension Gauge	3822525
One (1)	Charge Air Cooler CAC Pressure Kit	3824556
One (1)	Engine Barring Gear	3824591
One (1)	Torque Wrench	3398032
One (1)	Roller Follower Removal and Installation Tool	3163468
		Total for Section D: <u>\$4,861.00</u>

E. CUMMINS ENGINE DIAGNOSTIC TOOLS

One (1)	Inline 5 Adapter Kit	4918416
One (1)	Insite Basic	3886399
		*Software can be downloaded at no charge from the Internet at: www.powerspec.cummins.com .
One (1)	Printer	(J-38480-A)
		Total for Section E: <u>\$2,006.00</u>

F. TRANSMISSION DIAGNOSTIC EQUIPMENT

One (1) Allison Cable & Software (J-44950-H)

One (1) Allison Translator Kit (J-47943)

Total for Section F: \$1,879.00

H. BRAKE SYSTEM DIAGNOSTICS EQUIPMENT

One (1) Meritor (WABCO) Software (Toolbox)

One (1) NEXIQ USB - 2 Translator

Total for Section H: \$2,255.00

I. DIAGNOSTIC HARDWARE

One (1) Laptop PC

Total for Section I: \$2,574.00

J. DIAGNOSTIC HARDWARE

One (1) Panasonic Toughbook CF31

Total for Section J: \$4,200.00

K. HVAC DIAGNOSTICS

One (1) TK Intelligaire III

Total for Section K: \$1,461.00

L. DESTINATION SIGN

One (1) Twin Vision ELYSE Software

Total for Section L: \$1,130.00

M. COOLING SYSTEM

One (1) Modine E-FAN Diagnostic Cable

Total for Section M: \$150.00

N. VIDEO SECURITY SYSTEM

One (1) SEON PC Viewing Station \$2,860.00

One (1) SEON Laptop \$5,462.00

Total for Section N: \$8,322.00

PRICING CLARIFICATION

All the following general comments and clarifications may not apply to your specific procurement, but they are included so as to avoid misunderstandings, so they should not be construed as making this a conditional bid. These comments do not change the quoted pricing for the initial order and build.

TAX/FEE STATEMENT

The prices quoted for this procurement are for the specified deliverables only and **exclude** (unless specifically noted by buyer or seller) any Local, City, County, State, Franchise or Income or Value Added(VAT) taxes, tariffs, fees, business licenses, or other licenses, that may need to be paid as part of the performance of this contract, or any option of it. If any additional fees are required, they will be noted and added to the appropriate invoice.

PAYMENT

All Prices are in U.S. Dollars and payments are only accepted on U.S. bank checks or via electronic funds transfers, (no credit, debit or bank cards) and any applicable transaction fees would be the responsibility of the buyer.

EMISSIONS AND OTHER REGULATED OR MANDATED CHANGES

The prices quoted for the initial build quantity are for vehicles meeting all applicable Federal and State regulations (including EPA, CARB, or NHTSA requirements) currently known to be in effect at the time of delivery of those vehicles. Changes caused by or related to future regulations, any subsequently enacted regulations, or technologies necessitating revisions from the currently proposed vehicle configuration (e.g. component change/availability due to emission or other regulations, requirements or mandates), may require a price adjustment, which would be subject to negotiation and agreement by both Gillig and the buyer. This latter statement applies to future builds only that may need to use different components or currently unknown or unavailable technology, to meet regulations or requirements in effect at the time(s) of those optional deliveries(e.g. costs or technologies to meet 2017 emission requirements are currently unknown).

OPTIONAL BUILD PRICING

Most bids include a PPI adjuster to determine pricing for future builds, and this is to clarify that bus pricing for such future build quantities may be different from the PPI adjusted price because of the above regulated/mandated changes and/or due to customer initiated change notices.

GILLIG LLC

By

_____
JOSEPH POLICARPIOTITLE VICE PRESIDENTDATE DECEMBER 1, 2015

EXHIBIT C

SEEC FORM 11



Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(G)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined on the reverse side of this page).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor*, *prospective state contractor*, *principal of a state contractor* or *principal of a prospective state contractor*, with regard to a *state contract* or *state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no *state contractor*, *prospective state contractor*, *principal of a state contractor* or *principal of a prospective state contractor*, with regard to a *state contract* or *state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall *knowingly solicit* contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor* or *principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

PENALTIES FOR VIOLATIONS

Contributions of solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil Penalties – Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties – Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may result in the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to "Lobbyist/Contractor Limitations."



DEFINITIONS

"State contractor" means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. "State contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Prospective state contractor" means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. "Prospective state contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a state contractor or prospective state contractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

"State contract" means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. "State contract" does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United States Department of Defense.

"State contract solicitation" means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

"Managerial or discretionary responsibilities with respect to a state contract" means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

"Dependent child" means a child residing in an individual's household who may legally be claimed as a dependent on the federal income tax of such individual.

"Solicit" means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

"Subcontractor" means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor's state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. "Subcontractor" does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a subcontractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.

CONTRACT

Between

THE STATE OF CONNECTICUT

Acting by its

DEPARTMENT OF TRANSPORTATION

AND

NEW FLYER OF AMERICA, INC.

**30', 35' AND 40' LOW FLOOR HEAVY DUTY CLEAN FUEL DIESEL
AND HYBRID ELECTRIC BUSES**

APRIL 28

, 2016

Contract Award Date

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This contract (the "Contract") is made as of the day of execution of the contract, by and between, New Flyer of America Inc. (the "Contractor,") with a principal place of business at 711 Kernaghan Avenue, Winnipeg, Manitoba, Canada, R2C 3T4, acting by Paul Smith, Its Env. P. Sales & Marketing and the State of Connecticut, Department of Transportation (referred to in this Contract as the "Agency", "CTDOT", or the "Authority"), with a principal place of business at 2800 Berlin Turnpike, Newington, Connecticut, acting by Richard Andreski, its Bureau of Public Transportation, its Bureau Chief, in accordance with Section 13b-34 of the Connecticut General Statutes.

Now therefore, in consideration of these presents, and for other good and valuable consideration, the receipt and sufficiency of which the parties acknowledge the Contractor and the State agree as follows:

1. Definitions. Unless otherwise indicated, the following terms shall have the following corresponding definitions:
 - (a) Bid: A Bid submitted in response to a Solicitation
 - (b) Claims: All actions, suits, claims, demands, investigations and proceedings of any kind, open, pending or threatened, whether mature, unmatured, contingent, known or unknown, at law or in equity, in any forum.
 - (c) Confidential Information: This shall mean any name, number or other information that may be used, alone or in conjunction with any other information, to identify a specific individual including, but not limited to, such individual's name, date of birth, mother's maiden name, motor vehicle operator's license number, Social Security number, employee identification number, employer or taxpayer identification number, alien registration number, government passport number, health insurance identification number, demand deposit account number, savings account number, credit card number, debit card number or unique biometric data such as fingerprint, voice print, retina or iris image, or other unique physical representation. Without limiting the foregoing, Confidential Information shall also include any information that the Agency classifies as "confidential" or "restricted." Confidential Information shall not include information that may be lawfully obtained from publicly available sources or from federal, state, or local government records which are lawfully made available to the general public.
 - (d) Confidential Information Breach: This shall mean, generally, an instance where an unauthorized person or entity accesses Confidential Information in any manner, including but not limited to the following occurrences: (1) any Confidential Information that is not encrypted or protected is misplaced, lost, stolen or in any way compromised; (2) one or more third parties have had access to or taken control or possession of any Confidential Information that is not encrypted or protected without prior written authorization from the State; (3) the unauthorized acquisition of encrypted or protected Confidential Information together with the confidential process or key that is capable of compromising the integrity of the Confidential Information; or (4) if there is a substantial risk of identity theft or fraud to the Agency, the Contractor, or the State.
 - (e) Contract: The agreement, as of its Effective Date, between the Contractor and the State for any or all Goods or Services at the Bid price.
 - (f) Contractor: A person or entity who submits a Bid and who executes a Contract.
 - (g) Contractor Parties: A Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or

any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.

- (h) Day: All calendar days other than Saturdays, Sundays and days designated as national or State of Connecticut holidays upon which banks in Connecticut are closed.
 - (i) Force Majeure: Events that materially affect the cost of the Goods or Services or the time schedule within which to Perform and are outside the control of the party asserting that such an event has occurred, including, but not limited to, labor troubles unrelated to the Contractor, failure of or inadequate permanent power, unavoidable casualties, fire not caused by the Contractor, extraordinary weather conditions, disasters, riots, acts of God, insurrection or war.
 - (j) Goods: For purposes of the Contract, all things which are movable at the time that the Contract is effective and which include, without limiting this definition, supplies, materials and equipment, as specified in the Solicitation and set forth in Exhibit A.
 - (k) Goods or Services: Goods, Services or both, as specified in the Solicitation and set forth in Exhibit A.
 - (l) Records: All working papers and such other information and materials as may have been accumulated by the Contractor in performing the Contract, including but not limited to, documents, data, plans, books, computations, drawings, specifications, notes, reports, records, estimates, summaries and correspondence, kept or stored in any form.
 - (m) Services: The performance of labor or work, as specified in the Solicitation and set forth in Exhibit A.
 - (n) Solicitation: A State request, in whatever form issued, inviting bids, proposals or quotes for Goods or Services, typified by, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes. The Solicitation and this Contract shall be governed by the statutes, regulations and procedures of the State of Connecticut, Department of Administrative Services, even if the Agency has statutes, regulations and procedures which overlap DAS's. However, to the extent that the Agency has statutes, regulations or procedures which the Agency determines in its sole discretion to be inconsistent with DAS's, the Agency's shall control over those of DAS's. The Solicitation is incorporated into and made a part of the Contract as if it had been fully set forth in it if, but only if, the Solicitation is in the form of an invitation to bid, request for information or request for quotes. A Solicitation in the form of a request for proposals is not incorporated into the Contract in its entirety, but, rather, it is incorporated into the Contract only to the extent specifically stated in Exhibit A.
 - (o) State: The State of Connecticut, including the Agency and any office, department, board, council, commission, institution or other agency of the State.
 - (p) Termination: An end to the Contract prior to the end of its term whether effected pursuant to a right which the Contract creates or for a breach.
 - (q) Title: all ownership, title, licenses, rights and interest, including, but not limited to, perpetual use, of and to the Goods or Services.
2. Contracting Vehicle. The Solicitation may involve an invitation to bid, request for proposals, request for information or request for quotes, each of which may be governed by different statutory, regulatory and administrative procedures. ALTHOUGH THIS CONTRACT MAY USE THE TERMS "SOLICITATION" AND "BID" IT'S USE OF THOSE TERMS IS INTENDED ONLY FOR PURPOSES OF CONVENIENCE AND SHALL NOT BE DEEMED TO BE A CONTROLLING STATEMENT AS TO THE TYPE OF SOLICITATION USED OR THE RESPECTIVE RIGHTS AND OBLIGATIONS OF THE PARTIES. THE IDENTIFICATION IN THE SOLICITATION OF THE PARTICULAR PROCUREMENT VEHICLE THE STATE IS

USING TO SOLICIT GOODS OR SERVICES SHALL CONTROL. Therefore, if the Solicitation identifies the procurement vehicle as something other than an Invitation to Bid, the terms "Solicitation" and "Bid," as used in this Contract shall be read to mean "Request for Proposals," "Proposal" and "Proposer" or to mean such other terms as are consistent with the Solicitation in order to preserve the integrity of the statutory, regulatory and procedural distinctions among the various procurement vehicles and their corresponding principles.

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3. Term of Contract; Effective Date. The Contract will be in effect for five (5) years from the date the Contract is approved by the Attorney General.
4. Description of Goods or Services and Additional Terms and Conditions. The Contractor shall perform as set forth in Exhibit A. For purposes of this Contract, to perform and the performance in Exhibit A is referred to as "Perform" and the "Performance."
5. Price Schedule, Payment Terms and Billing.
 - (a) Payment terms under this Contract are set forth in Exhibit B. Payment shall be made only after the Agency receives and accepts the Goods or Services and after it receives a properly completed invoice. Unless otherwise specified in the Contract, payment for all accepted Goods or Services shall be due within forty-five (45) days after acceptance of the Goods or Services, or thirty (30) days if the Contractor is a certified small contractor or minority business enterprise as defined in Conn. Gen. Stat. § 4a-60g. The Contractor shall submit an invoice to the Agency for the Performance. The invoice shall include detailed information for Goods or Services, delivered and Performed, as applicable, and accepted. Any late payment charges shall be calculated in accordance with the Connecticut General Statutes.
 - (b) Notwithstanding any language regarding Contractor price increases herein, the Price Schedule will be adjusted to reflect any increase in the minimum wage rate that may occur during the term of this Contract as mandated by State law and in accordance with the terms of this section. Contractor shall provide documentation, in the form of certified payroll or other documentation acceptable to the State, substantiating the amount of any increase in Contractor labor costs as a result of changes to the minimum wage rate within ninety (90) days of the statutorily identified effective date of any increase in the minimum wage. Upon receipt, and verification of Contractor documentation DAS shall adjust the Price Schedule accordingly through a supplement to this Contract.
 - (c) Price Adjustments: See Exhibit A; (2.) Additional Terms and Conditions; Section 2.13 - Price Escalation/Economic Price Adjustment.
6. Rejected Items; Abandonment.
 - (a) The Contractor may deliver, cause to be delivered, or, in any other way, bring or cause to be brought, to any State premises or other destination, Goods, as samples or otherwise, and other supplies, materials, equipment or other tangible personal property. The State may, by written notice and in accordance with the terms and conditions of the Contract, direct the Contractor to remove any or all such Goods ("the "Rejected Goods") and any or all other supplies, materials, equipment or other tangible personal property (collectively, the "Contractor Property") from and out of State premises and any other location which the Agency or State manages, leases or controls. The Contractor shall remove the Rejected Goods and the Contractor Property in accordance with the terms and conditions of the written notice. Failure to remove the Rejected Goods or the Contractor Property in accordance with the terms and conditions of the written notice shall mean, for itself and all Contractor Parties, that:
 - (1) they have voluntarily, intentionally, unconditionally, unequivocally and absolutely abandoned and left unclaimed the Rejected Goods and Contractor Property and relinquished all ownership,

USING TO SOLICIT GOODS OR SERVICES SHALL CONTROL. Therefore, if the Solicitation identifies the procurement vehicle as something other than an Invitation to Bid, the terms "Solicitation" and "Bid," as used in this Contract shall be read to mean "Request for Proposals," "Proposal" and "Proposer" or to mean such other terms as are consistent with the Solicitation in order to preserve the integrity of the statutory, regulatory and procedural distinctions among the various procurement vehicles and their corresponding principles.

3. Term of Contract; Effective Date. The Contract will be in effect for five (5) years from the date of execution of this contract.
4. Description of Goods or Services and Additional Terms and Conditions. The Contractor shall perform as set forth in Exhibit A. For purposes of this Contract, to perform and the performance in Exhibit A is referred to as "Perform" and the "Performance."
5. Price Schedule, Payment Terms and Billing.
 - (a) Payment terms under this Contract are set forth in Exhibit B. Payment shall be made only after the Agency receives and accepts the Goods or Services and after it receives a properly completed invoice. Unless otherwise specified in the Contract, payment for all accepted Goods or Services shall be due within forty-five (45) days after acceptance of the Goods or Services, or thirty (30) days if the Contractor is a certified small contractor or minority business enterprise as defined in Conn. Gen. Stat. § 4a-60g. The Contractor shall submit an invoice to the Agency for the Performance. The invoice shall include detailed information for Goods or Services, delivered and Performed, as applicable, and accepted. Any late payment charges shall be calculated in accordance with the Connecticut General Statutes.
 - (b) Notwithstanding any language regarding Contractor price increases herein, the Price Schedule will be adjusted to reflect any increase in the minimum wage rate that may occur during the term of this Contract as mandated by State law and in accordance with the terms of this section. Contractor shall provide documentation, in the form of certified payroll or other documentation acceptable to the State, substantiating the amount of any increase in Contractor labor costs as a result of changes to the minimum wage rate within ninety (90) days of the statutorily identified effective date of any increase in the minimum wage. Upon receipt, and verification of Contractor documentation DAS shall adjust the Price Schedule accordingly through a supplement to this Contract.
 - (c) Price Adjustments: See Exhibit A; (2.) Additional Terms and Conditions; Section 2.13 - Price Escalation/Economic Price Adjustment.
6. Rejected Items; Abandonment.
 - (a) The Contractor may deliver, cause to be delivered, or, in any other way, bring or cause to be brought, to any State premises or other destination, Goods, as samples or otherwise, and other supplies, materials, equipment or other tangible personal property. The State may, by written notice and in accordance with the terms and conditions of the Contract, direct the Contractor to remove any or all such Goods ("the "Rejected Goods") and any or all other supplies, materials, equipment or other tangible personal property (collectively, the "Contractor Property") from and out of State premises and any other location which the Agency or State manages, leases or controls. The Contractor shall remove the Rejected Goods and the Contractor Property in accordance with the terms and conditions of the written notice. Failure to remove the Rejected Goods or the Contractor Property in accordance with the terms and conditions of the written notice shall mean, for itself and all Contractor Parties, that:
 - (1) they have voluntarily, intentionally, unconditionally, unequivocally and absolutely abandoned and left unclaimed the Rejected Goods and Contractor Property and relinquished all ownership,

title, licenses, rights, possession and interest of, in and to (collectively, "Title") the Rejected Goods and Contractor Property with the specific and express intent of (A) terminating all of their Title to the Rejected Goods and Contractor Property, (B) vesting Title to the Rejected Goods and Contractor Property in the State of Connecticut and (C) not ever reclaiming Title or any future rights of any type in and to the Rejected Goods and Contractor Property;

(2) there is no ignorance, inadvertence or unawareness to mitigate against the intent to abandon the Rejected Goods or Contractor Property;

(3) they vest authority, without any further act required on their part or the Agency's part, in the Agency and the State to use or dispose of the Rejected Goods and Contractor Property, in the Agency's sole discretion, as if the Rejected Goods and Contractor Property were the Agency's or State's own property and in accordance with law, without incurring any liability or obligation to the Contractor or any other party;

(4) if the Agency or State incur any costs or expenses in connection with disposing of the Rejected Goods and Contractor Property, including, but not limited to, advertising, moving or storing the Rejected Goods and Contractor Property, auction and other activities, the Agency shall invoice the Contractor for all such cost and expenses and the Contractor shall reimburse the State no later than thirty (30) days after the date of invoice; and

(5) they do remise, release and forever discharge the Agency and all State employees, departments, commissions, boards, bureaus, agencies, instrumentalities or political subdivisions and their respective successors, heirs, executors and assigns (collectively, the "State and Its Agents") of and from all Claims which they and their respective successors or assigns, jointly or severally, ever had, now have or will have against the Agency and the State and Its Agents arising from the use or disposition of the Rejected Goods and Contractor Property.

(b) The Contractor shall secure from each Contractor Party, as appropriate, such document or instrument as necessary or appropriate as will vest in the Contractor plenary authority to bind the Contractor Parties to the full extent necessary or appropriate to give full effect to all of the terms and conditions of this section. The Contractor shall provide, no later than fifteen (15) days after receiving a request from the Agency, such information as the Agency may require to evidence, in the Agency's sole determination, compliance with this section.

7. Order and Delivery. The Contract shall bind the Contractor to furnish and deliver the Goods or Services in accordance with Exhibit A and at the prices set forth in Exhibit B. Subject to the sections in this Contract concerning Force Majeure, Termination and Open Market Purchases, the Contract shall bind the Agency to order the Goods or Services from the Contractor, and to pay for the accepted Goods or Services in accordance with Exhibit B.

8. Contract Amendments. No amendment to or modification or other alteration of the Contract shall be valid or binding upon the State unless made in writing, signed by both parties and, if applicable, approved by the Connecticut Attorney General.

9. Assignment. The Contractor shall not assign any of its rights or obligations under the Contract, voluntarily or otherwise, in any manner without the prior written consent of the Agency. The Agency may void any purported assignment in violation of this section and declare the Contractor in breach of Contract. Any Termination by the Agency for a breach is without prejudice to the Agency's or the State's rights or possible Claims.

10. Termination.

- (a) Notwithstanding any provisions in this Contract, the Agency, through a duly authorized employee, may Terminate the Contract whenever the Agency makes a written determination that such Termination is in the best interests of the State. The Agency shall notify the Contractor in writing of Termination pursuant to this section, which notice shall specify the effective date of Termination and the extent to which the Contractor must complete its Performance under the Contract prior to such date.
- (b) Notwithstanding any provisions in this Contract, the Agency, through a duly authorized employee, may, after making a written determination that the Contractor has breached the Contract, Terminate the Contract in accordance with the provisions in the Breach section of this Contract.
- (c) The Agency shall send the notice of Termination via certified mail, return receipt requested, to the Contractor at the most current address which the Contractor has furnished to the Agency for purposes of correspondence, or by hand delivery. Upon receiving the notice from the Agency, the Contractor shall immediately discontinue all services affected in accordance with the notice, undertake all commercially reasonable efforts to mitigate any losses or damages, and deliver to the Agency all Records. The Records are deemed to be the property of the Agency and the Contractor shall deliver them to the Agency no later than thirty (30) days after the Termination of the Contract or fifteen (15) days after the Contractor receives a written request from the Agency for the Records. The Contractor shall deliver those Records that exist in electronic, magnetic or other intangible form in a non-proprietary format, such as, but not limited to, ASCII or .TXT.
- (d) Upon receipt of a written notice of Termination from the Agency, the Contractor shall cease operations as the Agency directs in the notice, and take all actions that are necessary or appropriate, or that the Agency may reasonably direct, for the protection, and preservation of the Goods and any other property. Except for any work which the Agency directs the Contractor to Perform in the notice prior to the effective date of Termination, and except as otherwise provided in the notice, the Contractor shall terminate or conclude all existing subcontracts and purchase orders and shall not enter into any further subcontracts, purchase orders or commitments.
- (e) The Agency shall, within forty-five (45) days of the effective date of Termination, reimburse the Contractor for its Performance rendered and accepted by the Agency in accordance with Exhibit A, in addition to all actual and reasonable costs incurred after Termination in completing those portions of the Performance which the notice required the Contractor to complete. However, the Contractor is not entitled to receive and the Agency is not obligated to tender to the Contractor any payments for anticipated or lost profits. Upon request by the Agency, the Contractor shall assign to the Agency, or any replacement contractor which the Agency designates, all subcontracts, purchase orders and other commitments, deliver to the Agency all Records and other information pertaining to its Performance, and remove from State premises, whether leased or owned, all of Contractor's property, equipment, waste material and rubbish related to its Performance, all as the Agency may request.
- (f) For breach or violation of any of the provisions in the section concerning Representations and Warranties, the Agency may Terminate the Contract in accordance with its terms and revoke any consents to assignments given as if the assignments had never been requested or consented to, without liability to the Contractor or Contractor Parties or any third party.
- (g) Upon Termination of the Contract, all rights and obligations shall be null and void, so that no party shall have any further rights or obligations to any other party, except with respect to the sections which survive Termination. All representations, warranties, agreements and rights of the parties under the Contract shall survive such Termination to the extent not otherwise limited in the

Contract and without each one of them having to be specifically mentioned in the Contract.

(h) Termination of the Contract pursuant to this section shall not be deemed to be a breach of contract by the Agency.

11. Cost Modifications. The parties may agree to a reduction in the cost of the Contract at any time during which the Contract is in effect. Without intending to impose a limitation on the nature of the reduction, the reduction may be to hourly, staffing or unit costs, the total cost of the Contract or the reduction may take such other form as the State deems to be necessary or appropriate.

12. Breach. If either party breaches the Contract in any respect, the non-breaching party shall provide written notice of such breach to the breaching party and afford the breaching party an opportunity to cure the breach within ten (10) days from the date that the breaching party receives such notice. Any other time provided for in the notice shall trump such ten (10) days. Such right to cure period shall be extended if the non-breaching party is satisfied that the breaching party is making a good faith effort to cure but the nature of the breach is such that it cannot be cured within the right to cure period. The notice may include an effective Contract Termination date if the breach is not cured by the stated date and, unless otherwise modified by the non-breaching party in writing prior to the Termination date, no further action shall be required of any party to effect the Termination as of the stated date. If the notice does not set forth an effective Contract Termination date, then the non-breaching party may Terminate the Contract by giving the breaching party no less than twenty four (24) hours' prior written notice. If the Agency believes that the Contractor has not performed according to the Contract, the Agency may withhold payment in whole or in part pending resolution of the Performance issue, provided that the Agency notifies the Contractor in writing prior to the date that the payment would have been due in accordance with Exhibit B.

13. Waiver.

(a) No waiver of any breach of the Contract shall be interpreted or deemed to be a waiver of any other or subsequent breach. All remedies afforded in the Contract shall be taken and construed as cumulative, that is, in addition to every other remedy provided in the Contract or at law or in equity.

(b) A party's failure to insist on strict performance of any provision of the Contract shall only be deemed to be a waiver of rights and remedies concerning that specific instance of Performance and shall not be deemed to be a waiver of any subsequent rights, remedies or breach.

14. Open Market Purchases. Failure of the Contractor to Perform within the time specified in the Contract, or failure to replace rejected or substandard Goods or fulfill unperformed Services when so requested and as the Contract provides or allows, constitutes a breach of the Contract and as a remedy for such breach, such failure shall constitute authority for the Agency, if it deems it to be necessary or appropriate in its sole discretion, to Terminate the Contract and/or to purchase on the open market, Goods or Services to replace those which have been rejected, not delivered, or not Performed. The Agency shall invoice the Contractor for all such purchases to the extent that they exceed the costs and expenses in Exhibit B and the Contractor shall pay the Agency's invoice immediately after receiving the invoice. If the Agency does not Terminate the Contract, the Agency will deduct such open market purchases from the Contract quantities. However, if the Agency deems it to be in the best interest of the State, the Agency may accept and use the Goods or Services delivered which are substandard in quality, subject to an adjustment in price to be determined by the Agency.

15. Purchase Orders.

- (a) The Contract itself is not an authorization for the Contractor to ship Goods or begin Performance in any way. The Contractor may begin Performance only after it has received a duly issued purchase order against the Contract for Performance.
- (b) The Agency shall issue a purchase order against the Contract directly to the Contractor and to no other party.
- (c) All purchase orders shall be in written or electronic form, bear the Contract number (if any) and comply with all other State and Agency requirements, particularly the Agency's requirements concerning procurement. Purchase orders issued in compliance with such requirements shall be deemed to be duly issued.
- (d) A Contractor making delivery without a duly issued purchase order in accordance with this section does so at the Contractor's own risk.
- (e) The Agency may, in its sole discretion, deliver to the Contractor any or all duly issued purchase orders via electronic means only, such that the Agency shall not have any additional obligation to deliver to the Contractor a "hard copy" of the purchase order or a copy bearing any hand-written signature or other "original" marking.

16. Indemnification.

- (a) The Contractor shall indemnify, defend and hold harmless the State and its officers, representatives, agents, servants, employees, successors and assigns from and against any and all (1) Claims arising, directly or indirectly, in connection with the Contract, including the acts of commission or omission (collectively, the "Acts") of the Contractor or Contractor Parties; and (2) liabilities, damages, losses, costs and expenses, including but not limited to, attorneys' and other professionals' fees, arising, directly or indirectly, in connection with Claims, Acts or the Contract. The Contractor shall use counsel reasonably acceptable to the State in carrying out its obligations under this section. The Contractor's obligations under this section to indemnify, defend and hold harmless against Claims includes Claims concerning confidentiality of any part of or all of the Contractor's bid, proposal or any Records, any intellectual property rights, other proprietary rights of any person or entity, copyrighted or uncopyrighted compositions, secret processes, patented or unpatented inventions, articles or appliances furnished or used in the Performance.
- (b) The Contractor shall not be responsible for indemnifying or holding the State harmless from any liability arising due to the negligence of the State or any other person or entity acting under the direct control or supervision of the State.
- (c) The Contractor shall reimburse the State for any and all damages to the real or personal property of the State caused by the Acts of the Contractor or any Contractor Parties. The State shall give the Contractor reasonable notice of any such Claims.
- (d) The Contractor's duties under this section shall remain fully in effect and binding in accordance with the terms and conditions of the Contract, without being lessened or compromised in any way, even where the Contractor is alleged or is found to have merely contributed in part to the Acts giving rise to the Claims and/or where the State is alleged or is found to have contributed to the Acts giving rise to the Claims.
- (e) The Contractor shall carry and maintain at all times during the term of the Contract, and during the time that any provisions survive the term of the Contract, sufficient general liability insurance to satisfy its obligations under this Contract. The Contractor shall cause the State to be named as an

additional insured on the policy and shall provide (1) a certificate of insurance, (2) the declaration page and (3) the additional insured endorsement to the policy to the Agency prior to the Effective Date of the Contract evidencing that the State is an additional insured. The Contractor shall not begin Performance until the delivery of these 3 documents to the Agency. The Agency shall be entitled to recover under the insurance policy even if a body of competent jurisdiction determines that the Agency or the State is contributorily negligent.

(f) This section shall survive the Termination of the Contract and shall not be limited by reason of any insurance coverage.

17. Forum and Choice of Law. The parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

18. Contractor Guaranties. Contractor shall:

- (a) Perform fully under the Contract;
- (b) Guarantee the Goods or Services against defective material or workmanship and to repair any damage or marring occasioned in transit or, at the Agency's option, replace them;
- (c) Furnish adequate protection from damage for all work and to repair damage of any kind, for which its workers are responsible, to the premises, Goods, the Contractor's work or that of Contractor Parties;
- (d) With respect to the provision of Services, pay for all permits, licenses and fees and give all required or appropriate notices;
- (e) Adhere to all Contractual provisions ensuring the confidentiality of Records that the Contractor has access to and are exempt from disclosure under the State's Freedom of Information Act or other applicable law; and
- (f) Neither disclaim, exclude nor modify the implied warranties of fitness for a particular purpose or of merchantability.

19. Implied Warranties. The Agency does not disclaim, exclude or modify the implied warranty of fitness for a particular purpose or the warranty of merchantability.

20. Goods, Standards and Appurtenances. Any Goods delivered must be standard new Goods, latest model, except as otherwise specifically stated in the Contract. Remanufactured, refurbished or reconditioned equipment may be accepted but only to the extent allowed under the Contract. Where the Contract does not specifically list or describe any parts or nominal appurtenances of equipment for the Goods, it shall be understood that the Contractor shall deliver such equipment and appurtenances as are usually provided with the manufacturer's stock model.

21. Delivery.

- (a) Delivery shall be made as ordered and in accordance with the Contract. Unless otherwise specified in the Contract, delivery shall be to a loading dock or receiving platform. The Contractor or Contractor's shipping designee shall be responsible for removal of Goods from the carrier and placement on the Agency loading dock or receiving platform. The receiving personnel of the Agency are not required to assist in this process. The decision of the Agency as to reasonable compliance with delivery terms shall be final and binding. The burden of proof of proper receipt of the order shall rest with the Contractor.
- (b) In order for the time of delivery to be extended, the Agency must first approve a request for extension from the time specified in the Contract, such extension applying only to the particular item or shipment.
- (c) Goods shall be securely and properly packed for shipment, according to accepted standard commercial practice, without extra charge for packing cases, baling or sacks. The containers shall remain the property of the Agency unless otherwise stated in the Contract.
- (d) All risk of loss and damage to the Goods transfers to the Agency upon Title vesting in the Agency.

22. Goods Inspection. The Agency shall determine the manner and prescribe the inspection of all Goods and the tests of all samples submitted to determine whether they comply with all of the specifications in the Contract. If any Goods fail in any way to meet the specifications in the Contract, the Agency may, in its sole discretion, either reject it and owe nothing or accept it and pay for it on an adjusted price basis, depending on the degree to which the Goods meet the specifications. Any decision pertaining to any such failure or rejection shall be final and binding.

23. Emergency Standby for Goods and/or Services. If any Federal or State official, having authority to do so, declares an emergency or the occurrence of a natural disaster within the State of Connecticut, the Agency may request the Goods and Services on an expedited and prioritized basis. Upon receipt of such a request the Contractor shall make all necessary and appropriate commercially reasonable efforts to reallocate its staffing and other resources in order to give primary preference to Performing this Contract ahead of or prior to fulfilling, in whole or in part, any other contractual obligations that the Contractor may have. The Contractor is not obligated to make those efforts to Perform on an expedited and prioritized basis in accordance with this paragraph if doing so will make the Contractor materially breach any other contractual obligations that the Contractor may have. Contractor shall acknowledge receipt of any request made pursuant to this paragraph within 2 hours from the time that the Contractor receives it via purchase order or through a request to make an expedited or prioritized purchase through the State of Connecticut Purchasing Card (MasterCard) Program (the "P-Card Program"). If the Contractor fails to acknowledge receipt within 2 hours, confirm its obligation to Perform or actually Perform, as set forth in the purchase order or through the P-Card Program, then the Agency may procure the Performance from another source without further notice to Contractor and without creating any right of recourse at law or in equity against the Agency.

24. Setoff. In addition to all other remedies available hereunder, the State, in its sole discretion, may setoff (1) any costs or expenses that the State incurs resulting from the Contractor's unexcused nonperformance under the Contract and under any other agreement or arrangement that the Contractor has with the State and (2) any other amounts that are due or may become due from the State to the Contractor, against amounts otherwise due or that may become due to the Contractor under the Contract, or under any other agreement or arrangement that the Contractor has with the State. The State's right of setoff shall not be deemed to be the State's exclusive remedy for the Contractor's or Contractor Parties' breach of the Contract, all of which shall survive any setoffs by the State.

25. Force Majeure. The Agency and the Contractor shall not be excused from their obligation to Perform in accordance with the Contract except in the case of Force Majeure events and as otherwise provided for in the Contract. In the case of any such exception, the nonperforming party shall give immediate written notice to the other, explaining the cause and probable duration of any such nonperformance.
26. Advertising. The Contractor shall not refer to sales to the State for advertising or promotional purposes, including, but not limited to, posting any material or data on the Internet, without the Agency's prior written approval.
27. Americans With Disabilities Act. The Contractor shall be and remain in compliance with the Americans with Disabilities Act of 1990 ("Act"), to the extent applicable, during the term of the Contract. The Agency may Terminate the Contract if the Contractor fails to comply with the Act.
28. Representations and Warranties. The Contractor, represents and warrants to Agency for itself and Contractor Parties, that:
- (a) if they are entities, they are duly and validly existing under the laws of their respective states of organization and authorized to conduct business in the State of Connecticut in the manner contemplated by the Contract. Further, as appropriate, they have taken all necessary action to authorize the execution, delivery and Performance of the Contract and have the power and authority to execute, deliver and Perform their obligations under the Contract;
 - (b) they will comply with all applicable State and Federal laws and municipal ordinances in satisfying their obligations to the Agency under and pursuant to the Contract, including, but not limited to (1) Connecticut General Statutes Title 1, Chapter 10, concerning the State's Codes of Ethics and (2) Title 4a concerning State purchasing, including, but not limited to Section 22a-194a concerning the use of polystyrene foam;
 - (c) the execution, delivery and Performance of the Contract will not violate, be in conflict with, result in a breach of or constitute (with or without due notice and/or lapse of time) a default under any of the following, as applicable: (1) any provision of law; (2) any order of any court or the State; or (3) any indenture, agreement, document or other instrument to which it is a party or by which it may be bound;
 - (d) they are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any governmental entity;
 - (e) as applicable, they have not, within the three years preceding the Contract, in any of their current or former jobs, been convicted of, or had a civil judgment rendered against them or against any person who would Perform under the Contract, for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a transaction or contract with any governmental entity. This includes, but is not limited to, violation of Federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (f) they are not presently indicted for or otherwise criminally or civilly charged by any governmental entity with commission of any of the offenses listed above;
 - (g) they have not within the three years preceding the Contract had one or more contracts with any governmental entity Terminated;

- (h) they have not employed or retained any entity or person, other than a bona fide employee working solely for them, to solicit or secure the Contract and that they have not paid or agreed to pay any entity or person, other than a bona fide employee working solely for them, any fee, commission, percentage, brokerage fee, gifts, or any other consideration contingent upon or resulting from the award or making of the Contract or any assignments made in accordance with the terms of the Contract;
- (i) to the best of their knowledge, there are no Claims involving the Contractor or Contractor Parties that might reasonably be expected to materially adversely affect their businesses, operations, assets, properties, financial stability, business prospects or ability to Perform fully under the Contract;
- (j) they shall disclose, to the best of their knowledge, to the Agency in writing any Claims involving them that might reasonably be expected to materially adversely affect their businesses, operations, assets, properties, financial stability, business prospects or ability to Perform fully under the Contract, no later than ten (10) Days after becoming aware or after they should have become aware of any such Claims. For purposes of the Contractor's obligation to disclose any Claims to the Agency, the ten (10) Days in the section of this Contract concerning Disclosure of Contractor Parties Litigation shall run consecutively with the ten (10) Days provided for in this representation and warranty;
- (k) their participation in the Solicitation process is not a conflict of interest or a breach of ethics under the provisions of Title 1, Chapter 10 of the Connecticut General Statutes concerning the State's Code of Ethics;
- (l) the Bid was not made in connection or concert with any other person or entity, including any affiliate (as defined in the Tangible Personal Property section of this Contract) of the Contractor, submitting a bid for the same Goods or Services, and is in all respects fair and without collusion or fraud;
- (m) they are able to Perform under the Contract using their own resources or the resources of a party who is not a Contractor;
- (n) the Contractor shall obtain in a written contract all of the representations and warranties in this section from any Contractor Parties and to require that provision to be included in any contracts and purchase orders with Contractor Parties;
- (o) they have paid all applicable workers' compensation second injury fund assessments concerning all previous work done in Connecticut;
- (p) they have a record of compliance with Occupational Health and Safety Administration regulations without any unabated, willful or serious violations;
- (q) they owe no unemployment compensation contributions;
- (r) they are not delinquent in the payment of any taxes owed, or, that they have filed a sales tax security bond, and they have, if and as applicable, filed for motor carrier road tax stickers and have paid all outstanding road taxes;
- (s) all of their vehicles have current registrations and, unless such vehicles are no longer in service, they shall not allow any such registrations to lapse;
- (t) each Contractor Party has vested in the Contractor plenary authority to bind the Contractor Parties to the full extent necessary or appropriate to ensure full compliance with and Performance in

accordance with all of the terms and conditions of the Contract and that all appropriate parties shall also provide, no later than fifteen (15) days after receiving a request from the Agency, such information as the Agency may require to evidence, in the Agency's sole determination, compliance with this section;

- (u) except to the extent modified or abrogated in the Contract, all Title shall pass to the Agency upon complete installation, testing and acceptance of the Goods or Services and payment by the Agency;
- (v) if either party Terminates the Contract, for any reason, they shall relinquish to the Agency all Title to the Goods delivered, accepted and paid for (except to the extent any invoiced amount is disputed) by the Agency;
- (w) with regard to third party products provided with the Goods, they shall transfer all licenses which they are permitted to transfer in accordance with the applicable third party license;
- (x) they shall not copyright, register, distribute or claim any rights in or to the Goods after the Effective Date of the Contract without the Agency's prior written consent;
- (y) they either own or have the authority to use all Title of and to the Goods, and that such Title is not the subject of any encumbrances, liens or claims of ownership by any third party;
- (z) the Goods do not infringe or misappropriate any patent, trade secret or other intellectual property right of a third party;
- (aa) the Agency's use of any Goods shall not infringe or misappropriate any patent, trade secret or other intellectual property right of a third party;
- (bb) if they procure any Goods, they shall sub-license such Goods and that the Agency shall be afforded the full benefits of any manufacturer or subcontractor licenses for the use of the Goods; and
- (cc) they shall assign or otherwise transfer to the Agency, or afford the Agency the full benefits of any manufacturer's warranty for the Goods, to the extent that such warranties are assignable or otherwise transferable to the Agency.

29. Representations and Warranties Concerning Motor Vehicles. If in the course of Performance or in any other way related to the Contract the Contractor at any time uses or operates "motor vehicles," as that term is defined by Conn. Gen. Stat. §14-1 (including, but not limited to such services as snow plowing, sanding, hauling or delivery of materials, freight or merchandise, or the transportation of passengers), the Contractor, represents and warrants for itself and the Contractor Parties, that:

- (a) It is the owner of record or lessee of record of each such motor vehicle used in the Performance of the Contract, and each such motor vehicle is duly registered with the Connecticut Department of Motor Vehicles ("ConnDMV") in accordance with the provisions of Chapter 246 of the Connecticut General Statutes. Each such registration shall be in valid status, and shall not be expired, suspended or revoked by ConnDMV, for any reason or cause. If such motor vehicle is not registered with ConnDMV, then it shall be duly registered with another state or commonwealth in accordance with such other state's or commonwealth's applicable statutes. Each such registration shall be in valid status, and shall not be expired, suspended or revoked by such other state or commonwealth for any reason or cause.
- (b) Each such motor vehicle shall be fully insured in accordance with the provisions of Sections 14-12b, 14-112 and 38a-371 of the Connecticut General Statutes, as amended, in the amounts required by the said sections or in such higher amounts as have been specified by ConnDMV as a condition for

the award of the Contract, or in accordance with all substantially similar provisions imposed by the law of the jurisdiction where the motor vehicle is registered.

- (c) Each Contractor Party who uses or operates a motor vehicle at any time in the Performance of the Contract shall have and maintain a motor vehicle operator's license or commercial driver's license of the appropriate class for the motor vehicle being used or operated. Each such license shall bear the endorsement or endorsements required by the provisions of Section 14-36a of the Connecticut General Statutes, as amended, to operate such motor vehicle, or required by substantially similar provisions imposed by the law of another jurisdiction in which the operator is licensed to operate such motor vehicle. The license shall be in valid status, and shall not be expired, suspended or revoked by ConnDMV or such other jurisdiction for any reason or cause.
 - (d) Each motor vehicle shall be in full compliance with all of the terms and conditions of all provisions of the Connecticut General Statutes and regulations, or those of the jurisdiction where the motor vehicle is registered, pertaining to the mechanical condition, equipment, marking and operation of motor vehicles of such type, class and weight, including, but not limited to, requirements for motor vehicles having a gross vehicle weight rating of 18,000 pounds or more or motor vehicles otherwise described by the provisions of Conn. Gen. Stat. § 14-163c(a) and all applicable provisions of the Federal Motor Carrier Safety Regulations, as set forth in Title 49, Parts 382 to 399, inclusive, of the Code of Federal Regulations.
30. Disclosure of Contractor Parties Litigation. The Contractor shall require that all Contractor Parties, as appropriate, disclose to the Contractor, to the best of their knowledge, any Claims involving the Contractor Parties that might reasonably be expected to materially adversely affect their businesses, operations, assets, properties, financial stability, business prospects or ability to Perform fully under the Contract, no later than ten (10) Days after becoming aware or after they should have become aware of any such Claims. Disclosure shall be in writing.
31. Entirety of Contract. The Contract is the entire agreement between the parties with respect to its subject matter, and supersedes all prior agreements, proposals, offers, counteroffers and understandings of the parties, whether written or oral. The Contract has been entered into after full investigation, neither party relying upon any statement or representation by the other unless such statement or representation is specifically embodied in the Contract.
32. Exhibits. All exhibits referred to in and attached to this Contract are incorporated in this Contract by such reference and shall be deemed to be a part of it as if they had been fully set forth in it.
33. Executive Orders. This Contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the Contract as if they had been fully set forth in it. The Contract may also be subject to Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services and to Executive Order No. 49 of Governor Dannel P. Malloy, promulgated May 22, 2015, mandating disclosure of certain gifts to public employees and contributions to certain candidates for office. If Executive Order 14 and/or Executive Order 49 are applicable, they are deemed to be incorporated into and are made a part of the Contract as if they had been fully set forth in it. At the Contractor's request, the Client Agency or DAS shall provide a copy of these orders to the Contractor.
34. Non-discrimination.

- (a) For purposes of this Section, the following terms are defined as follows:

- (1) "Commission" means the Commission on Human Rights and Opportunities;
- (2) "Contract" and "contract" include any extension or modification of the Contract or contract;
- (3) "Contractor" and "contractor" include any successors or assigns of the Contractor or contractor;
- (4) "Gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender-related identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose.
- (5) "good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;
- (6) "good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements;
- (7) "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced;
- (8) "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders;
- (9) "minority business enterprise" means any small contractor or supplier of materials fifty-one percent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of Connecticut General Statutes § 32-9n; and
- (10) "public works contract" means any agreement between any individual, firm or corporation and the State or any political subdivision of the State other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the State, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.

For purposes of this Section, the terms "Contract" and "contract" do not include a contract where each contractor is (1) a political subdivision of the state, including, but not limited to, a municipality, (2) a quasi-public agency, as defined in Conn. Gen. Stat. Section 1-120, (3) any other state, including but not limited to any federally recognized Indian tribal governments, as defined in Conn. Gen. Stat. Section 1-

267, (4) the federal government, (5) a foreign government, or (6) an agency of a subdivision, agency, state or government described in the immediately preceding enumerated items (1), (2), (3), (4) or (5).

(b)

(1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut; and the Contractor further agrees to take affirmative action to insure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by the Contractor that such disability prevents performance of the work involved; (2) the Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission; (3) the Contractor agrees to provide each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which the Contractor has a contract or understanding, a notice to be provided by the Commission, advising the labor union or workers' representative of the Contractor's commitments under this section and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the Contractor agrees to comply with each provision of this Section and Connecticut General Statutes §§ 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes §§ 46a-56, 46a-68e and 46a-68f; and (5) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor as relate to the provisions of this Section and Connecticut General Statutes § 46a-56. If the contract is a public works contract, the Contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works projects.

(c) Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: The Contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.

(d) The Contractor shall develop and maintain adequate documentation, in a manner prescribed by the Commission, of its good faith efforts.

(e) The Contractor shall include the provisions of subsection (b) of this Section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General

Statutes §46a-56; provided if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

(f) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this Contract and as they may be adopted or amended from time to time during the term of this Contract and any amendments thereto.

(g)

(1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the Contractor agrees to provide each labor union or representative of workers with which such Contractor has a collective bargaining agreement or other contract or understanding and each vendor with which such Contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the Contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) the Contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes § 46a-56; and (4) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor which relate to the provisions of this Section and Connecticut General Statutes § 46a-56.

(h) The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes § 46a-56; provided, if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

35. Tangible Personal Property.

(a) The Contractor on its behalf and on behalf of its Affiliates, as defined below, shall comply with the provisions of Conn. Gen. Stat. §12-411b, as follows:

(1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;

- (2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;
 - (3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;
 - (4) The Contractor and its Affiliates are not liable for use tax billed by them but not paid to them by a customer; and
 - (5) Any Contractor or Affiliate who fails to remit use taxes collected on behalf of its customers by the due date specified in the Contract shall be subject to the interest and penalties provided for persons required to collect sales tax under chapter 219 of the general statutes.
- (b) For purposes of this section of the Contract, the word "Affiliate" means any person, as defined in section 12-1 of the general statutes, that controls, is controlled by, or is under common control with another person. A person controls another person if the person owns, directly or indirectly, more than ten per cent of the voting securities of the other person. The word "voting security" means a security that confers upon the holder the right to vote for the election of members of the board of directors or similar governing body of the business, or that is convertible into, or entitles the holder to receive, upon its exercise, a security that confers such a right to vote. "Voting security" includes a general partnership interest.
- (c) The Contractor represents and warrants that each of its Affiliates has vested in the Contractor plenary authority to so bind the Affiliates in any agreement with the State of Connecticut. The Contractor on its own behalf and on behalf of its Affiliates shall also provide, no later than 30 days after receiving a request by the State's contracting authority, such information as the State may require to ensure, in the State's sole determination, compliance with the provisions of Chapter 219 of the Connecticut General Statutes, including, but not limited to, §12-411b.
36. Whistleblowing. This Contract may be subject to the provisions of Section 4-61dd of the Connecticut General Statutes. In accordance with this statute, if an officer, employee or appointing authority of the Contractor takes or threatens to take any personnel action against any employee of the Contractor in retaliation for such employee's disclosure of information to any employee of the contracting state or quasi-public agency or the Auditors of Public Accounts or the Attorney General under the provisions of subsection (a) of such statute, the Contractor shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of this Contract. Each violation shall be a separate and distinct offense and in the case of a continuing violation, each calendar day's continuance of the violation shall be deemed to be a separate and distinct offense. The State may request that the Attorney General bring a civil action in the Superior Court for the Judicial District of Hartford to seek imposition and recovery of such civil penalty. In accordance with subsection (f) of such statute, each large state contractor, as defined in the statute, shall post a notice of the provisions of the statute relating to large state contractors in a conspicuous place which is readily available for viewing by the employees of the Contractor.
37. Notice. All notices, demands, requests, consents, approvals or other communications required or permitted to be given or which are given with respect to this Contract (for the purpose of this section collectively called "Notices") shall be deemed to have been effected at such time as the notice is placed in the U.S. mail, first class and postage pre-paid, return receipt requested or placed with a recognized, overnight express delivery service that provides for a return receipt. All such Notices shall be in writing and shall be addressed as follows:

If to the Agency:

State of Connecticut Department of Transportation

ADDRESS 2800 Berlin Turnpike

Newington, CT 06131-7546

Attention: Mary Matuszak

If to the Contractor:

NAME NEW FLYER OF AMERICA INC.

ADDRESS 711 KERNAGHAN AVENUE

WINNIPEG, MANITOBA CANADA R2C 3T4

Attention: BOYD HOLDINGS

38. Insurance. Before commencing Performance, the Contractor shall obtain and maintain at its own cost and expense for the duration of the Contract, the following insurance as described in (a) through (d) below. Contractor shall assume any and all deductibles in the described insurance policies. The Contractor's insurers shall have no right of recovery or subrogation against the State and the described Contractor's insurance shall be primary coverage. Any failure to comply with the claim reporting provisions of the policy shall not affect coverage provided to the State.
- (a) Commercial General Liability: \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. Coverage shall include, Premises and Operations, Independent Contractors, Products and Completed Operations, Contractual Liability and Broad Form Property Damage coverage. If a general aggregate is used, the general aggregate limit shall apply separately to the project or the general aggregate limit shall be twice the occurrence limit.
- (b) Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury. Coverage extends to owned, hired and non-owned automobiles. If the vendor/contractor does not own an automobile, but one is used in the execution of the contract, then only hired and non-owned coverage is required. If a vehicle is not used in the execution of the contract then automobile coverage is not required.
- (c) Workers' Compensation and Employers Liability: Statutory coverage in compliance with the Compensation laws of the State of Connecticut. Coverage shall include Employer's Liability with minimum limits of \$100,000 each accident, \$500,000 Disease – Policy limit, \$100,000 each employee.

39. Headings. The headings given to the sections in the Contract are inserted only for convenience and are in no way to be construed as part of the Contract or as a limitation of the scope of the particular section to which the heading refers.
40. Number and Gender. Whenever the context so requires, the plural or singular shall include each other and the use of any gender shall include all genders.
41. Parties. To the extent that any Contractor Party is to participate or Perform in any way, directly or indirectly in connection with the Contract, any reference in the Contract to "Contractor" shall also be deemed to include "Contractor Parties," as if such reference had originally specifically included "Contractor Parties" since it is the parties' intent for the terms "Contractor Parties" to be vested with the same respective rights and obligations as the term "Contractor."
42. Contractor Changes. The Contractor shall notify the Agency in writing no later than ten (10) Days from the effective date of any change in:
- (a) its certificate of incorporation or other organizational document;
 - (b) more than a controlling interest in the ownership of the Contractor; or
 - (c) the individual(s) in charge of the Performance.

This change shall not relieve the Contractor of any responsibility for the accuracy and completeness of the Performance. The Agency, after receiving written notice by the Contractor of any such change, may require such agreements, releases and other instruments evidencing, to the Agency's satisfaction, that any individuals retiring or otherwise separating from the Contractor have been compensated in full or that provision has been made for compensation in full, for all work performed under terms of the Contract. The Contractor shall deliver such documents to the Agency in accordance with the terms of the Agency's written request. The Agency may also require, and the Contractor shall deliver, a financial statement showing that solvency of the Contractor is maintained. The death of any Contractor Party, as applicable, shall not release the Contractor from the obligation to Perform under the Contract; the surviving Contractor Parties, as appropriate, must continue to Perform under the Contract until Performance is fully completed.

43. Further Assurances. The parties shall provide such information, execute and deliver any instruments and documents and take such other actions as may be necessary or reasonably requested by the other party which are not inconsistent with the provisions of this Contract and which do not involve the vesting of rights or assumption of obligations other than those provided for in the Contract, in order to give full effect to the Contract and to carry out the intent of the Contract.
44. Audit and Inspection of Plants, Places of Business and Records.
- (a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract.
 - (b) The Contractor shall maintain, and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.

- (c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.
 - (d) All audits and inspections shall be at the State's expense.
 - (e) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Contract, or (ii) the expiration or earlier termination of this Contract, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.
 - (f) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct and the Contractor shall cooperate with an exit conference.
 - (g) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.
45. Background Checks. The State may require that the Contractor and Contractor Parties undergo criminal background checks as provided for in the State of Connecticut Department of Emergency Services and Public Protection Administration and Operations Manual or such other State document as governs procedures for background checks. The Contractor and Contractor Parties shall cooperate fully as necessary or reasonably requested with the State and its agents in connection with such background checks.
46. Continued Performance. The Contractor and Contractor Parties shall continue to Perform their obligations under the Contract while any dispute concerning the Contract is being resolved.
47. Working and Labor Synergies. The Contractor shall be responsible for maintaining a tranquil working relationship between the Contractor work force, the Contractor Parties and their work force, State employees, and any other contractors present at the work site. The Contractor shall quickly resolve all labor disputes which result from the Contractor's or Contractor Parties' presence at the work site, or other action under their control. Labor disputes shall not be deemed to be sufficient cause to allow the Contractor to make any claim for additional compensation for cost, expenses or any other loss or damage, nor shall those disputes be deemed to be sufficient reason to relieve the Contractor from any of its obligations under the Contract.
48. Contractor Responsibility.
- (a) The Contractor shall be responsible for the entire Performance under the Contract regardless of whether the Contractor itself performs. The Contractor shall be the sole point of contact concerning the management of the Contract, including Performance and payment issues. The Contractor is solely and completely responsible for adherence by the Contractor Parties to all applicable provisions of the Contract.
 - (b) The Contractor shall exercise all reasonable care to avoid damage to the State's property or to property being made ready for the State's use, and to all property adjacent to any work site. The Contractor shall promptly report any damage, regardless of cause, to the State.
49. Severability. If any term or provision of the Contract or its application to any person, entity or circumstance shall, to any extent, be held to be invalid or unenforceable, the remainder of the

Contract or the application of such term or provision shall not be affected as to persons, entities or circumstances other than those as to whom or to which it is held to be invalid or unenforceable. Each remaining term and provision of the Contract shall be valid and enforced to the fullest extent possible by law.

50. Confidential Information. The Agency will afford due regard to the Contractor's request for the protection of proprietary or confidential information which the Agency receives. However, all materials associated with the Bid and the Contract are subject to the terms of the Connecticut Freedom of Information Act ("FOIA") and all corresponding rules, regulations and interpretations. In making such a request, the Contractor may not merely state generally that the materials are proprietary or confidential in nature and not, therefore, subject to release to third parties. Those particular sentences, paragraphs, pages or sections that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Convincing explanation and rationale sufficient to justify each exemption consistent with the FOIA must accompany the request. The rationale and explanation must be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. To the extent that any other provision or part of the Contract, especially including the Bid, the Records and the specifications, conflicts or is in any way inconsistent with this section, this section controls and shall apply and the conflicting provision or part shall not be given effect. If the Contractor indicates that certain documentation is submitted in confidence, by specifically and clearly marking said documentation as "CONFIDENTIAL," the Agency will endeavor to keep said information confidential to the extent permitted by law. The Agency, however, has no obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief to prevent disclosure of any information that is sought pursuant to a FOIA request. The Contractor shall have the burden of establishing the availability of any FOIA exemption in any proceeding where it is an issue. In no event shall the Agency or the State have any liability for the disclosure of any documents or information in its possession which the Agency believes are required to be disclosed pursuant to the FOIA or other requirements of law.

51. References to Statutes, Public Acts, Regulations, Codes and Executive Orders.

All references in this Contract to any statute, public act, regulation, code or executive order shall mean such statute, public act, regulation, code or executive order, respectively, as it has been amended, replaced or superseded at any time. Notwithstanding any language in this Contract that relates to such statute, public act, regulation, code or executive order, and notwithstanding a lack of a formal amendment to this Contract, this Contract shall always be read and interpreted as if it contained the most current and applicable wording and requirements of such statute, public act, regulation, code or executive order as if their most current language had been used in and requirements incorporated into this Contract at the time of its execution.

52. Cross-Default.

- (a) If the Contractor or Contractor Parties breach, default or in any way fail to Perform satisfactorily under the Contract, then the Agency may, in its sole discretion, without more and without any action whatsoever required of the Agency, treat any such event as a breach, default or failure to perform under any or all other agreements or arrangements ("Other Agreements") that the Contractor or Contractor Parties have with the Agency. Accordingly, the Agency may then exercise at its sole option any and all of its rights or remedies provided for in the Contract or Other Agreements, either selectively or collectively and without such election being deemed to prejudice any rights or remedies of the Agency, as if the Contractor or Contractor Parties had suffered a breach, default or failure to perform under the Other Agreements.

- (b) If the Contractor or Contractor Parties breach, default or in any way fail to Perform satisfactorily under any or all Other Agreements with the Agency or the State, then the Agency may, in its sole discretion, without more and without any action whatsoever required of the Agency, treat any such event as a breach, default or failure to Perform under the Contract. Accordingly, the Agency may then exercise at its sole option any and all of its rights or remedies provided for in the Other Agreements or the Contract, either selectively or collectively and without such election being deemed to prejudice any rights or remedies of the Agency or the State, as if the Contractor or Contractor Parties had suffered a breach, default or failure to Perform under the Contract.
53. Disclosure of Records. This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related to the performance of the governmental function, and (b) indicate that such records and files are subject to FOIA and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of sections 1-205 and 1-206 of the Connecticut General Statutes.
54. Summary of State Ethics Laws. Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes, the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes is incorporated by reference into and made a part of the Contract as if the summary had been fully set forth in the Contract.
55. Sovereign Immunity. The parties acknowledge and agree that nothing in the Solicitation or the Contract shall be construed as a modification, compromise or waiver by the State of any rights or defenses of any immunities provided by Federal law or the laws of the State of Connecticut to the State or any of its officers and employees, which they may have had, now have or will have with respect to all matters arising out of the Contract. To the extent that this section conflicts with any other section, this section shall govern.
56. Time of the Essence. Time is of the essence with respect to all provisions of this Contract that specify a time for performance; provided, however, that this provision shall not be construed to limit or deprive a party of the benefits of any grace or use period allowed in this Contract.
57. Certification as Small Contractor or Minority Business Enterprise. The Contractor shall be in breach of this Contract if the Contractor is certified as a "small contractor" or a "minority business enterprise" under Conn. Gen. Stat. § 4a-60g and that certification lapses during the term of this Contract.
58. Campaign Contribution Restriction. For all State contracts as defined in Conn. Gen. Stat. § 9-612(g)(1) having a value in a calendar year of \$50,000 or more or a combination or series of such agreements or contracts having a value of \$100,000 or more, the authorized signatory to this Contract expressly acknowledges receipt of the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice, as set forth in "Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations," attached as Exhibit C.
59. Health Insurance Portability and Accountability Act.
- (a) If the Contactor is a Business Associate under the requirements of the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), the Contractor must comply with all terms and conditions

of this Section of the Contract. If the Contractor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contractor for this Contract.

- (b) The Contractor is required to safeguard the use, publication and disclosure of information on all applicants for, and all clients who receive, services under the Contract in accordance with all applicable federal and state law regarding confidentiality, which includes but is not limited to HIPAA, more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E; and
- (c) The Agency is a "covered entity" as that term is defined in 45 C.F.R. § 160.103; and
- (d) The Contractor, on behalf of the Agency, performs functions that involve the use or disclosure of "individually identifiable health information," as that term is defined in 45 C.F.R. § 160.103; and
- (e) The Contractor is a "business associate" of the Department, as that term is defined in 45 C.F.R. § 160.103; and
- (f) The Contractor and the Agency agree to the following in order to secure compliance with the HIPAA, the requirements of Subtitle D of the Health Information Technology for Economic and Clinical Health Act (the HITECH Act), (Pub. L. 111-5, sections 13400 to 13423), and more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E.
- (g) Definitions. For the purposes of this Section of the Contract:
 - (1) "Breach" shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(1)).
 - (2) "Business Associate" shall mean the Contractor or Contractor Parties.
 - (3) "Covered Entity" shall mean the Agency.
 - (4) "Designated Record Set" shall have the same meaning as the term "designated record set" in 45 C.F.R. § 164.501.
 - (5) "Electronic Health Record" shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(5)).
 - (6) "Individual" shall have the same meaning as the term "individual" in 45 C.F.R. § 160.103 and shall include a person who qualifies as a personal representative as defined in 45 C.F.R. § 164.502(g).
 - (7) "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 C.F.R. part 160 and part 164, subparts A and E.
 - (8) "Protected Health Information" or "PHI" shall have the same meaning as the term "protected health information" in 45 C.F.R. § 160.103, limited to information created or received by the Business Associate from or on behalf of the Covered Entity.
 - (9) "Required by Law" shall have the same meaning as the term "required by law" in 45 C.F.R. § 164.103.
 - (10) "Secretary" shall mean the Secretary of the Department of Health and Human Services or his designee.

(11) "More stringent" shall have the same meaning as the term "more stringent" in 45 C.F.R. § 160.202.

(12) "This Section of the Contract" refers to the HIPAA Provisions stated herein, in their entirety.

(13) "Security Incident" shall have the same meaning as the term "security incident" in 45 C.F.R. § 164.304.

(14) "Security Rule" shall mean the Security Standards for the Protection of Electronic Protected Health Information at 45 C.F.R. part 160 and part 164, subpart A and C.

(15) "Unsecured protected health information" shall have the same meaning as the term as defined in § 13402(h)(1)(A) of HITECH. Act. (42 U.S.C. §17932(h)(1)(A)).

(h) Obligations and Activities of Business Associates.

- (1) Business Associate agrees not to use or disclose PHI other than as permitted or required by this Section of the Contract or as Required by Law.
- (2) Business Associate agrees to use appropriate safeguards to prevent use or disclosure of PHI other than as provided for in this Section of the Contract.
- (3) Business Associate agrees to use administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of electronic protected health information that it creates, receives, maintains, or transmits on behalf of the Covered Entity.
- (4) Business Associate agrees to mitigate, to the extent practicable, any harmful effect that is known to the Business Associate of a use or disclosure of PHI by Business Associate in violation of this Section of the Contract.
- (5) Business Associate agrees to report to Covered Entity any use or disclosure of PHI not provided for by this Section of the Contract or any security incident of which it becomes aware.
- (6) Business Associate agrees to insure that any agent, including a subcontractor, to whom it provides PHI received from, or created or received by Business Associate, on behalf of the Covered Entity, agrees to the same restrictions and conditions that apply through this Section of the Contract to Business Associate with respect to such information.
- (7) Business Associate agrees to provide access, at the request of the Covered Entity, and in the time and manner agreed to by the parties, to PHI in a Designated Record Set, to Covered Entity or, as directed by Covered Entity, to an Individual in order to meet the requirements under 45 C.F.R. § 164.524.
- (8) Business Associate agrees to make any amendments to PHI in a Designated Record Set that the Covered Entity directs or agrees to pursuant to 45 C.F.R. § 164.526 at the request of the Covered Entity, and in the time and manner agreed to by the parties.
- (9) Business Associate agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created or received by, Business Associate on behalf of Covered Entity, available to Covered Entity or to the Secretary in a time and manner agreed to by the parties or designated by the Secretary, for purposes of the Secretary determining Covered Entity's compliance with the Privacy Rule.

- (10) Business Associate agrees to document such disclosures of PHI and information related to such disclosures as would be required for Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (11) Business Associate agrees to provide to Covered Entity, in a time and manner agreed to by the parties, information collected in accordance with clause h. (10) of this Section of the Contract, to permit Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder. Business Associate agrees that at the Covered Entity's direction to provide an accounting of disclosures of PHI directly to an individual in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.
- (12) Business Associate agrees to comply with any state or federal law that is more stringent than the Privacy Rule.
- (13) Business Associate agrees to comply with the requirements of the HITECH Act relating to privacy and security that are applicable to the Covered Entity and with the requirements of 45 C.F.R. sections 164.504(e), 164.308, 164.310, 164.312, and 164.316.
- (14) In the event that an individual requests that the Business Associate (a) restrict disclosures of PHI; (b) provide an accounting of disclosures of the individual's PHI; or (c) provide a copy of the individual's PHI in an electronic health record, the Business Associate agrees to notify the covered entity, in writing, within two business days of the request.
- (15) Business Associate agrees that it shall not directly or indirectly receive any remuneration in exchange for PHI of an individual without (1) the written approval of the covered entity, unless receipt of remuneration in exchange for PHI is expressly authorized by this Contract and (2) the valid authorization of the individual, except for the purposes provided under section 13405(d)(2) of the HITECH Act, (42 U.S.C. § 17935(d)(2)) and in any accompanying regulations
- (16) Obligations in the Event of a Breach
- (A) The Business Associate agrees that, following the discovery of a breach of unsecured protected health information, it shall notify the Covered Entity of such breach in accordance with the requirements of section 13402 of HITECH (42 U.S.C. § 17932(b)) and the provisions of this section of the contract.
- (B) Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the breach is discovered by the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to section 13402 (g) of HITECH (42 U.S.C. § 17932(g)). A breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate. The notification shall include the identification and last known address, phone number and email address of each individual (or the next of kin of the individual if the individual is deceased) whose unsecured protected health information has been, or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such breach.

- (C) The Business Associate agrees to include in the notification to the Covered Entity at least the following information:
1. A brief description of what happened, including the date of the breach and the date of the discovery of the breach, if known.
 2. A description of the types of unsecured protected health information that were involved in the breach (such as full name, Social Security number, date of birth, home address, account number, or disability code).
 3. The steps the Business Associate recommends that individuals take to protect themselves from potential harm resulting from the breach.
 4. A detailed description of what the Business Associate is doing to investigate the breach, to mitigate losses, and to protect against any further breaches.
 5. Whether a law enforcement official has advised either verbally or in writing the Business Associate that he or she has determined that notification or notice to individuals or the posting required under section 13402 of the HITECH Act would impede a criminal investigation or cause damage to national security and contact information for said official.
- (D) Business Associate agrees to provide appropriate staffing and have established procedures to ensure that individuals informed by the Covered Entity of a breach by the Business Associate have the opportunity to ask questions and contact the Business Associate for additional information regarding the breach. Such procedures shall include a toll-free telephone number, an e-mail address, a posting on its Web site and a postal address. Business Associate agrees to include in the notification of a breach by the Business Associate to the Covered Entity, a written description of the procedures that have been established to meet these requirements. Costs of such contact procedures will be borne by the Contractor or Contractor Parties.
- (E) Business Associate agrees that, in the event of a breach, it has the burden to demonstrate that it has complied with all notifications requirements set forth above, including evidence demonstrating the necessity of a delay in notification to the Covered Entity.

(i) Permitted Uses and Disclosure by Business Associate.

(1) General Use and Disclosure Provisions Except as otherwise limited in this Section of the Contract, Business Associate may use or disclose PHI to perform functions, activities, or services for, or on behalf of, Covered Entity as specified in this Contract, provided that such use or disclosure would not violate the Privacy Rule if done by Covered Entity or the minimum necessary policies and procedures of the Covered Entity.

(2) Specific Use and Disclosure Provisions.

- (A) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI for the proper management and administration of Business Associate or to carry out the legal responsibilities of Business Associate.
- (B) Except as otherwise limited in this Section of the Contract, Business Associate may disclose PHI for the proper management and administration of Business Associate, provided that disclosures are Required by Law, or Business Associate obtains

reasonable assurances from the person to whom the information is disclosed that it will remain confidential and used or further disclosed only as Required by Law or for the purpose for which it was disclosed to the person, and the person notifies Business Associate of any instances of which it is aware in which the confidentiality of the information has been breached.

- (C) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI to provide Data Aggregation services to Covered Entity as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).

(j) Obligations of Covered Entity.

- (1) Covered Entity shall notify Business Associate of any limitations in its notice of privacy practices of Covered Entity, in accordance with 45 C.F.R. § 164.520, or to the extent that such limitation may affect Business Associate's use or disclosure of PHI.
- (2) Covered Entity shall notify Business Associate of any changes in, or revocation of, permission by Individual to use or disclose PHI, to the extent that such changes may affect Business Associate's use or disclosure of PHI.
- (3) Covered Entity shall notify Business Associate of any restriction to the use or disclosure of PHI that Covered Entity has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Business Associate's use or disclosure of PHI.

(k) Permissible Requests by Covered Entity. Covered Entity shall not request Business Associate to use or disclose PHI in any manner that would not be permissible under the Privacy Rule if done by the Covered Entity, except that Business Associate may use and disclose PHI for data aggregation, and management and administrative activities of Business Associate, as permitted under this Section of the Contract.

(l) Term and Termination.

- (1) Term. The Term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with clause h. (10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such information, in accordance with the termination provisions in this Section.
- (2) Termination for Cause Upon Covered Entity's knowledge of a material breach by Business Associate, Covered Entity shall either:
 - (A) Provide an opportunity for Business Associate to cure the breach or end the violation and terminate the Contract if Business Associate does not cure the breach or end the violation within the time specified by the Covered Entity; or
 - (B) Immediately terminate the Contract if Business Associate has breached a material term of this Section of the Contract and cure is not possible; or
 - (C) If neither termination nor cure is feasible, Covered Entity shall report the violation to the Secretary.

(3) Effect of Termination.

- (A) Except as provided in (1)(2) above, upon termination of this Contract, for any reason, Business Associate shall return or destroy all PHI received from Covered Entity, or created or received by Business Associate on behalf of Covered Entity. Business Associate shall also provide the information collected in accordance with clause h. (10) of this Section of the Contract to the Covered Entity within ten business days of the notice of termination. This provision shall apply to PHI that is in the possession of subcontractors or agents of Business Associate. Business Associate shall retain no copies of the PHI.
- (B) In the event that Business Associate determines that returning or destroying the PHI is infeasible, Business Associate shall provide to Covered Entity notification of the conditions that make return or destruction infeasible. Upon documentation by Business Associate that return or destruction of PHI is infeasible, Business Associate shall extend the protections of this Section of the Contract to such PHI and limit further uses and disclosures of PHI to those purposes that make return or destruction infeasible, for as long as Business Associate maintains such PHI. Infeasibility of the return or destruction of PHI includes, but is not limited to, requirements under state or federal law that the Business Associate maintains or preserves the PHI or copies thereof.

(m) Miscellaneous Provisions.

- (1)Regulatory References. A reference in this Section of the Contract to a section in the Privacy Rule means the section as in effect or as amended.
- (2)Amendment. The Parties agree to take such action as is necessary to amend this Section of the Contract from time to time as is necessary for Covered Entity to comply with requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191.
- (3)Survival. The respective rights and obligations of Business Associate shall survive the termination of this Contract.
- (4)Effect on Contract. Except as specifically required to implement the purposes of this Section of the Contract, all other terms of the Contract shall remain in force and effect.
- (5)Construction. This Section of the Contract shall be construed as broadly as necessary to implement and comply with the Privacy Standard. Any ambiguity in this Section of the Contract shall be resolved in favor of a meaning that complies, and is consistent with, the Privacy Standard.
- (6)Disclaimer. Covered Entity makes no warranty or representation that compliance with this Section of the Contract will be adequate or satisfactory for Business Associate's own purposes. Covered Entity shall not be liable to Business Associate for any claim, civil or criminal penalty, loss or damage related to or arising from the unauthorized use or disclosure of PHI by Business Associate or any of its officers, directors, employees, contractors or agents, or any third party to whom Business Associate has disclosed PHI contrary to the provisions of this Contract or applicable law. Business Associate is solely responsible for all decisions made, and actions taken, by Business Associate regarding the safeguarding, use and disclosure of PHI within its possession, custody or control.
- (7)Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties,

awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, as amended or the HITECH Act, including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.

60. Protection of Confidential Information.

- (a) Contractor and Contractor Parties, at their own expense, have a duty to and shall protect from a Confidential Information Breach any and all Confidential Information which they come to possess or control, wherever and however stored or maintained, in a commercially reasonable manner in accordance with current industry standards.
- (b) Each Contractor or Contractor Party shall develop, implement and maintain a comprehensive data - security program for the protection of Confidential Information. The safeguards contained in such program shall be consistent with and comply with the safeguards for protection of Confidential Information, and information of a similar character, as set forth in all applicable federal and state law and written policy of the Agency or State concerning the confidentiality of Confidential Information. Such data-security program shall include, but not be limited to, the following:
 - (1) A security policy for employees related to the storage, access and transportation of data containing Confidential Information;
 - (2) Reasonable restrictions on access to records containing Confidential Information, including access to any locked storage where such records are kept;
 - (3) A process for reviewing policies and security measures at least annually;
 - (4) Creating secure access controls to Confidential Information, including but not limited to passwords; and
 - (5) Encrypting of Confidential Information that is stored on laptops, portable devices or being transmitted electronically.
- (c) The Contractor and Contractor Parties shall notify the Agency and the Connecticut Office of the Attorney General as soon as practical, but no later than twenty-four (24) hours, after they become aware of or suspect that any Confidential Information which Contractor or Contractor Parties have come to possess or control has been subject to a Confidential Information Breach. If a Confidential Information Breach has occurred, the Contractor shall, within three (3) business days after the notification, present a credit monitoring and protection plan to the Commissioner of Administrative Services, the Agency and the Connecticut Office of the Attorney General, for review and approval. Such credit monitoring or protection plan shall be made available by the Contractor at its own cost and expense to all individuals affected by the Confidential Information Breach. Such credit monitoring or protection plan shall include, but is not limited to reimbursement for the cost of placing and lifting one (1) security freeze per credit file pursuant


to Connecticut General Statutes § 36a-701a. Such credit monitoring or protection plans shall be approved by the State in accordance with this Section and shall cover a length of time commensurate with the circumstances of the Confidential Information Breach. The Contractors' costs and expenses for the credit monitoring and protection plan shall not be recoverable from the Agency, any State of Connecticut entity or any affected individuals.

- (d) The Contractor shall incorporate the requirements of this Section in all subcontracts requiring each Contractor Party to safeguard Confidential Information in the same manner as provided for in this Section.
- (e) Nothing in this Section shall supersede in any manner Contractor's or Contractor Party's obligations pursuant to HIPAA or the provisions of this Contract concerning the obligations of the Contractor as a Business Associate of Covered Entity.

61. Audit Requirements for Recipients of State Financial Assistance. For purposes of this paragraph, the word "contractor" shall be deemed to mean "nonstate entity," as that term is defined in Section 4-230 of the Connecticut General Statutes. The contractor shall provide for an annual financial audit acceptable to the Agency for any expenditure of state-awarded funds made by the contractor. Such audit shall include management letters and audit recommendations. The State Auditors of Public Accounts shall have access to all records and accounts for the fiscal year(s) in which the award was made. The contractor will comply with federal and state single audit standards as applicable.

IN WITNESS WHEREOF, the parties have executed this Contract by their duly authorized representatives with full knowledge of and agreement with its terms and conditions.

NEW FLYER OF AMERICA, INC.

By: 

PAUL SMITH
Print or Type Name

Title: E.V.P. SALES & MARKETING

Date: APRIL 12, 2016

STATE OF CONNECTICUT
Department Of [Agency Name]


By: 

RICHARD W. ANDRESKI
Print or Type Name

Title: BUREAU CHIEF, PUBLIC TRANSPORTATION

Date: 4/19/16

Approved as to form:


Asst Attorney General Robert W. Clark
State of Connecticut

Date: 4/08/16

EXHIBIT A

DESCRIPTION OF GOODS AND SERVICES

1. DESCRIPTION OF GOODS AND SERVICES:

1.1. See Exhibit A.1, "Technical Specifications"

1.2. INTERCHANGEABILITY

Unless otherwise agreed, all units and components procured under this Contract, whether provided by suppliers or manufactured by the Contractor will be duplicates in design, manufacture, and installation to assure interchangeability among buses in this procurement. This interchangeability will extend to the individual components as well as to their locations in the buses.

1.3 QUALITY ASSURANCE PROVISIONS

The Contractor, the Contractor's manufacturing plant and organization shall be certified to the appropriate QS-9000/ISO 9000 series of standards.

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.

CTDOT 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.

No less than thirty (30) days prior to the beginning of bus manufacture, the primary resident inspector shall meet with the Contractor's quality assurance manager and shall conduct a pre-production audit meeting. They shall review the inspection procedures and finalize inspection checklists which shall be in a format agreeable to both CTDOT and the Contractor. The resident inspectors may begin monitoring bus construction activities two (2) weeks prior to the start of bus fabrication.

Records and data maintained by the quality assurance organization shall be available for review by the resident inspectors. Inspection and test records for this procurement shall be available for a minimum of one (1) year after final inspections and tests are completed.

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.

Discrepancies noted by the resident inspector during assembly shall be entered by the Contractor's 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, CTDOT shall approve the modification, repair, or method of correction to the extent that the contract specifications are affected.

The primary resident inspector shall remain in the Contractor's plant for the duration of bus assembly work under this contract. The Contractor shall provide office space for the resident inspectors in close proximity to the final assembly area. This office space shall be equipped with desks, outside and interplant telephones, file cabinets, chairs, and clothing lockers sufficient to accommodate the resident staff. Only the primary resident inspector or designee shall be authorized to release the buses for delivery. The resident inspectors shall be authorized to approve the pre-delivery acceptance tests. Upon request to the quality assurance supervisors, the resident inspectors shall have access to the Contractor's quality assurance files related to this procurement. These files shall include drawings, assembly procedures, material standards, parts lists, inspection processing and reports, and records of defects.

Fully-documented tests shall be conducted on each production bus following manufacture to determine its acceptance to CTDOT. These acceptance tests shall include pre-delivery inspections and testing by the Contractor and inspections and testing by CTDOT after the buses have been delivered.

The Contractor shall conduct acceptance tests at its plant on each bus following completion of manufacture and before delivery to CTDOT. These pre-delivery tests shall include visual and measured inspections, as well as testing the total bus operation. The tests shall be conducted and documented in accordance with written test plans, approved by CTDOT.

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 of the contract. CTDOT may, prior to commencement of production, demand that the Contractor demonstrate compliance with any requirement, if there is evidence that prior tests have been invalidated by Contractor's change of supplier or change in manufacturing process. Such demonstration shall be by actual test or by supplying a report of a previously performed test on similar or like components and configuration. Any additional testing shall be recorded on appropriate test forms provided by the Contractor and shall be conducted before acceptance of the bus.

The pre-delivery tests shall be scheduled and conducted with thirty (30) days' notice so that they may be witnessed by the resident inspectors, who may accept or reject the results of the tests. The results of pre-delivery tests, and any other tests, shall be filed with the assembly inspection records for each bus. The under floor equipment shall be available for inspection by the resident inspectors, using a pit or bus hoist provided by the Contractor. A hoist, scaffold, or elevated platform shall be provided by the Contractor to easily and safely inspect bus roofs.

Delivery of each bus shall require written authorization of the primary resident inspector. Authorization forms for the release of each bus for delivery shall be provided by the Contractor. An executed copy of the authorization shall accompany the delivery of each bus.

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.

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 fifteen (15) miles during the road tests. Observed defects shall be recorded on the test forms. The bus shall be retested 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.

CTDOT may conduct acceptance tests on each delivered bus. These tests shall be completed within fifteen (15) days after bus delivery and shall be conducted in accordance with written test plans. The purpose of these tests is to identify defects that have become apparent between the time of bus release and delivery to CTDOT. The post-delivery tests shall include visual inspection and bus operations. No post-delivery test shall apply criteria that are different from the criteria applied in an analogous pre-delivery test (if any).

Buses that fail to pass the post-delivery tests are subject to non-acceptance. CTDOT 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 (5) days after completion of the tests. The defects detected during these tests shall be repaired according to procedures defined previously in this document.

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.

Road tests will be used for total bus operation similar to those conducted at the Contractor's plant. In addition, CTDOT may elect to perform chassis dynamometer tests. Operational deficiencies of each bus shall be identified and recorded.

RWA

1.4 TRAINING, MANUALS AND PARTS AVAILABILITY

The Contractor shall deliver the following training videos to ~~CTDOT participants~~ on CD or DVD with periodic updates and changes to all manuals prior to the delivery of the first coach:

Front Suspension	Rear Suspension	Entrance Door Operation
Air Brake System	Electric System	HVAC Diagnostic Reader
Multiplex System	Engine Troubleshooting	Transmission Troubleshooting
Pneumatic System	AC Maintenance	Driver's Orientation
Hybrid Beltless Alternator	Warranty	

The Contractor shall also provide eighty (80) hours of maintenance training to CTDOT within 180 calendar days of delivery of the first bus at a time and location specified by CTDOT. The training program should cover (but not be limited to) the following:

A. Orientation Module

- 1. History of Contractor
- 2. Advantages and strong points of the bus
- 3. Visuals of production system of the bus
- 4. Compartment by compartment tour of the bus
- 5. Special components or features of the bus

B. Electrical and Electronics

- 1. Location of all key electrical components on the bus.
- 2. Explanation of the wiring diagram and wiring codes.
- 3. Explanation of the charging system and basic troubleshooting of the system.
- 4. Explanation of the exterior and interior lighting system along with basic troubleshooting of the system.
- 5. Explanation of the safety shutdown system, including the warning indicators and basic troubleshooting of the system.
- 6. Operation of the multiplex system
- 7. Hybrid beltless alternator
- 8. Electric cooling fan system
- 9. Multiplex system
- 10. Decals of electrical schematics on all electric panels

C. Engine and Accessories

1. Explanation of the engine and location of key components.
2. Explanation of the engine driven accessories.
3. Explanation of the fuel, air and water system.
4. Explanation of engine tune-up procedures.
5. Basic troubleshooting procedures for the engine.
6. Engine overhaul/rebuilding
7. Hybrid drive propulsion system

D. Transmission and Controls

1. Explanation of the transmission or hybrid drive unit.
2. Explanation of the electronic control system.
3. Basic troubleshooting of the transmission.
4. Transmission overhaul/rebuilding

E. Air Conditioning

1. Explanation of the air conditioning system and the location of all key air conditioning components.
2. Explanation of the air conditioning electrical system.
3. Explanation of the air conditioning compressor along with basic troubleshooting and preventative maintenance of the air conditioning compressor.
4. Basic troubleshooting of the air conditioning system.
5. Preventive maintenance of the air conditioning system.

F. Wheelchair Ramp/Lift System

1. Explanation of the Ramp/Lift system and the location of all Ramp/Lift components.
2. Explanation of the Ramp/Lift electrical system.
3. Proper Ramp/Lift adjustment procedures.
4. Basic troubleshooting of the Ramp/Lift system.

G. Brakes

1. Explanation of the brake system.
2. Basic brake system repair including brake adjustment.
3. ABS & traction control.

H. Air System

1. Explanation of the air system with the location of all system components.
2. Basic troubleshooting of the air system.
3. Preventive maintenance of the air system.

I. Suspension, Steering and Axles

1. Explanation of the suspension system.
2. Basic repairs to the suspension system.
3. Basic troubleshooting of the suspension system.
4. Explanation of the steering system.
5. Basic troubleshooting of the steering system.
6. Explanation of the axles.
7. Ride height adjustment procedures

J. Body

1. Explanation of the body & attachment method of exterior body panels to vehicle structure.

2. Basic repair of the exterior panels.

K. Door System

1. Explanation of door system and location of components.
2. Explanation of the door electrical system.
3. Proper door adjustment procedures.
4. Rebuilding of door motors.
5. Basic troubleshooting of the door systems.

L. Parts

1. Explanation of the parts manual and how it is organized.
2. Explanation of the parts numbering system.
3. Orientation to the bus and components on the bus.
4. Practice in finding parts in the parts manual.
5. Explanation & training on warranty program.

M. Driving Instruction (For Maintenance Employees)

1. Operator Compartment
 - a. Controls and switches
 - b. Warning indicators and gauges
 - c. Seat adjustment
 - d. Door control
2. Walk Around Inspection
 - a. Compartment-by-compartment explanation
 - b. Mirror adjustment
 - c. Climate control system
3. Driving Instruction
 - a. Turns
 - b. Braking
 - c. Transmission shifting patterns and driving with the retarder
 - d. Backing

RWA The Contractor will provide formal training at ~~CTDOT~~ the operating transit facility on the Contractor's procedures for identifying, documenting and submitting claims for warranty reimbursement. The training shall include a description of the warranty provided on the buses, components and sub-components and warranty processing.

The Contractor will provide with the delivery of the first coach to CTDOT a training session for the designated Train the Trainer Supervisors who will in turn orient Bus Operators on how to inspect, safely drive the coach, and operate all the subsystems found on the coach. The training session for the operators will include classroom and driving sessions as necessary. The program shall include, but not be limited to the following:

1. Operator Compartment
 - a. Controls and Switches
 - b. Warning Indicators and Gauges
 - c. Seat Adjustment
 - d. Door Control
2. Walk Around Inspection
 - a. Compartment-by-compartment explanation
 - b. Mirror adjustments
 - c. Climate control systems
3. Driving Instruction
 - a. Turns

- b. Braking
- c. Transmission shifting patterns
- d. Backing

The driver Train the Trainer program shall consist of a four (4) hour module on the bus. Each trainee shall be given the opportunity to operate the bus with the Contractor's instructor on board.

The Contractor shall, at its own expense, have a competent engineering service representative(s) available on request to assist CTDOT's staff in the solution of engineering or design problems within the scope of the specifications that may arise during the warranty period.

The Contractor shall provide current maintenance manuals, parts manuals and parts price list, standard operator's manuals, OEM major equipment manuals and electrical and pneumatic system schematics as part of this Contract as specified in the table below.

Item	Quantity per Property
Maintenance Manuals	3
Operators Manuals	5 for every bus
Parts Manuals	3
Parts Price List	3
OEM Destination Sign Manuals	3
OEM Video System Manuals	3
OEM Engine Manuals	4
OEM Transmission Manuals	4
Bus Electrical Schematics	5
Bus Pneumatic Schematics	5

Detailed and well organized maintenance, parts, and operator manuals covering all items as built on the coach shall be supplied by the Contractor prior to acceptance of first coach. Manuals shall be delivered in three-ring binders and with the sections separated with sturdy plastic divider pages with tabs, and on CD or DVD. Manuals shall contain data required for preventive and corrective maintenance of all parts of the buses including but not limited to the following:

- Operating and Repair Publications
- General vehicle information and specifications.
- A complete, well-developed troubleshooting guide covering all mechanical, electrical and electronic components, including engine, transmission, and HVAC units.
- All preventive maintenance, lubrication and adjustment requirements.
- Complete wiring and schematic diagrams and schedules for wire and cable sizes and ratings including actual cable lay-out, plus locations in the coach of all electric and electronic components.
- All CAN wiring diagrams.
- All ground points control area network.
- Complete air and hydraulic diagrams showing locations in the coach of all air and hydraulic components. The air system diagram shall be 11 in. x 17 in. CAD drawing with color coding, using actual printed colors to match systems.
- Illustrative drawings, such as isometrics, exploded views or photographs identifying components in relationship to each other as mounted in the buses.
- Components shown in exploded views with all parts clearly identified including Contractor part number.
- Rebuilding procedures for all rebuildable components.
- Detailed, well-illustrated procedures for component change-out plus servicing, adjusting, testing, and run-in information as required.
- Body and structural information and material specifications for major accident repair.

- Seating and stanchion layouts and window diagrams.
- 11 in. x 17 in. scale drawing of driver's compartment, detailing all driver switches, controls, control panels and equipment locations (to be approved by CTDOT).
- Repair and calibration instructions and values.
- List of special test equipment and tools required to maintain and repair systems down to the component level including part number and supplier source.
- Three-dimensional drawings of bus and graphics and part number for all graphics.

Serial Numbers

Upon delivery of each bus, the Contractor shall provide a complete electronic list of serialized units installed on each bus to facilitate warranty tracking. The list shall include, but is not limited to the following:

- engine
- transmission
- all major subcomponents of the hybrid drive system
- alternator
- starter
- A/C compressor and condenser / evaporator unit
- drive axle
- power steering unit
- fuel cylinders (if applicable)
- air compressor
- mobility device/wheelchair ramp
- engine electronic control module
- transmission electronic control unit
- radiator
- muffler
- hydraulic pump
- steering box
- front/rear axle
- axle bunk right/left
- tires
- overhead driver keyboard
- driver's seat
- roof panel front/rear

The Contractor shall provide updated serial numbers resulting from warranty campaigns. The format of the list shall be approved by the CTDOT prior to delivery of the first production bus. Illustrated parts manuals shall contain exploded views that show all parts used on buses as built under this contract, and no other parts. The exploded views will show all fasteners and miscellaneous hardware. The manuals shall contain data arranged so that part numbers can be readily found and identified in the illustration for each system and subsystem component, assembly, subassembly or piece part from an orderly breakdown of the complete coach. It shall contain a ready reference part number index and part name index and be sufficiently well illustrated to identify items requiring repair, replacement, and storage for use in the maintenance of the buses. All subassemblies (such as wiper motors, starter motors, etc.) shall have the original manufacturer's part number displayed at the beginning of the appropriate parts listing section. Lists shall include at least the following information for all parts as built:

- Generic description and specifications
- Contractor part number

- Brand name, where applicable
- Original manufacturers part number (provide in separate cross reference binder)
- Indication if the part is custom manufactured only on request
- Standard hardware described by size, type, material and grade
- All original manufacturer names and addresses, all special tools, test and diagnostic equipment and their original manufacturer names and addresses.

All manuals shall be provided in three-ring binders and on CD or DVD. Format and features shall include index and search by name, part number, assembly and subassembly. CTDOT reserves the right to copy all information for future use.

The parts pricing list shall list all parts by alpha order starting with "A" and ending with "Z" and then in numerically ascending order starting with "A0" and ending with "Z9". The parts list shall supply the purchase price (including freight), and a description of the part. Updated price lists will note all part number supersede since last general issue at the price list. Unit of sale will be noted. e.g. each, minimum 5, per foot, etc.

Maintenance and parts manuals must be updated to include all changes made to the coach during production and post-delivery retrofits authorized or requested by the Contractor and to correct all errors and omissions found by CTDOT. Changes required to the parts and maintenance manuals due to warranty and/or post-delivery retrofits shall be completed within ninety (90) days from the date of modification approval. Manuals shall be available from the Contractor for fifteen (15) years following acceptance of the last coach. Revised parts price lists will also be supplied as price changes. Parts shall be interchangeable with the original equipment and be manufactured in accordance with the quality assurance provisions of this contract. Prices shall not exceed the Contractor's then current published catalog prices. Software updates to maintenance and parts manuals shall be available for fifteen (15) years following acceptance of the last coach.

Unless otherwise agreed, all units and components procured under this Contract, whether provided by suppliers or manufactured by the Contractor, shall be duplicates in design, manufacture, and installation to assure interchangeability among buses in this procurement. This interchangeability shall extend to the individual components as well as to their locations in the buses.

1.5 ACCEPTANCE OF BUS

Within fifteen (15) working (weekend & holidays not included) days after arrival at the designated point of delivery, the bus will undergo CTDOT tests as specified. If the bus passes these tests or if CTDOT does not notify Contractor of non-acceptance within fifteen (15) working days after delivery, acceptance of the bus by CTDOT occurs on the fifteenth day after delivery. Acceptance may occur earlier if CTDOT notifies the Contractor of early acceptance or places the bus in revenue service. If the bus fails these tests, it will not be accepted until the repair procedures defined in "Repairs After Non-Acceptance" have been carried out and the bus retested until it passes.

1.6 REPAIRS AFTER NONACCEPTANCE

The Contractor or its designated representative will perform the repairs after non-acceptance. If the Contractor fails or refuses to make the repairs within five (5) working days, then the work may be done by CTDOT's personnel with reimbursement by the Contractor.

1.7 REPAIRS BY CONTRACTOR

After non-acceptance of the bus, the Contractor must begin work within five (5) working days after receiving notification from CTDOT of failure of acceptance tests. CTDOT will make the bus available to complete repairs timely with the Contractor repair schedule.

The Contractor will provide, at its own expense, all spare parts, tools, and space required to complete the repairs. At CTDOT's option, the Contractor may be required to remove the bus from CTDOT's property while repairs are being

affected. If the bus is removed from CTDOT's property, repair procedures must be diligently pursued by the Contractor's representatives, and the Contractor will assume risk of loss while the bus is under its control.

Quality Assurance

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.

1. 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.
2. Authority and Responsibility. The quality assurance organization shall have the authority and responsibility for reliability, quality controls inspection planning, establishment of the quality control system, and acceptance / rejection of materials and manufactured articles in the production of the transit buses.
3. Quality Assurance Organization Functions and Minimum Functions. The quality assurance organization shall include the following minimum functions:

- **Work instructions:** The quality assurance organization shall verify inspection operation instructions to ascertain that the manufactured product meets all prescribed requirements.
- **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 three years after inspections and tests are completed.
- **Corrective action:** The quality assurance organization shall detect and promptly ensure 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.

Based on the outcome of thorough root cause investigations, the QAO is responsible to develop and implement appropriate Corrective Action(s). Potential Corrective Actions include but are not limited to: addressing vendor quality issues, employee training / retraining, revision / clarification of workshop procedures, development of improved tooling / fixtures, etc.

Root cause investigation and Corrective Actions shall be appropriately documented and shall be reported to the Authority in a timely manner.

4. Basic Standards and Facilities. The following standards and facilities shall be basic in the quality assurance process:
 - **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.
 - **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. These devices shall be calibrated at established periods against certified measurement standards that have known, valid relationships to national standards.
 - **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.

- **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.
- **Safety Practices and General Workshop Procedures:** The Contractor shall provide the Authority with all appropriate Safety Practices and General Workshop Procedures which will be in effect throughout this program. Examples include but are not limited to: rooftop equipment hoisting, fall restraints, vehicle jacking and securement, high voltage safety, etc.

5. Maintenance of Control. The Contractor shall maintain quality control of purchases:

- **Supplier control:** The Contractor shall require each Supplier to maintain a quality control program for the services and supplies that it provides. The Contractor's quality assurance organization shall inspect and test materials provided by Suppliers for conformance to specification requirements. Materials that have been inspected, tested and approved shall be identified as acceptable to the point of use in the manufacturing or assembly processes. Controls shall be established to prevent inadvertent use of nonconforming materials. At the Authority's request, the Contractor shall coordinate communications, conference calls, or meetings between the Authority, the Contractor, and any sub-suppliers. The Contractor shall coordinate and/or participate in source inspection(s) of sub-supplier parts, processes, and facilities as appropriate and at any time requested by the Authority.
- **Purchasing data:** The Contractor shall verify that all applicable specification requirements are properly included or referenced in purchase orders of articles to be used on transit buses.

6. Manufacturing Control.

- **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.
- **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.
- **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.
- **Statistical techniques:** Statistical analysis, tests and other quality control procedures may be used when appropriate in the quality assurance processes.
- **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.

7. Inspection System. 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. As a minimum, it shall include the following controls:

- **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.
- **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, then the Authority shall approve the modification, repair or method of correction to the extent that the Contract specifications are affected.

- Quality assurance audits: The quality assurance organization shall establish and maintain a quality control audit program. Records of this program shall be subject to review by the Authority.

8. Inspection and 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, 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.

9. Resident Inspectors and Resident Inspector's Role. The Authority shall be represented at the Contractor's plant by resident inspectors, as required by FTA. Resident inspectors may be Authority employees or outside contractors. The Authority shall provide the identity of each inspector and shall also identify his or her level of authority in writing. 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 the requirements of this procurement. The Authority shall designate a primary resident inspector, whose duties and responsibilities are delineated in "Pre-Production Meetings," "Authority" and "Pre-Delivery Tests," below. Contractor and resident inspector relations shall be governed by the guidelines included as Attachment A to this section.

10. Pre-Production and Design Review Meetings. The primary resident inspector shall participate in Pre-Production and Design Review Meetings with the Authority. At these meetings, quality assurance procedures shall be addressed, the configuration of the buses and the manufacturing processes shall be finalized, and all Contract documentation provided to the inspector.

No less than thirty (30) days prior to the beginning of bus manufacture, the primary resident inspector may meet with the Contractor's quality assurance manager and may conduct a Pre-Production audit meeting. They shall review the inspection procedures and finalize inspection checklists. The resident inspectors may begin monitoring bus construction activities two weeks prior to the start of bus fabrication.

11. Authority. During the project kickoff meeting the Contractor shall present and provide a copy of the manufacturers' formal quality assurance program. The Authority reserves the right to perform a quality assurance audit of the Contractor's quality assurance system to achieve a better understanding of these processes and confirm compliance to these processes. Records and data

maintained by the quality assurance organization shall be available for review by the resident inspectors. Inspection and test records for this procurement shall be available for a minimum of one year after inspections and tests are completed.

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.

Discrepancies noted by the resident inspector during assembly shall be entered by the Contractor's 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, then the Contractor shall submit for Authority review and approval the modification, repair or method of correction.

The primary resident inspector shall remain in the Contractor's plant for the duration of bus assembly Work under this Contract. Only the primary resident inspector or designee shall be authorized to release the buses for delivery. The resident inspectors shall be authorized to approve the pre-delivery acceptance tests. Upon request to the quality assurance supervisors, the resident inspectors shall have access to the Contractor's quality assurance files related to this procurement. These files shall include drawings, assembly procedures, material standards, parts lists, inspection processing and reports, and records of Defects.

12. Support Provisions. The Contractor shall provide office space for the resident inspectors in close proximity to the final assembly area. This office space shall be equipped with desks, outside and interplant telephones; Internet access, file cabinet and chairs. Specific MBTA facility requirements are outlined in the contract documents.
13. Compliance with Safety Requirements. At the time of the Pre-Production Meeting, the Contractor shall provide all safety and other operational restrictions that govern the Contractor's facilities. These issues will be discussed and the parties will agree which rules / restrictions will govern the Authority's inspector(s) and any other Authority representatives during the course of the Contract.
14. Acceptance Tests and Responsibility. Fully documented tests shall be conducted on each production bus following manufacture to determine its acceptance to the Authority. These acceptance tests shall include pre-delivery inspections and testing by the Contractor and inspections and testing by the Authority after the buses have been delivered.
15. Pre-Delivery Tests. The Contractor shall conduct acceptance tests at its plant on each bus following completion of manufacture and before delivery to the Authority. These pre-delivery tests shall include visual and measured inspections, as well as testing the total bus operation. The tests shall be conducted and documented in accordance with written test plans approved by the Authority.

Additional tests may be conducted at the Contractor's discretion to ensure that the completed buses have attained the required quality and have met the requirements in "Section TS: Technical Specifications." The Authority may, prior to commencement of production, demand that the Contractor demonstrate compliance with any requirement in that section if there is evidence that prior tests have been invalidated by the Contractor's change of Supplier or change in manufacturing process. Such demonstration shall be by actual test or by supplying a report of a previously performed test on similar or like components and configuration. Any additional testing shall be recorded on appropriate test forms provided by the Contractor and shall be conducted before acceptance of the bus.

The pre-delivery tests shall be scheduled and conducted with thirty (30) days' notice so that they may

be witnessed by the resident inspectors, who may accept or reject the results of the tests. The results of pre-delivery tests, and any other tests, shall be filed with the assembly inspection records for each bus. The underfloor equipment shall be available for inspection by the resident inspectors, using a pit or bus hoist provided by the Contractor. A hoist, scaffold or elevated platform shall be provided by the Contractor to easily and safely inspect bus roofs. Delivery of each bus shall require written authorization of the primary resident inspector. Authorization forms for the release of each bus for delivery shall be provided by the Contractor. An executed copy of the authorization shall accompany the delivery of each bus.

16. Water Test Inspection. The pre-delivery tests shall include a water test inspection. The water test inspection checks the integrity of the vehicle's body seams, window frame seals and other exterior component closeouts for their ability to keep rainwater, road splash, melting snow and slush, and other exterior water from entering the inside of the vehicle. The vehicle's interior is inspected for signs of moisture and water leaks. To perform the leak inspection, interior ceiling and side panels are removed, and access doors are opened. If any moisture or water is detected, then the source of the leak will be located and repaired by the manufacturer, and the vehicle will be tested again.
17. Visual and Measured Inspections. Visual and measured inspections shall be conducted with the bus in a static condition. The purpose of the inspection testing includes verification of overall dimension and weight requirements, that required components are included and are ready for operation, and that components and subsystems designed to operate with the bus in a static condition do function as designed.
18. 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 fifteen (15) miles during the road tests. If requested, computerized diagnostic printouts showing the performance of each bus shall be produced and provided to the Authority. Observed Defects shall be recorded on the test forms. The bus shall be retested when Defects are corrected and adjustments are made. This process shall continue until Defects or required adjustments are no longer detected.
19. Post Delivery Tests. The Authority may conduct acceptance tests on each delivered coach. These tests shall be completed within 15 (fifteen) days after coach delivery and shall be conducted in accordance with written test plans. The purpose of these tests is to identify Defects that have become apparent between the time of coach release and delivery to the Authority. The post-delivery tests shall include visual inspection and coach operations.

Coaches that fail to pass the post-delivery tests are subject to non-acceptance. The Authority shall record details of all Defects on the appropriate test forms and shall notify the Contractor of non-acceptance of each coach within five days after completion of the tests. The Defects detected during these tests shall be repaired according to procedures defined in the Warranty Requirements Section: WR.
20. Visual Inspection. The post-delivery inspection is similar to the inspection at the Contractor's plant and shall be conducted with the coach in a static condition. Any visual delivery damage shall be identified and recorded during the visual inspection of each coach.
21. Coach Operation. Road tests will be used for total coach operation similar to those conducted at the Contractor's plant. In addition, the Authority may elect to perform chassis dynamometer tests. Operational deficiencies of each coach shall be identified and recorded.
22. Coach History Book. The Contractor shall provide a Coach History Book for each bus at time of delivery. Each Coach History Book shall contain the following information at a minimum:

- List of defects noted and the disposition of each
- Listing of all serial-numbered components
- Shipping documents
- Shipping exceptions and unresolved / open issues
- Summary detail of each test performed on the coach or any part of the coach
- Complete record of inspection findings

During the pre-production meeting the Contractor shall provide a proposed Coach History Book for the Authority's review and approval.

At the Authority's discretion, additional documentation may be added to the requirements of the Coach History Book.

1.8 REPAIRS BY CTDOT OR OTHER AGENCY

1. Parts Used. If CTDOT performs the repairs after non-acceptance of the bus, it will correct or repair the defect and any related defects using Contractor-specified parts available from its own stock or those supplied by the Contractor specifically for this repair. Monthly, or at a period to be mutually agreed upon, reports of all repairs covered by this procedure will be submitted by CTDOT to the Contractor for reimbursement or replacement of parts. The Contractor will provide forms for these reports.
2. Contractor Supplied Parts. If the Contractor supplies parts for repairs being performed by CTDOT after non-acceptance of the bus, these parts will be shipped prepaid to CTDOT from any source selected by the Contractor within ten (10) working days after receipt of the request for said parts.
3. Return of Defective Components. The Contractor may request that parts covered by this provision be returned to the manufacturing plant. The total costs for this action will be paid by the Contractor.
4. Reimbursement for Labor. CTDOT will be reimbursed by the Contractor for labor. The amount will be determined by multiplying the number of person-hours actually required to correct the defect by a per hour technician, current straight wage rate, plus 40 percent fringe benefits, plus the cost of towing in the bus if such action was necessary. These wage and fringe benefit rates will not exceed the rates in effect in CTDOT's service garage at the time the defect correction is made.
5. Reimbursement for Parts. CTDOT will be reimbursed by the Contractor for defective parts that must be replaced to correct the defect. The reimbursement will include taxes where applicable and 22.5 percent handling costs.

1.9 PARTS AVAILABILITY GUARANTY

The Contractor hereby guarantees to provide, within reasonable periods of time, the spare parts, software and all equipment necessary to maintain and repair the buses supplied under this Contract for a period of at least fifteen (15) years after the date of award. Parts will be interchangeable with the original equipment and be manufactured in accordance with the quality assurance provisions of this Contract. Prices will not exceed the Contractor's then current published catalog prices.

Where the parts ordered by CTDOT are not received within two (2) working days of the agreed upon time/date and a bus procured under this Contract is out-of-service due to the lack of said ordered parts, then the Contractor will provide CTDOT, within eight (8) hours of CTDOT's verbal or written request, the original suppliers' and/or manufacturers' parts numbers, company names, addresses, telephone numbers and contract persons' names for all of the specific parts not received by CTDOT.

Where the Contractor fails to honor this parts guaranty or parts ordered by CTDOT are not received within thirty (30) days of the agreed upon delivery date, then the Contractor will provide to CTDOT, within seven (7) days of CTDOT's verbal or written request, the design and manufacturing documentation for those parts

manufactured by the Contractor and the original suppliers' and/or manufacturers' parts numbers, company names, addresses, telephone numbers and contact persons' names for all of the specific parts not received by CTDOT. Contractor's design and manufacturing documentation provided to CTDOT will be for its sole use in regard to the buses procured under this Contract and for no other purpose. If parts are not received warranty on bus will be extended.

1.10 OPTIONAL SPARE PARTS PURCHASE

The Contractor shall provide pricing of major parts and components that may be purchased during the contract period. See attached Exhibit B, Price Schedule.

1.11 CONSUMABLE SPARE PARTS

The Contractor shall submit a list of recommended Consumable Spare Parts within six (6) months after NTP. This list must detail parts required to maintain the fleet, identifying the vendor's name and address, vendor part number, full part description, unit cost, anticipated lead time, and estimated annual usage and include both inventory and non-inventory items.

1.12 RENEWAL PARTS INVENTORY LIST AND PARTS SEMINAR

The Contractor shall provide a Renewal Parts Inventory List and a Renewal Parts Inventory Seminar to familiarize material management personnel with the coach components. The Contractor shall submit a complete suggested parts inventory list, required to support this fleet with price detail to determine the total cost required. This list must include parts that are not in inventory, as well as parts needed to support this fleet. The required parts inventory information must be provided no later than thirty (30) days prior to delivery of each Pilot Bus.

The seminar shall be for one class not to exceed twenty-five (25) people held during daylight hours at a location to be designated by the Authority. The course shall not exceed thirty (30) hours but be no less than twelve (12), and shall include both classroom and field instruction. The seminar shall be conducted within one month of delivery of the each Pilot Bus. The Contractor's materials documentation shall include a Renewal Parts Inventory List, a parts number index, and pricing. The Contractor shall provide current parts pricing within ninety (90) days after the Authority's written approval of the draft parts manual.

1.13 WARRANTY PROVISIONS

The complete bus, propulsion system, components, major subsystems and body and chassis structure are to be warranted free from defects and related defects for eighteen (18) months or 50,000 miles, whichever comes first, beginning on the date of revenue service. The warranty is based on regular operation of the bus under the operating conditions prevailing in CTDOT's locale.

Body, body structure, structural elements of the suspension and engine cradle are warranted to be free from defects and related defects for three (3) years or 150,000 miles, whichever comes first.

Primary load-carrying members of the bus structure, including structural elements of the suspension, are warranted against corrosion failure and/or fatigue failure sufficient to cause a Class 1 or Class 2 failure for a period of twelve (12) years or 500,000 miles, whichever comes first.

Propulsion system components, specifically the engine, transmission or drive motors, and generators (for hybrid technology) and drive and non-drive axles shall be warranted to be free from defects and related defects for the standard two (2) years or 100,000 miles, whichever comes first. An extended warranty to a maximum of five (5) years or 300,000 miles, whichever comes first, may be purchased at an additional cost.

The warranty shall include towing, travel, and all related expenses.

Contractor warrants the ECS for five (5) years or 150,000 miles, whichever comes first. The ECS shall include, but is not limited to, the following components:

- Complete exhaust system, including catalytic converter (if required)
- After-treatment device
- Components identified as emission control devices

Major subsystems shall be warranted to be free from defects and related defects for two (2) years or 100,000 miles, whichever comes first. Items included as major subsystems are listed below:

- Brake system
- Destination signs
- Heating, ventilating
- AC unit and compressor
- Door systems
- Air compressor
- Air dryer
- Wheelchair lift and ramp system
- Starter
- Alternator
- Charge air cooler
- Fire suppression
- Power plant driven or mounted fan drive and power steering hydraulic or electric systems
- Cooling systems
 - Radiator
 - Transmission cooler
- Passenger seating (excluding fabric)
- Fuel system and delivery system
- Surveillance system including cameras and video recorders.
- Communications Equipment
- Hybrid drive system including battery storage and controls
- Beltless alternator
- Paint and decal provisions
- Corrosion protection
- Electric fan system
- Multiplex system

If, during the warranty period, repairs or modifications on any bus are made necessary by defective design, materials or workmanship are not completed due to lack of material or inability to provide the proper repair for 30 (thirty) calendar days, the applicable warranty period shall be extended by the number of days equal to the delay period.

The warranties shall not apply to the failure of any part or component of the bus that directly results from misuse, negligence, accident, or repairs not conducted in accordance with the Contractor-provided maintenance manuals and with workmanship performed by adequately trained personnel in accordance with recognized standards of the industry. The warranty also shall be void if CTDOT fails to conduct normal inspections and scheduled preventive maintenance procedures as recommended in the Contractor's maintenance manuals and that if that omission caused the part or component failure. CTDOT shall maintain documentation, auditable by the Contractor, verifying service activities in conformance with the Contractor's maintenance manuals.

The warranties shall not apply to the following items: scheduled maintenance items, normal wear-out items and items furnished by CTDOT.

The Contractor shall pass on to CTDOT any warranty, offered by a component supplier, that is superior to that required herein. The Contractor shall provide a list to CTDOT noting the conditions and limitations of the superior warranty not later than start of production. The superior warranty shall not be administered by the Contractor.

A fleet defect is defined as cumulative failures of 20 percent (20%) in the same components in the same or similar application where such items are covered by warranty. A fleet defect shall only apply to the warranty period, which period was agreed upon as being (two) 2 years or 100,000 miles, or whichever comes first.

For the purpose of fleet defects, each option order shall be treated as a separate bus fleet. In addition, should there be a change in a major component within either the base order or an option order, the buses containing the new major component shall become a separate bus fleet for the purposes of fleet defect.

The Contractor shall correct a fleet defect under the warranty provisions defined in this document. After correcting the defect, CTDOT and the Contractor shall mutually agree to and the Contractor shall promptly undertake and complete a work program reasonably designed to prevent the occurrence of the same defect in all other buses and spare parts purchased under this contract. Where the specific defect can be solely attributed to particular identifiable part(s), the work program shall include redesign and/or replacement of only the defectively designed and/or manufactured part(s). In all other cases, the work program shall include inspection and/or correction of all of the buses in the fleet via a mutually agreed-to arrangement.

The fleet defect warranty provisions shall not apply to CTDOT-supplied items, such as radios, fare collection equipment, communication systems and tires. In addition, fleet defects shall not apply to interior and exterior finishes, hoses, fittings and fabric.

The Contractor is responsible for all warranty-covered repair work. To the extent practicable, CTDOT will allow the Contractor or its designated representative to perform such work. At its discretion, CTDOT may perform such work if it determines it needs to do so based on transit service or other requirements. Such work shall be reimbursed by the Contractor.

If CTDOT detects a defect within the warranty period, it shall, within twenty (20) working days, notify the Contractor's representative. The Contractor or its designated representative shall, if requested, begin work on warranty-covered repairs within five (5) working days after receiving notification of a defect from CTDOT. CTDOT shall make the bus available to complete repairs timely with the Contractor's repair schedule.

The Contractor shall provide at its own expense all spare parts, tools and space required to complete repairs. At the option of CTDOT, the Contractor may be required to remove the bus from the property of CTDOT while repairs are being affected. If the bus is removed from CTDOT's property, repair procedures must be diligently pursued by the Contractor's representative.

If CTDOT performs the warranty-covered repairs, it shall correct or repair the defect and any related defects utilizing parts supplied by the Contractor specifically for this repair. At its discretion, CTDOT may use Contractor-specified parts available from its own stock if deemed in its best interests.

CTDOT may require that the Contractor supply parts for warranty-covered repairs being performed by the CTDOT. Those parts may be remanufactured but shall have the same form, fit and function and warranty. The parts shall be shipped prepaid to CTDOT from any source selected by the Contractor within ten (10) working days of receipt of the request for said parts and shall not be subject to a CTDOT handling charge.

The Contractor may request that parts covered by the warranty be returned to the manufacturing plant. The freight costs for this action shall be paid by the Contractor.

The Contractor shall, upon specific request of CTDOT, provide a failure analysis of fleet defect or safety-related parts, or major components, removed from buses under the terms of the warranty that could affect fleet operation. Such reports shall be delivered within sixty (60) days of the receipt of failed parts.

CTDOT shall be reimbursed by the Contractor for labor. The amount shall be determined by CTDOT for a technician at a straight time wage rate plus fringe benefits and overhead adjusted for CTDOT's most recently published rate in effect at the time the work is performed, plus the cost of towing the bus if such action was necessary and if the bus was in the normal service area. These wage and fringe benefit rates shall not exceed the rates in effect in CTDOT's service garage at the time the defect correction is made.

CTDOT shall be reimbursed by the Contractor for defective parts and for parts that must be replaced to correct the defect. The reimbursement shall be at the current price at the time of repair and shall include taxes where applicable, plus 22.5 percent handling costs. Handling costs shall not be paid if the part is supplied by Contractor and shipped to CTDOT.

The Contractor shall reimburse/respond to the warranty claim with an accept/reject decision including necessary failure analysis no later than sixty (60) days after CTDOT submits the claim and defective part(s), when requested. The parties should reconcile all outstanding warranty claims at least once per quarter throughout the entire warranty period.

If any component, unit or subsystem is repaired, rebuilt or replaced by the Contractor or by CTDOT with the concurrence of the Contractor, the component, unit or subsystem shall have the unexpired warranty period of the original. Repairs shall not be warranted if Contractor-provided or authorized parts are not used for the repair, unless the Contractor has failed to respond within five (5) working days.

If an item is declared to be a fleet defect, the warranty stops with the declaration of the fleet defect. Once the fleet defect is corrected, the item(s) shall have remaining time and/or miles of the original warranty. This remaining warranty period shall begin on the repair/replacement date for corrected items on each bus if the repairs are completed by the Contractor or on the date the Contractor provides all parts to CTDOT.

The following list represents requirements by CTDOT to the Contractor for processing warranty claims. One (1) failure per bus per claim is allowed.

1. Bus number and VIN
2. Total vehicle life mileage at time of repair
3. Date of failure/repair
4. Acceptance/in-service date
5. Contractor part number and description
6. Component serial number
7. Description of failure
8. All costs associated with each failure/repair (invoices may be required for third party costs)
 - a. Towing
 - b. Road calls
 - c. Labor
 - d. Materials
 - e. Parts
 - f. Handling
 - g. Troubleshooting time

CTDOT's standardized forms will be accepted if all of the above information is included. Electronic submittal may be used if available between the Contractor and CTDOT.

CTDOT must include the following when returning defective parts to the Contractor.

1. Part needs to be tagged with
 - a. Bus number and VIN
 - b. Claim number
 - c. Part number
 - d. Serial number (if available)

Each claim must be submitted no more than thirty (30) days from the date of failure and/or repair, whichever is later. All defective parts must be returned to the Contractor, when requested, no more than forty-five (45) days from date of repair.

2. ADDITIONAL TERMS AND CONDITIONS:

2.1. TVM CERTIFICATION

The Contractor agrees to comply with all the requirements of 49 CFR 23.67, as they apply to the procurement of transit vehicles under this contract, including but not limited to, furnishing the vehicle purchaser with a certification that it is in full compliance with all the regulatory requirements of 49 CFR 23.67.

2.2. DBE CERTIFICATION

Pursuant to Title 49, Code of Federal Regulations, part 23.67, a Proposer, as a condition of being authorized to bid this procurement, must certify by completing "DBE APPROVAL CERTIFICATION", that it has on file with the FTA an approved or not disapproved annual DBE subcontracting participation goal

2.3 COMPLIANCE WITH CONN. GEN. STATUTES SECTIONS 33-922, 33-636 AND 33-953:

Prior to the award of any contract, corporations which are incorporated in states other than Connecticut (foreign corporations) must have on file with the Connecticut Secretary of State's Office, an approved Certificate of Authority and corporations incorporated in Connecticut (domestic corporations) must have on file an approved Certificate of Incorporation. All required annual reports for both types of corporations, including the organizational report for domestic corporations must also be on file with the Connecticut Secretary of State's Office. See Conn. General Statutes Sections 33-922, 33-636 and 33-953. Any questions regarding these filing requirements may be directed to the Connecticut Secretary of State's Office at (860) 509-6002.

2.4 INTEREST OF MEMBERS OF, OR DELEGATES TO, CONGRESS

No member of, or delegate to, the Congress of the United States will be admitted to any share or part of this Contract or to any benefit arising there from. (41U.S.C. § 22.)

2.5 PROHIBITED INTEREST

No member officer or employee of CTDOT or of a local public body during his tenure or one (1) year thereafter will have any interest, direct or indirect, in this Contract or the proceeds thereof.

2.6 SUBCONTRACTORS

CTDOT must approve any and all subcontractors utilized by the Contractor prior to any such subcontractor commencing any work. Contractor acknowledges that any work provided under the Contract to any state entity is work conducted on behalf of the State and that the Commissioner of CTDOT or his/her designee may communicate directly with any subcontractor as the State deems to be necessary or appropriate. Contractor shall be responsible for all payment of fees charged by the subcontractor(s). A performance evaluation of any subcontractor shall be provided promptly by the Contractor to CTDOT upon request.

Contractor must provide the majority of services described in the specifications.

2.7 SINGLE PROPOSAL RESPONSE

If only one (1) proposal is received in response to this RFP, a detailed cost proposal may be requested of the single Proposer. A cost/price analysis and evaluation and/or audit may be performed of the cost proposal in order to determine if the price is fair and reasonable.

2.8 PURCHASE ORDERS:

Purchase Orders will be issued by CTDOT's Division of Purchasing and Materials Management. Contractors are cautioned not to perform services without receiving a purchase order number. Questions regarding Purchase Orders should be directed to CTDOT's Division of Purchasing & Materials Management; Processing Unit at telephone number (860) 594-2070.

Before a Contractor is used, a Certificate of Insurance, as detailed elsewhere in this document, must be on file at CTDOT's Division of Purchasing & Materials Management.

2.9 SECURITY AND/OR PROPERTY ENTRANCE POLICIES AND PROCEDURES

Contractor shall adhere to established security and/or property entrance policies and procedures. It is the responsibility of each Contractor to understand and adhere to those policies and procedures prior to any attempt to enter any premises for the purpose of carrying out the scope of work described in this Contract.

2.10 DELIVERY

Unless otherwise specified, the buses shall be delivered to the Hartford division of CTTransit at 100 Leibert Road, Hartford CT 02141, washed and with a full tank of fuel at a rate not to exceed ten (10) buses per week. Delivery shall be completed within time frame specified in the executed contract documents. Hours of delivery shall be 8:00 am through 4:00 pm, Monday through Friday.

Delivery of buses shall be determined by signed receipt of CTDOT's designated agent at the point of delivery and may be preceded by a cursory inspection of the bus.

2.11 CERTIFICATE OF ORIGIN

The awarded vendor must furnish a certificate of origin to the State of Connecticut unless otherwise specified. The certificate of origin must be mailed or delivered to the State of Connecticut, Department of Transportation, 2800 Berlin Turnpike, Room 2442, Newington, CT, Attention: Asset Management/Inventory Section, along with the invoice number. All information on the certificate must be completed accurately and serial numbers and odometer reading must match the bus that was delivered. **Failure to provide the proper certificate of origin will result in the delay of payment.**

The Certificate of Origin will be completed as follows:

Name of Purchaser: State of Connecticut, Department of Transportation
Address: 2800 Berlin Turnpike, Newington, CT 06131-7546
Odometer Reading: To be completed by the Contractor
Signature: Of authorized representative transferring ownership to the State

2.12 PURCHASE ORDER PAYMENTS

Payments will be processed by the Accounts Payable Unit through the State Comptroller's Office. Payments will be made in arrears and after receipt of a properly completed invoice. All billing must reference the State Purchase Order number, vendor invoice number and vendor's Federal Identification Number.

Invoices are to be mailed to:

State of Connecticut, Department of Transportation
Attn: Philip T. Scarozzo, Transit Manager
Bureau of Public Transportation
2800 Berlin Turnpike
P.O. Box 317546
Newington, CT 06131-7546

State of Connecticut payment terms are net forty-five (45) days.

Note: State of Connecticut General Statutes prohibits any state agency from making prepayments for repair or maintenance service. All payments will be made in arrears.

2.13 LIQUIDATED DAMAGES

It is mutually understood and agreed by and between the parties to the Contract that time is of the essence with respect to the completion of the Work and that in case of any failure on the part of the Contractor to complete the Work within the time specified in the contract or any extension thereof, CTDOT will be damaged thereby. The amount of said damages, being difficult if not impossible of definite ascertainment and proof, it is hereby agreed that

the amount of such damages due CTDOT shall be fixed at \$150.00 per calendar day per bus not delivered in substantially as good condition as inspected by CTDOT at the time released for shipment.

The Contractor hereby agrees to pay the aforesaid amounts as fixed, agreed and liquidated damages, and not by way of penalty, to CTDOT and further authorizes CTDOT to deduct the amount of the damages from money due the Contractor under the Contract, computed as aforesaid. If the monies due the Contractor are insufficient or no monies are due the Contractor, the Contractor shall pay CTDOT the difference or the entire amount, whichever may be the case, within thirty (30) calendar days after receipt of a written demand by the Contracting Officer.

The payment of aforesaid fixed, agreed and liquidated damages shall be in lieu of any damages for any loss of profit, loss of revenue, loss of use, or for any other direct, indirect, special or consequential losses or damages of any kind whatsoever that may be suffered by CTDOT arising at any time from the failure of the Contractor to fulfill the obligations referenced in this clause in a timely manner.

CTDOT specifically reserves the right, without limitation of any other rights, to terminate the Contract in accordance with SP-50; Contract Document (10.) "Termination".

2.14 PRICE ESCALATION/ECONOMIC PRICE ADJUSTMENT

CTDOT reserves the right to order buses and equipment over the five (5) year period beginning upon the day of contract award. The base price for buses furnished shall be the price agreed upon by the parties on that award date. The prices shall remain firm/fixed for any orders issued by CTDOT within a period of 365 days of contract award. The price(s) of any buses/equipment ordered by CTDOT after the initial 365 days firm/fixed price period shall be, the agreed upon base price adjusted to reflect any change which will be calculated based on the percentage change in the PPI category ~~WPS141106-WPU1413~~ "Transportation Equipment", "Trucks, over 14,000 lbs. GVW". The percentage change in this price index shall be used to adjust the Base Order Prices. However, in no event will the price(s) for any purchase order be adjusted by more or less than 5 percent of the price(s) that would have been in effect twelve (12) months prior to the date of the release, in accordance with the terms and conditions set forth above. If significant non-cardinal modifications are made to the technical specifications, the parties will enter into negotiations to determine the final unit price for subsequent orders.

RWA
/PS
RWA
/PS

2.15 ASSIGNMENT OF CONTRACT BY STATE

At any time during the continuance of the contract, CTDOT shall have the right to sell, assign and transfer the contract or all or part of the specified deliverables under the contract both the base and/or the option quantities with all its right, title, and interest therein, to any person, firm, or corporation, and the assignee thereof shall acquire all the rights granted to the State and shall be subject to any obligations that CTDOT may have under the contract.

2.16 BUSINESS OPERATIONAL CHANGES

In the event that the awarded Contractor moves or updates telephone numbers, it is the responsibility of the Contractor to advise CTDOT's Division of Purchasing & Materials Management of such changes in writing. The State will not be held responsible for payments or Purchase Orders that are delayed due to additional routing caused by the lack of notification on the Contractor's part. Change of address or telephone updates must be forwarded to:

State of Connecticut, Department of Transportation
Division of Purchasing & Materials Management
2800 Berlin Turnpike
P.O Box 317546
Newington, CT 06131-7546

Attn: Mary Matuszak, Fiscal Administrative Supervisor
mary.matuszak@ct.gov

NEW FLYER

EXHIBIT A.1

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

General Requirements

This procurement is for 30', 35' and 40' low floor heavy duty transit buses. . They all are required to have a minimum expected life of 15 years or 500,000 miles whichever comes first and are intended for the widest possible spectrum of passengers, including children, adults, the elderly, and persons with disabilities. Options are also requested for hybrid drive design versions of each of these different size buses.

These buses shall be designed to operate the “Transit Bus Duty Cycle” as described in the American Public Transportation Association “Standard Bus Procurement Guidelines”. All Definitions and abbreviations listed in the APTA “Standard Bus Procurement Guidelines” shall also apply to this procurement.

The contractor(s) shall comply with all applicable Federal, state and local regulations. The bus shall meet all applicable FMVSS and shall accommodate all applicable FMCSR regulations in effect at the date of manufacture.

The contractor(s) shall ensure that the application and installation of major bus sub-components and systems are compliant with all such sub-component vendors’ requirements and recommendations. Components used in the vehicle shall be of heavy-duty design and proven in transit service. Each contractor is required to provide information necessary for the evaluation committee to access the equivalency of components or systems.

Each bus facility which procures vehicles through this procurement shall receive a complete set of separate severe duty notebook computer preloaded with software for each of the applications listed below:

- Engine programming and diagnostics
- Transmission programming and diagnostics
- Multiplex system programming and diagnostics
- HVAC system programming and diagnostics
- Anti-Lock Brake / Electronic Stability Control diagnostics
- Electronic Destination Sign programming and diagnostics
- Video Security System programming and diagnostics
- Electronic Fan System and Beltless Alternator System
- Electronic Communication, Radio System, Passenger Counter and ITS

Towing adapters, jacking adapters, wheel alignment tools, compartment access door keys and any other special tools required to maintain the bus shall be listed in the proposal and supplied to each transit facility receiving buses in this procurement. The number of each item to be provided is listed in the following table:

Item	1-20 Buses	21 - 40 Buses	41+ Buses
Towing Adapters	1	2	3
Jacking Adapters	1	2	3
Wheel Alignment Tools	1	2	3
Compartment Keys	5	8	10
Other Required Tools	# as appropriate based upon # buses received		

Test ports shall be provided for commonly checked functions on the bus such as air intake, exhaust, hydraulic, pneumatic, charge-air and engine cooling systems.

The Contractor(s) shall provide a manual listing the times required for typical repair and service items on the bus.

All systems or components subject to periodic maintenance or that are subject to periodic failures shall be readily accessible for service and inspection. To the extent practicable, removal or physical movement of components unrelated to the specific maintenance and/or repair tasks involved shall be unnecessary.

Components with identical functions shall be interchangeable to the extent practicable. These components shall include, but not limited to, passenger window hardware, interior trim, lamps, lamp lenses, and seat assemblies. Components with non-identical functions shall not be, or appear to be, interchangeable. A component shall not be used in an application for which it was neither designed nor intended.

The bus shall achieve normal operation in ambient temperature ranges of -10° F to +115° F, at relative humidity between 5 percent and 100 percent, and at altitudes up to 3,000 feet above sea level. Degradation of performance due to atmospheric conditions shall be minimized at temperatures below -10° F, above +115° F, or at altitudes above 3,000 feet.

All the Connecticut bus transit systems in this procurement operate in a high corrosion environment due to the winter sand and salt and due to the close proximity to the Long Island Sound. The CTTRANSIT Waterbury operation is also extremely hilly with high road crowns. The buses proposed should address these issues.

In the design and manufacture of the bus the Contractor(s) shall make every effort to reduce the amount of potentially hazardous waste generated by the Procuring Agency when maintaining the bus in accordance with the procedures contained in the manufacturer's maintenance manuals. The manufacturer shall use, whenever possible, all LED lighting, cleanable filters, and non-asbestos brake blocks and gaskets. In accordance with Section 6002 of the Resource Conservation and Recovery Act the Contractor(s) shall use, whenever possible and allowed by the specifications, recycled materials in the manufacture of the bus.

The contractor(s) shall comply with all applicable Federal requirements defined in the Americans with Disabilities Act, 49 CFR Part 38, and all state regulations regarding mobility-impaired persons.

Basic Body

The bus shall have a clean, smooth, modern design. The bus height shall not exceed 130 inches. The exterior and body features, including grilles and louvers, shall be shaped to facilitate cleaning by automatic bus washers without snagging washer brushes. Water and dirt shall not be retained in or on anybody feature to freeze or bleed out onto the bus after leaving the washer. The body and windows shall be sealed to prevent leaking of air, dust, or water under normal operating conditions and during cleaning in automatic bus washers for the service life of the bus. Exterior panels shall be sufficiently stiff to minimize vibration, drumming or flexing while the bus is in service. When panels are lapped, the upper and forward panels shall act as a watershed. However if entry of moisture into interior of vehicle is prevented by other means, then rear cap panels may be lapped otherwise. The windows, hatches, and doors shall be able to be sealed. Accumulation on any window of the bus of spray and splash generated by the bus's wheels on a wet road shall be minimized.

All body panel connections to frame shall have body adhesives and sealants applied to the entire contact surface of panel to preclude corrosion between panel and structure.

The bus body and roof structure shall withstand a static load equal to 150 percent of the curb weight evenly distributed on the roof with no more than a 6-inch reduction in any interior dimension. Windows shall remain in place and shall not open under such a load. These requirements must be met without components such as roof mounted air conditioning installed.

The bus shall withstand a 25-mph impact by a 4,000-pound automobile at any point, excluding doorways, along either side of the bus with no more than 3 inches of permanent structural deformation at seated passenger hip height. This impact shall not result in sharp edges or protrusions in the bus interior.

Exterior panels below 35 inches from ground level shall withstand a static load of 2,000 pounds applied perpendicular to the bus by a pad no larger than 5 inches square. This load shall not result in deformation that prevents installation of new exterior panels to restore the original appearance of the bus.

Body materials shall be selected and the body fabricated to reduce maintenance, extend durability, and provide consistency of appearance throughout the service life of the bus. Detailing shall be kept simple; add-on devices and trim, where necessary, shall be minimized and integrated into the basic design. The body material surfaces shall be protected against graffiti and vandalism.

The bus flooring, sides, roof, understructure, axle suspension components shall resist corrosion or deterioration from atmospheric conditions and road salts for a period of 15 years or 500,000 miles whichever comes first. The bus shall maintain structural integrity and nearly maintain original appearance throughout its service life, provided that it is maintained by the Procuring Agency in accordance with the procedures specified in the Contractor's service manual. With the exception of periodically inspecting the visible coatings applied to prevent corrosion and reapplying these coatings in limited spots, the Contractor shall not require the complete reapplication of corrosion compounds over the life of the bus.

The vehicle shall be constructed using only stainless steel or other approved inherently corrosion-resistant materials and fasteners of sufficient type and quality to minimize deterioration over the specified period. The structure shall not require corrosion-preventive coatings or after-treatments to be applied either during construction or throughout the service life of the vehicle.

All materials that are not inherently corrosion resistant shall be protected with corrosion-resistant coatings. All joints and connections of dissimilar metals shall be corrosion-resistant and shall be protected from galvanic corrosion. Representative samples of all materials and connections shall withstand a 2-week (336-hour) salt spray test in accordance with ASTM Procedure B-117 with no structural detrimental effects to normally visible surfaces, and no weight loss of over 1 percent.

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.

The passenger and engine compartments shall be separated by a bulkhead(s) that shall, by incorporation of fireproof materials in its construction, be a firewall. The engine compartment shall include areas where the engine and exhaust systems are housed including the muffler, if mounted above the horizontal shelf. This firewall shall preclude propagation of an engine compartment fire into the passenger compartment and shall be in accordance with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993. Only necessary openings shall be allowed in the firewall, and these shall be fireproofed. 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. Wiring may pass through the bulkhead only if connectors or other means are provided to prevent or retard fire propagation through the firewall. 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.

The bus, loaded to GVWR and under static conditions, shall not exhibit deflection or deformation that impairs the operation of the steering mechanism, doors, windows, passenger escape mechanisms and service

doors. Static conditions shall include the vehicle at rest with any one wheel or dual set of wheels on a 6-inch curb or in a 6-inch deep hole.

Prior to acceptance of first bus, the structure of the bus shall have undergone appropriate structural testing and/or analysis, including FTA required Altoona testing, to ensure adequacy of design for the urban transit service. Any items that required repeated repairs or replacement must undergo the corrective action with supporting test and analysis. A report clearly describing and explaining the failures and corrective actions taken to ensure any and all such failures will not occur shall be submitted to the Procuring Agency.

Towing devices shall be provided on each end of the bus. Towing devices should accommodate wheel lift, flat-bedding or flat-towing. Each towing device shall withstand, without permanent deformation, tension loads up to 1.2 times the curb weight of the bus within 20 degrees of the longitudinal axis of the bus. The rear towing device(s) shall not provide a toehold for unauthorized riders.

The front towing devices shall allow attachment of adapters for a rigid tow bar and shall permit lifting and towing of the bus, at curb weight, until the front wheels are clear off the ground.

The rear towing devices shall permit lifting and towing of the bus for a short distance, such as in cases of an emergency, to allow access to provisions for front towing of bus. The method of attaching the tow bar or adapter shall require the specific approval of the Procuring Agency. Each towing device shall accommodate a crane hook with a 1-inch throat for towing and recovery.

It shall be possible to safely jack up the bus, at curb weight, with a common 10-ton floor jack or pneumatic bag (MatJack) with or without special adapter, when a tire or dual set is completely flat and the bus is on a level, hard surface, without crawling under any portion of the bus. Jacking from a single point shall permit raising the bus sufficiently high to remove and reinstall a wheel and tire assembly. Jacking pads located on the axle or suspension near the wheels shall permit easy and safe jacking with the flat tire or dual set on a 6-inch-high run-up block not wider than a single tire. Jacking and changing any one tire shall be completed by a mechanic in less than 30 minutes from the time the bus is approached. The bus shall withstand such jacking at any one or any combination of wheel locations without permanent deformation or damage. Jacking pads shall be painted safety yellow or orange for ease of identification primary and secondary jack points.

The bus axles or jacking plates shall accommodate the lifting pads of a 2-post hoist system. Jacking plates, if used as hoisting pads, shall be designed to prevent the bus from falling off the hoist. Other pads or the bus structure shall support the bus on jack stands independent of the hoist.

Where the floor meets the walls of the bus, as well as other vertical surfaces, such as, platform risers, the surface edges shall be blended with a circular section of radius not less than 1 inch. Similarly, a molding or cove shall prevent debris accumulation between the floor and wheel housings. The vehicle floor in the area of the entrance and exit doors shall have a lateral slope not exceeding 2° to allow for drainage.

The floor seam must lap up the sidewall. The floor deck may be integral with the basic structure or mounted on the structure securely to prevent chafing or horizontal movement and designed to last the life of the bus. Sheet metal screws shall not be used to retain the floor and all floor fasteners shall be serviceable from one side only. The use of adhesives to secure the floor to the structure shall be allowed only in combination with the use of bolt or screw fasteners and its effectiveness shall last throughout life of the coach. Tapping plates, if used for the floor fasteners, shall be no less than the same thickness as a standard nut and all floor fasteners shall be secured and protected from corrosion for the service life of the bus. The floor deck shall be reinforced as needed to support passenger loads. At GVWR, the floor shall have an elastic deflection of no more than 0.60 inches from the normal plane. The floor shall withstand the application of 2.5 times gross load weight without permanent detrimental deformation. Floor, with coverings applied, shall withstand a static load of at least 150 pounds applied through the flat end of a ½ inch-diameter rod, with 1/32-inch radius, without permanent visible deformation.

The floor shall consist of the subfloor and the floor covering. The floor, as assembled, including the sealer, attachments and covering shall be waterproof, non-hygroscopic, and impervious to mold growth. The subfloor shall be Space-age Synthetics Thermo-Lite or equal composite flooring material that will provide a minimum 150 pound weight savings per bus to the standard 3/4" marine plywood subfloor product. The composite material shall be waterproof and will not rot, warp, mildew, allow mold growth, split, soften or delaminate, will accept standard tooling and hardware, cannot be damaged by insects and should last the life of a 15 year bus.

The operator's platform height shall not exceed 12 inches. Trim shall be provided along top edges of platforms unless integral nosing is provided. Except where otherwise indicated, covering of platform surfaces and risers shall be same material as specified for floor covering. Trim installed along edges of platforms shall be constructed of stainless steel.

The operator's platform shall be of a height that, in a seated position, the operator can see an object located at an elevation of 42" above the road surface, 24" from the leading edge of the bumper. Notwithstanding this requirement, the platform height shall not position the operator such that the operator's vertical upward view is less than 15 degrees.

If the operator's platform is higher than 12 inches, then the farebox is to be mounted on platform of suitable height to provide accessibility for operator without compromising passenger's access.

If the vehicle is of a bi-level floor design, an intermediate platform shall be provided along the center aisle of the bus to facilitate passenger traffic between the upper and lower floor levels. This intermediate platform shall be cut into the rear platform and shall be approximately the aisle width, 18 inches deep and approximately one half the height of the upper level relative to the lower level. The horizontal surface of this platform shall be covered with yellow Hypalon or equal ribbed rubber or skid-resistant material and shall be sloped slightly for drainage. A warning decal or sign shall be provided at the immediate platform area to alert passengers to the change in floor level. All stair risers shall be laminated.

Sufficient clearance and air circulation shall be provided around the tires, wheels, and brakes to preclude overheating when the bus is operating on the design operating profile. The Waterbury buses shall be designed and constructed to allow the use of full-tire snow chains. Tire chain clearance shall be provided in accordance with SAE J683. Wheel well chain guards shall be provided as an option.

Interference between the tires and any portion of the bus shall not be possible in maneuvers up to the limit of tire adhesion with weights from curb weight to GVWR. Wheel housings shall be adequately reinforced where seat pedestals are installed. Wheel housings shall have sufficient sound insulation to minimize tire and road noise and meet all requirements. Wheel housing shall withstand a direct tire blowout.

Design and construction of front wheel housings shall allow for the installation of radio/electronic equipment storage compartment on interior top surface or its use as a luggage rack.

The exterior finish of the front wheel housings shall be scratch-resistant and complement interior finishes of the bus to minimize the visual impact of the wheel housing. If fiberglass wheel housings are provided, then they shall be color-impregnated to match interior finishes. The lower portion extending to approximately 12 inches above floor shall be equipped with additional more resistant coating or stainless steel trim.

Wheel housings shall be constructed of corrosion-resistant, fire-resistant material. Wheel housings, as installed and trimmed, shall withstand impacts of a 2-inch steel ball with at least 200 foot-pounds of energy without penetration.

Exterior protrusions, greater than 1/2 inch and within 80 inches of the ground, shall have a radius no less than the amount of the protrusion. The exterior rearview mirrors and required lights and reflectors are exempt from the protrusion requirement. Grilles, doors, bumpers and other features on the sides and rear of the bus shall be designed to minimize the ability of unauthorized riders to secure footholds or handholds.

Exterior panels below the lower daylight opening and within 35 inches above ground level shall be divided into sections that are repairable or replaceable by a mechanic in less than 30 minutes for a section up to 5 feet long (excludes painting).

Lower exterior panels within 28 inches above ground level shall be equipped with removable resilient, impact resistant panels for protection against minor impacts and scratches. The panels shall withstand impacts of 200 foot-pounds of energy from a steel-faced spherical missile no less than 9 inches in diameter without any visible damage to it or underlying panel and structure. The panels shall be no greater than 8 feet in length and shall be easily replaced by a mechanic in less than 10 minutes. The panels shall be color impregnated to complement color and paint scheme.

Rain gutters shall be provided to prevent water flowing from the roof onto the passenger doors, operator's side window, and exterior mirrors. When the bus is decelerated, the gutters shall not drain onto the windshield, or operator's side window, or into the door boarding area. Cross sections of the gutters shall be adequate for proper operation. A rain gutter shall also be provided above passenger side windows.

Provisions shall be made to recess mount standard size U.S. license plates per SAE J686 on the front and rear of the bus. These provisions shall recess the license plates so that they can be cleaned by automatic bus washing equipment without being caught by the brushes. License plates shall be mounted at the lower center or lower street side of the bus and shall not allow a foothold or handhold for unauthorized riders.

Features to minimize water spray from the bus in wet conditions shall be included in wheel housing design. Any fender skirts provided shall be easily replaceable. They shall be flexible if they extend beyond the allowable body width. Wheels and tires shall be removable with the fender skirts in place.

Splash aprons, composed of 1/4-inch-minimum composition or rubberized fabric, shall be installed behind and/or in front of wheels as needed to reduce road splash and protect underfloor components. The splash aprons shall extend downward to within 4 inches of the road surface at static conditions. Apron widths shall be no less than tire widths, except for the front apron that shall extend across the width of the bus. Splash aprons shall be bolted to the bus understructure. Splash aprons and their attachments shall be inherently weaker than the structure to which they are attached. The flexible portions of the splash aprons shall not be included in the road clearance measurements. Other splash aprons shall be installed where necessary to protect bus equipment.

Conventional or pantograph hinged doors shall be used for the engine compartment and for all auxiliary equipment compartments. Access openings shall be sized for easy performance of tasks within the compartment including tool operating space. Access doors shall be of rugged construction and shall maintain mechanical integrity and function under normal operations throughout the service life of the bus. They shall close flush with the body surface. All doors shall be hinged at the top or on the forward edge and shall be prevented from coming loose or opening during transit service or in bus washing operations. Doors with top hinges shall have safety props stored behind the door or on the doorframe. All access doors shall be retained in the open position by props or counterbalancing with over-center or gas-filled springs and shall be easily operable by one person. Springs and hinges shall be corrosion resistant. Latch handles shall be flush with, or recessed behind, the body contour and shall be sized to provide an adequate grip for opening. Access doors, when opened, shall not restrict access for servicing other components or systems. Access doors larger in area than 100 square inches shall be equipped with latches. The latches shall be standardized and shall be openable without the use of a key or tool.

Batteries shall be securely mounted on a stainless steel or equivalent tray that can accommodate the size and weight of the batteries. The battery tray shall pull out easily and properly support the batteries while they are being serviced. The tray shall allow each battery cell to be easily serviced and filled. A locking device shall retain the battery tray in the stowed position. A decal showing battery diagram and voltage shall be attached to the interior side of each battery compartment door.

The battery compartment or enclosure shall be vented and self-draining. It shall be accessible only from outside the bus. Batteries shall not be located within the engine compartment. All components within the battery compartment, and the compartment itself, shall be protected from damage or corrosion from the electrolyte and gases emitted by the battery, and from snow, slush, salt spray, mud, etc. generated from environmental conditions outside the vehicle. The inside surface of the battery compartment's access door shall be electrically insulated, as required, to prevent the battery terminals from shorting on the door if the door is damaged in an accident or if a battery comes loose.

Lights shall be provided in the engine and all other compartments, where service may be required, to generally illuminate the area for night emergency repairs or adjustments. Sealed lamp assemblies (LED type preferred) shall be provided in the engine compartment and shall be controlled by a switch located near the rear start controls in the engine compartment. Necessary lights, located in other service compartments, shall be provided with switches on the light fixture or convenient to the light.

Bumpers shall provide impact protection for the front and rear of the bus with the top of the bumper being 28 ½ inches above the ground. Bumper height shall be such that when one bus is parked behind another, a portion of the bumper faces will contact each other.

No front part of the bus, including the bumper, shall be damaged as a result of a 5-mph impact of the bus at curb weight with a fixed, flat barrier perpendicular to the bus's longitudinal centerline. The bumper shall return to its pre-impact shape within 10 minutes of the impact. The bumper shall protect the bus from damage as a result of 6.5 mph impacts at any point by the Common Carriage with Contoured Impact Surface defined in Figure 2 of FMVSS 301 loaded to 4,000 pounds parallel to the longitudinal centerline of the bus and 5.5-mph impacts into the corners at a 30 degree angle to the longitudinal centerline of the bus. The energy absorption system of the bumper shall be independent of every power system of the bus and shall not require service or maintenance in normal operation during the service life of the bus.

No rear part of the bus, including the bumper, shall be damaged as a result of a 2-mph impact with a fixed, flat barrier perpendicular to the longitudinal centerline of the bus. The bumper shall return to its pre-impact shape within 10 minutes of the impact. When using a yard tug with a smooth, flat plate bumper 2 feet wide contacting the horizontal centerline of the rear bumper, the bumper shall provide protection at speeds up to 5 mph, over pavement discontinuities up to 1 inch high, and at accelerations up to 2 mph/sec. The rear bumper shall protect the bus, when impacted anywhere along its width by the Common Carriage with Contoured Impact Surface defined in Figure 2 of FMVSS 301 loaded to 4,000 pounds, at 4 mph parallel to, or up to a 30degree angle to, the longitudinal centerline of the bus. The rear bumper shall be shaped to preclude unauthorized riders from standing on the bumper. The bumper shall be independent of all power systems of the bus and shall not require service or maintenance in normal operation during the service life of the bus.

Bumper material shall be corrosion-resistant and withstand repeated impacts of the specified loads without sustaining damage. Visible surfaces shall be black or color coordinated with the bus exterior. These bumper qualities shall be sustained throughout the service life of the bus.

All exterior lights shall be designed to prevent entry and accumulation of moisture or dust, and each lamp shall be replaceable in less than 5 minutes by a mechanic. Commercially available LED (Light Emitting Diode)-type lamps shall be used wherever possible. Lights mounted on the engine compartment doors shall be protected from the impact shock of door opening and closing. Lamps, lenses and fixtures shall be interchangeable to the extent practicable. Two hazard lamps at the rear of the bus shall be visible from

behind when the engine service doors are opened. Light lenses shall be designed and located to prevent damage when running the vehicle through an automatic bus washer. Lights located on the roof and sides (directionals) of the bus shall have protective shields or be of the flush mount type to protect the lens against minor impacts.

Visible and audible warning shall inform following vehicles or pedestrians of reverse operation. Visible reverse operation warning shall conform to SAE Standard J593. Audible reverse operation warning shall conform to SAE Recommended Practice J994 Type C or D.

Lamps at the front and rear passenger doorways shall comply with all ADA requirements and shall activate only when the doors open. These lamps shall illuminate the street surface to a level of no less than 1 foot-candle for a distance of 3 feet outward from the outboard edge of the door threshold. The lights may be positioned above or below the lower daylight opening of the windows and shall be shielded to protect passengers' eyes from glare. Turn-signal lights shall be provided on all sides of the bus.

Materials shall be selected on the basis of maintenance, durability, appearance, safety, flammability, and tactile qualities. Trim and attachment details shall be kept simple and unobtrusive. Materials shall be strong enough to resist everyday abuse and vandalism; they shall be resistant to scratches and graffiti. Interior trim shall be secured to avoid resonant vibrations under normal operational conditions.

Interior surfaces more than 10 inches below the lower edge of the side windows or windshield shall be shaped so that objects placed on them fall to the floor when the coach is parked on a level surface. The entire interior shall be cleanable with a hose, using a liquid soap attachment. Water and soap should not normally be sprayed directly on the instrument and switch panels. An anti-graffiti/vandalism surface treatment for interior surfaces shall be provided.

The entire front end of the bus shall be sealed to prevent debris accumulation behind the dash and to prevent the operator's feet from kicking or fouling wiring and other equipment. The front end shall be free of protrusions that are hazardous to passengers standing or walking in the front of the bus during rapid decelerations. Paneling across the front of the bus and any trim around the operator's compartment shall be formed metal or plastic material. Plastic dash panels shall be reinforced, as necessary, vandal-resistant, and replaceable. All colored, painted, and plated parts forward of the operator's barrier shall be finished with a dull matte surface to reduce glare.

The rear bulkhead and rear interior surfaces shall be material suitable for exterior skin, painted and finished to exterior quality, or paneled with melamine-type material, and trimmed with stainless steel, aluminum, or plastic.

Interior side trim panels shall be Arborite Vogue P-925-S or equal material. The operator's barrier shall be smoke color acrylic type material. Panels shall be easily replaceable and tamper-resistant. They shall be reinforced, as necessary, to resist vandalism and other rigors of transit bus service. Individual trim panels and parts shall be interchangeable to the extent practicable. Untrimmed areas shall be painted and finished to the quality described in Section 5.4.3.10. All materials shall comply with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993.

A suitable hanger shall be installed in a convenient approved location for the operator's overcoat and shall not interfere with location of fire extinguisher or any other safety equipment.

A rugged device shall be provided to securely hold the operator's drink container, which may vary widely in diameter. It must be mounted within easy reach of the operator and must have sufficient vertical clearance for easy removal of the container. When the container is in the device, the operator's view of the road must not be obstructed and leakage from the container must not fall on any switches, gauges or controls

A barrier or bulkhead between the operator and the street-side front passenger seat shall be provided. The barrier shall minimize glare and reflections in the windshield directly in front of the barrier from interior lighting during night operation.

An Operator's Barrier shall extend continually from floor to ceiling and from the bus wall to first stanchion immediately behind the Operator to provide security to the Operator and limit passenger conversation. Location and shape must permit full seat travel possibilities and accommodate the shoulders of a 95th percentile male. The partition shall have a side return and stanchion to prevent passengers from standing behind the Operator's seat; lower area between seat and panel must be accessible to the Operator. The partition must be strong enough in conjunction with entire partition assembly for mounting of such equipment as flare kits, fire extinguishers (1.2kg), microcomputer, public address amplifier, etc. The partition shall start 25mm (1") above floor and dark or black panels are preferred. The panel should be attached with rubber grommets.

An enclosed Operator storage area shall be provided with a positive latching door and lock; minimum approximate size: 355 mm x 355 mm x 355 mm (14" x 14" x 14").

Sturdy divider panels constructed of durable, unpainted, corrosion-resistant material complementing the interior trim shall be provided to act as both a physical and visual barrier for seated passengers. Modesty panels shall be located at doorways to protect passengers on adjacent seats, and along front edge of rear upper level. Design and installation of modesty panels located in front of forward facing seats shall include a handhold/grab handle along its top edge. These dividers shall be mounted on the sidewall and shall project toward the aisle no farther than passenger knee projection in longitudinal seats or the aisle side of the transverse seats. Modesty panels shall extend no higher than the lower daylight opening of the side windows and those forward of transverse seats shall extend downward to a level between 1-1/2 and 1 inches above the floor. Panels forward of longitudinal seats shall extend to below the level of the seat cushion. Dividers positioned at the doorways shall provide no less than a 2-1/2-inch clearance between the modesty panel and the opened door to protect passengers from being pinched. Modesty panels installed at doorways shall be equipped with grab rails (see Section 5.4.5.2). The modesty panel and its mounting shall withstand a static force of 250 pounds applied to a four-inch by four-inch area in the center of the panel without permanent visible deformation. A clear Plexiglas wind screen shall be provided on the modesty panel located in front of the curb side seats directly behind the rear door.

The rear bulkhead paneling shall be hard surface, graffiti resistant, contoured to fit the ceiling, side walls, and seat backs so that any litter, such as a cigarette package or newspaper, will tend to fall to the floor or seating surface when the bus is on a level surface. Any air vents in this area shall be louvered to reduce airflow noise and to reduce the probability of trash or litter being thrown or drawn through the grille. If it is necessary to remove the panel to service components located on the rear bulkhead, the panel shall be hinged or shall be able to be removed and replaced by a mechanic in 5 minutes. Grilles where access to or adjustment of equipment is required shall be heavy duty and designed to minimize damage. Rear bulkhead shall not be covered in carpeting or fabric material.

Engine

The propulsion system and drive train shall provide power to enable the bus to meet the defined acceleration, top speed, and gradability requirements, and operate all propulsion-driven accessories. Power requirements are based on heavy, heavy-duty diesel (HHDD) engines certified for use in all 50 states using actual road test results or computerized vehicle performance data. The buses shall be capable of achieving a top speed of 68 M.P.H. on a straight, level road at GVWR with all accessories operating.

Gradability requirements shall be met on grades with a dry commercial asphalt or concrete pavement at GVWR with all accessories operating. The propulsion system and drive train shall enable the bus to achieve and maintain a speed of 40 mph on a 2-1/2 percent ascending grade and 7 m.p.h. on a 16 percent ascending grade.

The bus acceleration shall meet the requirements as listed in the APTA "Standard Bus Procurement Guidelines" and the FTA Altoona Bus Testing Standards. The operating range of each bus when run on the transit coach duty cycle shall be at least 350 miles.

The engine shall be tuned when delivered to provide optimized performance as specified above, including fuel economy. All related components and configuration that affect fuel economy, such as, fan control/operation, transmission, axle ratio, etc., shall be selected accordingly. The bus shall achieve a minimum average fuel economy of 4.00 miles per gallon when run on the Transit Coach Duty Cycle loaded to SLW. Reference SAE J1376, Fuel Economy Measurement Test (Engineering Type) for Trucks and Buses.

The HHDD engine shall be designed to operate for not less than 300,000 miles without major failure or significant deterioration. Components of the fuel injector and/or control system shall be designed to operate for not less than 150,000 miles without replacement or major service.

The engine shall be designed to be capable of operating without any damage on both Nos. 1 and 2 ultra-low sulfur diesel fuels and up to 20% Biodiesel in accordance with ASTM D975. The engine shall be equipped with an electronically controlled management system.

The engine control system shall have onboard diagnostic capabilities able to monitor vital engine functions; store and time stamp out of parameter conditions in memory, and communicate faults and vital conditions to service personnel. Diagnostic reader device connector ports, suitably protected against dirt and moisture, shall be provided in operator's area and near or inside engine compartment.

The engine starter system shall be protected by an interlock that prevents its engagement when the engine is running and of a design that forces its disengagement once the engine starts. The engine shall be equipped with an operator-controlled fast idle device. The fast idle control shall be a two-way toggle mounted on the dash or side console and shall activate only with the transmission in neutral and the parking brake applied.

The engine control system shall protect the engine against progressive damage. The system shall monitor conditions critical for safe operation and automatically derate power and/or speed and initiate engine shutdown as needed. The on-board diagnostic system shall trigger a visual and audible alarm to the operator when the engine control unit detects a malfunction and the engine protection system is activated.

Automatic shutdown shall only occur when the parameters established for the following functions below are exceeded: Coolant Level, Coolant Temperature, Oil Pressure, Oil Temperature and fire suppression.

The optional hybrid drive propulsion system shall be provided for each bus size when specifically included in the relevant purchase order. The hybrid propulsion system shall be an Allison E40, BAE HybriDrive, ISE Thundervolt/Siemans or equal design. It must have been installed and operating on a minimum 100 transit buses for a minimum of one year at the time of proposal submission. The traction electrical storage shall use nickel metal hydride, Lithium Ion or Lithium Polymer batteries or Ultra capacitors. Lead acid batteries for traction storage will not be accepted.

The cooling systems shall be electric hybrid fans using the latest technology and of sufficient size to maintain all engine and transmission fluids and engine intake air at safe, continuous operating temperatures during the most severe operations possible and in accordance with engine and transmission manufacturers' cooling system requirements. The cooling system fan/fans control should sense the temperatures of the operating fluids and the intake air and if either is above safe operating conditions the cooling fan should be engaged. The fan control system shall be designed with a fail-safe mode of "fan on." The cooling system in new condition shall have an ambient capacity of at least 110° F with water as

coolant and sea level operation. Hybrid fan system shall provide a self-cleaning function, activated on initial start-up of the engine as well as manually as necessary.

The engine shall be cooled by a dedicated/isolated water-based, pressure type cooling system that does not interact or share coolant with the passenger compartment heating / defrosting system. The engine cooling system will be designed so as not to allow aeration or air pockets to form in any area of the engine or EGR system, nor shall it permit boiling or coolant loss during the operations described above. The passenger heater/defroster system shall be controlled and supplied by a source that is not connected to the engine or dependent on engine temperature. This is necessary to eliminate damage to the engine and EGR cooler caused by aerated coolant returning from the heater cores. Engine thermostats shall be easily accessible for replacement. Shutoff valves shall allow filter replacement without coolant loss. Valves shall permit complete shutoff of lines for the heating and defroster units, and water booster pumps. The water boost pump shall be a magnetically coupled, brushless and seal less design. 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. A sight glass to determine satisfactory engine coolant level shall be provided and shall be accessible by opening the engine compartment door. A spring-loaded, push button type valve to safely release pressure or vacuum in the cooling system shall be provided with both it and the water filler no more than 48 inches above the ground and both shall be accessible through the same access door.

The engine shall meet all applicable emission standards. Exhaust gases and waste heat shall be discharged from the roadside rear corner of the roof. The exhaust pipe shall be of sufficient height to prevent exhaust gases and waste heat from discoloring or causing heat deformation to the bus roof. The entire exhaust system shall be adequately shielded to prevent heat damage to any bus component. The exhaust outlet shall be designed to minimize rain, snow or water generated from high-pressure washing systems from entering into the exhaust pipe and causing damage to the catalyst.

All wiring and hose clamps in high temperature areas shall be resistant to heat and mechanical fatigue.

The power plant shall be mounted in a compartment in the rear of the bus. All power plant mounting shall be mechanically isolated to minimize transfer of vibration to the body structure. Mounts shall control movement of the power plant so as not to affect performance of belt driven accessories or cause strain in piping and wiring connections to the power plant.

The power plant shall be arranged so that accessibility for all routine maintenance is assured. No special tools, other than dollies and hoists, shall be required to remove the power plant. Two mechanics shall be able to remove and replace the engine and transmission assembly in less than 12 total combined man-hours. The muffler, exhaust system, air cleaner, air compressor, starter, alternator, radiator, all accessories, and any other component requiring service or replacement shall be easily removable and independent of the engine and transmission removal. An engine oil pressure gauge and coolant temperature gauge shall be provided in the engine compartment. These gauges shall be easily read during service and mounted in an area where they shall not be damaged during minor or major repairs.

Engine oil and the radiator filler caps shall be hinged to the filler neck and closed with spring pressure or positive locks. All fluid fill locations shall be properly labeled to help ensure correct fluid is added and all fillers shall be easily accessible with standard funnels, pour spouts, and automatic dispensing equipment. All lubricant sumps shall be fitted with magnetic-type, external, hex head, self-sealing drain plugs. All fluid fillers shall not be higher than 48 inches above the ground.

The engine and transmission shall be equipped with sufficient heavy-duty fuel and oil filters for efficient operation and to protect the engine and transmission between scheduled filter changes. To the extent practicable, the filters shall be of the spin-on, disposable type or integral with the engine and transmission. All filters shall be easily accessible and the filter bases shall be plumbed to assure correct

reinstallation. The engine shall be equipped with a fuel-priming pump or a check valve fitted in the fuel suction line to aid restarting after fuel filter changes.

A Spinner II Model 976 or equal centrifugal, non-disposable bypass engine oil filter shall be provided as an option only.

An air cleaner with a dry filter element and a graduated air filter restriction indicator shall be provided. The filter shall be removable by a mechanic in 10 minutes or less. The location of the air intake system shall be designed to minimize the entry of dust and debris and maximize the life of the air filter. The engine air duct shall be designed to minimize the entry of water into the air intake system. Drainage provisions shall be included to allow any water/moisture to drain prior to entry into air filter.

Engine-driven accessories shall be mounted for quick removal and repair. Accessory drive systems shall operate without unscheduled adjustment for not less than 50,000 miles on the design operating profile. These accessories shall be driven at speeds sufficient to assure adequate system performance during extended periods of idle operation and low route speed portion of the design operating profile. Belt guards shall be provided as required for safety and shall be sturdy in design and installation and readily removable and hinged design.

Any accessory may be driven hydraulically or electrically at buyer's option. The hydraulic system shall demonstrate a mean time between repairs in excess of 50,000 miles. Hydraulic system service tasks shall be minimized and scheduled no more frequently than those of other major coach systems. All elements of the hydraulic system shall be easily accessible for service or unit replacement. Critical points in the hydraulic system shall be fitted with service ports so that portable diagnostic equipment may be connected or sensors for an off-board diagnostic system permanently attached to monitor system operation. A tamper-proof priority system shall prevent the loss of power steering during operation of the bus if other devices are also powered by the hydraulic system. Sensors in the hydraulic system, excluding those in the power steering system, shall indicate on the operator's on-board diagnostic panel conditions of low hydraulic fluid level.

All fluid lines and air piping shall be rigidly supported and isolated to prevent chafing damage, vibration, fatigue failures, and tension strain. Lines passing through a panel, frame, or bulkhead shall be protected by grommets (or similar device) that fit snugly to both the line and the perimeter of the hole that the line passes through to prevent chafing and/or wear.

Flexible fuel and oil lines shall be kept at a minimum and shall be as short as practicable. Flexible lines shall be routed or shielded so that failure of a line shall not allow fuel or oil to spray or drain onto any component operable above the auto-ignition temperature of the fluid. Flexible lines shall be Teflon hoses with braided stainless steel jackets except in applications where premium hoses are required and shall have standard SAE or JIC brass or steel, swivel, end fittings. Flexible hoses over 1 inch in diameter need not be Teflon with braided stainless steel jacket but shall be in conformance with SAE Standard J100R5. Flexible hoses and fluid lines shall not touch one another, or any part of the bus. Fuel lines shall have shut off valve for service and repair.

Lines shall have a maximum length of six (6) feet unless demonstrated inappropriate for a given application. Hoses/lines shall be secured with heavy-duty stainless steel, full silicone rubber clamps.

Compression fittings shall be standardized as much as practicable to prevent the intermixing of components. Compression fitting components from more than one manufacturer shall not be mixed even if the components are known to be interchangeable.

The vehicle engine compartment shall be equipped with an Amerex ABC dry chemical pre-engineered fire suppression system V(H)30, or equal, or a wet system at the buyer's option. The system shall be approved and listed for use at any ambient temperature within the range of -65° F to +150° F by Factory Mutual Research Corp. The automatic actuation system shall provide 24-hour fire detection supported by

a 24-hour battery backup system, NiMH-type preferred. The system shall also be capable of being activated manually by depressing an electric switch button with a pull pin labeled "FIRE" mounted in the driver's area. An inspection door will be provided by the OEM on the bus body or the bus interior to allow for visual site inspection of the agent cylinder gauge. The fire suppression system shall include the following:

- A minimum 32lb capacity agent cylinder of the stored pressure type shall be furnished. The cylinder will be constructed of welded steel and must conform to DOT spec 4BW, and be rated for 12 year minimum hydrostatic testing. The cylinder shall be outfitted with a gauge and a forged brass valve assembly.
- A minimum of three (3) FMRC approved temperature sensitive weather proof miniature thermostats, constructed of stainless steel material, shall be located in the engine compartment.
- A modular control panel shall be provided to electrically supervise the following automatic fire suppression system wiring circuits; power, heat detection, and system actuation. The monitor shall provide a display indicating normal, fire, or fault conditions and the panel will shut the engine down within 15 seconds of detecting a fire. An engine shutdown reset button on panel will be included and will have the capacity to provide a minimum of 7 diagnostic flash codes for ease of troubleshooting.
- A minimum of five (5) brass nozzles shall be located in the engine compartment, fitted with dust caps, which upon actuation are displaced to allow full ABC fire suppression powder flow for a minimum of 20 seconds. Each nozzle shall displace a minimum of 6 lbs. of ABC agent +/- .5 lbs.

The bus OEM (contractor) shall provide a written sign-off, including full documentation, photos, etc., supplied by the fire suppression equipment manufacturer, which confirms that all installation requirements have been met on the pilot bus fire suppression system.

Fuel lines shall be rated and sized to prevent freezing and plugging due to condensation and/or fuel gelling in extreme winter. The fuel lines forward of the engine bulkhead shall be in conformance with SAE Standard J1149 Type 1 for copper tubing, corrosion-resistant stainless steel tubing or SAE Standard J844 for nylon tubing color coded orange.

The fuel tank(s) shall be equipped with an external, hex head, brass drain plug. It shall be at least a 3/8-inch size and shall be located at the lowest point of the tank(s). The fuel tank(s) shall have an inspection plate or easily removable filler neck to permit cleaning and inspection of the tank(s) without removal from the bus. The tank(s) shall be baffled internally to prevent fuel-sloshing regardless of fill level. The baffles or fuel pickup location shall assure continuous full power operation on a 6 percent upgrade for 15 minutes starting with no more than 25 gallons of fuel over the unusable amount in the tank(s). The bus shall operate at idle on a 6 percent downgrade for 30 minutes starting with no more than 10 gallons of fuel over the unusable amount in the tank(s).

The fuel tank(s) shall be made of corrosion resistant stainless steel or other durable and inert material and shall be securely mounted to the bus to prevent movement during bus maneuvers, but shall be capable of being removed and reinstalled by a mechanic for cleaning or replacement in 1.5 hours or less.

The capacity, date of manufacture, manufacturer name, location of manufacture, and certification of compliance to Federal Motor Carrier Safety Regulation shall be permanently marked on the fuel tank(s). The markings shall be readily visible and shall not be covered with an undercoating material.

The fuel filler shall be located 7 to 25 feet behind the centerline of the front door on the curbside of the bus. The filler cap shall be retained to prevent loss and shall be recessed into the body so that spilled fuel will not run onto the outside surface of the bus.

The fuel lines forward of the engine bulkhead shall be in conformance to the SAE Standards. Automatic and manual fuel shutoffs shall be provided.

The fuel filler shall be an Emco Wheaton or equal system and accommodate a nozzle that forms a locked and sealed connection during the refueling process to eliminate spills. Fuel shall not be allowed to flow into the tank unless the nozzle has been properly coupled, locked and sealed to the filler. With the nozzle open, fuel shall enter the tank at a fill rate of not less than 40 gallons per minute of foam-free fuel without causing the nozzle to shut off before the tank is full. The nozzle shall automatically shut off when the tank is essentially full. Once disconnected, fuel shall not be allowed to flow through the nozzle at any time. Any pressure over 3 psi shall be relieved from the fuel tank automatically. An audible signal shall indicate when the tank is essentially full.

The DEF filler shall be an Emco Wheaton Posi/Lock Blue or equal system. Filler must be accessible and located as to prevent spills on other bus components.

Oil and hydraulic lines shall be compatible with the fluid they carry. The lines shall be designed and intended for use in the environment which they are installed, i.e., high temperatures in engine compartment, road salts, oils, etc. Lines shall be capable of withstanding maximum system pressures. Lines within the engine compartment shall be composed of steel tubing where practicable except in locations where flexible lines are specifically required. Hydraulic lines of the same size and with the same fittings as those on other piping systems of the bus, but not interchangeable, shall be tagged or marked for use on the hydraulic system only.

Transmission

The transmission shall be cooled by a separate heat exchanger sized to maintain operating fluid within the transmission manufacturer's recommended parameters of flow, pressure and temperature. The transmission cooling system shall be matched to retarder and engine cooling systems to ensure that all operating fluids remain within recommended temperature limits established by each component manufacturer.

The transmission shall be an Allison B330R, B400R, B500R or equal sized appropriately for the buses in this procurement. All transmissions shall be factory filled with Castrol Transynd synthetic transmission fluid or equal fluid. The transmission shall be multiple-speed, automatic shift with torque converter, retarder and electronic controls. Gross input power, gross input torque and rated input speed shall be compatible with the engine. A mechanic, with optional assistance, shall be able to remove and replace the transmission assembly for service in less than 16 total combined man-hours. The transmission shall be designed to operate for not less than 300,000 miles on the design operating profile without replacement or major service.

The electronic controls shall be capable of transmitting and receiving electronic inputs and data from other drivetrain components and broadcasting that data to other vehicle systems. Electronic controls shall be compatible with either 12 or 24 volt power distribution, provide consistent shift quality, and compensate for changing conditions such as variations in vehicle weight and engine power. A brake pedal application of 15 to 20 psi shall be required by the operator to engage forward or reverse range from the neutral position to prevent sudden acceleration of the bus from a parked position.

The electronically controlled transmission shall have on-board diagnostic capabilities, be able to monitor functions, store and time stamp out-of-parameter conditions in memory, and communicate faults and vital conditions to service personnel. The transmission shall contain built-in protection software to guard against severe damage. A diagnostic reader device connector port, suitably protected against dirt and moisture, shall be provided in the operator's area. The on-board diagnostic system shall trigger a visual alarm to the operator when the electronic control unit detects a malfunction.

An electronic transmission fluid level monitoring and protection system shall be provided. This system shall allow a mechanic to accurately determine transmission fluid levels during checking or oil change and shall be in addition to the manual dipstick. This system shall also provide protection against any damage resulting from improper fluid level conditions.

The transmission shall have an auto neutral feature that shall cause it to automatically and immediately shift to "Neutral" whenever the transmission is left in gear and either (a) the parking brake is applied, (b) no bus operator is sitting in the operator's seat, or (c) both Conditions (a) and (b) apply. This system shall also automatically shift the transmission to "Neutral," after a 5-minute delay, whenever the exit door brake interlock is applied.

The transmission shall be equipped with an integral hydraulic retarder designed to extend brake lining service life. The application of the retarder shall cause a smooth blending of both retarder and service brake functions without exceeding jerk requirements. Brake lights shall illuminate when the retarder is activated.

The retarder shall become partially engaged (approximately 1/4 to 1/3 of its total application, with a resulting deceleration of no greater than 0.03 g) when the throttle is completely released (e.g., zero throttle). Maximum retarder shall be achieved when brake pedal is depressed prior to engagement of service brakes with a maximum resulting deceleration of approximately 0.13g. The resulting decelerations specified include the effects of engine braking, wind resistance and rolling resistance.

The thermostatically controlled cooling fan shall be activated when the retarder is engaged and the coolant temperature exceeds the maximum limit established by the engine and transmission manufacturers.

The retarder on/off switch shall be located in the engine compartment at a location approved during pre-production.

Jerk, the rate of change of acceleration measured at the centerline, floor level of the bus shall be minimized throughout the shifting of each transmission range and retarder application and shall be no greater than 0.3 g/sec. for duration of a quarter-second or more.

Axle(s)

The front axle shall be a MAN or equal solid beam, non-driving with a load rating sufficient for the bus loaded to GVWR and shall be equipped with oil lubricated front wheel bearings and seals. All friction points on the front axle shall be equipped with replaceable bushings or inserts and lubrication fittings easily accessible from a pit or hoist.

Fatigue life of all steering components shall exceed 1,000,000 miles. No element of the steering system shall sustain a Class I failure when one of the tires hits a curb or strikes a severe road hazard. Inadvertent alternations of steering as a result of striking road hazards are steering failures.

The bus shall be driven by a single heavy-duty MAN or equal axle at the rear with a load rating sufficient for the bus loaded to GVWR. Transfer of gear noise to the bus interior shall be minimized. The drive axle shall be designed to operate for not less than 300,000 miles on the design operating profile without replacement or major repairs. The lubricant drain plug shall be magnetic type, external hex head. If a planetary gear design is employed, the oil level in the planetary gears shall be easily checked through the plug or sight gauge. The drive shaft shall be guarded to prevent it striking the floor of the coach or the ground in the event of a tube or universal joint failure. Drive shaft universal joint should be clamp type, serviceable to yoke. Both front and rear axle shall have a five (5) year warranty.

Suspension System

Both the front and rear suspensions shall be pneumatic type. The basic suspension system shall last the service life of the bus without major overhaul or replacement. Normal replacement items, such as one suspension bushing, shock absorbers, or air spring shall be replaceable by a mechanic in 30 minutes or less. Adjustment points shall be minimized and shall not be subject to a loss of adjustment in service. Necessary adjustments shall be easily accomplished without removing or disconnecting the components.

The bus approach, departure and front break over angle shall be a minimum 9 degrees.

The suspension system shall permit a minimum wheel travel of 3 inches jounce-upward travel of a wheel when the bus hits a bump (higher than street surface), and 3 inches rebound-downward travel when the bus comes off a bump and the wheels fall relative to the body. Elastomeric bumpers shall be provided at the limit of jounce travel. Rebound travel may be limited by elastomeric bumpers or hydraulically within the shock absorbers. Suspensions shall incorporate appropriate devices for automatic height control so that regardless of load the bus height relative to the centerline of the wheels does not change more than $\pm 1/2$ inch at any point.

Vertical damping of the suspension system shall be accomplished by hydraulic shock absorbers mounted to the suspension arms or axles and attached to an appropriate location on the chassis. Damping shall be sufficient to control coach motion to 3 cycles or less after hitting road perturbations. Shock absorbers shall maintain their effectiveness for at least 50,000 miles. Each unit shall be replaceable by a mechanic in less than 15 minutes. The shock absorber bushing shall be made of elastomeric material that will last the life of the shock absorber.

All elements of steering, suspension, and drive systems requiring scheduled lubrication shall be provided with grease fittings conforming to SAE Standard J534. These fittings shall be located for ease of inspection, and shall be accessible with a standard grease gun without flexible hose end from a pit or with the bus on a hoist. Each element requiring lubrication shall have its own grease fitting with a relief path. Lubricant specified shall be standard for all elements on the bus serviced by standard fittings.

A kneeling system shall lower the entrance(s) of the bus a minimum of 2.5 inches during loading or unloading operations regardless of load up to GVWR, measured at the longitudinal centerline of the entrance door(s), by the driver using a three position, spring loaded to center switch. Downward direction will lower the bus. Release of switch at any time will completely stop lowering motion and hold height of the bus at that position. Upward direction of the switch will allow the system to go to floor height without the driver having to hold the switch up. The kneeling system shall only function with doors in closed position.

An optional reverse kneeling feature shall be provided at buyer's option that is capable of adjusting the exit heights of both front and rear doors to 15.5 inches. When a reverse kneeling feature is provided, the three-position, spring loaded to center switch shall be modified such that release of the switch will completely stop motion and hold the height of the bus *whether the bus is being lowered or being raised*.

Brake and Throttle interlock shall prevent movement when the bus is kneeled. The kneeling control shall be disabled when the bus is in motion. The bus shall kneel at a maximum rate of 1.25 inches per second at essentially a constant rate. After kneeling, the bus shall rise within 2 seconds to a height permitting the bus to resume service and shall rise to the correct operating height within 7 seconds regardless of load up to GVWR. During the lowering and raising operation, the maximum acceleration shall not exceed 0.2g and the jerk shall not exceed 0.3g/sec. Brake and Throttle interlock will release in conjunction with application of service brake.

An indicator visible to the driver shall be illuminated until the bus is raised to a height adequate for safe street travel. An audible warning alarm will sound simultaneously with the operation of the kneeler to

alert passengers and bystanders. A warning light mounted near the curbside of the front door, minimum 3" diameter, amber lens shall be provided that will blink when the kneel feature is activated. Kneeling shall not be operational while the wheelchair ramp or lift is deployed or in operation.

Wheels and Tires

Wheels and rims shall be hub-piloted powder coated painted steel and shall resist rim flange wear. All wheels shall be interchangeable and shall be removable without a puller. Wheels shall be compatible with tires in size and load-carrying capacity. Front wheels and tires shall be balanced as an assembly per SAE J1986.

Tires shall be provided and installed by the contractor, and shall be suitable for the conditions of transit service and sustained operation at the maximum speed capability of the bus. Load on any tire at GVWR shall not exceed the tire supplier's rating. A spare tire on a rim shall be provided with every bus. Tires should be branded and serialized per buyer's direction.

The buses in this procurement shall be equipped with a standard hub odometer mounted at the curbside of the rear axle or current FLEETWATCH or fuel management system at the buyer's option. The hub odometer shall have a capacity reading no less than 999,999 miles in full mile increments (no tenths of a mile).

Automatic Tire Chain System shall be provided as an option.

Steering

Hydraulically assisted power steering shall be provided. Electric power steering shall be provided as an option. The steering gear shall be an integral type with flexible lines eliminated or the number and length minimized. The torque required to turn the steering wheel 10 degrees shall be no less than 5 foot pounds and no more than 10 foot pounds. Steering torque may increase to 70 foot pounds when the wheels are approaching the steering stops, as the relief valve activates. Steering effort shall be measured with the bus at GVWR, stopped with the brakes released, the engine at normal idling speed on clean, dry, level, commercial asphalt pavement, the tires inflated to recommended pressure and the front wheels positioned straight ahead. Power steering failure shall not result in loss of steering control. With the bus in operation the steering effort shall not exceed 55 pounds at the steering wheel rim and perceived free play in the steering system shall not materially increase as a result of power assist failure. Gearing shall require no more than seven turns of the steering wheel lock-to-lock.

Caster angle shall be selected to provide a tendency for the return of the front wheels to the straight position with minimal assistance from the driver.

The steering wheel diameter shall be no less than 18" and no more than 20"; the rim diameter shall be 7/8" to 1 1/4" and shaped for firm grip with comfort for long periods of time. The steering wheel shall be hard plastic with no foam, black in color and a rounded three spoke design.

Steering wheel spokes and wheel thickness should be such as to insure that visibility is within the range of a 95-percentile range as described in SAE 1050a, section 4.2.2 and 4.2.3. Placement of steering column must be as far forward as possible, but either in-line or behind the instrument cluster.

The steering column shall have full tilt and telescoping capability allowing the operator to easily adjust the location of the steering wheel. The steering wheel shall have a rearward tilt adjustment range of no less than 40 degrees as measured from the horizontal and upright position. The steering wheel shall be removable with a standard or universal puller, and shall be manufactured of hard plastic.

Brakes

Service brakes shall be controlled and actuated by a compressed air system. Force to activate the brake pedal control shall be an essentially linear function of the bus deceleration rate and shall not exceed 50 pounds at a point 7 inches above the heel point of the pedal to achieve maximum braking. The heel point is the location of the driver's heel when foot is rested flat on the pedal and the heel is touching the floor or heel pad of the pedal. A microprocessor controlled Automatic Braking System (ABS) shall be provided. The microprocessor for the ABS system shall be protected yet in an accessible location to allow for ease of service. The total braking effort shall be distributed among all wheels in such a ratio as to ensure equal friction material wear rate at all wheel locations

Microprocessor controlled Automatic Traction Control (ATC) shall be provided. Actuation of ABS and/or ATC shall override the operation of the brake retarder.

The entire service brake system, including friction material, shall have a minimum overhaul or replacement life of 50,000 miles with a brake retarder on the design operating profile. Brakes shall be self-adjusting throughout this period. Visible stroke indicators shall be provided to allow service personnel to easily identify when the brakes are not in correct adjustment. The brake linings shall be made of non-asbestos material. In order to aid maintenance personnel in determining extent of wear, a provision such as a scribe line or chamfer indicating the thickness at which replacement becomes necessary, shall be provided on each brake lining.

Replaceable wheel bearing seals shall run on replaceable wear surfaces or be of an integral wear surface sealed design. Oil lubricated wheel bearings and hub seals shall not leak or weep lubricant for 100,000 miles when running on the design operating profile.

The bus shall be equipped with disc brakes. The manufacturer shall provide an electronic as well as a mechanical visible wear indicator on the disc brake calipers. The brake system material and design shall be selected to absorb and dissipate heat quickly so the heat generated during braking operation does not glaze brake linings. The heat generated shall not increase the temperature of tire beads and wheel contact area to more than that allowed by the tire manufacturer.

The parking brake shall be a spring-operated system, actuated by a valve that exhausts compressed air to apply the brakes. The parking brake may be manually enabled when the air pressure is at the operating level per FMVSS 121. An emergency brake release shall be provided to release the brakes in the event of automatic emergency brake application. The parking brake valve button will pop out when air pressure drops below requirements of FMVSS 121. The driver shall be able to manually depress and hold down the emergency brake release valve to release the brakes and maneuver the bus to safety. Once the operator releases the emergency brake release valve, the brakes shall engage to hold the bus in place.

A chock block retainer shall be provided so that it neatly and conveniently stores the standard CTRANSIT chock block on the front of the curb side front wheel well.

Cooling

The radiator, and charge air cooler shall be modular and of durable corrosion-resistant construction with bolted-on removable tanks. The radiator shall be designed so a mechanic can gain access to a substantial portion of the side facing the engine for the purpose of cleaning the radiator in five minutes or less.

Radiators with a fin density greater than 12 fins per inch, and louvered/slit designs, are more susceptible to clogging and deteriorating cooling performance over time and shall not be used.

No heat producing components or climate control system components shall be mounted between the engine cooling air intake aperture and the radiator. The radiator and charge air cooler shall be designed to withstand thermal fatigue and vibration associated with the installed configuration.

The engine cooling system shall be equipped with a properly sized water filter with a spin-on element and an automatic system for releasing supplemental coolant additives as needed to replenish and maintain protection properties.

The cooling fan shall be temperature controlled, allowing the engine to reach operating temperature quickly. The temperature-controlled fan shall not be driven when the coolant temperature falls below the minimum level recommended by the engine manufacturer.

The charge air cooling system also referred to as after-coolers or inter-coolers shall provide maximum air intake temperature reduction with minimal pressure loss. The charge air radiator shall be sized and positioned to meet engine manufacturer's requirements. The charge air radiator shall not be stacked ahead or behind the engine radiator and shall be positioned as close to the engine as possible unless integrated with the radiator. Air ducting and fittings shall be protected against heat sources, and shall be configured to minimize restrictions and maintain sealing integrity.

Radiator piping shall be stainless steel or brass tubing and, if practicable, hoses shall be eliminated. Necessary hoses shall be of a premium, silicone rubber type that is impervious to all bus fluids. All hoses shall be as short as practicable. All hoses shall be secured with premium, stainless steel clamps that provide a complete 360° degree seal. The clamps shall maintain a constant tension at all times, expanding and contracting with the hose in response to temperature changes and aging of the hose material.

Pneumatic Systems

The bus air system shall operate the air-powered accessories and the braking system with reserve capacity. New buses shall not leak down more than 5psi as indicated on the instrument panel mounted air gauges, within 15 minutes from the point of governor cut-off.

Provision shall be made to supply shop air to the bus air systems using a standard tire inflation type valve. Lincoln Air Quick Disconnect #11659 or equal quick disconnect fittings, shall be easily accessible and shall be located in the engine compartment and near the front bumper area for towing. Retained caps shall be installed to protect fitting against dirt and moisture when not in use. Air for the compressor shall be filtered through the main engine air cleaner system. The air system shall be protected by a pressure relief valve set at 150psi and shall be equipped with check valve and pressure protection valves to assure partial operation in case of line failures.

The engine-driven air compressor or electric compressor shall be sized to charge the air system from 40psi to the governor cutoff pressure in less than 3 minutes while not exceeding the fast idle speed setting of the engine.

Air lines, except necessary flexible lines, shall conform to the installation and material requirements of SAE Standard J1149 for copper tubing with standard, brass, flared or ball sleeve fittings, or SAE Standard J844 for nylon tubing if not subject to temperatures over 300 degrees F. Nylon tubing shall be installed in accordance with the following color-coding standards:

Green.	Indicates primary brakes and supply
Red.	Indicates secondary brakes
Brown.	Indicates parking brake
Yellow.	Indicates compressor governor signal
Black.	Indicates accessories

Line supports shall prevent movement, flexing, tension strain, and vibration. Copper lines shall be supported to prevent the lines from touching one another or any component of the bus. To the extent practicable and before installation, the lines shall be pre-bent on a fixture that prevents tube flattening or excessive local strain. Copper lines shall be bent only once at any point, including pre-bending and installation. Rigid lines shall be supported at no more than 5-foot intervals. Nylon lines may be grouped and shall be supported at 2-foot intervals or less. Service air ports shall be available at front and rear of vehicle. Glad-hand coupler shall be available in the front of the vehicle as an option.

The compressor discharge line between power plant and body-mounted equipment shall be flexible convoluted copper or stainless steel line, or may be flexible Teflon hose with a braided stainless steel jacket. Other lines necessary to maintain system reliability shall be flexible Teflon hose with a braided stainless steel jacket. End fittings shall be standard SAE or JIC brass or steel, flanged, swivel type fittings. Flexible hoses shall be as short as practicable and individually supported. They shall not touch one another or any part of the bus except for the supporting grommets. Flexible lines shall be supported at 2-foot intervals or less.

Air lines shall be clean before installation and shall be installed to minimize air leaks. All air lines shall be sloped toward a reservoir and routed to prevent water traps. Grommets or insulated clamps shall protect the air lines at all points where they pass through understructure components.

All air reservoirs shall meet the requirements of FMVSS Standard 121 and SAE Standard J10 and shall be equipped with clean-out plugs and guarded or flush type drain valves. Major structural members shall protect these valves and any automatic moisture ejector valves from road hazards. Reservoirs shall be sloped toward the drain valve. All air reservoirs shall have brass drain valves which discharge below floor level with lines routed to eliminate the possibility of water traps and/or freezing in the drain line.

An air dryer shall prevent accumulation of moisture and oil in the air system. The air dryer system shall include a replaceable desiccant bed, electrically heated drain, and activation device. A mechanic shall be able to replace the desiccant in less than 15 minutes. An oil separator shall be provided between the compressor and dryer.

Charge air piping and fittings shall be designed to minimize air restrictions and leaks. Piping shall be as short as possible and the number of bends shall be minimized. Bend radii shall be maximized to meet the pressure drop and temperature rise requirements of the engine manufacturers. The cross section of all charge air piping shall not be less than the cross section of the intake manifold inlet. Any change in pipe diameter shall be gradual to ensure a smooth passage of air and to minimize restrictions. Piping shall be routed away from exhaust manifolds and other heat sources, and shielded as required to meet the temperature rise requirements of the engine manufacturer.

Charge air piping shall be constructed of stainless steel, aluminized steel or anodized aluminum, except between the air filter and turbocharger inlet where piping may be constructed of fiberglass. Connections between all charge air piping sections shall be sealed with a short section of reinforced hose and secured with stainless steel, constant tension clamps that provide a complete 360° seal.

Heating, Ventilating and Air Conditioning Equipment

The HVAC unit shall be a Thermo King T-Series or equal incorporating a bus rear-mount with a screw type compressor design. An all-electric option will be considered.

With the bus running at the design operating profile with corresponding door opening cycle, and carrying a number of passengers equal to 150 percent of the seated load, the HVAC system shall maintain an average passenger compartment temperature within a range between 65° and 80°F, while controlling the relative humidity to a value of 50 percent or less. The system shall maintain these conditions while subjected to any outside ambient temperatures within a range of -10° to +95° F and at any ambient relative humidity levels between 5 and 100 percent.

When the bus is operated in outside ambient temperatures of 95° to 115°F, the interior temperature of the bus shall be permitted to rise one degree for each degree of exterior temperature in excess of 95°F. When bus is operated in outside ambient temperatures in the range of -10° to +10°F, the interior temperature of the bus shall not fall below 55°F while bus is running on the Design Operating Profile.

The air conditioning portion of the HVAC system shall be capable of reducing the passenger compartment temperature from 110 degrees to 90 degrees F in less than 20 minutes after engine start-up. Engine temperature shall be within the normal operating range at the time of start-up of the cool-down test and the engine speed shall be limited to fast idle that may be activated by an operator-controlled device. During the cool-down period the refrigerant pressure shall not exceed safe high-side pressures and the condenser discharge air temperature, measured 6 inches from the surface of the coil, shall be less than 45oF above the condenser inlet air temperature. The appropriate solar load as recommended in the APTA "Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System," representing 4 P.M. on August 21, shall be used. There shall be no passengers on board, and the doors and windows shall be closed.

The air conditioning system shall meet performance requirements using: HFC R134a or a current EPA-approved refrigerant of the buyer's choice.

The climate control blower motors and fan shall be designed such that their operation complies with the interior noise level requirements as specified.

The HVAC system excluding the operator's heater/defroster shall be centrally controlled with an advanced electronic/diagnostic control system with provisions for extracting/reading data.

After manual selection and/or activation of climate control system operation mode, all interior climate control system requirements for the selected mode shall be attained automatically to within ± 2 degrees F of specified temperature control set-point.

The climate control system shall have the provision to allow operator to adjust the temperature control set-point at a minimum of between 68 degrees and 72 degrees F. From then on, all interior climate control system requirements shall be attained automatically, unless re-adjusted by operator.

The operator shall have full control over the defroster and operator's heater. The operator shall be able to adjust the temperature in the operator's area through air distribution and fans. The interior climate control system shall switch automatically to the ventilating mode if the refrigerant compressor or condenser fan fails.

Interior temperature distribution shall be uniform to the extent practicable to prevent hot and/or cold spots. After stabilization with doors closed, the temperatures between any two points in the passenger compartment in the same vertical plane, and 6 inches to 72 inches above the floor, shall not vary by more than 5°F with doors closed. The interior temperatures, measured at the same height above the floor, shall not vary more than $\pm 5^\circ\text{F}$, from the front to the rear, from the average temperature determined in accordance to APTA Recommended Instrumentation and Performance Testing for Transit Bus Air Conditioning System. Variations of greater than $\pm 5^\circ\text{F}$ will be allowed for limited, localized areas provided the majority of the measured temperatures fall within the specified requirement.

The cooling mode of the interior climate control system shall introduce air into the bus at or near the ceiling height at a minimum rate of 25 cubic feet per minute (cfm) per passenger based on the standard configuration bus carrying a number of passengers equal to 150 percent of the seated load. Airflow shall be evenly distributed throughout the bus with air velocity not exceeding 100 feet per minute on any passenger. The ventilating mode shall provide air at a minimum flow rate of 20 cfm per passenger.

Airflow may be reduced to 15 cfm per passenger (at 150 percent of seated load) when operating in the heating mode. The fans shall not activate until the heating element has warmed sufficiently to assure at least 70 degrees F air outlet temperature. The heating air outlet temperature shall not exceed 120 degrees F under any normal operating conditions.

The bus interior climate control system shall deliver at least 100 cfm of air to the operator's area when operating in the ventilating and cooling modes. Adjustable nozzles shall permit variable distribution or shutdown of the airflow. Airflow in the heating mode shall be reduced proportionally to the reduction of airflow into the passenger area. The windshield defroster unit shall meet the requirements of SAE Recommended Practice J382, Windshield Defrosting Systems Performance Requirements, and shall have the capability of diverting heated air to the operator's feet and legs. The defroster or interior climate control system shall maintain visibility through the operator's side window.

There shall be an operator control for the auxiliary heater in rear engine compartment. The auxiliary heater dash indicator lights shall include a green light for when system is operating and yellow light for system failure.

The controls for the operator's compartment for heating, ventilation, and cooling systems shall be integrated and shall meet the following requirements. The heat/defrost system fan shall be controlled by a separate switch that has an "Off" position and at least two positions for speed control. All switches and controls shall preclude the possibility of clothing becoming entangled.

A manually operated control valve shall control the coolant flow through the heater core. If a cable operated manual control valve is used, the cable length shall be kept to a minimum to reduce cable seizing. Heater water control valves shall be "positive" type, closed or open.

A separate heating, ventilation, and defroster system for the operator's area shall be provided and shall be controlled by the operator. The system shall meet the following requirements:

The heater and defroster system shall provide heating for the operator and heated air to completely defrost and defog the windshield, operator's side window, and the front door glasses in all operating conditions. Fan(s) shall be able to draw air from the bus body interior and/or the exterior through a control device and pass it through the heater core to the defroster system and over the operator's feet. A minimum capacity of 100cfm shall be provided. The operator shall have complete control of the heat and fresh airflow for their area.

The defroster supply outlets shall be located at the lower edge of the windshield. These outlets shall be unbreakable and shall be free of sharp edges that can catch clothes during normal daily cleaning. The system shall be such that foreign objects such as coins or tickets cannot fall into the defroster air outlets. Adjustable ball vents shall be provided at the left of the operator's position to allow direction of air onto the side windows. Two additional ball vents shall be located on the vertical front dash panel adjacent to the front door to allow direction of air onto the door windows and/or entrance area.

A ventilation system shall be provided to ensure operator comfort and shall be capable of providing fresh air in both the foot and head areas. Vents shall be controllable by the operator from the normal driving position. Decals shall be provided indicating "operating instructions" and "open" and "closed" positions as well. When closed, vents shall be sealed to prevent the migration of water or air into the bus.

Air shall be filtered before discharge into the passenger compartment. The filter shall meet the ANSI/ASHRAE 52.1 requirement for 5 percent or better atmospheric dust spot efficiency, 50 percent weight arrestance, and a minimum dust holding capacity of 120 gram per 1,000 cfm cell. More efficient air filtration may be provided to maintain efficient heater and/or evaporator operation. Air filters shall be easily removable for service. Air filters shall be of the disposable type.

Two roof ventilators shall be provided in the roof of the bus, one approximately over or just forward of the front axle and the other, approximately over the rear axle. A single roof ventilator is required for the 30' bus.

Each ventilator shall be motorized to open and close remotely via a push-button driver control switch. Each ventilator shall operate independently of the other. Selecting the "open" switch fully opens the ventilator to provide maximum airflow to the bus interior. Selecting the "close" switch position fully closes and automatically locks the ventilator hatch. The ventilators shall meet FMVSS217 requirements for non-school bus applications. When open with the bus in motion, the ventilators shall provide fresh air inside the bus. Each ventilator shall cover an opening area no less than 425 square inches and shall be capable of being positioned as a scoop with either the leading or trailing edge open no less than 4 inches, or with all four edges raised simultaneously to a height of no less than 3-1/2 inches. An escape hatch shall be incorporated into the roof ventilator. Roof ventilator(s) shall be sealed to prevent entry of water when closed.

Manually controlled shutoff valves in the refrigerant lines shall allow isolation of the compressor and dehydrator filter for service. To the extent practicable, self-sealing couplings utilizing O-ring seals shall be used to break and seal the refrigerant lines during removal of major components, such as the refrigerant compressor. Shut-off valves may be provided in lieu of self-sealing couplings. The condenser shall be located to efficiently transfer heat to the atmosphere, and shall not ingest air warmed above the ambient temperature by the bus mechanical equipment, or to discharge air into any other system of the bus. The location of the condenser shall preclude its obstruction by wheel splash, road dirt or debris. HVAC components located within 6 inches of floor level shall be constructed to resist damage and corrosion.

Heat shall be supplied to the entrance and exit areas to prevent accumulation of snow, ice, or slush with bus operating under design operating profile and corresponding door opening cycle.

Sufficient floor level heaters shall be provided that evenly supply heated forced air through floor ducts across the length of bus. Floor ducts may be discontinued at the upper level but additional provisions to prevent cold floor and ensure temperature uniformity shall be included. Control of the floor level heating shall be through the main heating system electronic control.

Interior Lighting

The passenger interior lighting system shall be DINEX LED lighting system or 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.

Step lighting for the intermediate platform between lower and upper floor levels shall be provided and shall illuminate in all engine run positions. The step lighting shall be low-profile to minimize tripping and snagging hazard for passengers and shall be shielded as necessary to protect passengers' eyes from glare.

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, Philips or 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 clear polycarbonate. Lens shall be designed to effectively "mask" all individual LED's to make them invisible and there shall be no "hot spot" or "dark spot". Lens shall be sealed to inhibit incursion of dust and insects yet be 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, and shall be reverse polarity protected 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 fade 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.

Emergency backup system shall keep the light fixtures over the front and rear doors illuminated at minimum light output under a separated battery power for 10 to 15 minutes allowing passengers visibility and timely evacuation from the vehicle during emergency conditions.

A light fixture shall be mounted in the ceiling above the farebox location. The fixture shall be capable of projecting a concentrated beam of light on the farebox. This light will automatically come on whenever the front doors are opened and the run switch is in the "night run" or "night park" position.

Lighting shall be programmable to minimize windshield glare at night.

Doors

Two doorways shall be provided for low floor buses in the curbside of the bus for passenger ingress and egress. The front doorway shall be forward of the front wheels and located so that the operator will be able to collect or monitor the collection of fares. Passenger doors and doorways shall comply with ADA requirements.

The rear doorway centerline shall be rearward of the point midway between the front door centerline and the rearmost seat back.

The door style for the low floor buses shall be slide glide.

Structure of the doors, their attachments, inside and outside trim panels, and any mechanism exposed to the elements shall be corrosion-resistant. Door panel construction shall be of corrosion-resistant metal or reinforced non-metallic composite materials. The doors, when fully opened, shall provide a firm support and shall not be damaged if used as an assist by passengers during ingress or egress. The front leaves of the passenger doors shall overlap the rear leaves. At the buyer's option, a two-thirds front leaf/one-third rear leaf door may be provided at the front door position.

The front door clear width shall be no less than 31.75 inches with the doors fully opened. The rear door clear width shall be no less than 24 inches with the doors fully opened. When open, the doors shall leave an opening no less than 76 inches in height.

Both front and rear low floor bus doors shall have grab rails and be a "Full Glass" glazing design to provide passengers and vehicle operators an unobstructed view. In the case where the front doorway exceeds the width of the wheelchair ramp, an additional guide rail may be required that prevents wheelchairs from moving sideways off the ramp. The doors shall be Vapor Bus International Ameriview or equal. The doors shall be tamper resistant but parts shall be designed for quick and easy replacement by a trained mechanic.

The front door panel glazing material shall have a nominal ¼ inch or 6 mm thick laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 2 and the Recommended Practices defined in SAE J673. Glazing material in the rear doorway door panels shall be the same material, thickness and color as the side windows defined in Section 5.4.7.4.2.

It shall be possible to open and close either passenger door without its contact with an **8-inch-high curb**¹. This condition is to be met when (1) the bus loaded to GVWR, (2) is **not knelt**, (3) is parked with only the tires touching that curb, and (4) is on a street sloping toward the curb such that the street side wheels are 5 inches higher than the curb side wheels.

Closing door edge speed shall not exceed 19 inches per second. Power close rear doors shall be equipped with a sensitive edge or other obstruction sensing system such that if an obstruction is struck by a closing door edge, the doors will stop and/or reverse direction prior to imparting a 10-pound force on 1 square inch of that obstruction. Doors closed by return spring or counterweight-type device need not be equipped with an obstruction sensing device but shall be capable of being pushed to the point where the door starts to open with a force not to exceed 20 pounds applied to the center edge of the forward door panel. Whether or not the obstruction sensing system is present or functional it shall be possible to withdraw a 1-1/2 inch diameter cylinder from between the center edges of a closed and locked door with an outward force not greater than 35 pounds.

Door actuators shall be adjustable so that the door opening and closing speeds can be independently adjustable. Actuators and the complex door mechanism shall be concealed from passengers but shall be easily accessible for servicing. The door actuators shall be rebuildable. If powered by compressed air, exhaust from the door system shall be routed below the floor of the bus to prevent accumulation of any oil that may be present in air system and to muffle sound.

In the event of an emergency, it shall be possible to open the doors manually from inside the bus using a force of no more than 25 pounds after actuating an unlocking device at each door. The unlocking devices shall be clearly marked as an emergency-only device and shall require two distinct actions to actuate. The respective door emergency unlocking device shall be accessible from the entrance and exit areas. When the rear door emergency device is actuated, the door interlock throttle system shall return the engine to idle and the door interlock brake system shall apply to stop the bus. When the front door emergency device is actuated, only the door interlock throttle system shall be actuated. Locked doors shall require a force of more than 100 pounds to open manually. When the locked doors are manually forced to open, damage shall be limited to the bending of minor door linkage with no resulting damage to the doors, engines, and complex mechanism.

¹ If the buses are ordered with a reverse kneeling feature, the words "**not knelt**" shall be replaced by "**raised by the reverse kneeler to its highest position**," and the term "**an 8-inch-high curb**" shall be replaced by the term "**a 15-inch high-level platform or curb**" in this paragraph.

Access doors for the door actuator compartments shall be secured with hand screws or latches, and shall prevent entry of mechanism lubricant into the bus interior. All fasteners that retain access panels shall be captive in the cover.

Fare Collection

Space, as far forward as practicable and structural provisions, shall be made for installation of a farebox of the type designated by the Procuring Agency for that type of bus. Location of the fare collection device shall not restrict traffic in the vestibule, including wheelchairs if a front door loading device is used, and shall allow the operator to easily reach the farebox controls and to view the fare register. The fare box shall not restrict access to the operator area, shall not restrict operation of operator controls and shall not, either by itself or in combination with stanchions, transfer mounting, cutting, and punching equipment and route destination signs, restrict operator's field of view per SAE Recommended Practice J1050 (See Section 5.4.7.2.) Location and mounting of the fare collection device shall allow use, without restriction, by passengers. Fare box location shall permit accessibility to the vault for easy manual removal or attachment of suction devices. Meters and counters on the fare box shall be readable on a daily basis. The floor under the fare box shall be reinforced, as necessary, to provide a sturdy mounting platform and to prevent shaking of the fare box.

Each transit system in this procurement will supply and install its own farebox and transfer/ticket issuing equipment of the type designated when the bus is delivered in Connecticut. The bus manufacturer is required to provide enough space for this equipment installation and to meet all ADA requirements, as well as driver access to the Bus Operator Work Station. A stanchion around the farebox and any related equipment is not required.

A switch type 15-amp minimum protected circuit shall be available to power the fare box. The switch is to be located overhead of driver to reboot or shut off farebox. This power service shall include a grounded lead with both wires enclosed in a flexible conduit. The farebox and transfer issuing equipment will be provided and installed by each transit system after the bus is delivered to Connecticut.

Windows

The windshield shall permit an operator's field of view as referenced in SAE Recommended Practice J1050. The vertically upward view shall be a minimum of 15 degrees, measured above the horizontal and excluding any shaded band. The vertically downward view shall permit detection of an object 3-1/2 feet high no more than 2 feet in front of the bus. The horizontal view shall be a minimum of 90 degrees above the line of sight. Any binocular obscuration due to a center divider may be ignored when determining the 90-degree requirement, provided that the divider does not exceed a 3-degree angle in the operator's field of view. Windshield pillars shall not exceed 10 degrees of binocular obscuration. The windshield shall be designed and installed to minimize external glare as well as reflections from inside the bus.

The windshield shall be a two piece windshield design and easily replaceable by removing zip-locks from the windshield retaining moldings. Bonded-in-place windshield shall not be used. The windshield glazing material shall have a 1/4-inch or 6-mm nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 1A and the Recommended Practices defined in SAE J673. The glazing material shall have single density tint. The upper portion of the windshield above the operator's field of view shall have a dark, shaded band with a minimum luminous transmittance of 6 percent when tested in accordance to ASTM D-1003.

The operator's side window shall be the sliding type, requiring only the rear half of sash to latch upon closing and shall open sufficiently to permit the seated operator to easily adjust the street side outside rearview mirror. When in an open position, the window shall not rattle or close during braking. The entire assembly shall be hinged and have a single release for Emergency Egress. This window section shall slide in tracks or channels designed to last the service life of the bus. The operator's side window

shall not be bonded in place and shall be easily replaceable. The glazing material shall have a single density tint.

Design must prevent sections from freezing closed in the winter. Light transmittance shall be 75% on the glass area below 53" from the operator platform floor.

The operator's view, perpendicular through operator's side window glazing, should extend a minimum of 840 mm (33 inches) to the rear of the Heel Point on the accelerator, and in any case must accommodate a 95th percentile male operator. The view through the glazing at the front of the assembly should begin not more than 560 mm (26 inches) above the operator's floor to ensure visibility of an under-mounted convex mirror. Operator's window construction shall maximize ability for full opening of the window.

The operator's side window glazing material shall have a 1/4 inch nominal thickness laminated safety glass conforming to the requirements of ANSI Z26.1 Test Grouping 2 and the Recommended Practices defined in SAE J673.

All side windows, except windows in passenger doors and those smaller than 500 square inches, shall have window panels that are openable by passengers. Openable window panels shall be equipped with latches that secure the window in the fully open and fully closed positions.

Each openable side window shall incorporate an upper transom portion. The transom shall be between 25 and 35 percent of the total window area. The lower portion of the window shall be fixed. The transom portion shall be hinged along the lower edge and open inward.

All side windows shall be easily replaceable without disturbing adjacent windows and shall be mounted so that flexing or vibration from engine operation or normal road excitation is not apparent.

The windows shall be designed and constructed to enable a mechanic to remove and replace two windows in less than 10 minutes.

Emergency exit and window operation instructions must be a metal plate and a fixed to the bus sidewall. The instruction must be in both English and Spanish and be mounted within six inches of the emergency handle.

Side windows glazing material shall have 1/4-inch nominal thickness laminated safety glass. The material shall conform to applicable requirements of ANSI Z26.1 and the Recommended Practices defined in SAE J673.

Windows on the bus sides and in the rear door shall be tinted gray in color, complementary to the bus exterior with a 76% light transmission. Windows over the destination signs shall not be tinted. The side window sash frames including the Driver's window frame will be made of black anodized aluminum. An optional 3-min window tear-off protection system shall be added at the Procuring Agency's discretion.

Mirrors

The bus shall be equipped with 8" x 15" 2/1 split view or equal corrosion-resistant, outside rearview mirror on each side of the bus. The upper part of the mirror is flat and the lower portion is convex. Mirrors shall permit the operator to view the roadway along both sides of the bus, including the rear wheels.

The bus shall be equipped with 2 outside mirrors of unit magnification (flat), each with not less than 50 sq. in. of reflective surface. The mirrors shall be corrosion-resistant and be installed with stable supports on each side of the bus. The mirrors shall be located so as to provide the operator a view to the rear along both sides of the bus and shall be adjustable both in the horizontal and vertical directions to view the

rearward scene. The rearview mirrors shall be mounted so that its lower edge is no less than 80 inches above the street surface and equipped with a permanent high quality weather resistant orange reflective decal.

The operator shall be able to adjust both mirrors remotely while seated in the driving position. The control for remote positioning of the mirror shall be a single switch or device.

Driver side and curbside mirrors shall have directional signals in the mirror head.

All exterior mirrors shall be electrically heated. The heaters shall be energized whenever the operator's heater and/or defroster are activated.

Mirrors shall be firmly attached to the bus to minimize vibration and prevent loss of adjustment, but not so firmly attached that the bus or its structure is damaged when the mirror is struck in an accident. Mirrors shall retract or fold sufficiently to allow bus washing operations.

Mirror stops shall be provided to prevent outside mirrors from striking side glass or windshield.

Interior mirrors shall be provided for the operator to observe passengers throughout the bus without leaving his/her seat and without shoulder movement. The operator shall be able to observe passengers in the front/entrance and rear/exit areas, anywhere in the aisle, and in the rear seats.

Seats

The bus shall be designed and manufactured in accordance with all applicable fire safety and smoke emission regulations. These provisions shall include the use of fire-retardant/low-smoke materials, fire detection systems, firewalls, and facilitation of passenger evacuation.

All materials used in the construction of the Passenger Compartment of the bus shall be in accordance with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993. Materials entirely enclosed from the passenger compartment, such as insulation within the sidewalls, need not comply. In addition, smaller components and items, such as seat grab rails, switch knobs and small light lenses, and shall be exempt from this requirement.

The passenger seating arrangement in the bus shall be such that seating capacity is maximized and in compliance with the following requirements. The Procuring Agency recognizes that ramp location, foot room, hip-to-knee room, doorway type and width, seat construction, floor level type, seat spacing requirements, etc. ultimately affect seating capacity and layout.

Passenger seats shall be arranged in a transverse, forward facing configuration, except at the wheel housings where aisle-facing seats may be arranged as appropriate with due regard for passenger access and comfort. Other areas where aisle-facing seats may be provided are at wheelchair securement areas and platforms (such as for fuel tank storage space).

Passenger seating capacity with this arrangement shall be no less than 38 for a forty foot bus, 30 for a thirty-five foot bus and 25 in a thirty foot bus not including the operator with an emphasis on flexibility in design to maximize seating capacity, with the specified seating arrangement. Rearward facing seats are discouraged.

Passenger seats to be American Seating InSight model, or approved equal, with plush padded cushion seats forward of the rear door and standard vandal resistant padded cushion seats behind the rear door. The plush padded cushion is defined as at least 1 ¼" thick for the seat cushion and ½" for the seat back. Color of seat frame and back will be determined at the pre-build meeting. All applicable seat dimensions specified below shall be measured with pad fully depressed. The padded seat inserts shall be affixed to

the seat body with industrial heavy duty Velcro. A provision, such as a small grommeted hole, to allow drainage, shall be incorporated into seat insert.

Hip-to-knee room measured from the front of one seat back horizontally across the highest part of the seat to the seat or panel immediately in front, shall be no less than 28 inches. At all seating positions in paired transverse seats immediately behind other seating positions hip-to-knee room shall be no less than 28 inches.

In order to maximize seating capacity without unduly affecting passenger comfort, minor variations in the required hip-to-knee room will be allowed in limited areas. All such areas shall be identified to the Procuring Agency prior to bid for approval.

Foot room, measured at the floor forward from a point vertically below the front of the seat cushion, shall be no less than 14 inches. Seats immediately behind the wheel housings and modesty panels may have foot room reduced, provided the wheelhouse is shaped so that it may be used as a footrest or the design of modesty panel effectively allows for foot room.

Thickness of the transverse seat backs shall be minimized at the bottom to increase passenger knee room and passenger capacity. The area between the longitudinal seat backs and the attachment to the bus sidewalls shall be designed to prevent debris accumulation.

The aisle between the seats shall be no less than 20 inches wide at seated passenger hip height. Seat backs shall be shaped to increase this dimension to no less than 24 inches at standing passenger hip height.

All proposers shall submit a copy of their proposed seat layout consistent with these specifications showing hip-to-knee and foot room dimensions, stanchion layout and wheelchair maneuverability layout with your proposal.

Armrests shall be padded with material that is the same as or similar to, the seat back padding and handhold. Seats, back cushions and other pads shall be securely attached and shall be detachable by means of a simple release mechanism employing a special tool so that they are easily removable by maintenance personnel but not by passengers. To the extent practicable, seat pads shall be interchangeable throughout the bus. Materials shall have high resistance to tearing, flexing, and wetting. The seat fabric shall be Holdsworth product numbers BHD480, BQV285 and BXE051, coated with Defender fabric treatment, or equal.

Formed plastic seats shall be provided as an option.

Powered USB 2.0 ports at all passenger seating locations shall be provided as an option.

Passenger Assists

Passenger assists in the form of full grip, vertical stanchions or handholds shall be provided for the safety of standees and for ingress/egress. Passenger assists shall be convenient in location, shape, and size for both the 95th-percentile male and the 5th-percentile female standee. Starting from the entrance door and moving anywhere in the bus and out the exit door, a vertical assist shall be provided either as the vertical portion of seat back assist and as a separate item so that a 5th-percentile female passenger may easily move from one assist to another using one hand and the other without losing support. All handholds and stanchions at front doorway, around farebox, and at interior steps for bi-level designs shall be powder-coated in high contrast yellow color. The forward-most vertical stanchions on either side of the aisle immediately behind the operator's area shall be powder-coated yellow.

Excluding those mounted on the seats and doors, the assists shall have a cross-sectional diameter between 1-1/4 and 1-1/2 inches or shall provide an equivalent gripping surface with no corner radii less than 1/4 inch. All passenger assists shall permit a full hand grip with no less than 1-1/2 inches of knuckle clearance around the assist. Passenger assists shall be designed to minimize catching or snagging of clothes or personal items and shall be capable of passing the NHTSA Drawstring Test.

Any joints in the assist structure shall be underneath supporting brackets and securely clamped to prevent passengers from moving or twisting the assists. Passenger assists shall be designed to minimize glare in the Operator's area to the extent possible (see Section 5.4.6.1.1). With the exception of seat and door handholds, all areas of the passenger assists that are handled by passengers including functional components used as passenger assists shall be of anodized aluminum or stainless steel. Seat handholds shall be of the same construction and finish as the seat frame. Door mounted passenger assists shall be of anodized aluminum, stainless steel, or powder coated metal. Connecting tees and angles shall be powder coated metal castings. Assists shall withstand a force of 300 pounds applied over a 12-inch lineal dimension in any direction normal to the assist without permanent visible deformation. All passenger assist components, including brackets, clamps, screw heads, and other fasteners used on the passenger assists shall be designed to eliminate pinching, snagging and cutting hazards and shall be free from burrs or rough edges.

Front and rear doors, or the entry area, shall be fitted with ADA compliant assists. Assists shall be as far outward as practicable, but shall be located no farther inboard than 6 inches from the outside edge of the entrance step and shall be easily grasped by a 5th-percentile female boarding from street level. Door assists shall be functionally continuous with the horizontal front passenger assist and the vertical assist and the assists on the wheel housing or on the front modesty panel.

The aisle side of the operator's barrier, the wheel housings, and when applicable the modesty panels shall be fitted with vertical passenger assists that are functionally continuous with the overhead assist and that extend to within 36 inches of the floor. These assists shall have sufficient clearance from the barrier to prevent inadvertent wedging of a passenger's arm.

A horizontal passenger assist shall be located across the front of the bus and shall prevent passengers from sustaining injuries on the fare collection device or windshield in the event of a sudden deceleration. Without restricting the vestibule space, the assist shall provide support for a boarding passenger from the front door through the fare collection procedure. Passengers shall be able to lean against the assist for security while paying fares. The assist shall be no less than 36 inches above the floor. The assists at the front of the bus shall be arranged to permit a 5th-percentile female passenger to easily reach from the door assist, to the front assist, to vertical assists on the operator's barrier, wheel housings, or front modesty panel.

Vertical assists that are functionally continuous with the overhead assist shall be provided at the aisle side of the transverse seat immediately forward of the rear door and on the aisle side of the rear door modesty panel(s). Passenger assists shall be provided on modesty panels that are functionally continuous with the rear door assists. Rear doors, or the exit area, shall be fitted with assists no less than 3/4 inch in width and shall provide at least 1-1/2 inches of knuckle clearance between the assists and their mounting. The assists shall be designed to permit a 5th-percentile female to easily move from one assist to another during the entire exiting process. The assists shall be located no farther inboard than 6 inches from the outside edge of the rear doorway.

Except forward of the standee line and at the rear door, a continuous, full grip, overhead assist shall be provided. This assist shall be convenient to standees anywhere in the bus and shall be located over the center of the aisle seating position of the transverse seats. The assist shall be no less than 70 inches above the floor.

Straps or other extensions as necessary shall be provided for sections where vertical assists are not available and for the use by passengers that cannot reach to 70 inches. Straps shall be provided in the front of the bus where the wheelchair securements are located and there is a large space between vertical assists.

Overhead assists shall simultaneously support 150 pounds on any 12-inch length. No more than 5 percent of the full grip feature shall be lost due to assist supports.

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Longitudinal seats shall have vertical assists located between every other designated seating position, except for seats that fold/flip up to accommodate wheelchair securement. Assists shall extend from near the leading edge of the seat and shall be functionally continuous with the overhead assist. Assists shall be staggered across the aisle from each other where practicable and shall be no more than 52 inches apart or functionally continuous for a 5th percentile female passenger. The Contractor shall provide a safety barrier in the front of the first row of front facing seats to protect the passengers from being ejected from these seats on a hard brake incident. Arm rests with handles and hand rails will be provided for Parlor Seating or in other open positions where no other form of barrier protection can be provided.

Unless passenger seating is provided on top of wheel housing, passenger assists shall be mounted around the exposed sides of the wheel housings (and propulsion compartments if applicable) which shall also be designed to prevent passengers from sitting on wheel housings. Such passenger assists shall also effectively retain items, such as bags and luggage, placed on top of wheel housing.

Noise Levels

The bus interior and exterior noise levels shall meet or exceed the requirements of the APTA "Standard Bus Procurement Guidelines." 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 80 dab measured at the outside skin of the bus shall have a sound level of 65 dab or less at any point inside the bus. These conditions shall prevail with all openings, including doors and windows, closed and with the engine and accessories switched off.

Bus Interior

Ceiling panels shall be white melamine-type material suitable for exterior skin painted and finished to exterior quality. Headlining shall be supported to prevent buckling, drumming, or flexing and shall be secured without loose edges. Headlining materials shall be treated or insulated to prevent marks due to condensation where panels are in contact with metal members. Moldings and trim strips, as required to make the edges tamperproof, shall be stainless steel, aluminum, or plastic, colored to complement the ceiling material. Headlining panels covering operational equipment that is mounted above the ceiling shall be on hinges for ease of service but retained to prevent inadvertent opening.

Interior panels shall be attached so that there are no exposed unfinished or rough edges or rough surfaces. Panels and fasteners shall not be easily removable by passengers. Interior trim fasteners, where required, shall be rivets or cross-recessed head screws.

A frame shall be provided along both sides of the bus near the juncture of the bus ceiling and sidewall to retain advertising media 11 inches high and 0.09 inches thick. The retainers may be concave and shall support the media without adhesives. The media shall be illuminated by the ambient fluorescent light system on the interior of the bus.

Any insulation material used between the inner and outer panels shall be sealed or self-sealing to minimize entry and/or retention of moisture. Insulation properties shall be unimpaired during the service life of the bus. Any insulation material used inside the engine compartment shall not absorb or retain oils

or water and shall be designed to prevent casual damage that may occur during maintenance operations. All insulation materials shall comply with the Recommended Fire Safety Practices defined in FTA Docket 90, dated October 20, 1993.

Access for maintenance and replacement of equipment shall be provided by panels and doors that appear to be an integral part of the interior. Access doors shall be hinged with gas props or over-center springs, where practical, to hold the doors out of the mechanic's way. Panel fasteners shall be standardized so that only one tool is required to service all special fasteners within the bus.

The bus body shall be thoroughly sealed so that the operator or passengers cannot feel drafts during normal operations with the passenger doors closed.

The floor covering shall have a non-skid walking surface that remains effective in all weather conditions and complies with all ADA requirements. The floor covering, as well as transitions of flooring material to the main floor and to the entrance and exit area, shall be smooth and present no tripping hazards. The standee line shall be at least 2 inches wide and shall extend across the bus aisle. This line shall be the same color as the outboard edge of the entrance/exit areas. The flooring shall be Gerflor Apollo NT Self-adhesive material or equal, in a color/pattern as further specified by the Procuring Agency.

Any areas on floor, which are not intended for standees, such as areas "swept" during passenger door operation, shall be clearly and permanently marked. The floor in the operator's compartment shall be easily cleaned and shall be arranged to minimize debris accumulation.

A one-piece center strip shall extend from the vertical wall of the rear settee between the aisle sides of transverse seats to the standee line. If the floor is of a bi-level construction, then center strip shall be one-piece at each level. The covering between the center strip and the wheel housings may be separate pieces. At the rear door, however, a separate strip as wide as the door shall extend from the center strip to the outboard edge of the rear/exit area. The floor under the seats shall be covered with smooth surface flooring material. The floor covering shall closely fit the sidewall cove or extend to the top of the cove.

Access openings in the floor shall be sealed to prevent entry of fumes and water into the bus interior. Flooring material shall be flush with the floor and shall be edge-bound with stainless steel, or other material that is acceptable to the Procuring Agency, to prevent the edges from coming loose. Access openings shall be asymmetrical so that reinstalled flooring shall be properly aligned. Fasteners shall tighten flush with the floor. Interior access opening panels shall be provided for the driveshaft, the transmission, the engine and the suspension system.

Two 15 1/4" high by 10" wide by 14 1/2" long black rubber waste baskets shall be provided in each bus. One will be secured on the curb side wheel well next to the schedule rack. The second one will be secured behind the curb side seat directly in front of the rear door.

Provisions shall be made on the rear of the operator's barrier for two frames to retain information that are sized 17 inches wide and 11 inches high posted by the transit system, such as notices and schedule changes. The frames shall be Transit Information Products MC TAB HOR or equal. Overall size is 18.490" by 11.875" by .25". The unit shall be fabricated from clear acrylic and display one 17" wide x 11" tall insert, and shall have openings at the bottom to reduce dust accumulation. All outside edges shall be flame polished. The unit installs with 9 flat head 4-40 screws.

A Transit Information Products OBIC-WW8-P metal or equal multi-pocket schedule holder shall be provided and secured on the bus front curb side wheel well.

A passenger "Stop Requested" signal system that complies with applicable ADA requirements defined in 49 CFR, Part 38.37 shall be provided. The system shall consist of a heavy-duty pull cable, chime, and interior sign message. The interior sign message shall be integrated into the bus stop enunciator display(s) included in any intelligent transportation system (ITS) provided at the factory or installed soon

after delivery. The pull cable shall be located the full length of the bus on the sidewalls at the level where the transom is located. If no transom window is required, height of pull cable shall approximate this transom level and shall be no greater than 63 inches as measured from floor surface. It shall be easily accessible to all passengers, seated or standing. Vertical pull cords shall also be provided between all windows in the front lower section of the bus. Pull cable(s) shall activate a solid state or magnetic proximity switch(es). At each wheelchair parking position and priority seating positions additional provisions shall be included to allow a passenger in a mobility aid to easily activate "Stop Requested" signal.

A heavy-duty passenger Stop Request signal button shall be installed on modesty panel stanchion immediately forward of rear door and clearly identified with the word "STOP" on the button.

Exit signals located in the wheelchair parking area shall be no higher than 4 feet above the floor. Instructions shall be provided to clearly indicate function and operation of these signals. No portion of the signal activator may be obstructed, and the activator shall be clearly visible to any passenger sitting in this area.

A single "Stop Requested" chime shall sound when the system is first activated. A double chime shall sound when the system is first activated from wheelchair passenger areas.

A "Stop Requested" message shall be illuminated when the passenger "Stop Requested" signal system is activated. The message shall remain visible until one or both passenger doors are opened. A message shall be visible to the seated operator and seated passengers:

The operator shall be able to deactivate the signal system from the operator's area. A green light shall be mounted above the rear door, approximately on center of the rear door actuator compartment access panel, to indicate when the rear doors have been unlocked.

Paint & Decals

The CTTRANSIT buses shall be painted in metallic blue (DUHS 16429) and metallic silver (DUHS 36352) paint to a dry-film thickness of between 3 and 4 mils, inclusive, measured at the extreme corners of the bus. This is a base coat/clear coat system. The clear coat contains an anti-graffiti additive. The paint and color scheme for the other transit systems in this procurement will be determined at preproduction. They should be costed out based upon the CTTRANSIT paint and color scheme.

Monograms, numbers and other special signing specified by the Procuring Agency shall be produced in a Frutiger font, unless otherwise indicated by the Procuring Agency and shall be applied to the inside and outside of the bus as required. Signs shall be best quality durable and fade-, chip-, and peel-resistant; they may be painted signs, decals, or pressure-sensitive appliques. Signs and decals shall be provided in compliance with the ADA requirements defined in 49 CFR Part, Subpart B, 38.27.

All decals, including reflecting stripes, shall be made from high quality 3M or equal cast vinyl material and screened using compatible inks. All decals shall be sealed with clear, waterproof sealant around all exposed edges if required by the decal supplier. A sample list of decals to be provided shall include all manufacturer safety related decals as well as the following:

Exterior Decals

- Handicapped Accessible Symbol
- Bus System Logo
Bus System URL
Bus System Telephone #
- "Seats xx"
CTDOT logo/Operated By ...

- Stand Back When Flashing ... Wheelchair Ramp Arrow
- Bus number (Front, Back and two on each side and large number on the roof)
Wide Right Turns ...
- For Your Safety ...
- Bike Rack (Standard safety and operating instruction decals on Bike Rack)
- Two Bike Maximum (only for buses with interior bike racks installed)

Interior Decals

- Wait for Light ... (English & Spanish)
- For your safety, ... (English & Spanish)
- No radios, smoking, etc... (English & Spanish)
- Video Camera ...” (English & Spanish)
- Make seats available ...
- Bus number to be provided at four locations on the interior as determined at preproduction
- “Watch Your Step” on stanchions and rear platform step
- Handicapped Accessible Symbol
- Pull Cord Signal

All exterior surfaces shall be smooth and free of wrinkles and dents. Exterior surfaces to be painted shall be properly prepared as required by the paint system supplier, prior to application of paint to assure a proper bond between the basic surface and successive coats of original paint for the service life of the bus. Drilled holes and cutouts in exterior surfaces shall be made prior to cleaning, priming and painting to prevent corrosion. The bus shall be completely painted prior to installation of exterior lights, windows, mirrors and other items that are applied to the exterior of the bus. Body filler materials may be used for surface dressing, but not for repair of damaged or improperly fitted panels.

Paint shall be applied smoothly and evenly with the finished surface free of dirt and the following other imperfections:

- A. Blisters, orange peel or bubbles appearing in the topcoat film.
- B. Chips, scratches, or gouges of the surface finish.
- C. Cracks in the paint film.
- D. Craters where paint failed to cover due to surface contamination.
- E. Overspray.
- F. Peeling
- G. Runs or sags from excessive flow and failure to adhere uniformly to the surface.
- H. Chemical stains and water spots.

To the degree consistent with industry standards for commercial vehicle finishes, painted surfaces shall have gloss and orange peel shall be minimized. All exterior finished surfaces shall be impervious to diesel fuel, gasoline and commercial cleaning agents. Finished surfaces shall resist damage by controlled applications of commonly used graffiti-removing chemicals.

Wheelchair Ramp/Lift/ Securement

The design and construction of the bus shall be in accordance with all requirements defined in 49 CFR, Part 38, and Subpart B: ADA Accessibility Specifications for Transportation Vehicles - Buses, Vans and Systems. A front door wheelchair ramp system shall be provided in the low floor buses. The ramp when deployed in the street shall conform to all provisions of the then-current ADA requirements. The Contractor shall provide a plan submitted with their proposal, including layout drawings for entry, maneuvering, parking, and exiting of wheelchair passengers, to show compliance with ADA regulations.

An automatically-controlled, power-operated ramp system compliant to requirements defined in 49 CFR Part 38, Subpart B, §38.23c shall provide ingress and egress quickly, safely, and comfortably, both in forward and rearward directions, for a passenger in a wheelchair from a level street or curb into the low floor buses.

The ramp shall be a, simple hinged, fold over type design. The weight of the wheelchair loading system shall not exceed 200lb. The ramp shall be equipped with a finish flange that permits the installer to trim-out the ramp to vehicle floor interface with a simple lap joint. The wheelchair loading system including all pumps, motors and hydraulics, must be completely self-contained and be replaceable within 30 minutes by a mechanic.

The unit shall be cam driven and all components shall be constructed of stainless steel including all exposed surfaces. When the system is not in use, the passageway shall appear normal. In the stored position of the ramp, no tripping hazards shall be presented and any resulting gaps shall be minimized. The controls shall be simple to operate with no complex phasing operations required, and the loading system operation shall be under the surveillance and complete control of the operator. The bus shall be prevented from moving during the loading or unloading cycle by a throttle and brake interlock system. The wheelchair loading system shall not present a hazard, nor inconvenience customer passage. The loading system shall be inhibited from retracting or folding when a passenger is on the ramp/platform. A passenger departing or boarding via the ramp shall be able to easily obtain support by grasping the passenger assist located on the doors or other assists provided for this purpose. The platform shall be designed to protect the ramp from damage and persons on the sidewalk from injury during the extension/retraction or lowering/raising phases of operation. The loading platform shall be covered with a replaceable or renewable, nonskid material and shall be fitted with devices to prevent the wheelchair from rolling off the sides during loading or unloading. The stow and deploy speed of the ramp shall be adjustable. The device shall function without failure or adjustment for 500 cycles in all weather conditions on the design operating profile when activated once during the idle phase. A manual override system shall permit unloading a wheelchair and storing the device in the event of a primary power failure. The ramp assembly components shall be replaceable within 30 minutes by a mechanic. The ramp shall be constructed to permit the bus vendor to provide a substantial structural connection at the front edge of the ramp, between the doorposts to minimize damage to the ramp system resulting from impacts to the lower, front right hand corner of the bus. Fabrication and assembly of the wheelchair loading system shall be executed under the control of an ISO9001 registered quality assurance system. Installation must be approved by the ramp manufacturer prior to bus delivery.

Two forward-facing locations, as close to the wheelchair loading system as practical, shall provide parking space and securement system compliant with and exceeding ADA requirements for a passenger in a wheelchair. Restraint devices will be provided at the two (2) Personnel Mobility Aid Devices (PMAD) seating positions to restrain the wheelchairs and their occupants.

The American Seating Advanced Restraint Module A.R.M. or equal system will be provided. This will include the American Seating Dual Auto-Lok system or equal for the rear wheelchair securement belts.

The ADA securement system shall be an integral part of the vehicle seating. The seating shall be designed by means of fold-up, convertible seating units to minimize the amount of ambulatory passenger seating losses, provide a safe securement for mobility aid users and allow for a quick, easy to use system for transit supplies. The system shall include a three (3) point lap and shoulder occupant restraint belt and four (4) mobility aid securement belts optimally placed for stability and adaptable for the widest range of equipment. This system shall comply with the strength and free movement criteria of the Americans with Disabilities Act (ADA) accessibility guidelines for transportation vehicles; final guidelines per regulation 36 CFR part 1192 and conforming to all applicable Federal Motor Vehicle Safety Standards. (Note: ADA measurements are from the raised seat to the aisle and not from the bus wall to the aisle).

The system's recommended minimum spacing is fifty-three (53") inches in the longitudinal direction and thirty-five (35") inches from the wall (raised seat). The minimum securement area, as specified by ADA, is for mobility aid parking area only and does not take in to account the maneuvering room required by various types of mobility aids. Also, the area necessary for a driver or an assistant to access the tie-down equipment must be accounted for in the layout. The Procuring Agencies want to provide maximum space for customer and operator access. The proposed securement system, design and layout must be submitted with your proposal.

Maneuvering room inside the bus shall accommodate easy travel for a passenger in a wheelchair from the loading device through the bus to the designated parking area, and back out. No portion of the wheelchair or its occupant shall protrude into the normal aisle of the bus when parked in the designated parking space(s). As a guide, no width dimension should be less than 34 inches. From the aisle to the raised seat areas requiring 90-degree turns of wheelchairs should have a clearance arc dimension no less than 45 inches and in the parking area where 180-degree turns are expected, space should be clear in a full 60-inch-diameter circle. A vertical clearance of 12 inches above the floor surface should be provided on the outside of turning areas for wheelchair footrest.

ADA priority seating signs as required and defined by 49 CFR, Part 38.27 shall be provided to identify the seats designated for passengers with disabilities. Requirements for a public information system in accordance with 49 CFR, Part 38.35 shall be provided. Requirements for a stop-request passenger signal in accordance with 49 CFR, Part 38.37 shall be provided. Requirements for exterior destination signs in accordance with 49 CFR, Part 38.39 shall be provided.

External Route Display sign system

A Twin Vision all LED, automatic External Route Display sign system, or equal, shall be furnished and installed in the bus by the vendor.

The sign located near the front door shall not block the operator's critical horizontal line of sight. Display areas of destination signs shall be clearly visible in direct sunlight and/or at night. Signs shall be installed to allow replacement by a mechanic within 30 minutes. Parts shall be commercially available.

All signs shall be controlled via a single Human Machine Interface (HMI). In the absence of a single Mobile Data Terminal (MDT), the HMI shall be conveniently located for the bus operator in Area 5 of the Operator's Workstation Control and Instrument Array, mounted in such a manner that will not pose any safety hazard.-Color of LED bulbs provided shall be amber, or as otherwise directed by the Procuring Agency.

The system shall consist of:

- Front sign: 16 rows x 160 columns; display height minimum 7.9", display width 62.75 Side sign: 14 rows x 108 columns; display height minimum 4.25", display width 42.25 Rear sign: 16 rows x 48 columns; display height minimum 6.1", display width 17"; Block number sign (dash mounted): 14 rows x 36 columns; display height minimum 4.25", display width 14"; (It shall be capable of both automatic and direct entry programming).
- Operator Control Unit (OCU)
- Cables and Accessories

The Front Sign shall be mounted on the front of the Bus, near the top edge of the body, behind windshield protection, and in an enclosed but accessible compartment provided by the Bus manufacturer.

The Side Sign shall be located on the right side of the Bus near the front door either mounted near the top of an existing window or in a separate enclosed but accessible weather-proof compartment provided by

15 | the Bus manufacturer. For this procurement the largest Side Sign which can be mounted in the first window near the front door will be provided.

The Rear Sign (external) shall be mounted on TwinVision supplied brackets on the rear of the vehicle on an appropriate sized cutout provided by the Bus Manufacturer. An optional and additional LED third rear brake lamp indicating "STOP" that illuminates when brakes are applied shall be added at the discretion of the Procuring Agency.

The Block Number Sign shall be mounted on the front dash on the right side of the Bus near the front door and shall accommodate 5 digits.

The entire display area of all signs shall be readable in direct sunlight, at night, and in all lighting conditions between those two lighting extremes, with evenly distributed illumination appearance to the un-aided eye.

The system shall be microprocessor-based utilizing approved bi-directional serial communications, such as; S.A.E J1708 between system components, and shall utilize error detection techniques within the communication protocol.

The sign system shall be controlled by one primary controller located in the operator control unit. The system shall be capable of communicating with, and/or controlling additional information devices, such as interior information Signs, Voice Annunciation devices, etc., and must be able to be controlled by any Intelligent Transportation System (ITS) otherwise provided on the bus. The system shall provide for destination and/or Public Relations (P/R) message entry.

Flash memory integrated circuits shall be capable of storing and displaying up to 10,000 message lines. Message memory shall be changeable by the use of a "USB Key" ("thumb drive") sized according to the message listing noted herein.

The System shall have the ability to sequentially display multi-line destination messages, with the route number portion remaining in a constant "on" mode at all times, if so programmed. It shall also be capable of accepting manual entry of Route Alpha/Numeric information on the dash sign up to 5 digits. Street side sign shall be provided as an option.

The various Signs shall be programmable to display independent messages or the same messages; up to two destination messages and one public relations message shall be pre-selectable. The operator shall be able to quickly change between the pre-selected messages without re-entering a message code. Public relations messages shall be capable of being displayed alternately with the regular text and route messages or displayed separately.

An emergency message shall be activated by a push button or toggle switch in a location to be approved by the Procuring Agency. The emergency message shall be displayed on signs facing outside the vehicle while signs inside the vehicle, including the OCU display, remain unchanged. The emergency message shall be canceled by entering a new destination code, or power cycling (after removal of the emergency signal).

The programming software shall provide means of adjusting the length of time messages are displayed in 0.1 second increments up to twenty-five seconds.

Power to the Sign system shall be controlled by the Master Coach Run Switch. The signs shall operate in all positions of this switch except off. The signs shall be internally protected against voltage transients and RFI interference to ensure proper operation in the local environment.

All Sign displays shall consist of pixels utilizing High Intensity Light Emitting Diodes ("LED"), for superior outdoor environmental performance, (of selected color with illumination appearance of light wavelength of 590 NM). LED should be made of AlInGaP II, superior UV resistant Epoxy lens and superior resistance to the effects of moisture. Each pixel shall have a dedicated LED for illumination of that pixel in all lighting conditions. The sign system shall have multi-level intensity changes, which adjust automatically as a function of ambient lighting conditions. There shall be no requirement for any fan or any specialized cooling or air circulation.

This LED shall be mounted such as to be visible directly to the observer positioned in the viewing cone, allowing for full readability 65 degrees either side of the destination sign centerline. The LEDs shall be the only means of illumination of the sign system. The LED illumination source shall have an operating life M.T.B.F. of not less than 100,000 hours. Each LED shall not consume more than 0.02 Watts.

Readability and color contrast of all characters formed by the System shall meet the requirements of the Americans with Disabilities Act (ADA) of 1990 Reference 49 CFR Section 38.39.

All Signs shall be enclosed in a manner such as to inhibit entry of dirt, dust, water and other contaminants during normal operation or cleaning. The front, side and block number signs shall be a solid framed design with an integral metal louvered arrangement for optimal optical viewing and maximum thermal dispersion. Access shall be provided to clean the inside of the Bus window(s) associated with the Sign and to remove or replace the Sign components. Access panels and display boards shall be mounted for ease of maintenance/replacement. Any exterior Rear Sign enclosure used shall be made of Polycarbonate material containing fiberglass reinforcement. The vehicle manufacturer shall comply with the Sign manufacturer's recommended mounting, mounting configuration, and installation procedures to assure optimum visibility and service accessibility of the Sign System and System components.

All electronic circuit boards used in the Sign System shall be uniformly coated to meet the requirements of military specification MIL-I-46058C. All Sign System light board components shall be certified to have been subjected to a "burn-in" test of a minimum of twelve (12) hours operation in a temperature of 150 degrees F. prior to final inspection.

The Front Sign message shall be readable by a person with 20/20 vision from a distance not less than 350 feet for signs of display height greater than 8 inches and from a distance not less than 275 feet for display heights less than 8 inches. The Front Sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

The Side Sign message shall be readable by a person with 20/20 vision, from a distance of not less than 110 feet. The Side Sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

The Rear Sign shall be capable of independently displaying alpha-numeric characters. Its message shall be readable by a person with 20/20 vision, from a distance of not less than 225 feet. The Rear Sign shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone.

The Block Number Sign shall be readable by a person with 20/20 vision from a distance not less than 65 feet and shall have a viewing cone of equal readability at 65 degrees on either side of a line perpendicular to the center of the mean plane of the display. The intensity of the illumination of the display pixels shall appear, to the naked eye, to be approximately uniform throughout the full viewing cone. The Block

Number (Run Number) sign shall be capable of displaying up to four alpha-numeric characters (26 Upper Case letters and 0-9 numerals) which will be independently controlled from the Destination Sign System operator control unit (OCU keyboard) or through the J1708 command sequences. It will also be independent of the destination sign message code that is preprogrammed into the sign system.

The OCU Unit shall be used to view and update display messages. It shall be recess mounted on the Bus vehicle front Sign compartment access cover or door. The OCU shall utilize a multi-key conductive rubber pad keyboard and be designed for transit operating conditions.

The OCU Unit shall contain a display of at least two-lines of 20-character capability. The OCU Unit shall contain an audio annunciator that beeps indicating that a key is depressed. The OCU Unit shall continuously display the message associated with the selected destination readings (except the emergency message feature as noted above).

The OCU shall also contain the capability to manually select the Block Number Sign information (from 1 to 4 Alpha-Numeric characters) to be sent to the Block Number sign, independent of any pre-programmed destination sign message information.

An auxiliary J1939 port shall be made available on the OCU so that auxiliary J1939 commands may be provided to the Electronic Destination Sign System.

A WINDOWS® programming software package shall be supplied, under limited-use license, to generate message lists for the Sign system.

The program shall be designed for ease of deleting and adding messages to a destination Sign listing in a WINDOWS® 7 or later current Operating Environment. The Programming Software shall be intuitive, of design to facilitate ease of training, and use context-sensitive help features. Reasonable on-site training support shall be provided with the software.

This software will provide capability for both standard editing mode and freestyle editing mode. The software should be capable of entering one destination for all signs and automatically place the information in the correct positioning. It should also allow for creation of a custom displays by varying spacing between characters, words, or other message elements. This software also allows for creation of graphic displays with or without text: by selecting preprogrammed graphic sign images and by allowing use of multiple fonts within the same message and graphic symbols placed anywhere within the display area. The software should be backward compatible to support all other sign configurations within the fleet that were produced by the same manufacturer.

The Sign system shall be reprogrammable on the vehicle with the use of a USB Key. A key slot shall be provided on the OCU face for this purpose. The maximum reprogramming time for a 10,000 line listing shall be one minute.

Operator's Work Area

The operator's work area shall be designed to minimize glare to the extent possible. Objects within and adjacent to this area shall be matte black or dark gray in color wherever possible to reduce the reflection of light onto the windshield. The use of polished metal and light-colored surfaces within and adjacent to the operator's area shall be avoided. Such objects include dash panels, switches and controls, cowlings, windshield wipers and arms, barriers and modesty panels, fare stanchions, access panels and doors, fasteners, flooring, ventilation and heating ducting, window and door frames, and visors. Interior lighting located ahead of the standee line shall be controlled by the operator.

An adjustable roller type sunscreen shall be provided over the operator's windshield and the operator's side window. The sunscreen shall be capable of being lowered to the midpoint of the operator's window.

When deployed, the screen shall be secure, stable and shall not rattle, sway or intrude into the operator's field of view due to the motion of the coach or as a result of air movement. Once lowered, the screen shall remain in the lowered position until returned to the stowed position by the operator.

All switches and controls necessary for the safe operation of the bus shall be conveniently located in the operator's area and shall provide for ease of operation. Switches and controls shall be divided into basic groups and assigned to specific areas, in conformance with SAE Recommended Practice J680, Revised 1988, Location and Operation of Instruments and Controls in Motor Truck Cabs, and be essentially within the hand reach envelope described in SAE Recommended Practice, J287, Driver Hand Control Reach. Operational controls, instrumentation, switches, and other system controls shall not be mixed with ventilation diffusers and non-operational controls or readouts. Controls shall be located so that boarding passengers may not easily tamper with control settings.

The door control, kneel ramp control, windshield wiper/washer controls, and run switch shall be in the most convenient operator locations. They shall be identifiable by shape, touch, and permanent markings. Doors shall be operated by a single control, conveniently located and operable in a horizontal plane by the operator's left hand. The kneeling ramp control shall also be located close to the door control so that it too can be operated by the Operator's left hand. The setting of these controls shall be easily determined by position and touch.

All panel-mounted switches and controls shall be marked with easily read identifiers. Text designating position (on/off) shall be a minimum of 9 points, identifying legends shall be a minimum of 11 points. Extremely condensed or italic type fonts shall not be used. Graphical symbols shall conform to SAE Recommended Practice J2402, Road Vehicles - symbols For Controls, Indicators, and Tell Tales, where available and applicable. Color of switches and controls shall be dark with contrasting typography or symbols. Red type on a black or gray field (or vice versa) shall not be used. Mechanical switches and controls shall be replaceable, and the wiring at these controls shall be serviceable from the vestibule or the operator's seat. Switches, controls, and instruments shall be dust and water resistant consistent with the bus washing practice described previously.

Operator Controls - The following list for Normal Bus Operation identifies bus controls used to operate the bus safely and efficiently. These controls are frequently used or they are critical to the operation of the bus. They should be located within easy reach of the operator. The operator should not be required to stand or turn his/her body to view or to actuate these controls that include:

Engine Start Switch or Button	Four Position Master Run Switch
Transmission Shift Select	Parking Brake
Door	High Beam
Turn Signals	Hazard Lights
Defroster	Kneel & Ramp Controls
Windshield Wiper	Instrument Panel Lighting Intensity

Accelerator and brake pedals shall be designed for ankle motion. Foot surfaces of the pedals shall be faced with wear-resistant, nonskid, replaceable material.

The Master Run Switch shall be a four-position rotary switch with the following functions:

OFF - All electrical systems off, except power available for the passenger interior lighting, stoplights, turn lights, hazard lights, radio, silent alarm, horn, fare box, fire detection equipment, engine compartment lights, auxiliary heater, if provided and electronic equipment that require continuous energizing. A timer circuit shall be provided to provide battery cut-off (except for the farebox) after two hours. Electrical loads resulting from the Procuring Agency's devices, such as, farebox, GPS, radio, etc., shall not exceed 1.5 amps with the master run switch in the OFF position.

CL/ID - All electrical systems off, except those listed in OFF and power to destination signs, interior lights and marker lights.

RUN - All electrical systems and engine on, except the headlights, parking lights and marker lights. Daytime running lights (DRL) shall be provided and shall be on. (Daytime running lights only on when the engine is on).

NITE/RUN - All electrical systems and engine on.

The door control shall be located on the street side of the operator's area within the hand reach envelope described in SAE Recommended Practice, J287, Driver Hand Control Reach. The front door shall remain in commanded state position even if power is removed or lost. The rear door shall stay open until the Operator control is activated.

Operation of, and power to, the passenger doors shall be completely controlled by the operator. Power to rear doors shall be controlled by the operator.

A control or valve in the operator's compartment shall shut off the power to, and/or dump the power from, the front door mechanism to permit manual operation of the front door with the bus shut down. A master door switch which is not within reach of the seated operator when set in the "Off" position shall close the doors, deactivate the door control system, release the interlocks, and permit only manual operation of the doors.

The operator's area shall have a light to provide general illumination and it shall illuminate the half of the steering wheel nearest the operator to a level of 10 to 15 foot-candles. This light shall be operator controlled by a toggle switch located on the operator's control panel or other approved location.

(1) A three-position toggle switch, labeled "Interior Lights; on (at top), Off, Normal" shall control the lights.

- "On" turns on all lights in any Master Switch position
- "Off" turns off lights except as noted in (2) and (3)
- "Normal" turns on all lights in "Night Run" & "Night Park" except as noted in (2).

(2) The first light on each side (behind the Operator and the front door) is normally turned on only when the front door is opened, in "Night Run" and "Night Park." As soon as the door closes, these lights shall go out. These lights shall be turned on at any time if the toggle switch is in the "On" position.

(3) To help eliminate windshield reflection on suburban roads where street lighting is at a low level, the second light on each side, when "Night Run" or "Night Park" is selected, shall be controlled by the toggle switch; off in "Off" and on in "Normal." (These lights shall be turned on at any time if the toggle switch is in the "On" position.)

(4) All interior lighting shall be turned off whenever the transmission selector is in the reverse and engine run switch is in the "On" position.

Operator Controls - The following list of Special bus controls identifies the controls to initiate system diagnostics, aid the physically handicapped passenger, and control mirrors and speakers, etc. They are less often used than those in Normal Bus Operation. These controls should be within easy reach for viewing and actuation by the operator:

ABS Diagnostics Test	Engine Diagnostic Test
Stop Engine Override	Chime
Drivers Fan	Fast Idle
Mirror Heater (Opt.)	Public Address System

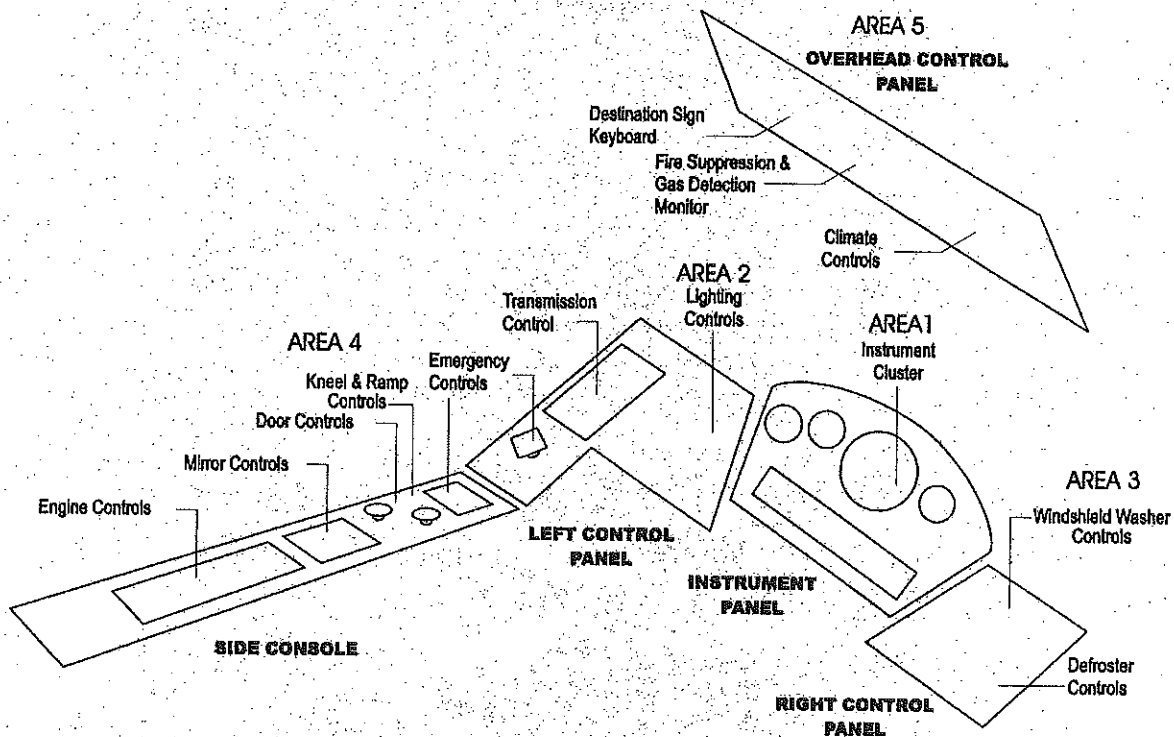
- | | |
|-------------------------|--------------------------------|
| Drivers HVAC | Diagnostic Light Panel Test |
| Fire Suppression (Opt.) | Destination Sign On/Off (Opt.) |
| Hill Holder | Remote Mirror Control (Opt.) |
| Retarder | Kneel/Ramp Control |
| Heater Blower Interlock | |

Operator Controls - The following list of Passenger Comfort Controls identifies the bus controls for the interior bus temperature, lighting, air circulation, etc. The settings of these controls are changed infrequently. The operator should be able to see and actuate these controls with minimal effort.

- | | | |
|-----------------|--------------------|--------------|
| Climate Control | Temperature Select | Aisle Lights |
| Interior HVAC | Blower | |
| Interior Lights | Dome Lights | |

The Figure below is provided as an illustrative guide to the desired instrument and control grouping:

- Area 1: Operational gauges - speedometer, air pressure (primary and secondary), voltmeter(s), fuel and diagnostics shall be located immediately in front of the operator's field of view.
- Area 2: Operational controls and switches, including but not limited to emergency controls and flashers, transmission controls, and lighting switches, located adjacent the left side of the instruments.
- Area 3: Operational controls and switches, including but not limited to washer controls, operator's climate controls, located adjacent the right side of the instruments.
- Area 4: Secondary operating controls including door, kneel and ramp switches, mirror and engine controls, located to the left of the operator ahead of the Seat Reference Point of the 5 percentile female.
- Area 5: System function controls, including destination sign keypad, cabin climate controls, fire suppression, located on the operator's centerline, above operator's upper sight cutoff line.
- Areas 1 & 2: Preferred location for all warning and visual indicator lights.



The angle of the accelerator pedal shall be determined from a horizontal plane regardless of the slope of the cab floor. The accelerator pedal shall be positioned at an angle of 27-35 degrees at the point of initiation of contact, and extend downward to an angle of 10-18 degrees at full throttle. The floor mounted accelerator pedal shall be 10" - 12" long and 3" - 4" wide. The force to depress the accelerator pedal shall be measured at the midpoint of the accelerator. The accelerator force shall be no less than 7 foot pounds and no more than 9 foot pounds.

To preclude movement of the bus, an accelerator interlock shall lock the accelerator in the closed position and a brake interlock shall engage the service brake system when the rear door control is activated. The braking effort shall be adjustable with hand tools. Rear doors shall not open unless the bus speed is below 2 m.p.h. An accelerator interlock shall lock the accelerator in the closed position whenever front doors are open.

The angle of the brake pedal shall be determined from a horizontal plane regardless of the slope of the cab floor. The brake pedal shall be positioned at an angle of 27-35 degrees at the point of initiation of contact, and extend downward to an angle of 20-28 degrees at full depression. The floor mounted brake pedal shall be 10" - 12" long and 3" - 4" wide. The force to depress the brake pedal shall be measured at the midpoint of the brake pedal. The brake pedal force shall be no less than 10 foot pounds and no more than 50 foot pounds.

The accelerator and brake pedals shall be positioned such that the spacing between them, measured at the heel of the pedals, is between 1" and 2". The location of the brake and accelerator pedals shall be determined by the manufacturer, based on space needs, visibility, lower edge of windshield, and vertical H-point. The brake pedal shall have a 0-degree lateral angle, and the accelerator shall have a 12-degree lateral angle to coincide with the position of the operator's leg as it moves outward to operate the accelerator pedal.

The angle of the turn signal platform shall be determined from a horizontal plane, regardless of the slope of the cab floor. The turn signal platform shall be angled at a minimum of 10 degrees and a maximum of 28 degrees. It shall be located no closer to the seat-front than the heel point of the accelerator pedal. Turn signal controls shall be floor-mounted, foot-controlled, waterproof, heavy-duty, momentary contact switches. High Beam, Hazard, and PA Controls shall be floor mounted with the same requirements as the Turn Signal controls.

The speedometer, air pressure gauge(s), and certain indicator lights shall be located in Area 1 Instrument Panel immediately ahead of the steering wheel. The steering wheel spokes or rim shall not obstruct the operator's vision of the instruments when the steering wheel is in the straight-ahead position. Illumination of the instruments shall be simultaneous with the marker lamps. Glare or reflection from the windshield, side window, or front door windows from the instruments, indicators, or other controls shall be minimized. Instruments shall be easily readable in direct sunlight or shielded in such a manner that sunlight does not adversely affect legibility. Instrument covers shall be non-reflective, without electrostatic qualities that attract and hold dust, and shall be resistant to scratching or hazing as a result of cleaning. Text shall be a minimum of 11 points. Extremely condensed or italic type fonts shall not be used. The color of the display field shall be dark with contrasting typography. Indicator lights or illuminated symbols or typography immediately in front of the operator shall be restricted to those concerned with the operation of the vehicle, as identified in the following table.

Visual Indicator	Audible Alarm	Condition
Back-Up	Backup Alarm	Reverse gear is selected
Hazard	Click	Four-way flashers activated
DRL	None	Daytime Running Lights
High Beam	None	Headlamp high beams activated
Kneel	Kneel Horn	Suspension kneeling system activated
Left Turn Signal	Click	Left turn signal activated

Parking Brake	None	Parking brake is activated
Rear Door	None	Rear passenger door is not closed and locked
Right Turn Signal	Click	Right turn signal activated
Stop Request	Chime	Passenger stop request has been activated
Wheelchair Request	Double Chime	Passenger wheelchair stop request activated
Seatbelt	Chime	Seatbelt not buckled
Seat Alarm	Chime	Driver out of seat, bus is in gear
Auxiliary Heater (Green)	None	Auxiliary heater is on
Auxiliary Heater (Yellow)	None	Auxiliary heater failure
Voltage Overcharge (Yellow)	None	Electrical system overcharged
Voltage Undercharge (Red)	None	Electrical system not charging

The instrument panel shall include an electronic speedometer indicating no more than 80 mph and calibrated in maximum increments of 5 mph. The speedometer shall be a rotating pointer type, with a dial deflection of 220 to 270 degrees and 40 mph near the top of the dial. The speedometer shall be sized and accurate in accordance with SAE Recommended Practice J678. The speedometer shall be equipped with an odometer with a capacity reading no less than 999,999 miles.

The instrument panel shall also include air brake reservoir pressure gauge(s) with indicators for primary and secondary air tanks and voltmeter(s) to indicate the operating voltage across the bus batteries. The instrument panel and wiring shall be easily accessible for service from the operator's seat or top of the panel. The diagnostic panel shall be separately removable and replaceable without damaging the instrument panel or gauges. Wiring shall have sufficient length and be routed to permit service without stretching or chafing the wires.

The bus shall be equipped with visual and audible alarms linked to an on-board diagnostic system that will indicate conditions that require immediate action by the operator to avoid an unsafe condition or prevent further damage to the bus. The indicator panel shall be located in Area 1 of the Instrument Panel. The intensity of visual indicators shall permit easy determination of on/off status in bright sunlight or shielded in such a manner that sunlight does not adversely affect legibility. Indicator illumination shall not cause a visibility problem at night. All indicators shall have a method of momentarily testing their operation. The audible alarm shall be tamper resistant and shall have an outlet level between 80 and 83 dBA when measured at the location of the operator's ear. Wherever possible, sensors shall be of the closed circuit type, so that failure of the circuit and/or sensor shall activate the malfunction indicator.

To avoid unnecessary confusion and anxiety on the part of the operator, on-board displays visible to the operator should be limited to indicating the status of those functions described herein that are necessary for the safe operation of the bus and protection of assets. All other indicators needed for diagnostics and their related interface hardware shall be concealed and protected from unauthorized access. Malfunction and other indicators listed in the following table shall be supplied on all buses.

Visual Indicator	Audible Alarm	Condition or Malfunction
ABS	None	ABS System Malfunction
A/C Stop	None	Compressor stopped due to high/low pressure or loss of refrigerant
Check Engine	None	Engine Electronic Control Unit detects a malfunction
Check Transmission	None	Transmission Electronic Control Unit detects a malfunction
Fire	Bell	Over-temperature condition in engine compartment
Alternator Fail	None	Loss of alternator output
Hot Engine	Buzzer	Excessive engine coolant temperature
Low Air	Buzzer	Insufficient air pressure in either primary or

Low Oil	Buzzer	secondary reservoirs
Low Coolant	Buzzer	Insufficient engine oil pressure
Wheelchair Ramp	Beeper	Insufficient engine coolant level
		Wheelchair ramp is not stowed and disabled

The bus shall be equipped with a variable speed electric windshield wiper for each half of the windshield. For non-synchronized wipers, separate controls for each side shall be supplied. A variable intermittent feature shall be provided to allow adjustment of wiper speed for each side, or a synchronized pair, ranging approximately 5 to 25 cycles per minute. No part of the windshield wiper mechanism shall be damaged by manual manipulation of the arms. At 60 mph, no more than 10 percent of the wiped area shall be lost due to windshield wiper lift. Both wipers shall park along the inner edges of the windshield glass. Windshield wiper motors and mechanisms shall be easily accessible for repairs or service and shall be removable as complete units. The fastener that secures the wiper arm to the drive mechanism shall be corrosion resistant.

The windshield washer system shall be a dry arm design to deposit washing fluid on the windshield and, when used with the wipers, shall evenly and completely wet the entire wiped area. If powered by compressed air, all fluid shall be purged from the lines after each use of the washers.

The windshield washer system shall have a minimum 3-gallon reservoir, located for easy refilling from outside of the bus and protected from freezing. Reservoir pumps, lines, and fittings shall be corrosion-resistant, and the reservoir itself shall be translucent for easy determination of fluid level.

The Bus Operators seat shall be a Recaro Ergo Metro (3-pt) or equal.

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Three-point seat belts shall be provided across the operator's lap and diagonally across the operator's chest. The operator shall be able to use both belts by connecting a single buckle on the right side of the seat cushion. The belts shall be fastened to the seat and/or the bus structure so that the operator may adjust the seat without resetting the seat belt. An independent shoulder belt as well as an independent lap belt shall be provided as an option. Seat belts shall be stored in automatic retractors. Seat belt webbing shall be of a high-visibility color, preferably "safety orange" or similar.

Seat belts shall be extended length to accommodate operators of all sizes and stored in a hard plastic housing. The seatbelt buckle shall have an easy top button design to provide the driver with quick and easy release.

The operator's seat shall be contoured to provide maximum comfort for extended period of time. Cushions shall be fully padded with at least 3 inches of closed-cell polyurethane foam or material with equal properties, in the seating areas at the bottom and back. The seat material shall be black high grade vinyl.

A four way adjustable headrest with six position vertical adjustment shall be provided.

Electrical

The electrical system and its electronic components shall be capable of operating in the area of the vehicle in which they will be installed. Electrical and electronic equipment shall not be located in an environment that will reduce the performance or shorten the life of the component or electrical system. No vehicle component shall generate, or be affected by, electromagnetic interference or frequency interference (EMI/RFI) that can disturb the performance of electrical/electronic equipment as defined in SAE J1113.

All electrical/electronic hardware shall be accessible and replaced by a mechanic in 30 minutes. Access to front electrical panel shall be unobstructed. It shall be mounted on an insulating panel to facilitate replacement. The mounting of the hardware shall not be used to provide the sole source ground, and all

hardware shall be isolated from potential EMI/RFI. Static straps shall be mounted to the under frame of bus to discharge unwanted electro-static electricity to ground.

All electrical/electronic hardware mounted in the interior of the vehicle shall be inaccessible to passengers and hidden from view unless intended to be viewed. The hardware shall be mounted in such a manner as to protect it from splash or spray. All electrical/electronic hardware mounted on the exterior of the vehicle, that is not designed to be installed in an exposed environment, shall be mounted in a sealed enclosure. All electrical/electronic hardware and its mounting shall comply with the shock and vibration requirements of SAE J1455.

The system shall supply a nominal 12V and/or 24V of direct current (DC). Batteries, except those used for auxiliary power, shall be easily accessible for inspection and service from the outside of the vehicle only. All electrical and battery compartments shall have wiring diagram and identification on panel door.

Four low-voltage batteries (24V) Group 31 Series deep-cycling sealed non spillage maintenance-free absorbed glass mat (AGM) batteries Odyssey or approved equal shall be provided. Each battery shall have a minimum of 1150 cold cranking amps at 0° F. The batteries shall be designed and installed to withstand the operating environment. Batteries shall be tested not more than 3 days prior to bus shipment. Battery manufacturing dates must be not more than 3 months prior to bus shipment dates, and shall be fully maintained prior to shipment to the Buyer.

The battery terminal ends and cables shall be color-coded with red for the primary positive, black for negative, and another color for any intermediate voltage cables. Battery cables shall be flexible and sufficiently long to reach the batteries with tray in the extended position without stretching or pulling on any connection and shall not lie directly on top of the batteries. Except as interrupted by the master battery switch, battery and starter wiring shall be continuous cables with connections secured by bolted terminals; and shall conform to specification requirements of SAE Standard J1127 –Type SGT or SGX and SAE Recommended Practice J541.

Ultra capacitors (super capacitors) shall be used in conjunction with the AGM batteries to provide effective power storage and to ensure successful engine starting. Ultra capacitor technology is to be used for cranking applications and then employing AGM battery technology to manage auxiliary loads. Ultra capacitors shall deliver their storage electrical energy at a high crank rate in a variety of extreme temperatures to provide reliable and consistent starting. The ultra capacitors shall be rated at a minimum of 120 kJ for cold climates and 75 kJ for warmer climates. The batteries and ultra capacitors shall be designed and installed to withstand the operating environment.

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A.S.* | A KBI EC501.2 KAPower Module super capacitor rated at 24Kw and 300 F or equal unit shall be installed in parallel with the batteries as an aid to engine start. The module shall be actuated upon engine start via the Multiplex system and through a solenoid. The solenoid shall be engaged for a period of one minute. Electrical cables shall be 4/0 and shall not exceed 10 ft in length. The module shall be enclosed within a stainless steel box, and the solenoid shall not be exposed to environmental hazards. A decal shall be installed on the outside of the box to indicate danger of high amp equipment. The KBI module will be enclosed in a powder coated steel box mounted above the engine in the engine compartment.

A jump-start connector shall be provided in the engine compartment equipped with dust cap and adequately protected from moisture, dirt and debris.

A 110v ac to 12v dc unit with automatic battery disconnect shall be built into the bus so that when the bus is plugged in from outside power it can provide internal electrical power to the vehicle. The system would be similar to providing a shore power hookup connection to a boat.

A single master switch shall be provided near the battery compartment for the disconnecting of all battery positives (12V & 24V) except for safety devices such as fire suppression system and other systems as

specified. The location of the master battery switch shall be clearly identified on the exterior access panel, be accessible in less than 10 seconds for de-activation, and prevent corrosion from fumes and battery acid when the batteries are washed off or are in normal service. Turning the master switch "OFF", with the power plant operating, shall not damage any component of the electrical system. The master switch shall be capable of carrying and interrupting the total circuit load. The batteries shall be equipped with a single switch for disconnecting both 12V & 24V power.

The power generating system shall maintain the charge on fully charged batteries, except when the vehicle is at standard idle with a total alternator load exceeding 70 percent of the alternator nameplate rating. Use of fast idle shall maintain a charge on fully charged batteries so long as the total alternator load does not exceed 90 percent of the alternator nameplate rating. Alternator over-voltage output protection shall be provided.

Power distribution to all equipment requiring dedicated power and ground wiring to the batteries shall be accomplished by using power bus bars consisting of either a solid copper bar or heavy-duty terminal strip. One bus bar for each voltage potential, including ground, shall be located as close to the source of the potential as possible. Cabling from the bus bars to the equipment must be sized to supply the total current requirements with no greater than a five percent volt drop across the length of the cable.

All branch circuits, except battery-to-starting motor and battery-to-generator/alternator circuits, shall be protected by circuit breakers or fuses sized to the requirements of the load. Electronic circuit protection for the cranking system shall be provided to prevent engaging of the system for not more than 30 seconds at a time to prevent overheating. The circuit breakers or fuses shall be easily accessible for authorized personnel. Fuses shall be used only where it can be demonstrated that circuit breakers are not practicable. Any manually re-settable circuit breakers shall provide visible indication of open circuits.

Circuit breakers or fuses shall be sized to a minimum of 15 percent larger than the total circuit load current. The current rating for the wire used for each circuit must exceed the size of the circuit protection being used.

The battery shall be grounded to the vehicle chassis/frame at one location only, as close to the batteries as possible. When using a chassis ground system, the chassis shall be grounded to the frame in multiple locations, evenly distributed throughout the vehicle to eliminate ground loops. No more than four ground connections shall be made per ground stud. Electronic equipment requiring an isolated ground to the battery (i.e., electronic ground) shall not be grounded to the chassis.

All power and ground wiring shall have double electrical insulation, shall be waterproof, and shall conform to specification requirements of SAE Recommended Practice J1127, J1128 and J1292. Double insulation shall be maintained as close to the junction box, electrical compartment, or terminals as possible.

Wiring shall be grouped, numbered, and color-coded. Wiring harnesses shall not contain wires of different voltage classes unless all wires within the harness are insulated for the highest voltage present in the harness. Kinking, grounding at multiple points, stretching, and exceeding minimum bend radius shall be prevented.

Strain-relief fittings shall be provided at points where wiring enters all electrical compartments. Grommets or other protective material shall be installed at points where wiring penetrates metal structures outside of electrical enclosures. Wiring supports shall be protective and non-conductive at areas of wire contact and shall not be damaged by heat, water, solvents, or chafing.

To the extent practicable, wiring shall not be located in environmentally exposed locations under the vehicle. Wiring and electrical equipment necessarily located under the vehicle shall be insulated from

water, heat, corrosion, and mechanical damage. Where feasible, front to rear electrical harnesses should be installed above the window line of the vehicle.

All wiring harnesses over five feet long and containing at least five wires shall include 10 percent (minimum one [1]) excess wires for spares. This requirement for spare wires does not apply to data links and/or communication cables. Wiring length shall allow end terminals to be replaced twice without pulling, stretching, or replacing the wire. Except for large wires such as battery cables, terminals shall be crimped according to connector manufacturer's recommendations for techniques and tools to the wiring and may be soldered only if the wire is not stiffened above the terminal and no flux residue remains on the terminal. Battery cable connectors shall be crimped and soldered. All solder connections shall be made using noncorrosive rosin-core solder.

Terminals shall be crimped, corrosion-resistant and full ring type or interlocking lugs with insulating ferrules. When using pressure type screw terminal strips, stranded wire only shall be used. Insulation clearance shall ensure wires have a minimum of "visible clearance" and a maximum of two (2) times the conductor diameter or 1/16", whichever is less. When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands that can penetrate the insulation of the inner wires. Base nut shall be provided on all terminal binding posts and junction block studs where the terminal junction block has not been specifically designed to eliminate the need for a base nut.

Ultra-sonic and T-splices may be used with 7 AWG or smaller wire. When a T-splice is used it shall meet these additional requirements: include a mechanical clamp in addition to solder on the splice; the wire supports no mechanical load in the area of the splice; and the wire is supported to prevent flexing. All splicing shall be staggered in the harness so that no two splices are positioned in the same location within the harness.

For wiring harness connectors, pins shall be removable, crimp contact type of the correct size, and rated for the wire being terminated. All supply-side terminations shall end in a socket, not a pin. Unused pin positions shall be sealed with sealing plugs. Adjacent connectors shall either use opposing pin genders, different insert orientations, or different connectors to prevent incorrect connections. All cable connectors shall be placed to provide adequate space for ease of removal and disconnection. All electrical connectors subjected to environmental exposure outside the passenger compartment shall be corrosion resistant and splash proof.

All electrical components, including switches, relays, flashers, and circuit breakers, shall be heavy-duty designs with either a successful history of application to heavy-duty vehicles, or design specifications for an equivalent environment. These components shall be replaceable in less than 5 minutes by a mechanic.

All electric motors shall be of a heavy-duty brushless type. All electric motors shall be easily accessible for servicing.

All relays, controllers, flashers, circuit breakers, and other electrical components shall be mounted in easily accessible electrical compartments. All compartments exposed to the outside environment shall be corrosion resistant and sealed. The components and circuits in each electrical compartment shall be identified and their location permanently recorded on a drawing attached to the inside of the access panel or door. The drawing shall be protected from oil, grease, fuel, and abrasion. The front compartment shall be completely serviceable from the operator's seat, vestibule, or from outside. A rear start and run control box shall be mounted in an accessible location in the engine compartment.

If an electronic component has an internal clock, it shall provide its own battery backup to monitor time when battery power is disconnected.

All electronic component suppliers shall ensure that their equipment is self-protecting in the event of shorts in the cabling, and also in over-voltage and reverse polarity conditions. If an electronic component

is required to interface with other components, it shall not require external pull-up and/or pull-down resistors.

Kinking, grounding at multiple points, stretching, and exceeding minimum bend radius shall be prevented.

All wiring to I/O devices, either at the harness level or individual wires, shall be labeled, stamped or color-coded in a fashion that allows unique identification. Labels shall be resistant to rubbing (hot stamped tubing and protected printing are service-proven examples of acceptable labels). Wiring for each I/O device shall be bundled together. If the I/O terminals are the same voltages, then jumpers may be used to connect the common of each I/O terminal. All plug terminals and connections shall be compatible with dielectric grease.

All wiring that requires shielding shall meet the following minimum requirements. A shield shall be generated by connecting to a ground, which is sourced from a power distribution bus bar or chassis. A shield shall be connected at one location only, typically at one end of the cable. However certain standards or special requirements, such as SAE J1939 or RF applications, have separate shielding techniques that shall also be used as applicable. *Note: A shield grounded at both end forms a ground loop, which can cause intermittent control or faults.* When using shielded or coaxial cable, upon stripping of the insulation, the metallic braid shall be free from frayed strands, which can penetrate the insulation of the inner wires. To prevent the introduction of noise, the shield shall not be connected to the common side of a logic circuit.

RF components, such as radios, video devices, cameras, global positioning systems (GPS), etc., shall use coaxial cable to carry the signal. All RF systems require special design consideration for losses along the cable. Connectors shall be minimized, since each connector and crimp has a loss, which will attribute to attenuation of the signal. Cabling should allow for the removal of antennas or attached electronics without removing the installed cable between them. The corresponding component vendors shall be consulted for proper application of equipment including installation of cables.

Cabling used for microphone level and line level signals shall be 22 AWG minimum with shielded twisted pair. Cabling used for amplifier level signals shall be 18 AWG minimum.

All vehicles shall be equipped with a multiplexing system. The primary purpose of the multiplexing system is control of components necessary to operate the vehicle. This is accomplished by processing information from input devices and controlling output devices through the use of an internal logic program.

Versatility and future expansion shall be provided for by expandable system architecture. The multiplex system shall be capable of accepting new inputs and outputs through the addition of new modules and/or the utilization of existing spare inputs and outputs. All like components in the multiplex system shall be modular and interchangeable with self-diagnostic capabilities. The modules shall be easily accessible for troubleshooting electrical failures and performing system maintenance. Multiplex input/output modules shall use solid-state devices to provide extended service life and individual circuit protection.

Ten percent (10%) of the total number of inputs and outputs (or at least one each) at each zone location shall be designated as spares. Zone locations are: (1) behind the rear bulkhead; (2) forward of the bulkhead above the window line; and (3) forward of the bulkhead below the window line.

The multiplex system shall have a proven method of determining its status (system health and input/output status) and detecting either active (Online) or inactive (Offline) faults through the use of on-board visual/audible indicators.

All sub-electrical systems including lighting, fare box, radio, and cameras shall shutdown when multiplex system goes into sleep mode. Parasitic loads shall be minimized so bus can be started on its own power after being in sleep mode for 80 hours.

In addition to the indicators, the system shall employ an advanced diagnostic and fault detection system, which shall be accessible via a notebook computer. The multiplex system shall have security provisions to protect its software from unwanted changes. This shall be achieved through any or all of the following procedures: password protection, limited distribution of the configuration software, limited access to the programming tools required to change the software, and hardware protection that prevents undesired changes to the software.

Provisions for programming the multiplex system shall be possible through a notebook computer. The multiplex system shall have proper revision control to insure that the hardware and software is identical on each vehicle equipped with the system. Revision control shall be provided by all of the following: hardware component identification where labels are included on all multiplex hardware to identify components; hardware series identification where all multiplex hardware displays the current hardware serial number and firmware revision employed by the module; and software revision identification where all copies of the software in service displays the most recent revision number, and a method of determining which version of the software is currently in use in the multiplex system.

Public Address System

In the absence of an ITS provided on the bus, the following will be provided at the discretion of the Procuring Agency:

A public address system shall be provided that complies with the ADA requirements of 49 CFR, Part 38.35 and enables the operator to address passengers either inside or outside the bus. Inside speakers shall broadcast, in a clear tone, announcements that are clearly perceived from all seat positions at approximately the same volume level. A speaker shall be provided so announcements can be clearly heard by passengers standing outside the bus near the front door. An operator-controlled switch shall select inside or outside announcements. A separate volume control shall be provided for the outside system if volume adjustment would otherwise be necessary when switching from inside to outside. The system shall be muted when not in use.

As an option only, a hands-free Clever Devices Speakeasy II or equal microphone system shall be provided with foot-switch activation. The public address system speakers shall be Minneapolis Speaker Company model EN5WI-6WB 5" round solid basket, 8 ohm, and waterproof, mounted on an 8.25x8.25 square white grill, or equal. For this procurement Radio Engineering Industries (REI) waterproof public address system speakers will be provided as an approved equal.

The OEM shall provide a hand held microphone with two input jack ports and mounting clips in the operator's area. Locate one port for easy accessibility for driver and locate second port for easy accessibility for tour guide. An operator-controlled switch shall be provided to allow either input jack (but not both simultaneously) to be the input to the amplifier for broadcasting over the loudspeakers on the bus without the need for any wiring modification.

PROVISIONS FOR INTELLIGENT TRANSPORTATION SYSTEMS (ITS), including but not limited to, COMPUTER-AIDED DISPATCH/AUTOMATIC VEHICLE LOCATION (CAD/AVL) AND AUTOMATIC PASSENGER COUNTING (APC) SYSTEMS

In this section, the term "OEM" refers to the bus manufacturer and "Contractor" refers to an installer designated by CTDOT and/or the systems manufacturer(s). If the OEM is not the Contractor, the OEM shall pre-wire each bus to accept later mounting and final installation of the systems in accordance with instructions issued by CTDOT and/or the systems manufacturer(s). Such instructions shall be provided as soon as possible after acceptance of the successful bid.

Contractor shall supply all necessary cabling provisions and components, to make fully operational; passenger counter, CAD/AVL and radio systems by Trapeze – TransitMaster on each bus. Trapeze ITS system provisions installed by the Contractor shall be fully compatible with the systems currently in use by CTDOT. CTDOT will be moving the following CAD/AVL equipment from retired vehicles to the new vehicles to complete the TransitMaster system once buses arrive at CTDOT:

- IVLU (Intelligent Vehicle Logic Unit)
- MDT (Mobile Data Terminal)
- Radio
- APC Analyzer
- APC Sensors

CTDOT will provide contractor one (1) set of the above TransitMaster systems components so that the complete system can be tested on each vehicle prior to delivery.

Contractor shall coordinate with CTDOT and Trapeze ITS to configure the various interfaces between CAD/AVL system and other devices/systems to ensure compatibility with the TransitMaster CAD/AVL system currently in use at CTDOT. Contractor shall coordinate with CTDOT and Trapeze ITS to determine location on bus for each component of the CAD/AVL and Radio system listed in this section.

The OEM (or Contractor, as may be agreed by the Procuring Agency) shall install the Trapeze TransitMaster system at a location agreed to by the OEM and the Procuring Agency. The OEM shall purchase the aforementioned system directly from Trapeze and coordinate directly with Trapeze on all aspects of product procurement, delivery, installation and testing.

All ITS systems must be compatible with the radio specified by the Procuring Agency for installation on each bus. Such radios may include a Motorola digital P-25 mobile radio or an analog Tait TM8105 mobile radio or other type designated by the Procuring Agency. Such radio may be purchased by the OEM, a separate Contractor, directly by the Procuring Agency, or as otherwise directed by that Agency.

Contractor shall clearly state all assumptions made in determining the cost of the CAD/AVL and Radio system.

The APC equipment shall include all sensors, logic, interfaces, wiring, cabling, calibration, profiling where applicable, and installation required to properly equip each bus for passenger counting at all passenger doors. Contractor shall integrate the APC equipment with the TransitMaster CAD/AVL system. Contractor shall work with the APC equipment supplier to ensure that the APC equipment is installed exactly as per the specifications and meets or exceeds the accuracy specifications from the manufacturer. Contractor shall work with CTDOT and APC equipment supplier to ensure compatibility between the APC equipment being installed and the TransitMaster CAD/AVL system.

Contractor shall provide all documentation and wiring diagrams for the APC, CAD/AVL and Radio system as a part of the overall maintenance manual package for the bus.

Video Security System

A Mobile Digital Video Recording system (MDVR) shall be provided in each bus. The MDVR system shall be a Seon type or equal. The MDVR shall be capable of recording up to thirteen (13) simultaneous or sequential continuous grayscale or color camera inputs, as well as up to eight (8) opto-isolated sensor channels. The MDVR shall have the capacity for up to twenty (20) additional J1708 and J1939-

compatible devices and minimum of one (1) high definition (HD) 720 pixels camera. Inputs are switched by an internal multiplexing system.

The bus digital video security recording system shall not interfere electrically with the operation of the transit bus or with its onboard electronic equipment such as the radio, farebox, engine controls, transmission or other electronic equipment. Furthermore, the unit shall be Federal Communication Commission listed and approved. The digital video recorder shall be installed in an appropriate secure location approved by the Procuring Agency, preferably on the "driver's side", so as to minimize its physical exposure and also to reduce shock and impact.

The digital video camera system shall be a high performance video monitoring system designed specifically for installation in transit buses. Features of the system shall include digital recording, rugged camera enclosures, versatile equipment enclosures, and the latest video technologies for capturing and retaining high quality images. The on-board digital video camera system shall perform mobile monitoring and surveillance of transit buses utilizing an end-to-end digital recording approach. The system shall be activated through the transit bus's master switch. When the transit bus is started, the digital recorder acquires and stores data from cameras. On a routine basis, recording may stop following a pre-programmed period or when the transit bus master switch is off and the system stands idle.

The system shall be installed according to industry standards meeting Society of Automotive Engineers recommended practices. All cables, wiring, interconnections, switches, and circuit breakers/fuses shall be heavy-duty and specifically designed for their purposes and automotive application. The selected wire sizes and insulation shall be based on the current carrying capability voltage drop, mechanical strength temperature and flexibility requirements. Video and audio wires selected shall be gauged to minimize signal loss. The system shall be GPS ready to provide geo-fencing and inertia sensor.

The system shall have been successfully tested for a minimum of twelve months in actual documented field use in an urban mass transit bus environment.

A protective filtering device shall be installed to protect the video system and its memories from electrical fluctuation typically found in a transit bus including, but not limited to, over voltage, under voltage, transient, power surge/dip during engine or other transit bus equipment startup, alternator noises, etc. It is important that the filtering device provides sufficient and proper protection to the video camera equipment supplied under this contract.

The buses in this procurement shall each come equipped with operational high quality (600 line resolution) color, wide angle lens cameras installed in aesthetically pleasing enclosures. The number of such cameras shall be seven (7) for 30-ft buses or nine (9) for 35- or 40-ft buses. The cameras shall automatically switch from color to black & white in low light conditions. The enclosures shall be vandal resistant, secure, lockable, shock-resistant, dust resistant and weather and water-resistant and shall be made of impact-resistant non-toxic material. The cameras shall be installed as follows:

- Facing the front door
- Facing the rear door
- Facing out the windshield (driver eye view)
- Facing down the aisle from the front to the back of the bus
- Located abeam the back door facing the back bus platform
- On the outside curb side of the bus behind the rear door facing back to front
- On the outside driver side of the bus over the driver side window facing front to back
- Two (2) locations to be determined by the participants

Digital video recorders, multiplexers, power converters/inverters and all other required electronic equipment shall be enclosed within a low-profile enclosure. The equipment enclosure shall be mounted so that it does not obstruct customer traffic flow, interfere with the transit bus operator, or create a safety

hazard. The equipment enclosure shall be made of impact-resistant non-toxic material, designed to withstand blows, impacts, shock and vibration. The enclosure shall be fully enclosed, lockable, vandal-resistant, dust-resistant, and water-resistant, and designed to allow for temperature compensation through the use of cooling fans or other means. All locks, enclosures and cabinets utilized throughout the video system shall be keyed alike.

The design of enclosure shall allow for the quick and easy installation and removal of electronic equipment from within the enclosure, and all connectors shall terminate at a bulkhead board (Termination Board). Enclosure shall be designed to allow for any type of mounting, floor mount, roof mount or wall mount. The design of the equipment enclosure and mounting locations shall be approved at pre-production.

The MDVR shall operate on 8-32 volt DC power, with a unit operational draw of 2.0 amperes @ 24 volts, not including cameras. Operational draw with cameras is between 3.0 and 5.0 amperes, depending on cameras. All cables and connectors to and from the MDVR shall conform to SAE standards.

The MDVR shall not exceed the physical dimensions of 3 inches high, 12 inches deep, and 12 inches wide, exclusive of enclosure and mounting brackets.

The MDVR shall not exceed 8 pounds, exclusive of removable hard drive.

The operating temperature of the MDVR shall be from - 20°F to +120°F. The MDVR shall withstand humidity to 90% condensing and meet an environmental rating of IP 67 or better.

The MDVR shall be capable of withstanding shock pulses of up to 20 G-forces per 11ms period operating and 40 G-forces per 11ms period non-operating.

The MDVR shall be capable of being mounted in any orientation without detriment to its operation.

The MDVR shall have three (3) Ethernet ports to allow external programming and system diagnostics. Built-in software shall perform full and continuous system diagnostics and is capable of reporting failures.

The MDVR clock shall operate independently of the main power supply and shall have a minimum five (5) year operational lifetime before battery change is required. Clock drift shall be no more than one (1) minute per six (6) months. The MDVR shall be capable of updating and synchronizing the entire fleet of onboard clocks through a GPS interface.

Dates are to be pre-programmed to the year 2040, and shall take into account all leap years and daylight savings time changes automatically without external intervention. The clock data is digitally inserted into the image/sensor data stream prior to storage to hard disk.

The MDVR shall require no operator interface other than the Master Switch operation to effectuate operation, initiate shutdown, maintain the system, service or program the system, or prepare the system for operation.

The MDVR shall be controlled using embedded processors in an industrial form factor to assure adequate shock and vibration resistance. PC motherboards are not acceptable without a documented mobile rating.

The MDVR operating system software shall be of an embedded type contained within a firmware chip. The operating system shall be written specifically for MDVR operation and allow for the largest available drives to be used. Consumer-based operating systems residing on internal hard drives are not acceptable because they are subject to frequent failure.

The MDVR shall have thirteen (13) NTSC video inputs for composite 1V PP signals (12 analog and 1 HD) and shall be capable of black-and-white or color recording.

The MDVR shall have a standard recording resolution of 720 × 480 pixels and 1280 x 720 pixels for HD.

The MDVR shall provide ten (10) channels of digitized synchronous 16-bit audio with ADPCM compression at 16 KHz sampling rate. Input frequency is between 20 Hz and 8 KHz. The audio will not be turned on or recorded for any Connecticut bus.

The MDVR shall be equipped with the following external ports:

- (2) RJ-45 type RS-232 Communications Ports
- (1) RS-232 Serial Communications Port
- (1) System Diagnostics Port
- (3) RJ-45 Ethernet Port
- (2) Universal Serial Bus (USB) version 2.0 Ports

The MDVR shall have a wave engine module that accepts up to twelve (12) analog color and 1 HD color camera inputs. Every time the MDVR boots, the cameras attached to the wave engine module are detected. This allows adjustable camera configurations. The wave engine module shall also have a separate input for an audio signal.

The MDVR shall be capable of directly digitizing, combining, compressing, encrypting, and storing NTSC video, audio sensors, and auxiliary sensor signals. Video and audio signals shall be encrypted using digital cryptographic methods that prevent alteration and tampering, restrict access and detect attempted alteration or tampering (authentication). Compressed, encrypted data is stored to mobile-rated removable disk storage media and is transmittable over a user's wired or wireless network.

In addition to accurate time and date, the MDVR shall append with image data the following ten (10) signal and alarm programmable analog vehicle parameters and the buses in this procurement shall be equipped and delivered recording these vehicle parameters:

- ◆ vehicle speed
- ◆ left signal (directional)
- ◆ headlights
- ◆ event switch
- ◆ wheelchair lift
- ◆ door actuation
- ◆ right signal (directional)
- ◆ brake operation
- ◆ throttle position
- ◆ passenger count

The MDVR combines the vehicle variables above with the other text data, such as time and date and vehicle identification number.

The MDVR shall be capable of supporting up to twenty (20) J-1708 and J1939 digital sensors and other devices. Proper operation of sensor input data can be reliant on the availability of appropriate interfaces and/or protocols being supplied by the vehicle owners and/or component manufacturers.

The MDVR shall have the ability to dynamically change video and audio settings during operation. Changes to the frame rate or image quality of any camera input can be changed based on time, sensor input, or J-1708/J1939 input in real time. Frame rates range up to 30 fps per camera. The MDVR shall be capable of recording multiple differing frame rates and differing levels of image quality per camera at the same time.

All data shall be recorded by the MDVR in a secure encrypted MPEG4 format that is not recognized or readable by standard digital video player software. Video recorded in standard AVI, MPEG, MOV, or MJPEG format is not acceptable. Video recorded and stored in standard AVI, MPEG, MOV, or MJPEG

format is alterable by numerous off-the-shelf software packages and, as a result, provides insufficient data security to meet courtroom standards of admissibility.

The MDVR shall maintain a log file of its actions, which are stored on the removable hard drive. This information includes the time and date of the action and includes: ignition on/off, events start and stop, camera failure, drive errors, and other diagnostics.

The MDVR shall be capable of communicating utilizing the Society of Automotive Engineers (SAE) "Electronic Data Interchange Between Microcomputer Systems and Heavy-Duty Vehicle Applications" standard (SAE J1708 and SAE J1587) and "Recommended Practice for a Serial Control and Communications Vehicle Network" (SAE J1939). The MDVR is optionally capable of acquiring data from electronic vehicle systems, including engines, utilizing this data communication standard. The MDVR and all sub-systems shall comply with SAE J1455, "Recommended Environmental Practices for Electrical Equipment Design" for vibration and shock isolation, including Section 202F. The electronic standard is in place and accessible to an installed vehicle electronic control module (ECM) if output is available from a manufacturer's ECM.

The MDVR shall comply with all the requirements of the "Buy America Act" (49 CFR Part 661), at the component level.

The MDVR shall have the capability to interface with diagnostic software operated from either a workstation or portable computer for system troubleshooting and configuration purposes.

The MDVR shall interface with a remote LED panel and provide the status of MDVR start up, normal operation, not recording, events full, and camera failure. The LED shall be programmable to indicate green, red, yellow, flashing green, flashing red, or off for each status. The LED shall also have an Event switch.

The MDVR shall interface with an Event switch that will be hardwired to the vehicle's panic button. When a system input such as a panic button is activated the video recording unit shall tag the event. When retrieved, the tagged event shall be easily identifiable. The system shall be activated through the transit bus master switch. When the transit bus is started, the digital recorder shall acquire data from cameras and optional pre-selected sensor parameters. On a routine basis, recording may stop following a pre-programmed period or when the transit bus master switch is off and the system stands idle. As available disk space is filled, new information overwrites old in a linear sequence. This linear sequence shall continue indefinitely until an event or incident occurs necessitating retrieval of stored data.

The MDVR shall have at least two (2) USB 2.0 ports. These ports shall allow up to two (2) additional 120GB hard drive canisters to be attached to the MDVR for additional video storage.

The MDVR shall have an internal power source that can supply the MDVR with power in the event of an unexpected loss of power. This internal power source must supply enough power for the MDVR to perform its normal shutdown processes. This power source must be maintenance free and have an expected life of at least eight years.

The MDVR shall have at least two (2) PCMCIA slots. These slots shall accept a standard Compact Flash (CF) card or cellular modem card. The CF cards can be used for solid-state storage of Event data. A cellular modem can be used to transfer live video and audio data via a cellular network.

The removable disk media conforms to mobile requirements for reliability and durability and also conforms to SAE and MILSPEC vibration standards. The canister protects the media and is capable of withstanding shock pulses of 200G-forces per 2 millisecond period operating, and 800G-forces per 1 millisecond period non-operating, without system failure.

The rated life (Mean Time Before Failure) on the disk drive shall be 40,000 hours. The average Mean Time Before Failure of the disk drive units shall be an average of not less than 4 years.

The removable drive shall be secured in place by a key lock mounted on the MDVR. Total storage capacity shall be at least 2 TB (terabytes).

One (1) spare removable hard disk drive per bus shall be provided to each transit system in this procurement. The spare disk drives provided are to be identical to the system drives and shall be individually wrapped and protected within a container supplied by the selected Proposer or manufacturer.

Duration is determined by video capture quality, drive size, and aggregate frame rate. The MDVR shall support a minimum of 72 hours with ten cameras at 300 fps aggregate at standard video quality. For this procurement seven cameras will be provided with an initial setting each of 15 fps.

Disk capacity/storage time shall be field-upgradeable with nominal changes to software and/or hardware.

The disk media shall be capable of withstanding continuous vibration (5Hz to 500Hz) and frequent shock pulses of moderate duration (up to 10ms). Recorded data must survive all typical traffic accidents as well as collisions up to 40G-forces.

Disk storage media shall be conveniently portable, easily removable and transportable.

All recorded data shall be created in a secure encrypted file format using digital cryptography. The encryption restricts access, prevents alteration and tampering, and supports the detection or attempts to alter or tamper with video images or sensor information.

Recorded data shall be viewable in read-only format on a standard PC workstation or PC laptop. Software is supplied for on-site data playback and is compatible with standard PC-based operating systems such as Windows7. Data can be easily downloaded for long-term storage to high capacity storage media.

The MDVR shall support wireless connectivity. Data from the hard drive canister shall be transferable via a compatible 802.11x wireless Ethernet Bridge or cellular modem and downloadable to a server via a wireless network. The transferred or downloaded data shall be reviewable by a workstation that has an installed copy of the vender's video reviewing software. The system shall also be capable of delivering video data and system health status information automatically to the server for review.

A desktop viewing station shall be provided to each transit system in this procurement and consist of a personal computer dedicated to playback and review of the MDVR's recorded data. Minimum system requirements for the desktop viewing station are as follows:

- Microsoft Windows 7 or later current Operating System
- 2GB² Dual Channel DDR2 SDRAM at 667MHz - 2 DIMMs
- 250GB⁴ or greater Serial ATA 3Gb/s Hard Drive (7200RPM) w/DataBurst Cache™
- ATI Mobility Radeon HD 2400 Video Card
- Integrated Gigabit Ethernet (10/100/1000Base-T)
- 32X Slot load CD/DVD burner (DVD+/-RW)
- Network interface card (NIC)
- 6 USB 2.0 ports
- Standard keyboard and mouse
- Audio with built-in speakers
- Storage devices to meet the user's requirements for archiving, including automated upload to a secure Internet server
- Removable drive adapter (docking station) that connects the MDVR's removable drive to the desktop computer via a USB 2.0 connection

- A Panasonic CF-53 or equivalent notebook computer shall be provided to each transit system in the procurement to act as a portable viewing station that will be dedicated to playback and review of the MDVR's recorded data. Storage devices to meet the user's requirements for archiving, including automated upload to a secure Internet server
- Removable drive adapter that connects the MDVR removable drive to the notebook via a USB 2.0 connection

The system's viewing software shall allow review of the data from the MDVR's removable drive canister. It shall allow for up to 13 simultaneous, synchronized playback windows as thumbnails, with one, two, four, eight, ten or twelve plus one larger windows displayed at one time in a tiled format. It shall allow for a zoom function by means of a slide bar, double-clicking, or rubber banding. The screen shall display the Vehicle ID number, date of recorded video, display sensor information, and camera number. This option shall be capable of being turned on or off.

It shall allow for image enhancement consisting of sharpening, brightness, contrast, saturation, and hue. The MDVR shall allow all image enhancements to be applied to the motion video, but shall *not* modify the original video in any manner (i.e., enhancements to a video frame continue to play on subsequent frames, but are not saved to the removable drive canister).

The MDVR shall allow for archiving of all video, selected frames, or selected loops of video. The MDVR shall allow for individual video frames or selected loops to be exported in JPEG, BMP, AVI or TIFF formats. The MDVR shall allow for thirteen (13) synchronized channels of audio playback with multiple filter options.

The MDVR shall allow searching for specific video via time and date stamps. The MDVR shall allow the user to select the time and date for viewing. It is not necessary to load the entire hard drive to view a set time. Specific Events and Incidents shall also be selectable.

Each video frame shall be decoded and authenticated dynamically upon request. The MDVR shall display the status as each frame is validated.

The MDVR shall allow users to create custom reports.

The MDVR data must be able to be accepted as evidence in criminal proceedings and civil proceedings, and be deemed to have sufficient forensic integrity to meet authentication and encryption requirements expected by the courts.

All video systems shall be delivered with the manufacturer's standard manuals for each component for the model offered.

The vendor shall provide each transit property in this procurement with any special diagnostic equipment necessary to maintain this video system.

Training shall be provided to insure satisfactory operation, servicing and maintenance of the equipment furnished. Instructions shall also include manufacturers' recommendations of test frequency, limits and methods, including downloading and transferring to a CD or DVD. When methods of access, removal, dismantling or application of a component are not self-evident, the instruction shall also cover these matters.

Training shall be provided to each transit property personnel receiving this equipment in maintenance, engineering, dispatch, and supervisory staff. Training includes maintenance procedures, installation and un-installation procedures, disk retrieval, and playback and data transfer.

Digital video camera systems shall include all necessary equipment for total system functionality: cameras, digital video recorders, multiplexers, converters, hard drives, cabling, operating software, all connectors and mounting enclosures.

The system shall be field-upgradeable both in hardware and software with minimal time loss and expense and be backward compatible were feasible.

The total system shall have a one (1) year parts and labor warranty. Repair and/or replacement shall be provided at no charge, during the warranty period, for parts with manufacturing defects.

Telephone troubleshooting service shall be available between 8:00AM and 5:00PM Connecticut time, Monday through Friday via a toll free telephone line.

Bicycle rack

A two position SportWorks stainless steel or equivalent bicycle rack shall be provided and installed on the front of the bus using a quick release removal bracket. The standard safety and operating instruction decals are required on each bicycle rack. Depending on application a provision for interior or exterior bike rack is required. At the option of the Procuring Agency, an interior bicycle rack system accessible through the rear door shall be offered in lieu of an exterior bicycle rack system.

Radio

The radio to be installed on each bus shall be further specified by the Procuring Agency. Such radios may include a Motorola digital P-25 mobile radio or an analog Tait TM8105 mobile radio or other type designated by the Procuring Agency. Such radio may be purchased by the OEM, a separate Contractor, directly by the Procuring Agency, or as otherwise directed by that Agency.

The radio system includes an operator speaker, handset and cradle (Audiosears Corp model C10838-QOP05 or equal) to be provided and installed by the vendor. The radio will be provided by and installed by each transit system after the buses are delivered to Connecticut, unless directed otherwise by the Procuring Agency. A location convenient to the operator shall be provided for the radio control head, speaker, handset, and cradle. The location shall conform to SAE Recommended Practice J287 "Driver Hand Control Reach."

For ITS equipped buses use Trapeze Kit 36T0003-103, Handset Kit: 36T0003-103. Handset Alone: 25T0128-103

Provisions for attaching an antenna to the roof and routing an antenna lead to the radio compartment shall be provided. Antenna mounting shall conform to the electromagnetic suppression requirements of SAE J551. A roof mounted radio antenna requires a ground plane to prevent electronic noise being generated inside the vehicle. A metal roof can serve as a sufficient ground plane; however a fiberglass roof requires either a metallic surface, or an antenna with a virtual ground plane. To test and repair antenna connections, quick access shall be provided inside the vehicle at the point where the antenna is mounted to the roof and where the antenna cable attaches to the antenna.

A radio box is required that will be pre-wired by the bus manufacturer with power on ignition run switch and 12V and 24V power. The box shall be keyed with a 5/16" T.

A 762-870 MHZ 3DB LOW PROFILE MOBILE antenna, Motorola part number RAF4226A shall be provided by the vendor and installed on the bus roof at a location, by an installer, as approved at preproduction by the vendor and the Procuring Agency.

Emergency Alarm

The Covert Emergency Alarm is for the operators use in dangerous situations. The alarm shall be integrated with the radio, the External Route Display shall display "911," and the CCTV shall tag and save recordings. The alarm button shall be located on the Bus Operator Work Station lower left side wall. The driver should be able to take his/her left hand and reach over in a location near his/her knee to push it without moving or calling attention to his/her action. The alarm button shall be a Square D #9001KR2U push button or equal. For ITS equipped buses the Covert Switch Kit: 36T0033-003. Switch Alone: 24T0058-001.

An antenna cable shall be provided and installed as follows:

Run 2 Belden 8418 (20 AWG 8 Conductor shielded) audio cables from the top of the "Streetside Closeout air/electrical" to Radio Box leaving 24 inches extra in Radio Box. Mark "Handset/Speaker/Spectra Mic" and "Handset/Speaker/Spectra Mic Spare." Run RG58/U Belden 8240 Coax from Antenna Access hole to radio box leaving 24 inches extra in radio box and 12 inches extra in antenna access. Run 1-20 AWG Green and 1-20 AWG Black from Terminal block in Radio Box leaving 36 inches coiled in the bottom of the box for the 911 system, Marked for "Silent Alarm Code Plug".

New Flyer

EXHIBIT A.2

VEHICLE TECHNICAL INFORMATION



NEW FLYER

New Flyer Xcelsior® 35' Diesel (XD35) Vehicle Technical Information and Weight Analysis

Built to
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Exhibit A.2

VEHICLE TECHNICAL INFORMATION

The Proposer shall submit a completely filled-in Vehicle Technical Information form below as part of their proposal submission. A separate form shall be checked and filled out for each different bus model proposed.

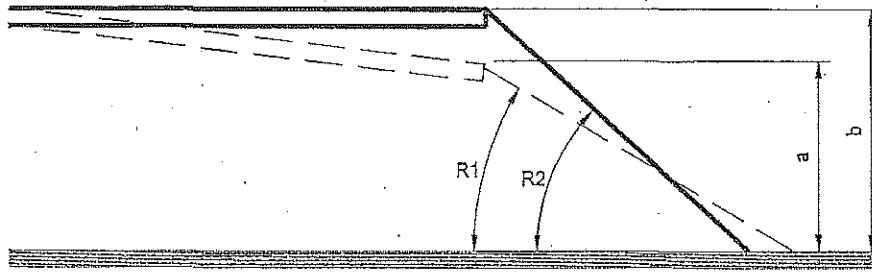
- 30' Diesel Bus
 35' Diesel Bus
 40' Diesel Bus

- 30' Hybrid Bus
 35' Hybrid Bus
 40' Hybrid Bus

A.	BUS MANUFACTURER	<u>New Flyer of America Inc.</u>
	Bus Model	<u>Xcelsior</u>
B.	UNDERSTRUCTURE MANUFACTURER	<u>New Flyer of America Inc.</u>
	Model Number	<u>XD35</u>
C.	BASIC BODY CONSTRUCTION	
	1. Type	<u>Semi-Monocoque</u>
	2. Tubing or frame member Thickness, Dimensions & Material	
	a. Overstructure	<u>Carbon Steel 0.075 to 0.25 inches</u>
	b. Understructure	<u>Carbon Steel 0.075 to 0.25 inches</u>
	3. Skin Thickness and Material	
	a. Roof	<u>Fiberglass 0.18+0/-0.06 inches</u>
	b. Sidewall	<u>Fiberglass 0.18+0/-0.06 inches</u>
	c. Skirt Panel	<u>N/A</u>
	d. Front End	<u>Fiberglass 0.18+0.03</u>
	e. Rear End	<u>Fiberglass 0.18+0.03</u>
D.	DIMENSIONS	
	1. Overall Length	
	a. Over Bumpers	<u>35</u> ft. <u>5</u> in.
	b. Over Body	<u>36</u> ft. <u>3</u> in.
	2. Overall Width	
	a. Over Body excluding Mirrors	<u>8 FT 6</u> in.
	b. Over Body including Mirrors - driving position	<u>10 FT 5</u> in.
	c. Over Tires Front Axles	<u>8 FT 6</u> in.
	d. Over Tires Rear Axles	<u>8 FT 6</u> in.
	3. a. Over all Height (maximum)	<u>126</u> in.
	b. Overall Height (main roof line)	<u>117</u> in.
	4. Angle of Approach	<u>9</u> deg.
	5. Breakover Angle	<u>12</u> deg.
	6. Angle of Departure	<u>9</u> deg.

7.	Doorway Dimensions	<u>Front</u>	<u>Rear</u>
a.	Width Between Door Posts	<u>43.7</u> in.	<u>38.9</u> in.
b.	Door Width Between Panels	<u>36.8</u> in.	<u>30.5</u> in.
c.	Clear Door Width	<u>33.8</u> in.	<u>30.5</u> in.
d.	Doorway Height	<u>77.3</u> in.	<u>77.3</u> in.
e.	Knuckle Clearance	<u>1.75</u> in.	<u>1.5</u> in.
f.	Door Protrusion Beyond Side Panels	<u> </u> in.	<u> </u> in.

8. Step Height from Ground (measured at center of doorway)



<u>Front Doorway, Empty</u>		<u>Ramp Angle</u>		<u>Rear Doorway, Empty</u>	
(Kneeled) a.	<u>10</u> in.	R1	<u>9.46</u> deg.	a.	<u>14</u> in.
(Unkneeled) b.	<u>14</u> in.	R2	<u>18.5</u> deg.	b.	<u>14</u> in.
(Reverse Kneeled) c.	<u>N/A</u> in.	R3	<u>N/A</u> deg.	c.	<u>N/A</u> in.

9. Interior Head Room (center of aisle)

a.	Front Axle Location	<u>79.5</u> in.
b.	Drive Axle Location	<u>78</u> in.

10. Aisle Width Between Transverse Seats (minimum) 22.5 in.

11. Floor Ride Height Above Ground (centerline of bus)

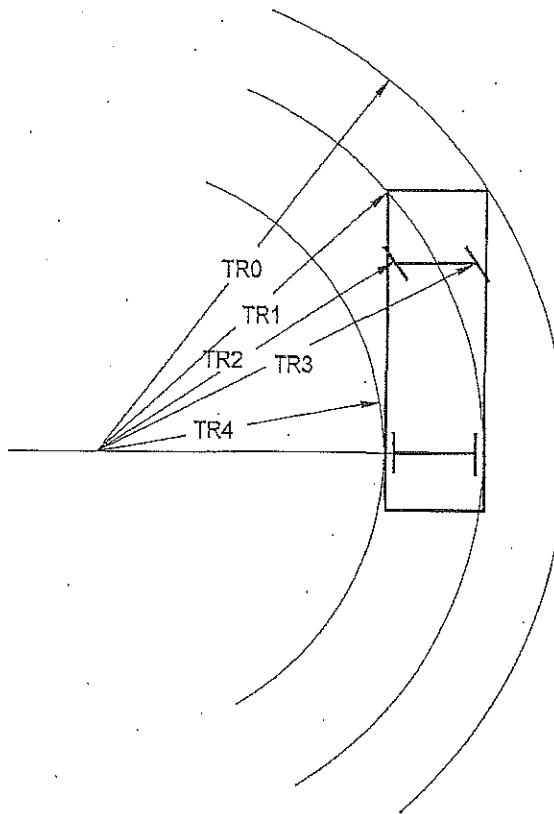
a.	at Front door	<u>14.0</u> in.
b.	at Front Axle	<u>15.5</u> in.
c.	at Drive Axle	<u>31</u> in.
d.	at Rear door	<u>14.0</u> in.

12. Minimum Ground Clearance (between bus and ground, with bus unkneeled)

a.	Excluding Axles	<u>10</u> in.
b.	Including Axles	<u>5.6</u> in.

13. Horizontal Turning Envelope (see diagram on following page)

a.	Outside Body Turning Radius, TR0 (including bumper)	<u>44</u> ft.	<u>0</u> in.
b.	Front Inner Corner Radius, TR1 (including bumper)	<u>38.6</u> ft.	<u>0</u> in.
c.	Front Wheel Inner Turning Radius, TR2	<u>33</u> ft.	<u>0</u> in.
d.	Front Wheel Outer Turning Radius, TR3	<u>39.9</u> ft.	<u>0</u> in.
e.	Inside Body Turning Radius, TR4 (including bumper)	<u>23.5</u> ft.	<u>0</u> in.



14.	Wheelbase		<u>226.75</u> in.
15.	Overhang, Centerline of Axle Over Bumper		
	a. Front	<u> </u> ft.	<u>87.3</u> in.
	b. Rear	<u> </u> ft.	<u>120.8</u> in.
16.	Floor		
	a. Interior Length	<u>34</u> ft.	<u>7.5</u> in.
	b. Interior Width (excluding coving)	<u>8</u> ft.	<u>1</u> in.
	c. Total Standee Area	<u>50.8</u> sq. ft.	
	d. Minimum distance between Wheelhouses:		
	Front:		<u>35.5</u> in.
	Rear:		<u>41.5</u> in.
	e. Maximum interior floor slope (from horizontal)	<u>3.5</u> deg.	
17.	Passenger Capacity Provided		
	a. Total Maximum Seating	<u>30</u>	
	b. Standee Capacity	<u> </u>	
	c. Minimum Knee to Hip Room		<u>28</u> in.
	d. Minimum Foot Room		<u>10</u> in.

E. WEIGHT OF BUS - Please see the attached weight analysis chart

	No. of People	Front Axle			Rear Axle			TOTAL BUS
		Left	Right	Total	Left	Right	Total	
Empty Bus Full Fuel and Farebox	0							
Fully Seated Full Fuel and Farebox	_____ +Driver							
Fully Loaded Standee and Fully Seated Full Fuel and Farebox	_____ +Driver							
Crush Load (1.5xFully Loaded)	_____							
GVWR								
GAWR								

Continued on Next Page

F. ENGINE, MAIN

- | | | |
|-----|--|-------------------------|
| 1. | Manufacturer | Cummins |
| 2. | Model Number | ISL 2016 - 280 |
| 3. | Type | Diesel |
| 4. | No. of Cylinders | 6 |
| 5. | Bore | 4.49 in. |
| 6. | Stroke | 5.69 in. |
| 7. | Displacement | 543 cu. in. |
| 8. | Compression Ratio | 16.6:1 |
| 9. | Injector Type and Size | Bosch Closed Nozzle |
| 10. | Net S.A.E. Horsepower | 280 HP at 2200 rpm |
| 11. | Net S.A.E. Torque | 900 lb. ft. at 1300 rpm |
| 12. | Crankcase Oil Capacity | |
| | a. New Engine, dry | 6.3 gal. |
| | b. New Engine, wet | 6.3 gal. |
| 13. | Turbocharger | |
| | a. Make | Holset |
| | b. Model Number | HX40 |
| 14. | Maximum Speed, no load | 2400 rpm |
| 15. | Maximum Speed, full load | 200 rpm |
| 16. | Speed at Idle | 750 rpm |
| 17. | Speed at Fast Idle | 1000 rpm |
| 18. | Engine Information/graphs to be attached with this form: | |

- Engine speed vs. road speed*
- Torque vs. engine speed*
- Horsepower vs. engine speed*
- Fuel consumption vs. engine speed.*
- Vehicle speed vs. time (both loaded and unloaded)*
- Vehicle speed vs. grade (both loaded and unloaded)*
- Acceleration vs. time*
- Change of acceleration vs. time.*

19. Optional Hybrid Drive System
 Allison ISE BAE OTHER _____
20. Optional Hybrid Drive Electricity Storage
 Nickel Metal Hydride Lithium Ion Ultracap OTHER _____

G. TRANSMISSION

- Allison B330R Allison B400R Allison B500R OTHER _____

- | | | |
|----|---|-------------------------------|
| 1. | Manufacturer | Allison |
| 2. | Model Number | B400R |
| 3. | Type | Electronic |
| 4. | Speeds | 6 |
| 5. | Gear Ratios | Forward _____ Reverse -4.80:1 |
| 6. | Shift Speeds | |
| | a. 1st - 2nd | _____ mph |
| | b. 2nd - 3rd | _____ mph |
| | c. 3rd - 4th | _____ mph |
| | d. 4th - 5th (if applicable) | _____ mph |
| | e. 5th - 6th (if applicable) | _____ mph |
| 7. | Fluid Capacity [Including heat exchanger and filter(s)] | 26 |

See performance SCAANs

H. VOLTAGE REGULATOR

1. Manufacturer	Delco
2. Model Number	50-VR

I. VOLTAGE EQUALIZER

1. Manufacturer	Vanner
2. Model Number	80 AMP

J. ALTERNATOR

1. Manufacturer	EMP
2. Model Number	Air Cooled
3. Type	Power 450
4. Output at Idle	280 Amps
5. Output at Maximum Speed	455 Amps
6. Maximum Warranted Speed	6500 rpm
7. Speed at Idle	2000 rpm
8. Drive Type	Belt

K. STARTER MOTOR

1. Manufacturer	Delco Remy
2. Model Number	24 VDC
3. Type	42MDT

L. AIR COMPRESSOR

1. Manufacturer	Wabco
2. Type	Reciprocating
3. Rated Capacity	30.4 cfm
4. Capacity, at Idle	6.9 cfm
5. Capacity, at Maximum Speed	22.4 cfm
6. Maximum Warranted Speed	3000 rpm
7. Speed Idle	700 rpm
8. Drive Type	Direct rpm
9. Governor	
a) Cut-in Pressure	131 psi
b) Cut-Out Pressure	117 psi

M. AXLE, FRONT

MAN solid beam, non-driving

Or equal as listed below:

1. Manufacturer	M.A.N.
2. Type	VOK-07-F
3. Model Number	Reverse Elliot cast beam, dropped centre, non-driven
4. Gross Axle Weight Rating	15873 lb.
5. Axle Load	12398 lb.

N. AXLE, REAR

MAN heavy duty

Or equal as listed below:

1. Manufacturer	M.A.N.
2. Model Number	HY-1350-F
3. Type	Single Reduction
4. Gross Axle Weight Rating	28660 lb.
5. Axle Load	26052 lb.
6. Axle Ratio	4.56:1

O. SUSPENSION SYSTEM

1. Manufacturer		New Flyer
2. Type:	Front	Pneumatic
	Rear	Pneumatic
3. Springs:	Front	Firestone
	Rear	Firestone

P. WHEELS AND TIRES

1. Wheels		
a. Make		Alcoa
b. Size		22.5 x 8.25
c. Capacity		tbd lb.
d. Material		Aluminum

2. Tires		
a. Manufacturer		Michelin X InCity Z
b. Type		Low Profile
c. Size		305/70R22.5
d. Load Range/Air Press.		tbd lb./psi.

Q. STEERING, POWER

1. Pump		
a. Manufacturer		Ixetic (Luk)
b. Model Number		Ixetic (Luk)
c. Type		Powered off Engine accessory drive
d. Relief Pressure		2175 psi
2. Booster/Gear Box		
a. Manufacturer		Sheppard
b. Model Number		M110
c. Type		Recirculating Ball
d. Ratio		23:1
3. Power Steering Fluid Capacity		20 gal.
4. Maximum Effort at Steering Wheel (unloaded stationary coach on dry asphalt pavement)		9-10 deg lb.
5. Steering Wheel Diameter		20 in.

R. BRAKES

1. Make of Fundamental Brake System		Knorr
2. Brake Chambers Vendor's Size & Part No.		MGM / 1621705, 1621706
a. Front		MGM/MJB2024ET752
b. Rear		70 lbs. -ft
3. Brake Operation Effort		
4. Slack Adjuster's Vendor's Type & Part No.		
a. Front		
	1) Right	N/A
	2) Left	N/A
b. Rear		
	1) Right	N/A
	2) Left	N/A
c. Length,		
	1) Front Take-up	N/A in.
	2) Rear Take-up	N/A in.

5.	Brake Drums/Discs			
	a.	Front		
		1)	Manufacturer	MAN
		2)	Part Number	81.50803.0040
		3)	Diameter	16.14 in.
	b.	Rear		
		1)	Manufacturer	M.A.N.
		2)	Part Number	81.50803.0041
		3)	Diameter	16.14 in.
6.	Brake Lining			
	a.	Front		
		1)	Manufacturer	Ferodo
		2)	Type	4567
	b.	Rear		
		1)	Manufacturer	Ferodo
		2)	Type	4567
7.	Brake Lining Identification			
	a.	Front		
		1)	Forward	81.50820.5104
		2)	Reverse	81.50820.5104
	b.	Rear		
		1)	Forward	81.50820.5104
		2)	Reverse	81.50820.5104
8.	Brake Linings Per shoe			
	a.	Front		2 pad/caliper, 4 pads per axle
	b.	Rear		2 pad/caliper, 4 pads per axle
9.	Brake Lining Widths			
	a.	Front		N/A in.
	b.	Rear		N/A in.
10.	Brake Lining Lengths			
	a.	Front		7.09 in.
	b.	Rear		7.09 in.
11.	Brake Lining Thickness			
	a.	Front		0.827 in.
	b.	Rear		0.827 in.
12.	Brake Lining Area Per Axle			
	a.	Front		30.38 sq. in.
	b.	Rear		30.38 sq. in.

S. COOLING SYSTEM

1.	Radiator/Charge Air Cooler			
	a.	Manufacturer	EMP	/ EMP
	b.	Model Number	MH4 GEN4	/ MH4 GEN4
	c.	Type	Electric	/ Bar-Plate
	d.	Number of Tubes	37 rows	/ 15 rows
	e.	Tubes Outer Diameter	0.098 in.	/ 0.098 in.
	f.	Fins Per in.	8.5 Fins/	8.5 Fins
	g.	Fin Thickness	0.003 in.	/ 0.003 in.
2.	Total Cooling and Heating System Capacity		23	gal.
3.	Radiator Fan Speed Control		Electronic	Type
4.	Surge Tank, Capacity		20	qt.
5.	Engine Thermostat Temperature Setting			
	a.	Initial Opening	180	° F
	b.	Fully Closed	200	° F
6.	Overheat Alarm Temperature Sending Unit Setting		200	° F
7.	Shutdown Temperature Setting		235	° F

T. AIR RESERVOIR CAPACITY

1.	Supply Reservoir	800	cu. in.
2.	Primary Reservoir	1200	cu. in.
3.	Secondary Reservoir	2150	cu. in.
4.	Parking Reservoir	n/a	cu. in.
5.	Accessory Reservoir	1400	cu. in.
6.	Other Reservoir Type	2150	cu. in.

U. HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT

Thermo King T-Series Rear Mount with Screw Compressor

Or equal; Thermo King RLF rooftop A/C unit

1.	Heating System Capacity	105,000	BTU
2.	Air Conditioning Capacity	98,000	BTU
3.	Ventilating Capacity	2400	cfm
4.	Compressor	Thermo King RLF rooftop A/C unit	
	a. Manufacturer	S391 screw type compressor.	
	b. Model Number	n/a	
	c. No. of Cylinders	1.41:1	
	d. Drive Ratio	3000 rpm max rpm	
	e. Maximum Warranted Speed	rpm	
	f. Operating Speed	147 lb.	
	g. Weight	0.92 gal.	
	h. Oil Capacity	0.92 gal.	
	1) Dry	R-134a freon Type TBD lb.	
	2) Wet		
i.	Refrigerant		
5.	Condenser	Thermo King	
	a. Manufacturer	EBM	
	b. Model Number	3	
	c. No. of Rows	12	
	d. No. of Fins/in.	0.375 in.	
	e. O.D. of Tube	0.008 in.	
	f. Fin Thickness		
6.	Condenser Fan	Thermo King	
	a. Manufacturer	EBM	
	b. Model Number	12 in.	
	c. Fan Diameter	3300 rpm	
	d. Speed Maximum	7500 cfm	
	e. Flow Rate (maximum)		
7.	Receiver	Thermo King	
	a. Manufacturer	TBD	
	b. Model Number	4 lb.	
	c. Capacity		
8.	Condenser Fan Drive Motors	Thermo King / EBM	
	a. Manufacturer	EBM	
	b. Model Number	Cased Axial Flow Integral Motor	
	c. Type	0.03 HP	
	d. Horse Power	3300 MAX rpm	
	e. Operating Speed		
9.	Evaporator Fan Drive Motors	Thermo King / EBM	
	a. Manufacturer	EBM	
	b. Model Number	Forward Curve Single Inlet	
	c. Type	0.75 HP	
	d. Horse Power	1550 MAX rpm	
	e. Operating Speed		

10.	Evaporator(s)		
a.	Manufacturer	Thermo King	
b.	Model Number	Thermo King	
c.	Number of Rows	4	
d.	No. of Fins/in.	10	
e.	Outer Diameter of Tube	0.375	in.
f.	Fin Thickness	0.008	in.
g.	Number of Evaporator	2	
11.	Expansion Valve		
a.	Manufacturer	Thermo King	
b.	Model Number	Sporlan	
12.	Filter-Drier		
a.	Manufacturer	Thermo King	
b.	Model Number	TBD	
13.	Heater Cores		
a.	Manufacturer	Thermo King	
b.	Model Number	Thermo King	
c.	Capacity	350	BTU
d.	Number of Rows	2	
e.	Number of Fins/in.	9	
f.	Outer Diameter of Tube	0.375	in.
g.	Fin Thickness	0.008	in.
h.	Number of Heater Cores	1	
14.	Floor Heater Blowers		
a.	Heater Blower Motors		
1)	Manufacturer	EBM	
2)	Model Number	EBM	
3)	Horsepower	0.18	HP
4)	Speed(s)	3800	rpm
b.	Heater Blower Wheel		
1)	Manufacturer		
2)	Model Number		
3)	Capacity		cfm
c.	Cores		
1)	Manufacturer		
2)	Model Number		
3)	Capacity		BTU
4)	Number of Rows		
5)	Number of Fins/in.		Fins
6)	Outer Diameter of Tube		in.
7)	Fin Thickness		in.
8)	Number of Heater Cores		
15.	Controls		
a.	Manufacturer	Thermo King	
b.	Model Number	Intelligaire III	
c.	Type	Electronic	
16.	Driver's Heat		
a.	Manufacturer	Mobile Climate Control	
b.	Model Number	12-600070	
c.	Capacity	56,800	BTU
17.	Ventilation System		
a.	Type	Recirculated Air	
18.	Coolant Heater		
a.	Make	Spheros	
b.	Model Number	thermo 230	
c.	Capacity(BTU)	80,000	btu

V. INTERIOR LIGHTING

- Dinex with Nichia or Philips LED's
- Or equal as listed below:

1. Manufacturer	<u>New Flyer (TCB)</u>
2. Type	<u>LED</u>
3. Number of Fixtures	<u>10</u>
4. Size of Fixtures	<u>76 - 96 inc.</u>
5. Power Pack	<u>TCB</u>

W. DOORS

- Vapor Bus International Ameriview
- Or equal as listed below:

1. <u>Front</u>		
a. Manufacturer of Operating Equipment	<u>VAPOR</u>	
b. Type of Door	<u>PNEUMATIC</u>	
c. Type of Operating Equipment	<u>SLIDE GLIDE</u>	
2. <u>Rear</u>		
a. Manufacturer of Operating Equipment	<u>VAPOR</u>	
b. Type door	<u>PNEUMATIC</u>	
c. Type of Operating Equipment	<u>SLIDE GLIDE</u>	

X. PASSENGER WINDOWS

1. Manufacturer	<u>Arwon Global (Storm Tite)</u>		
2. Model Number	<u>Evolution Rapid Replacement</u>		
3. Type	<u>Non Flush bottom is fixed, top tip-in.</u>		
4. Number: (Side)	<u>13 including drivers side</u>		
(Rear)	<u>n/a</u>		
5. Sizes:	<u>40.83 inc.</u>	<u>43.62 inc.</u>	<u>62.28 inch</u>
6. Glazing:			
a. Type	<u>tempered</u>		
b. Thickness	<u>6mm</u>		
c. Color of Tint	<u>Gray and Green</u>		
d. Light Transmission	<u>78% & 72 %</u>		

Y. MIRRORS

	<u>Size</u>	<u>Type</u>	<u>Manufacturer</u>	<u>Mfg. Part #</u>	<u>Model No.</u>
1. Right Side Exterior	<u>8x15</u>	<u>2/1</u>	<u>Hadley</u>	<u>tbd</u>	<u>tbd</u>
2. Left Side Exterior	<u>8x15</u>	<u>2/1</u>	<u>Hadley</u>	<u>tbd</u>	<u>tbd</u>
3. Left Side Exterior	<u>8x15</u>	<u>2/1</u>	<u>Hadley</u>	<u>tbd</u>	<u>tbd</u>
4. Center Rearview	<u>8x15</u>	<u>Convex</u>	<u>Lucerix</u>	<u>tbd</u>	<u>tbd</u>
5. Front Entrance Area	<u>6"</u>	<u>Flat</u>	<u>Lucerix</u>	<u>tbd</u>	<u>tbd</u>
6. Upper-Right Hand Corner	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>
7. Rear Exit Area	<u>12"</u>	<u>Convex</u>	<u>Lucerix</u>	<u>tbd</u>	<u>tbd</u>

Z. SEATS

1. 30', 35' & 40' Bus Passenger Front Section Seats	
<input type="checkbox"/> American Seating Model 6466	
<input checked="" type="checkbox"/> Or equal as listed below:	
a. Manufacturer	<u>American Seating</u>
b. Model Number	<u>Insight</u>
2. 30', 35' & 40' Bus Passenger Rear Section Seats	
<input type="checkbox"/> American Seating Model 6468	
<input checked="" type="checkbox"/> Or equal as listed below:	
a. Manufacturer	<u>American Seating</u>
b. Model Number	<u>Insight</u>

3. Bus Operator Seat
 Recaro Ergo M (3-pt) (Fluorescent Color Belt)
 Or equal as listed below:
 a. Manufacturer
 b. Model Number

AA. PAINT

1. Manufacturer
 2. Type
 3. Minimum Total Paint Thickness

Axalta
 Elite
 tbd

BB. WHEELCHAIR RAMP/LIFT EQUIPMENT

1. Manufacturer
 2. Model Number
 3. Type
 4. Capacity
 5. Dimensions
 a. Width of Platform
 b. Length of Platform
 6. System Fluid Capacity
 7. Type Fluid Used
 8. Operating Hydraulic Pressure
 9. Hydraulic Cylinders
 a. Size
 b. Number

New Flyer
 NFIL
 HYDRAULIC
 660 lb.
 32 in.
 47.5 in.
 1 qt.
 atf
 tbd
 1200-1400 psi
 1.4 x 4" stroke
 1

CC. WHEELCHAIR SECUREMENT EQUIPMENT

- American Seating ARM & Dual Auto-Lok System
 Or equal as listed below:
 1. Manufacturer
 2. Model Number

DD. DESTINATION SIGNS

- Twin Vision all LED
 Or equal:

1. Type
 2. Character Length
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route
 3. Character Height
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route
 4. Number of Characters
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route
 5. Message Width
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route

160 rows in.
 n/a in.
 96 col in.
 n/a in.
 16 rows in.
 n/a in.
 8 rows in.
 n/a in.
 Varies with font in.
 n/a in.
 Varies with font in.
 n/a in.
 62.99 in.
 n/a in.
 37.4 in.
 n/a in.

EE. ELECTRICAL

- 1. Multiplex System
 - a. Manufacturer Vansco
 - b. Model Number VMM 1615
- 2. Batteries
 - a. Manufacturer Odyssey
 - b. Model Number _____
 - c. Type group 31

FF. P.A. SYSTEM (If Required)

- Clever Devices Speakeasy II Microphone with Minneapolis Speakers model EN5WI-6WB
- Or equal as listed below:

- | | <u>Manufacturer</u> | <u>Model No.</u> |
|------------------|---------------------|----------------------|
| 1. Amplifier | _____ | _____ |
| 2. Microphone | _____ | _____ |
| 3. Int. Speakers | _____ | _____ (number _____) |
| 4. Ext. Speaker | _____ | _____ (number _____) |

GG. VIDEO SECURITY SYSTEM

- Seon Explorer DX
- Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

HH. BICYCLE RACK

- Sportworks DL2 S/S with Ten Second Bracket
- Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____

II. ENGINE FIRE SUPPRESSION SYSTEM

- Amerex ABC Model V(H)30
- Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

JJ. TRANSMISSION FLUID

- Castro Transynd synthetic
- Or equal as listed below:

- 1. Manufacturer _____
- 2. Brand Name _____
- 3. Description _____

KK. ENGINE BYPASS CENTRIFUGAL NON-DISPOSABLE FILTER (If Required)

- Spinner II Model 976
- Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

LL. FUEL FILLER

Emco Wheaton

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

MM. AUXILIARY BUS AIR SYSTEM CONNECTION

Lincoln Air Quick Disconnect #11659

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

NN. BUS SUBFLOOR

Spaceage Synthetics Thermo-Lite Composite

Or equal as listed below:

- 1. Manufacturer Milwaukee composite flooring.
- 2. Brand Milwaukee
- 3. Description fiberglass composite for step and floor to the rear wheelhouses and Milwaukee composite flooring to the rear.

OO. INTERMEDIATE PLATFORM RIBBED YELLOW FLOOR COVERING

Hypalon

Or equal as listed below:

- 1. Manufacturer Specialty Products & Gerflor
- 2. Brand FMJ & Apollo
- 3. Description Yellow Full Metal Jacket spray on flooring for step edges and risers. Step tread surface is covered in Gerflor rubber flooring.

PP. EXTERNAL REFLECTIVE GRAPHICS STRIPING

3M Cast Vinyl

Or equal as listed below:

- 1. Manufacturer _____
- 2. Brand _____
- 3. Description _____

QQ. INTERNAL SIDE TRIM PANELS

Arborite Vogue P-925-S

Or equal as listed below:

- 1. Manufacturer Arborite
- 2. Model Number P-290-CA
- 3. Description Berry Blue Linolite, NOTE** Color Vogue P-925-S is discontinued and no longer available.

RR. BUS FLOORING

Gerflor Apollo NT Self-adhesive

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

SS. PASSENGER SEAT FABRIC

Holdsworth 5621/6094/3267

Or equal as listed below:

- 1. Manufacturer Holdsworth
- 2. Model Number BHD480, BQV285 and BXE051 with defender treatment
- 3. Description _____

TT. PASSENGER NOTICE SIGN FRAMES

Transit Information Products MC TAB HOR

or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Plas Tech Inc.

tbd

Two clear polycarbonate ad frames. 17" W x 11" H x 0.25" thick.

UU. SCHEDULE HOLDER

Transit Information Products OBIC-WW8-P

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

VV. SUPERCAPACITOR ENGINE START AID

KAPower KBI EC501.2

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

KBI

KSM05002405

WW. RADIO HANDSET AND CRADLE (PART IF ITS SYSTEM)

Audiosears Corp. 1001A00AEMJLUC-QHC

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

XX. COVERT EMERGENCY ALARM BUTTON

Square D #9001KR2U Push Button

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

RECARO

TBD

YY. ITS SYSTEM

Trapeze TransitMaster

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Continued on Next Page

WEIGHT OF BUS (Estimated)

XD35	No. of People		MAN Front Axle			MAN Rear Axle			Total bus
			Left	Right	Total	Left	Right	Total	
Empty Bus Full Fuel	0		3,974	3,926	7,900	9,494	9,686	19,180	27,080
Fully Seated and Full Fuel	30	+ Driver	4,483	4,430	8,913	11,294	11,523	22,817	31,730
Fully Loaded Standee and Fully Seated Full Fuel	61	+ Driver	5,656	5,588	11,244	12,442	12,694	25,136	36,380
Crush Load (1.5xFully Loaded)	91	+ Driver	6,784	6,704	13,488	13,559	13,833	27,392	40,880
GVWR			5,656	5,588	11,244	12,442	12,694	25,136	36,380
GAWR			7,984	7,889	15,873	14,187	14,473	28,660	44,533

Please note that this estimate does not include any component weights which will be installed by property after bus delivery and other options offered.
 This weight estimate is subject to +/- 1% range.



NEW FLYER

New Flyer Xcelsior® 35' Diesel-Hybrid (XDE35) Vehicle Technical Information and Weight Analysis

Built to
RELY ON.™

www.newflyer.com

Exhibit A.2

VEHICLE TECHNICAL INFORMATION

The Proposer shall submit a completely filled-in Vehicle Technical Information form below as part of their proposal submission. A separate form shall be checked and filled out for each different bus model proposed.

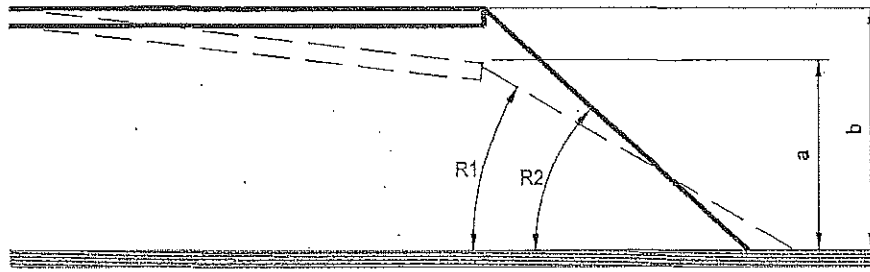
- 30' Diesel Bus
 35' Diesel Bus
 40' Diesel Bus

- 30' Hybrid Bus
 35' Hybrid Bus
 40' Hybrid Bus

A.	BUS MANUFACTURER	<u>New Flyer of America Inc.</u>
	Bus Model	<u>Xcelstior</u>
B.	UNDERSTRUCTURE MANUFACTURER	<u>New Flyer of America Inc.</u>
	Model Number	<u>XDE35</u>
C.	BASIC BODY CONSTRUCTION	
1.	Type	<u>Semi-Monocoque</u>
2.	Tubing or frame member Thickness, Dimensions & Material	
	a. Overstructure	<u>Carbon Steel 0.075 to 0.25 inches</u>
	b. Understructure	<u>Carbon Steel 0.075 to 0.25 inches</u>
3.	Skin Thickness and Material	
	a. Roof	<u>Fiberglass 0.18+0/-0.06 inches</u>
	b. Sidewall	<u>Fiberglass 0.18+0/-0.06 inches</u>
	c. Skirt Panel	<u>N/A</u>
	d. Front End	<u>Fiberglass 0.18+0.03</u>
	e. Rear End	<u>Fiberglass 0.18+0.03</u>
D.	DIMENSIONS	
1.	Overall Length	
	a. Over Bumpers	<u>35</u> ft. <u>5</u> in.
	b. Over Body	<u>36</u> ft. <u>3</u> in.
2.	Overall Width	
	a. Over Body excluding Mirrors	<u>8 FT 6</u> in.
	b. Over Body including Mirrors - driving position	<u>10 FT 5</u> in.
	c. Over Tires Front Axles	<u>98</u> in.
	d. Over Tires Rear Axles	<u>102</u> in.
3.	a. Over all Height (maximum)	<u>126</u> in.
	b. Overall Height (main roof line)	<u>117</u> in.
4.	Angle of Approach	<u>9</u> deg.
5.	Breakover Angle	<u>12</u> deg.
6.	Angle of Departure	<u>9</u> deg.

7.	Doorway Dimensions	<u>Front</u>	<u>Rear</u>
a.	Width Between Door Posts	<u>43.7</u> in.	<u>32</u> in.
b.	Door Width Between Panels	<u>36.8</u> in.	<u>30.5</u> in.
c.	Clear Door Width	<u>33.8</u> in.	<u>30.5</u> in.
d.	Doorway Height	<u>77</u> in.	<u>76.5</u> in.
e.	Knuckle Clearance	<u>1.75</u> in.	<u>1.5</u> in.
f.	Door Protrusion Beyond Side Panels	<u> </u> in.	<u> </u> in.

8. Step Height from Ground (measured at center of doorway)



<u>Front Doorway, Empty</u>		<u>Ramp Angle</u>	<u>Rear Doorway, Empty</u>
(Kneeled)	a. <u>10</u> in.	R1 <u>9.46</u> deg.	a. <u>14</u> in.
(Unkneeled)	b. <u>14</u> in.	R2 <u>18.5</u> deg.	b. <u>14</u> in.
(Reverse Kneeled)	c. <u>N/A</u> in.	R3 <u>N/A</u> deg.	c. <u>N/A</u> in.

9. Interior Head Room (center of aisle)

a.	Front Axle Location	<u>79.5</u> in.
b.	Drive Axle Location	<u>78</u> in.

10. Aisle Width Between Transverse Seats (minimum)

22.5 in.

11. Floor Ride Height Above Ground (centerline of bus)

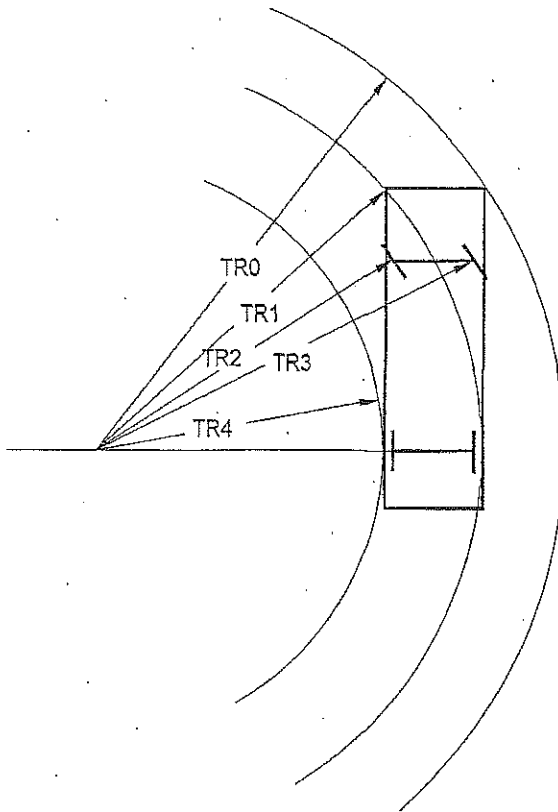
a.	at Front door	<u>14.0</u> in.
b.	at Front Axle	<u>15.5</u> in.
c.	at Drive Axle	<u>31</u> in.
d.	at Rear door	<u>14.0</u> in.

12. Minimum Ground Clearance (between bus and ground, with bus unkneeled)

a.	Excluding Axles	<u>10</u> in.
b.	Including Axles	<u>5.6</u> in.

13. Horizontal Turning Envelope (see diagram on following page)

a.	Outside Body Turning Radius, TR0 (including bumper)	<u>44</u> ft.	<u>0</u> in.
b.	Front Inner Corner Radius, TR1 (including bumper)	<u>38.6</u> ft.	<u>0</u> in.
c.	Front Wheel Inner Turning Radius, TR2	<u>33</u> ft.	<u>0</u> in.
d.	Front Wheel Outer Turning Radius, TR3	<u>39.9</u> ft.	<u>0</u> in.
e.	Inside Body Turning Radius, TR4 (including bumper)	<u>23.5</u> ft.	<u>0</u> in.



14.	Wheelbase		<u>226.75</u>	in.	
15.	Overhang, Centerline of Axle Over Bumper				
a.	Front	<u> </u>	ft.	<u>87.3</u>	in.
b.	Rear	<u> </u>	ft.	<u>120.8</u>	in.
16.	Floor				
a.	Interior Length	<u>34</u>	ft.	<u>7.5</u>	in.
b.	Interior Width (excluding coving)	<u>8</u>	ft.	<u>1</u>	in.
c.	Total Standee Area	<u>50.8</u>	sq. ft.		
d.	Minimum distance between Wheelhouses:				
	Front:			<u>35.5</u>	in.
	Rear:			<u>41.5</u>	in.
e.	Maximum interior floor slope (from horizontal)	<u>3.5</u>	deg.		
17.	Passenger Capacity Provided				
a.	Total Maximum Seating	<u>30</u>			
b.	Standee Capacity	<u>36</u>			
c.	Minimum Knee to Hip Room			<u>28</u>	in.
d.	Minimum Foot Room			<u>10</u>	in.

E. WEIGHT OF BUS Please refer to the attached weight analysis.

	No. of People	Front Axle			Rear Axle			TOTAL BUS
		Left	Right	Total	Left	Right	Total	
Empty Bus Full Fuel and Farebox	0							
Fully Seated Full Fuel and Farebox	_____ +Driver							
Fully Loaded Standee and Fully Seated Full Fuel and Farebox	_____ +Driver							
Crush Load (1.5xFully Loaded)	_____							
GVWR								
GAWR								

Continued on Next Page

F. ENGINE, MAIN

- | | | |
|-----|--|-------------------------|
| 1. | Manufacturer | Cummins |
| 2. | Model Number | ISB 2016 - 280 |
| 3. | Type | Diesel |
| 4. | No. of Cylinders | 6 |
| 5. | Bore | 4.49 in. |
| 6. | Stroke | 5.69 in. |
| 7. | Displacement | 543 cu. in. |
| 8. | Compression Ratio | 16.6:1 |
| 9. | Injector Type and Size | Bosch Closed Nozzle |
| 10. | Net S.A.E. Horsepower | 280 HP at 2200 rpm |
| 11. | Net S.A.E. Torque | 900 lb. ft. at 1300 rpm |
| 12. | Crankcase Oil Capacity | |
| | a. New Engine, dry | 6.3 gal. |
| | b. New Engine, wet | 6.3 gal. |
| 13. | Turbocharger | |
| | a. Make | Holset |
| | b. Model Number | HX40 |
| 14. | Maximum Speed, no load | 2400 rpm |
| 15. | Maximum Speed, full load | 200 rpm |
| 16. | Speed at Idle | 750 rpm |
| 17. | Speed at Fast Idle | 1000 rpm |
| 18. | Engine Information/graphs to be attached with this form: | |

- Engine speed vs. road speed*
- Torque vs. engine speed*
- Horsepower vs. engine speed*
- Fuel consumption vs. engine speed.*
- Vehicle speed vs. time (both loaded and unloaded)*
- Vehicle speed vs. grade (both loaded and unloaded)*
- Acceleration vs. time*
- Change of acceleration vs. time.*

19. Optional Hybrid Drive System

- Allison
 ISE
 BAE
 OTHER _____

20. Optional Hybrid Drive Electricity Storage

- Nickel Metal Hydride
 Lithium Ion
 Ultracap
 OTHER _____

G. TRANSMISSION

- Allison B330R
 Allison B400R
 Allison B500R
 OTHER _____

- | | | |
|----|---|----------------------------|
| 1. | Manufacturer | Allison |
| 2. | Model Number | H40EP |
| 3. | Type | Electronic |
| 4. | Speeds | n/a |
| 5. | Gear Ratios | Forward n/a Reverse n/a |
| 6. | Shift Speeds | |
| | a. 1st - 2nd | _____ mph |
| | b. 2nd - 3rd | _____ mph |
| | c. 3rd - 4th | _____ mph |
| | d. 4th - 5th (if applicable) | _____ mph |
| | e. 5th - 6th (if applicable) | _____ mph |
| 7. | Fluid Capacity [including heat exchanger and filter(s)] | |

Please see the performance SCAANS

H. VOLTAGE REGULATOR

1. Manufacturer Delco
2. Model Number 50-VR

I. VOLTAGE EQUALIZER

1. Manufacturer Vanner
2. Model Number 80 AMP

J. ALTERNATOR

1. Manufacturer EMP
2. Model Number Air Cooled
3. Type Power 450
4. Output at Idle 280 Amps
5. Output at Maximum Speed 455 Amps
6. Maximum Warranted Speed 6500 rpm
7. Speed at Idle 2000 rpm
8. Drive Type Belt

K. STARTER MOTOR

1. Manufacturer Delco Remy
2. Model Number 24 VDC
3. Type 42MDT

L. AIR COMPRESSOR

1. Manufacturer Wabco
2. Type Reciprocating
3. Rated Capacity 30.4 cfm
4. Capacity, at Idle 6.9 cfm
5. Capacity, at Maximum Speed 22.4 cfm
6. Maximum Warranted Speed 3000 rpm
7. Speed Idle 700 rpm
8. Drive Type Direct rpm
9. Governor
a) Cut-in Pressure 131 psi
b) Cut-Out Pressure 117 psi

M. AXLE, FRONT

MAN solid beam, non-driving
 Or equal as listed below:

1. Manufacturer M.A.N.
2. Type VOK-07-F
3. Model Number Reverse Elliot cast beam, dropped centre, non-driven
4. Gross Axle Weight Rating 15873 lb.
5. Axle Load 12398 lb.

N. AXLE, REAR

MAN heavy duty
 Or equal as listed below:

1. Manufacturer M.A.N.
2. Model Number HY-1350-F
3. Type Single Reduction
4. Gross Axle Weight Rating 28660 lb.
5. Axle Load 26052 lb.
6. Axle Ratio 4.56:1

O. SUSPENSION SYSTEM

1. Manufacturer		New Flyer
2. Type:	Front	Pneumatic
	Rear	Pneumatic
3. Springs:	Front	Firestone
	Rear	Firestone

P. WHEELS AND TIRES

1. Wheels		
a. Make		Alcoa
b. Size		22.5 x 8.25
c. Capacity		tbd lb.
d. Material		Aluminum

2. Tires		
a. Manufacturer		Michelin X InCity Z
b. Type		Low Profile
c. Size		305/70R22.5
d. Load Range/Air Press.		tbd lb./psi.

Q. STEERING, POWER

1. Pump		
a. Manufacturer		Ixetic (Luk)
b. Model Number		Ixetic (Luk)
c. Type		Powered off Engine accessory drive
d. Relief Pressure		2175 psi
2. Booster/Gear Box		
a. Manufacturer		Sheppard
b. Model Number		M110
c. Type		Recirculating Ball
d. Ratio		23:1
3. Power Steering Fluid Capacity		20 gal.
4. Maximum Effort at Steering Wheel (unloaded stationary coach on dry asphalt pavement)		9-10 deg lb.
5. Steering Wheel Diameter		20 in.

R. BRAKES

1. Make of Fundamental Brake System		Knorr
2. Brake Chambers Vendor's Size & Part No.		MGM / 1621705, 1621706
a. Front		MGM/MJB2024ET752
b. Rear		70 lbs. -ft
3. Brake Operation Effort		
4. Slack Adjuster's Vendor's Type & Part No.		
a. Front		
	1) Right	N/A
	2) Left	N/A
b. Rear		
	1) Right	N/A
	2) Left	N/A
c. Length		
	1) Front Take-up	N/A in.
	2) Rear Take-up	N/A in.

5.	Brake Drums/Discs			
	a.	Front		
		1)	Manufacturer	MAN
		2)	Part Number	81.50803.0040
		3)	Diameter	16.14 in.
	b.	Rear		
		1)	Manufacturer	M.A.N.
		2)	Part Number	81.50803.0041
		3)	Diameter	16.14 in.
6.	Brake Lining			
	a.	Front		
		1)	Manufacturer	Ferodo
		2)	Type	4567
	b.	Rear		
		1)	Manufacturer	Ferodo
		2)	Type	4567
7.	Brake Lining Identification			
	a.	Front		
		1)	Forward	81.50820.5104
		2)	Reverse	81.50820.5104
	b.	Rear		
		1)	Forward	81.50820.5104
		2)	Reverse	81.50820.5104
8.	Brake Linings Per shoe			
	a.	Front		2 pad/caliper, 4 pads per axle
	b.	Rear		2 pad/caliper, 4 pads per axle
9.	Brake Lining Widths			
	a.	Front		N/A in.
	b.	Rear		N/A in.
10.	Brake Lining Lengths			
	a.	Front		7.09 in.
	b.	Rear		7.09 in.
11.	Brake Lining Thickness			
	a.	Front		0.827 in.
	b.	Rear		0.827 in.
12.	Brake Lining Area Per Axle			
	a.	Front		30.38 sq. in.
	b.	Rear		30.38 sq. in.

S. COOLING SYSTEM

1.	Radiator/Charge Air Cooler			
	a.	Manufacturer	EMP	EMP
	b.	Model Number	MH5 GEN4	MH5 GEN4
	c.	Type	Electric	Bar-Plate
	d.	Number of Tubes	37 rows	15 rows
	e.	Tubes Outer Diameter	0.098 in.	0.098 in.
	f.	Fins Per in.	8.5 Fins	8.5 Fins
	g.	Fin Thickness	0.003 in.	0.003 in.
2.	Total Cooling and Heating System Capacity		23	gal.
3.	Radiator Fan Speed Control		Electronic	Type
4.	Surge Tank, Capacity		20	qt.
5.	Engine Thermostat Temperature Setting			
	a.	Initial Opening	180	° F
	b.	Fully Closed	200	° F
6.	Overheat Alarm Temperature Sending Unit Setting		225	° F
7.	Shutdown Temperature Setting		235	° F

T. AIR RESERVOIR CAPACITY

1.	Supply Reservoir	800	cu. in.
2.	Primary Reservoir	1200	cu. in.
3.	Secondary Reservoir	2150	cu. in.
4.	Parking Reservoir	n/a	cu. in.
5.	Accessory Reservoir	1400	cu. in.
6.	Other Reservoir Type	2150	cu. in.

U. HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT

Thermo King T-Series Rear Mount with Screw Compressor

Or equal: Thermo King RLF rooftop A/C unit

1.	Heating System Capacity	105,000	BTU
2.	Air Conditioning Capacity	98,000	BTU
3.	Ventilating Capacity	2400	cfm
4.	Compressor	Thermo King RLF rooftop A/C unit	
	a. Manufacturer	S391 screw type compressor.	
	b. Model Number	n/a	
	c. No. of Cylinders	1.41:1	
	d. Drive Ratio	3000 rpm max rpm	
	e. Maximum Warranted Speed	rpm	
	f. Operating Speed	147 lb.	
	g. Weight	0.92 gal.	
	h. Oil Capacity	0.92 gal.	
	1) Dry	R-134a freon Type TBD lb.	
	2) Wet		
5.	Condenser	Thermo King	
	a. Manufacturer	EBM	
	b. Model Number	3	
	c. No. of Rows	12	
	d. No. of Fins/in.	0.375 in.	
	e. O.D. of Tube	0.008 in.	
	f. Fin Thickness	Thermo King	
6.	Condenser Fan	EBM	
	a. Manufacturer	12 in.	
	b. Model Number	3300 rpm	
	c. Fan Diameter	7500 cfm	
	d. Speed Maximum		
	e. Flow Rate (maximum)	Thermo King	
7.	Receiver	TBD	
	a. Manufacturer	4 lb.	
	b. Model Number		
	c. Capacity	Thermo King / EBM	
8.	Condenser Fan Drive Motors	EBM	
	a. Manufacturer	Cased Axial Flow Integral Motor	
	b. Model Number	0.03 HP	
	c. Type	3300 MAX rpm	
	d. Horse Power		
	e. Operating Speed	Thermo King / EBM	
9.	Evaporator Fan Drive Motors	EBM	
	a. Manufacturer	Forward Curve Single Inlet	
	b. Model Number	0.75 HP	
	c. Type	1550 MAX rpm	
	d. Horse Power		
	e. Operating Speed		

10.	Evaporator(s)	
a.	Manufacturer	Thermo King
b.	Model Number	
c.	Number of Rows	4
d.	No. of Fins/in.	10
e.	Outer Diameter of Tube	0.375 in.
f.	Fin Thickness	0.008 in.
g.	Number of Evaporator	2
11.	Expansion Valve	
a.	Manufacturer	Thermo King
b.	Model Number	Sporlan
12.	Filter-Drier	
a.	Manufacturer	Thermo King
b.	Model Number	TBD
13.	Heater Cores	
a.	Manufacturer	Thermo King
b.	Model Number	Thermo King
c.	Capacity	350 BTU
d.	Number of Rows	2
e.	Number of Fins/in.	9
f.	Outer Diameter of Tube	0.375 in.
g.	Fin Thickness	0.008 in.
h.	Number of Heater Cores	1
14.	Floor Heater Blowers	
a.	Heater Blower Motors	
1)	Manufacturer	EBM
2)	Model Number	EBM
3)	Horsepower	0.18 HP
4)	Speed(s)	3800 rpm
b.	Heater Blower Wheel	
1)	Manufacturer	
2)	Model Number	
3)	Capacity	cfm
c.	Cores	
1)	Manufacturer	
2)	Model Number	
3)	Capacity	BTU
4)	Number of Rows	
5)	Number of Fins/in.	Fins
6)	Outer Diameter of Tube	in.
7)	Fin Thickness	in.
8)	Number of Heater Cores	
15.	Controls	
a.	Manufacturer	Thermo King
b.	Model Number	Intelligaire III
c.	Type	Electronic
16.	Driver's Heat	
a.	Manufacturer	Mobile Climate Control
b.	Model Number	12-600070
c.	Capacity	56,800 BTU
17.	Ventilation System	
a.	Type	Recirculated Air
18.	Coolant Heater	
a.	Make	Spheros
b.	Model Number	Thermo 230
c.	Capacity(BTU)	80,000 btu

V. INTERIOR LIGHTING

- Dinex with Nichia or Philips LED's
- Or equal as listed below:

1. Manufacturer	<u>New Flyer (TCB)</u>
2. Type	<u>LED</u>
3. Number of Fixtures	<u>10</u>
4. Size of Fixtures	<u>76 - 96 inc.</u>
5. Power Pack	<u>TCB</u>

W. DOORS

- Vapor Bus International Ameriview
- Or equal as listed below:

1. <u>Front</u>		
a. Manufacturer of Operating Equipment	<u>VAPOR</u>	
b. Type of Door	<u>PNEUMATIC</u>	
c. Type of Operating Equipment	<u>SLIDE GLIDE</u>	
2. <u>Rear</u>		
a. Manufacturer of Operating Equipment	<u>VAPOR</u>	
b. Type door	<u>PNEUMATIC</u>	
c. Type of Operating Equipment	<u>SLIDE GLIDE</u>	

X. PASSENGER WINDOWS

1. Manufacturer	<u>Arwon Global (Storm Tite)</u>
2. Model Number	<u>Evolution Rapid Replacement</u>
3. Type	<u>Non Flush bottom is fixed, top tip-in.</u>
4. Number: (Side)	<u>13 including drivers side</u>
(Rear)	<u>n/a</u>
5. Sizes:	<u>40.83 inc. 43.62 inc. 62.28 inch</u>
6. Glazing:	
a. Type	<u>tempered</u>
b. Thickness	<u>6mm</u>
c. Color of Tint	<u>Gray and Green</u>
d. Light Transmission	<u>78% & 72 %</u>

Y. MIRRORS

	<u>Size</u>	<u>Type</u>	<u>Manufacturer</u>	<u>Mfg. Part #</u>	<u>Model No.</u>
1. Right Side Exterior	<u>8x15</u>	<u>2/1</u>	<u>Hadley</u>	<u>tbd</u>	<u>tbd</u>
2. Left Side Exterior	<u>8x15</u>	<u>2/1</u>	<u>Hadley</u>	<u>tbd</u>	<u>tbd</u>
3. Left Side Exterior	<u>8x15</u>	<u>2/1</u>	<u>Hadley</u>	<u>tbd</u>	<u>tbd</u>
4. Center Rearview	<u>8x15</u>	<u>Convex</u>	<u>Lucerix</u>	<u>tbd</u>	<u>tbd</u>
5. Front Entrance Area	<u>6"</u>	<u>Flat</u>	<u>Lucerix</u>	<u>tbd</u>	<u>tbd</u>
6. Upper-Right Hand Corner	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>
7. Rear Exit Area	<u>12"</u>	<u>Convex</u>	<u>Lucerix</u>	<u>tbd</u>	<u>tbd</u>

Z. SEATS

1. 30', 35' & 40' Bus Passenger Front Section Seats	
<input type="checkbox"/> American Seating Model 6466	
<input checked="" type="checkbox"/> Or equal as listed below:	
a. Manufacturer	<u>American Seating</u>
b. Model Number	<u>Insight</u>
2. 30', 35' & 40' Bus Passenger Rear Section Seats	
<input type="checkbox"/> American Seating Model 6468	
<input checked="" type="checkbox"/> Or equal as listed below:	
a. Manufacturer	<u>American Seating</u>
b. Model Number	<u>Insight</u>

3. Bus Operator Seat
 Recaro Ergo M (3-pt) (Fluorescent Color Belt)
 Or equal as listed below:
- a. Manufacturer _____
 - b. Model Number _____

AA. PAINT

1. Manufacturer Axalta
2. Type Elite
3. Minimum Total Paint Thickness tbd

BB. WHEELCHAIR RAMP/LIFT EQUIPMENT

1. Manufacturer New Flyer
2. Model Number NFIL
3. Type HYDRAULIC
4. Capacity 660 lb.
5. Dimensions
 - a. Width of Platform 32 in.
 - b. Length of Platform 47.5 in.
6. System Fluid Capacity 1 qt.
7. Type Fluid Used atf
8. Operating Hydraulic Pressure tbd
9. Hydraulic Cylinders 1200-1400 psi
 - a. Size 1.4 x 4" stroke
 - b. Number 1

CC. WHEELCHAIR SECUREMENT EQUIPMENT

- American Seating ARM & Dual Auto-Lok System
 Or equal as listed below:
1. Manufacturer _____
 2. Model Number _____

DD. DESTINATION SIGNS

- Twin Vision all LED
 Or equal: _____
1. Type _____
 2. Character Length
 - a. Front Destination 160 rows in.
 - b. Front Run Number n/a in.
 - c. Side Destination 96 col in.
 - d. Rear Route n/a in.
 3. Character Height
 - a. Front Destination 16 rows in.
 - b. Front Run Number n/a in.
 - c. Side Destination 8 rows in.
 - d. Rear Route n/a in.
 4. Number of Characters
 - a. Front Destination Varies with font in.
 - b. Front Run Number n/a in.
 - c. Side Destination Varies with font in.
 - d. Rear Route n/a in.
 5. Message Width
 - a. Front Destination 62.99 in.
 - b. Front Run Number n/a in.
 - c. Side Destination 37.4 in.
 - d. Rear Route n/a in.

EE. ELECTRICAL

- 1. Multiplex System
 - a. Manufacturer Vansco
 - b. Model Number VMM 1615
- 2. Batteries
 - a. Manufacturer Odyssey
 - b. Model Number _____
 - c. Type group 31

FF. P.A. SYSTEM (If Required)

- Clever Devices Speakeasy II Microphone with Minneapolis Speakers model EN5WI-6WB
- Or equal as listed below:

	<u>Manufacturer</u>	<u>Model No.</u>
1. Amplifier	_____	_____
2. Microphone	_____	_____
3. Int. Speakers	_____	_____ (number _____)
4. Ext. Speaker	_____	_____ (number _____)

GG. VIDEO SECURITY SYSTEM

- Seon Explorer DX
- Or equal as listed below:

1. Manufacturer	_____
2. Model Number	_____
3. Description	_____

HH. BICYCLE RACK

- Sportworks DL2 S/S with Ten Second Bracket
- Or equal as listed below:

1. Manufacturer	_____
2. Model Number	_____

II. ENGINE FIRE SUPPRESSION SYSTEM

- Amerex ABC Model V(H)30
- Or equal as listed below:

1. Manufacturer	_____
2. Model Number	_____
3. Description	_____

JJ. TRANSMISSION FLUID

- Castro Transynd synthetic
- Or equal as listed below:

1. Manufacturer	_____
2. Brand Name	_____
3. Description	_____

KK. ENGINE BYPASS CENTRIFUGAL NON-DISPOSABLE FILTER (If Required)

- Spinner II Model 976
- Or equal as listed below:

1. Manufacturer	_____
2. Model Number	_____
3. Description	_____

LL. FUEL FILLER

Emco Wheaton

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

MM. AUXILIARY BUS AIR SYSTEM CONNECTION

Lincoln Air Quick Disconnect #11659

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

NN. BUS SUBFLOOR

Spaceage Synthetics Thermo-Lite Composite

Or equal as listed below:

- 1. Manufacturer Milwaukee composite flooring.
- 2. Brand Milwaukee
- 3. Description fiberglass composite for step and floor to the rear wheelhouses and Milwaukee composite flooring to the rear.

OO. INTERMEDIATE PLATFORM RIBBED YELLOW FLOOR COVERING

Hypalon

Or equal as listed below:

- 1. Manufacturer Specialty Products & Gerflor
- 2. Brand FMJ & Apollo
- 3. Description Yellow Full Metal Jacket spray on flooring for step edges and risers. Step tread surface is covered in Gerflor rubber flooring.

PP. EXTERNAL REFLECTIVE GRAPHICS STRIPING

3M Cast Vinyl

Or equal as listed below:

- 1. Manufacturer _____
- 2. Brand _____
- 3. Description _____

QQ. INTERNAL SIDE TRIM PANELS

Arborite Vogue P-925-S

Or equal as listed below:

- 1. Manufacturer Arborite
- 2. Model Number P-290-CA
- 3. Description Berry Blue Linolite, NOTE** Color Vogue P-925-S is discontinued and no longer available.

RR. BUS FLOORING

Gerflor Apollo NT Self-adhesive

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

SS. PASSENGER SEAT FABRIC

Holdsworth 5621/6094/3267

Or equal as listed below:

- 1. Manufacturer Holdsworth
- 2. Model Number BHD480, BQV285 and BXE051 with defender treatment
- 3. Description _____

TT. PASSENGER NOTICE SIGN FRAMES

Transit Information Products MC TAB HOR

or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Plas Tech Inc.
TBD

Two clear polycarbonate ad frames, 17" W x 11" H x 0.25" thick.

UU. SCHEDULE HOLDER

Transit Information Products OBIC-WW8-P

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

VV. SUPERCAPACITOR ENGINE START AID N/A FOR Hybrid

KAPower KBI EC501.2

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

WW. RADIO HANDSET AND CRADLE part of Trapeze ITS System

Audiosears Corp. 1001A00AEMJLUC-QHC

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

XX. COVERT EMERGENCY ALARM BUTTON

Square D #9001KR2U Push Button

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Recaro

TBD

YY. ITS SYSTEM

Trapeze TransitMaster

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Continued on Next Page

WEIGHT OF BUS (Estimated)

XDE35	No. of People		MAN Front Axle			MAN Rear Axle			Total bus
			Left	Right	Total	Left	Right	Total	
Empty Bus Full Fuel	0		3,954	3,906	7,860	9,979	10,181	20,160	28,020
Fully Seated and Full Fuel	30	+ Driver	4,463	4,410	8,873	11,780	12,017	23,797	32,670
Fully Loaded Standee and Fully Seated Full Fuel	61	+ Driver	5,636	5,568	11,204	12,927	13,189	26,116	37,320
Crush Load (1.5xFully Loaded)	91	+ Driver	6,764	6,684	13,448	14,044	14,328	28,372	41,820
GVWR			5,636	5,568	11,204	12,927	13,189	26,116	37,320
GAWR			7,984	7,889	15,873	14,187	14,473	28,660	44,533

Please note that this estimate does not include any component weights which will be installed by property after bus delivery and other options offered.
 This weight estimate is subject to +/- 1% range.



NEW FLYER

New Flyer Xcelsior® 40' Diesel (XD40) Vehicle Technical Information and Weight Analysis

Built to
RELY ON.™

www.newflyer.com

Exhibit A.2

VEHICLE TECHNICAL INFORMATION

The Proposer shall submit a completely filled-in Vehicle Technical Information form below as part of their proposal submission. A separate form shall be checked and filled out for each different bus model proposed.

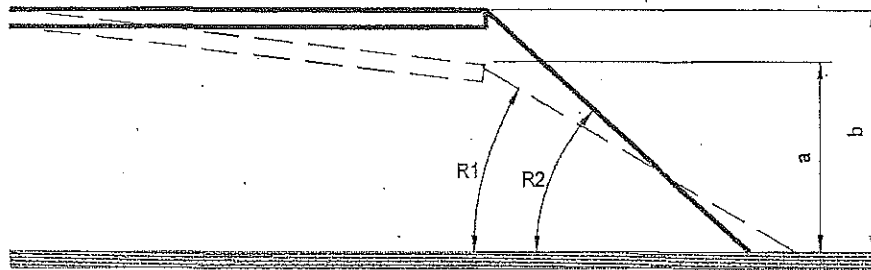
- 30' Diesel Bus
 35' Diesel Bus
 40' Diesel Bus

- 30' Hybrid Bus
 35' Hybrid Bus
 40' Hybrid Bus

A.	BUS MANUFACTURER	<u>New Flyer of America Inc.</u>
	Bus Model	<u>Xcelsior</u>
B.	UNDERSTRUCTURE MANUFACTURER	<u>New Flyer of America Inc.</u>
	Model Number	<u>XD40</u>
C.	BASIC BODY CONSTRUCTION	
1.	Type	<u>Semi-Monocoque</u>
2.	Tubing or frame member Thickness, Dimensions & Material	
a.	Overstructure	<u>Carbon Steel 0.075 to 0.25 inches</u>
b.	Understructure	<u>Carbon Steel 0.075 to 0.25 inches</u>
3.	Skin Thickness and Material	
a.	Roof	<u>Fiberglass 0.18+0/-0.06 inches</u>
b.	Sidewall	<u>Fiberglass 0.18+0/-0.06 inches</u>
c.	Skirt Panel	<u>N/A</u>
d.	Front End	<u>Fiberglass 0.18+0.03</u>
e.	Rear End	<u>Fiberglass 0.18+0.03</u>
D.	DIMENSIONS	
1.	Overall Length	
a.	Over Bumpers	<u>41</u> ft. <u>0</u> in.
b.	Over Body	<u>40</u> ft. <u>2</u> in.
2.	Overall Width	
a.	Over Body excluding Mirrors	<u>8 FT 6</u> in.
b.	Over Body including Mirrors - driving position	<u>10 FT 5</u> in.
c.	Over Tires Front Axles	<u>98</u> in.
d.	Over Tires Rear Axles	<u>102</u> in.
3.	Overall Height	
a.	Over all Height (maximum)	<u>126</u> in.
b.	Overall Height (main roof line)	<u>117.5</u> in.
4.	Angle of Approach	<u>9</u> deg.
5.	Breakover Angle	<u>9</u> deg.
6.	Angle of Departure	<u>9</u> deg.

7.	Doorway Dimensions	<u>Front</u>	<u>Rear</u>
a.	Width Between Door Posts	<u>43.7</u> in.	<u>32</u> in.
b.	Door Width Between Panels	<u>36.8</u> in.	<u>34.5</u> in.
c.	Clear Door Width	<u>33.8</u> in.	<u>30</u> in.
d.	Doorway Height	<u>77</u> in.	<u>76.5</u> in.
e.	Knuckle Clearance	<u>1.75</u> in.	<u>N/A</u> in.
f.	Door Protrusion Beyond Side Panels	<u> </u> in.	<u> </u> in.

8. Step Height from Ground (measured at center of doorway)



<u>Front Doorway, Empty</u>		<u>Ramp Angle</u>	<u>Rear Doorway, Empty</u>
(Kneeled) a. <u>10</u> in.		R1 <u>9.46</u> deg.	a. <u>14</u> in.
(Unkneeled) b. <u>14</u> in.		R2 <u>18.5</u> deg.	b. <u>14</u> in.
(Reverse Kneeled) c. <u>N/A</u> in.		R3 <u>N/A</u> deg.	c. <u>N/A</u> in.

9. Interior Head Room (center of aisle)

a.	Front Axle Location	<u>15.5</u> in.
b.	Drive Axle Location	<u>31</u> in.

10. Aisle Width Between Transverse Seats (minimum)

21.75 in.

11. Floor Ride Height Above Ground (centerline of bus)

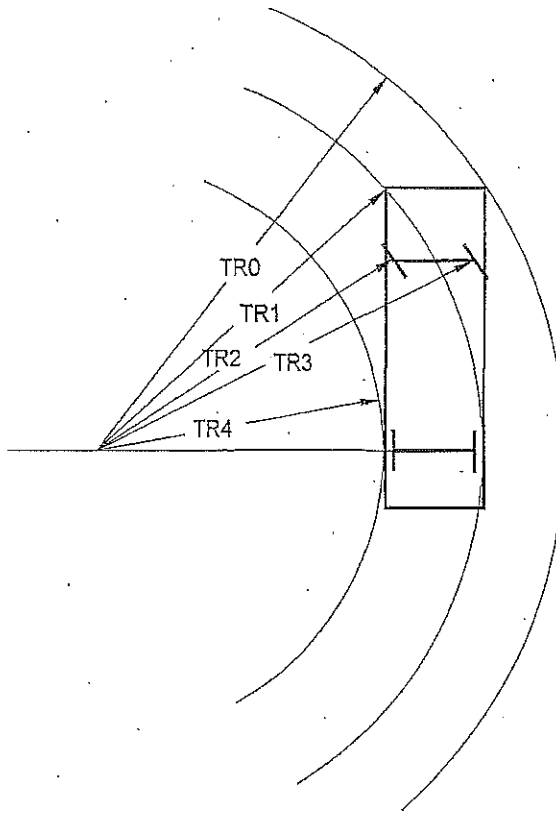
a.	at Front door	<u>15.5</u> in.
b.	at Front Axle	<u>15.5</u> in.
c.	at Drive Axle	<u>31</u> in.
d.	at Rear door	<u>15.5</u> in.

12. Minimum Ground Clearance (between bus and ground, with bus unkneeled)

a.	Excluding Axles	<u>10</u> in.
b.	Including Axles	<u>5.6</u> in.

13. Horizontal Turning Envelope (see diagram on following page)

a.	Outside Body Turning Radius, TR0 (including bumper)	<u>44</u> ft.	<u>0</u> in.
b.	Front Inner Corner Radius, TR1 (including bumper)	<u>39</u> ft.	<u>0</u> in.
c.	Front Wheel Inner Turning Radius, TR2	<u>33</u> ft.	<u>2</u> in.
d.	Front Wheel Outer Turning Radius, TR3	<u>39</u> ft.	<u>0</u> in.
e.	Inside Body Turning Radius, TR4 (including bumper)	<u>21</u> ft.	<u>11</u> in.



14.	Wheelbase		<u>283.75</u> in.
15.	Overhang, Centerline of Axle Over Bumper		
	a. Front	<u>7</u> ft.	<u>3.5</u> in.
	b. Rear	<u>10</u> ft.	<u>1</u> in.
16.	Floor		
	a. Interior Length	<u>34</u> ft.	<u>7.5</u> in.
	b. Interior Width (excluding coving)	<u>8</u> ft.	<u> </u> in.
	c. Total Standee Area	<u>45</u> sq. ft.	
	d. Minimum distance between Wheelhouses:		
	Front:		<u>35.5</u> in.
	Rear:		<u>41.5</u> in.
	e. Maximum interior floor slope (from horizontal)	<u>3.5</u> deg.	
17.	Passenger Capacity Provided		
	a. Total Maximum Seating	<u>36</u>	
	b. Standee Capacity	<u>36</u>	
	c. Minimum Knee to Hip Room		<u>28</u> in.
	d. Minimum Foot Room		<u>10</u> in.

E. WEIGHT OF BUS Please refer to the attached weight analysis.

	No. of People	Front Axle			Rear Axle			TOTAL BUS
		Left	Right	Total	Left	Right	Total	
Empty Bus Full Fuel and Farebox	0							
Fully Seated Full Fuel and Farebox	_____ +Driver							
Fully Loaded Standee and Fully Seated Full Fuel and Farebox	_____ +Driver							
Crush Load (1.5xFully Loaded)	_____							
GVWR								
GAWR								

Continued on Next Page

F. ENGINE, MAIN

1.	Manufacturer	Cummins
2.	Model Number	ISL 2016 - 280
3.	Type	Diesel
4.	No. of Cylinders	6
5.	Bore	4.49 in.
6.	Stroke	5.69 in.
7.	Displacement	543 cu. in.
8.	Compression Ratio	16.6:1
9.	Injector Type and Size	Bosch Closed Nozzle
10.	Net S.A.E. Horsepower	280 HP at 2200 rpm
11.	Net S.A.E. Torque	900 lb. ft. at 1300 rpm
12.	Crankcase Oil Capacity	
	a. New Engine, dry	6.3 gal.
	b. New Engine, wet	6.3 gal.
13.	Turbocharger	
	a. Make	Holset
	b. Model Number	HX40
14.	Maximum Speed, no load	2400 rpm
15.	Maximum Speed, full load	200 rpm
16.	Speed at Idle	750 rpm
17.	Speed at Fast Idle	1000 rpm
18.	Engine Information/graphs to be attached with this form:	

- Engine speed vs. road speed*
- Torque vs. engine speed*
- Horsepower vs. engine speed*
- Fuel consumption vs. engine speed.*
- Vehicle speed vs. time (both loaded and unloaded)*
- Vehicle speed vs. grade (both loaded and unloaded)*
- Acceleration vs. time*
- Change of acceleration vs. time.*

19. Optional Hybrid Drive System n/a
 Allison ISE BAE OTHER _____
20. Optional Hybrid Drive Electricity Storage n/a
 Nickel Metal Hydride Lithium Ion Ultracap OTHER _____

G. TRANSMISSION

- Allison B330R Allison B400R Allison B500R OTHER _____

1.	Manufacturer	Allison
2.	Model Number	B400R
3.	Type	Electronic
4.	Speeds	6
5.	Gear Ratios	Forward _____ Reverse - 4.80:1
6.	Shift Speeds	
	a. 1st - 2nd	_____ mph
	b. 2nd - 3rd	_____ mph
	c. 3rd - 4th	_____ mph
	d. 4th - 5th (if applicable)	_____ mph
	e. 5th - 6th (if applicable)	_____ mph
7.	Fluid Capacity [Including heat exchanger and filter(s)]	26

See Performance Scaans

H. VOLTAGE REGULATOR

- 1. Manufacturer
- 2. Model Number

Delco

 50-VR

I. VOLTAGE EQUALIZER

- 1. Manufacturer
- 2. Model Number

Vanner

 80 AMP

J. ALTERNATOR

- 1. Manufacturer
- 2. Model Number
- 3. Type
- 4. Output at Idle
- 5. Output at Maximum Speed
- 6. Maximum Warranted Speed
- 7. Speed at Idle
- 8. Drive Type

EMP

 Air Cooled

 Power 450

 280 Amps

 455 Amps

 6500 rpm

 2000 rpm

 Belt

K. STARTER MOTOR

- 1. Manufacturer
- 2. Model Number
- 3. Type

Delco Remy

 24 VDC

 42MDT

L. AIR COMPRESSOR

- 1. Manufacturer
- 2. Type
- 3. Rated Capacity
- 4. Capacity, at Idle
- 5. Capacity, at Maximum Speed
- 6. Maximum Warranted Speed
- 7. Speed Idle
- 8. Drive Type
- 9. Governor
 - a) Cut-in Pressure
 - b) Cut-Out Pressure

Wabco

 Reciprocating

 30.4 cfm

 6.9 cfm

 22.4 cfm

 3000 rpm

 700 rpm

 Direct rpm

 131 psi

 117 psi

M. AXLE, FRONT

- MAN solid beam, non-driving
- Or equal as listed below:

- 1. Manufacturer
- 2. Type
- 3. Model Number
- 4. Gross Axle Weight Rating
- 5. Axle Load

M.A.N.

 VOK-07-F

 Reverse Elliot cast beam, dropped centre, non-driven

 15873 lb.

 12398 lb.

N. AXLE, REAR

- MAN heavy duty
- Or equal as listed below:

- 1. Manufacturer
- 2. Model Number
- 3. Type
- 4. Gross Axle Weight Rating
- 5. Axle Load
- 6. Axle Ratio

M.A.N.

 HY-1350-F

 Single Reduction

 28660 lb.

 26052 lb.

 4.56:1

O. SUSPENSION SYSTEM

1. Manufacturer	New Flyer
2. Type:	Front
	Rear
3. Springs:	Front
	Rear

Pneumatic
Pneumatic
Firestone
Firestone

P. WHEELS AND TIRES

1. Wheels	
a. Make	Alcoa
b. Size	22.5 x 8.25
c. Capacity	tbd lb.
d. Material	Aluminum

Alcoa
22.5 x 8.25
tbd lb.
Aluminum

2. Tires	
a. Manufacturer	Michelin X InCity Z
b. Type	Low Profile
c. Size	305/70R22.5
d. Load Range/Air Press.	tbd lb./psi.

Michelin X InCity Z
Low Profile
305/70R22.5
tbd lb./psi.

Q. STEERING, POWER

1. Pump	
a. Manufacturer	Ixetic (Luk)
b. Model Number	Ixetic (Luk)
c. Type	Powered off Engine accessory drive
d. Relief Pressure	2175 psi
2. Booster/Gear Box	
a. Manufacturer	Sheppard
b. Model Number	M110
c. Type	Recirculating Ball
d. Ratio	23:1
3. Power Steering Fluid Capacity	20 gal.
4. Maximum Effort at Steering Wheel (unloaded stationary coach on dry asphalt pavement)	9-10 deg lb.
5. Steering Wheel Diameter	20 in.

Ixetic (Luk)
Ixetic (Luk)
Powered off Engine accessory drive
2175 psi
Sheppard
M110
Recirculating Ball
23:1
20 gal.
9-10 deg lb.
20 in.

R. BRAKES

1. Make of Fundamental Brake System	Knorr
2. Brake Chambers Vendor's Size & Part No.	MGM / 1621705, 1621706
a. Front	MGM/MJB2024ET752
b. Rear	70 lbs. -ft
3. Brake Operation Effort	
4. Slack Adjuster's Vendor's Type & Part No.	
a. Front	
1) Right	N/A
2) Left	N/A
b. Rear	
1) Right	N/A
2) Left	N/A
c. Length	
1) Front Take-up	N/A in.
2) Rear Take-up	N/A in.

Knorr
MGM / 1621705, 1621706
MGM/MJB2024ET752
70 lbs. -ft
N/A
N/A
N/A
N/A
N/A in.
N/A in.

5.	Brake Drums/Discs			
	a.	Front		
		1)	Manufacturer	MAN
		2)	Part Number	81.50803.0040
		3)	Diameter	16.14 in.
	b.	Rear		
		1)	Manufacturer	M.A.N.
		2)	Part Number	81.50803.0041
		3)	Diameter	16.14 in.
6.	Brake Lining			
	a.	Front		
		1)	Manufacturer	Ferodo
		2)	Type	4567
	b.	Rear		
		1)	Manufacturer	Ferodo
		2)	Type	4567
7.	Brake Lining Identification			
	a.	Front		
		1)	Forward	81.50820.5104
		2)	Reverse	81.50820.5104
	b.	Rear		
		1)	Forward	81.50820.5104
		2)	Reverse	81.50820.5104
8.	Brake Linings Per shoe			
	a.	Front		2 pad/caliper, 4 pads per axle
	b.	Rear		2 pad/caliper, 4 pads per axle
9.	Brake Lining Widths			
	a.	Front		N/A in.
	b.	Rear		N/A in.
10.	Brake Lining Lengths			
	a.	Front		7.09 in.
	b.	Rear		7.09 in.
11.	Brake Lining Thickness			
	a.	Front		0.827 in.
	b.	Rear		0.827 in.
12.	Brake Lining Area Per Axle			
	a.	Front		30.38 sq. in.
	b.	Rear		30.38 sq. in.

S. COOLING SYSTEM

1.	Radiator/Charge Air Cooler			
	a.	Manufacturer	EMP	EMP
	b.	Model Number	MH4 GEN4	MH4 GEN4
	c.	Type	Electric	Bar-Plate
	d.	Number of Tubes	37 rows	15 rows
	e.	Tubes Outer Diameter	0.098 in.	0.098 in.
	f.	Fins Per in.	8.5 Fins	8.5 Fins
	g.	Fin Thickness	0.003 in.	0.003 in.
2.	Total Cooling and Heating System Capacity		23	gal.
3.	Radiator Fan Speed Control		Electronic	Type
4.	Surge Tank, Capacity		20	qt.
5.	Engine Thermostat Temperature Setting			
	a.	Initial Opening	180	° F
	b.	Fully Closed	200	° F
6.	Overheat Alarm Temperature Sending Unit Setting		225	° F
7.	Shutdown Temperature Setting		235	° F

T. AIR RESERVOIR CAPACITY

1.	Supply Reservoir	800	cu. in.
2.	Primary Reservoir	1200	cu. in.
3.	Secondary Reservoir	2150	cu. in.
4.	Parking Reservoir	n/a	cu. in.
5.	Accessory Reservoir	1400	cu. in.
6.	Other Reservoir Type	2150	cu. in.

U. HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT

Thermo King T-Series Rear Mount with Screw Compressor

Or equal: Thermo King RLF rooftop A/C unit

1.	Heating System Capacity	105,000	BTU
2.	Air Conditioning Capacity	98,000	BTU
3.	Ventilating Capacity	2400	cfm
4.	Compressor	Thermo King RLF rooftop A/C unit	
	a. Manufacturer	S391 screw type compressor.	
	b. Model Number	n/a	
	c. No. of Cylinders	1.42:1	
	d. Drive Ratio	3000 rpm max rpm	
	e. Maximum Warranted Speed	rpm	
	f. Operating Speed	147 lb.	
	g. Weight	0.92 gal.	
	h. Oil Capacity	0.92 gal.	
	1) Dry	R-134a freon Type TBD lb.	
	2) Wet		
	i. Refrigerant		
5.	Condenser	Thermo King	
	a. Manufacturer	EBM	
	b. Model Number	3	
	c. No. of Rows	12	
	d. No. of Fins/in.	0.375 in.	
	e. O.D. of Tube	0.008 in.	
	f. Fin Thickness		
6.	Condenser Fan	Thermo King	
	a. Manufacturer	EBM	
	b. Model Number	12 in.	
	c. Fan Diameter	3300 rpm	
	d. Speed Maximum	7500 cfm	
	e. Flow Rate (maximum)		
7.	Receiver	Thermo King	
	a. Manufacturer	TBD	
	b. Model Number	4 lb.	
	c. Capacity		
8.	Condenser Fan Drive Motors	Thermo King / EBM	
	a. Manufacturer	EBM	
	b. Model Number	Cased Axial Flow Integral Motor	
	c. Type	0.03 HP	
	d. Horse Power	3300 MAX rpm	
	e. Operating Speed		
9.	Evaporator Fan Drive Motors	Thermo King / EBM	
	a. Manufacturer	EBM	
	b. Model Number	Forward Curve Single Inlet	
	c. Type	0.75 HP	
	d. Horse Power	1550 MAX rpm	
	e. Operating Speed		

10.	Evaporator(s)		
a.	Manufacturer	Thermo King	
b.	Model Number		
c.	Number of Rows	4	
d.	No. of Fins/in.	10	
e.	Outer Diameter of Tube	0.375	in.
f.	Fin Thickness	0.008	in.
g.	Number of Evaporator	2	
11.	Expansion Valve		
a.	Manufacturer	Thermo King	
b.	Model Number	Sporlan	
12.	Filter-Drier		
a.	Manufacturer	Thermo King	
b.	Model Number	TBD	
13.	Heater Cores		
a.	Manufacturer	Thermo King	
b.	Model Number	Thermo King	
c.	Capacity	350	BTU
d.	Number of Rows	2	
e.	Number of Fins/in.	9	
f.	Outer Diameter of Tube	0.375	in.
g.	Fin Thickness	0.008	in.
h.	Number of Heater Cores	1	
14.	Floor Heater Blowers		
a.	Heater Blower Motors		
1)	Manufacturer	EBM	
2)	Model Number	EBM	
3)	Horsepower	0.18	HP
4)	Speed(s)	3800	rpm
b.	Heater Blower Wheel		
1)	Manufacturer		
2)	Model Number		
3)	Capacity		cfm
c.	Cores		
1)	Manufacturer		
2)	Model Number		
3)	Capacity		BTU
4)	Number of Rows		
5)	Number of Fins/in.		Fins
6)	Outer Diameter of Tube		in.
7)	Fin Thickness		in.
8)	Number of Heater Cores		
15.	Controls		
a.	Manufacturer	Thermo King	
b.	Model Number	Intelligaire III	
c.	Type	Electronic	
16.	Driver's Heat		
a.	Manufacturer	Mobile Climate Control	
b.	Model Number	12-600070	
c.	Capacity	56,800	BTU
17.	Ventilation System		
a.	Type	Recirculated Air	
18.	Coolant Heater		
a.	Make	Spheros	
b.	Model Number	Thermo 230	
c.	Capacity(BTU)	80,000	btu

3. Bus Operator Seat
 Recaro Ergo M (3-pt) (Fluorescent Color Belt)
 Or equal as listed below:
 a. Manufacturer
 b. Model Number

AA. PAINT

1. Manufacturer
 2. Type
 3. Minimum Total Paint Thickness

Axalta
Elite
tbd

BB. WHEELCHAIR RAMP/LIFT EQUIPMENT

1. Manufacturer
 2. Model Number
 3. Type
 4. Capacity
 5. Dimensions
 a. Width of Platform
 b. Length of Platform
 6. System Fluid Capacity
 7. Type Fluid Used
 8. Operating Hydraulic Pressure
 9. Hydraulic Cylinders
 a. Size
 b. Number

New Flyer
NFIL
HYDRAULIC
660 lb.
32 in.
47.5 in.
1 qt.
atf
tbd
1200-1400 psi
1.4 x 4" stroke
1

CC. WHEELCHAIR SECUREMENT EQUIPMENT

- American Seating ARM & Dual Auto-Lok System
 Or equal as listed below:
 1. Manufacturer
 2. Model Number

DD. DESTINATION SIGNS

- Twin Vision all LED
 Or equal:

1. Type
 2. Character Length
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route
 3. Character Height
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route
 4. Number of Characters
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route
 5. Message Width
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route

160 rows	in.
n/a	in.
96 col	in.
n/a	in.
16 rows	in.
n/a	in.
8 rows	in.
n/a	in.
Varies with font	in.
n/a	in.
Varies with font	in.
n/a	in.
62.99	in.
n/a	in.
37.4	in.
n/a	in.

EE. ELECTRICAL

- 1. Multiplex System
 - a. Manufacturer Vansco
 - b. Model Number VMM 1615
- 2. Batteries
 - a. Manufacturer Odyssey
 - b. Model Number _____
 - c. Type group 31

FF. P.A. SYSTEM (If Required)

- Clever Devices Speakeasy II Microphone with Minneapolis Speakers model EN5WI-6WB
- Or equal as listed below:

	<u>Manufacturer</u>	<u>Model No.</u>
1. Amplifier	_____	_____
2. Microphone	_____	_____
3. Int. Speakers	_____	_____ (number _____)
4. Ext. Speaker	_____	_____ (number _____)

GG. VIDEO SECURITY SYSTEM

- Seon Explorer DX
- Or equal as listed below:

1. Manufacturer	_____
2. Model Number	_____
3. Description	_____

HH. BICYCLE RACK

- Sportworks DL2 S/S with Ten Second Bracket
- Or equal as listed below:

1. Manufacturer	_____
2. Model Number	_____

II. ENGINE FIRE SUPPRESSION SYSTEM

- Amerex ABC Model V(H)30
- Or equal as listed below:

1. Manufacturer	_____
2. Model Number	_____
3. Description	_____

JJ. TRANSMISSION FLUID

- Castro Transynd synthetic
- Or equal as listed below:

1. Manufacturer	_____
2. Brand Name	_____
3. Description	_____

KK. ENGINE BYPASS CENTRIFUGAL NON-DISPOSABLE FILTER (If Required)

- Spinner II Model 976
- Or equal as listed below:

1. Manufacturer	_____
2. Model Number	_____
3. Description	_____

LL. FUEL FILLER

Emco Wheaton

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

MM. AUXILIARY BUS AIR SYSTEM CONNECTION

Lincoln Air Quick Disconnect #11659

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

NN. BUS SUBFLOOR

Spaceage Synthetics Thermo-Lite Composite

Or equal as listed below:

- 1. Manufacturer Milwaukee composite flooring.
- 2. Brand Milwaukee
- 3. Description fiberglass composite for step and floor to the rear wheelhouses and Milwaukee composite flooring to the rear.

OO. INTERMEDIATE PLATFORM RIBBED YELLOW FLOOR COVERING

Hypalon

Or equal as listed below:

- 1. Manufacturer Specialty Products & Gerflor
- 2. Brand FMJ & Apollo
- 3. Description Yellow Full Metal Jacket spray on flooring for step edges and risers. Step tread surface is covered in Gerflor rubber flooring.

PP. EXTERNAL REFLECTIVE GRAPHICS STRIPING

3M Cast Vinyl

Or equal as listed below:

- 1. Manufacturer _____
- 2. Brand _____
- 3. Description _____

QQ. INTERNAL SIDE TRIM PANELS

Arborite Vogue P-925-S

Or equal as listed below:

- 1. Manufacturer Arborite
- 2. Model Number P-290-CA
- 3. Description Berry Blue Linolite. NOTE** Color Vogue P-925-S is discontinued and no longer available.

RR. BUS FLOORING

Gerflor Apollo NT Self-adhesive

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

SS. PASSENGER SEAT FABRIC

Holdsworth 5621/6094/3267

Or equal as listed below:

- 1. Manufacturer Holdsworth
- 2. Model Number Material - Holdsworth BHD480, BQV285 and BXE051 with defender treatment
- 3. Description _____

TT. PASSENGER NOTICE SIGN FRAMES

Transit Information Products MC TAB HOR

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Plas Tech Inc.

TBD

Two clear polycarbonate ad frames, 17" W x 11" H x 0.25" thick.

UU. SCHEDULE HOLDER

Transit Information Products OBIC-WW8-P

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

VV. SUPERCAPACITOR ENGINE START AID

KAPower KBI EC501.2

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

KBI

KSM05002405

WW. RADIO HANDSET AND CRADLE (Included in Trapeze ITS system)

Audiosears Corp. 1001A00AEMJLUC-QHC

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

XX. COVERT EMERGENCY ALARM BUTTON

Square D #9001KR2U Push Button

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Recaro

TBD

YY. ITS SYSTEM

Trapeze TransitMaster

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Continued on Next Page

WEIGHT OF BUS (Estimated)

XD40	No. of People		MAN Front Axle			MAN Rear Axle			Total bus
			Left	Right	Total	Left	Right	Total	
Empty Bus Full Fuel	0		4,406	4,354	8,760	9,534	9,726	19,260	28,020
Fully Seated and Full Fuel	36	+ Driver	5,151	5,089	10,240	11,548	11,782	23,330	33,570
Fully Loaded Standee and Fully Seated Full Fuel	72	+ Driver	6,575	6,497	13,072	12,820	13,079	25,898	38,970
Crush Load (1.5xFully Loaded)	108	+ Driver	7,867	7,773	15,640	14,221	14,509	28,730	44,370
GVWR			6,575	6,497	13,072	12,820	13,079	25,898	38,970
GAWR			7,984	7,889	15,873	14,187	14,473	28,660	44,533

Please note that this estimate does not include any component weights which will be installed by property after bus delivery and other options offered.
 This weight estimate is subject to +/- 1% range.



NEW FLYER

New Flyer Xcelsior® 40' Diesel-Hybrid (XDE40) Vehicle Technical Information and Weight Analysis

Built to
RELY ON.™

www.newflyer.com

Exhibit A.2

VEHICLE TECHNICAL INFORMATION

The Proposer shall submit a completely filled-in Vehicle Technical Information form below as part of their proposal submission. A separate form shall be checked and filled out for each different bus model proposed.

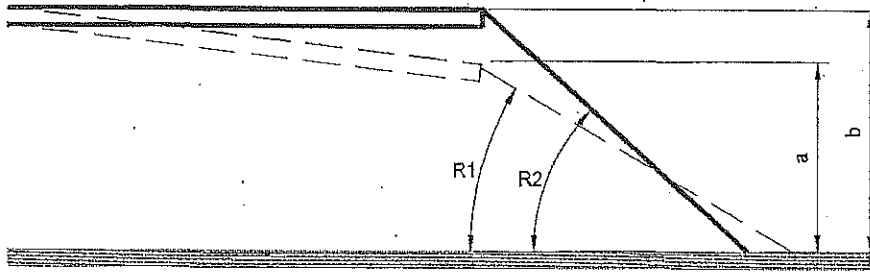
- 30' Diesel Bus
 35' Diesel Bus
 40' Diesel Bus

- 30' Hybrid Bus
 35' Hybrid Bus
 40' Hybrid Bus

A.	BUS MANUFACTURER	<u>New Flyer of America Inc.</u>
	Bus Model	<u>Xcelsior</u>
B.	UNDERSTRUCTURE MANUFACTURER	<u>New Flyer of America Inc.</u>
	Model Number	<u>XDE40</u>
C.	BASIC BODY CONSTRUCTION	
	1. Type	<u>Semi-Monocoque</u>
	2. Tubing or frame member Thickness, Dimensions & Material	
	a. Overstructure	<u>Carbon Steel 0.075 to 0.25 inches</u>
	b. Understructure	<u>Carbon Steel 0.075 to 0.25 inches</u>
	3. Skin Thickness and Material	
	a. Roof	<u>Fiberglass 0.18+0/-0.06 inches</u>
	b. Sidewall	<u>Fiberglass 0.18+0/-0.06 inches</u>
	c. Skirt Panel	<u>N/A</u>
	d. Front End	<u>Fiberglass 0.18+0.03</u>
	e. Rear End	<u>Fiberglass 0.18+0.03</u>
D.	DIMENSIONS	
	1. Overall Length	
	a. Over Bumpers	<u>41</u> ft. <u>0</u> in.
	b. Over Body	<u>40</u> ft. <u>2</u> in.
	2. Overall Width	
	a. Over Body excluding Mirrors	<u>8 FT 6</u> in.
	b. Over Body including Mirrors - driving position	<u>10 FT 5</u> in.
	c. Over Tires Front Axles	<u>98</u> in.
	d. Over Tires Rear Axles	<u>102</u> in.
	3. a. Over all Height (maximum)	<u>126</u> in.
	b. Overall Height (main roof line)	<u>117.5</u> in.
	4. Angle of Approach	<u>9</u> deg.
	5. Breakover Angle	<u>9</u> deg.
	6. Angle of Departure	<u>9</u> deg.

7.	Doorway Dimensions	<u>Front</u>	<u>Rear</u>
a.	Width Between Door Posts	<u>43.7</u> in.	<u>32</u> in.
b.	Door Width Between Panels	<u>36.8</u> in.	<u>34.5</u> in.
c.	Clear Door Width	<u>33.8</u> in.	<u>30</u> in.
d.	Doorway Height	<u>77</u> in.	<u>76.5</u> in.
e.	Knuckle Clearance	<u>1.75</u> in.	<u>1.5</u> in.
f.	Door Protrusion Beyond Side Panels	<u> </u> in.	<u> </u> in.

8. Step Height from Ground (measured at center of doorway)



<u>Front Doorway, Empty</u>		<u>Ramp Angle</u>		<u>Rear Doorway, Empty</u>
(Kneeled)	a. <u>10</u> in.	R1	<u>9.46</u> deg.	a. <u>14</u> in.
(Unkneeled)	b. <u>14</u> in.	R2	<u>18.5</u> deg.	b. <u>14</u> in.
(Reverse Kneeled)	c. <u>N/A</u> in.	R3	<u>N/A</u> deg.	c. <u>N/A</u> in.

9. Interior Head Room (center of aisle)

a.	Front Axle Location	<u>15.5</u> in.
b.	Drive Axle Location	<u>31</u> in.

10. Aisle Width Between Transverse Seats (minimum) 21.75 in.

11. Floor Ride Height Above Ground (centerline of bus)

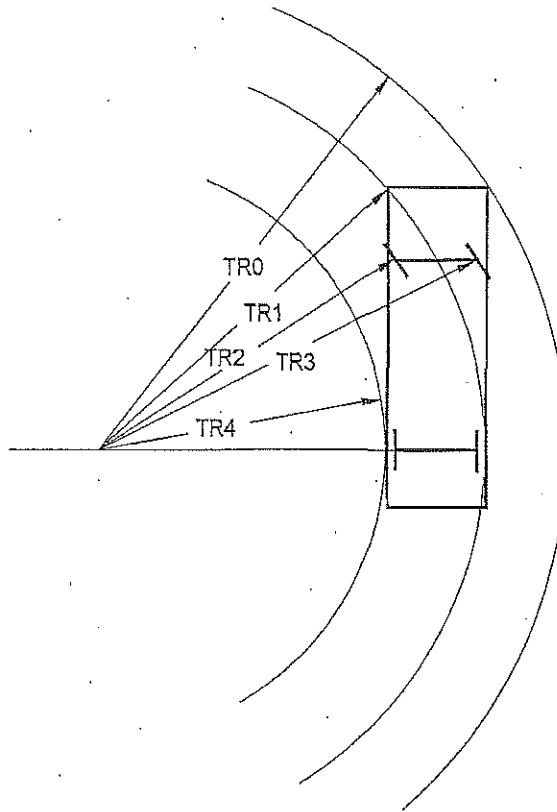
a.	at Front door	<u>15.5</u> in.
b.	at Front Axle	<u>15.5</u> in.
c.	at Drive Axle	<u>31</u> in.
d.	at Rear door	<u>15.5</u> in.

12. Minimum Ground Clearance (between bus and ground, with bus unkneeled)

a.	Excluding Axles	<u>10</u> in.
b.	Including Axles	<u>5.6</u> in.

13. Horizontal Turning Envelope (see diagram on following page)

a.	Outside Body Turning Radius, TR0 (including bumper)	<u>44</u> ft.	<u>0</u> in.
b.	Front Inner Corner Radius, TR1 (including bumper)	<u>39</u> ft.	<u>0</u> in.
c.	Front Wheel Inner Turning Radius, TR2	<u>33</u> ft.	<u>2</u> in.
d.	Front Wheel Outer Turning Radius, TR3	<u>39</u> ft.	<u>0</u> in.
e.	Inside Body Turning Radius, TR4 (including bumper)	<u>21</u> ft.	<u>11</u> in.



14.	Wheelbase		<u>283.75</u>	in.
15.	Overhang, Centerline of Axle Over Bumper			
	a. Front	<u>7</u>	ft.	<u>3.5</u>
	b. Rear	<u>10</u>	ft.	<u>1</u>
16.	Floor			
	a. Interior Length	<u>34</u>	ft.	<u>7.5</u>
	b. Interior Width (excluding coving)	<u>8</u>	ft.	<u> </u>
	c. Total Standee Area	<u>45</u>	sq. ft.	
	d. Minimum distance between Wheelhouses:			
	Front:			<u>35.5</u>
	Rear:			<u>41.5</u>
	e. Maximum interior floor slope (from horizontal)	<u>3.5</u>	deg.	
17.	Passenger Capacity Provided			
	a. Total Maximum Seating	<u>36</u>		
	b. Standee Capacity	<u>36</u>		
	c. Minimum Knee to Hip Room			<u>28</u>
	d. Minimum Foot Room			<u>10</u>

E. WEIGHT OF BUS Please refer to the attached weight analysis.

	No. of People	Front Axle			Rear Axle			TOTAL BUS
		Left	Right	Total	Left	Right	Total	
Empty Bus Full Fuel and Farebox	0							
Fully Seated Full Fuel and Farebox	_____ +Driver							
Fully Loaded Standee and Fully Seated Full Fuel and Farebox	_____ +Driver							
Crush Load (1.5xFully Loaded)	_____							
GVWR								
GAWR								

Continued on Next Page

F. ENGINE, MAIN

1.	Manufacturer	Cummins
2.	Model Number	ISB 2016 - 280
3.	Type	Diesel
4.	No. of Cylinders	6
5.	Bore	4.49 in.
6.	Stroke	5.69 in.
7.	Displacement	543 cu. in.
8.	Compression Ratio	16.6:1
9.	Injector Type and Size	Bosch Closed Nozzle
10.	Net S.A.E. Horsepower	280 HP at 2200 rpm
11.	Net S.A.E. Torque	900 lb. ft. at 1300 rpm
12.	Crankcase Oil Capacity	
	a. New Engine, dry	6.3 gal.
	b. New Engine, wet	6.3 gal.
13.	Turbocharger	
	a. Make	Holset
	b. Model Number	HX40
14.	Maximum Speed, no load	2400 rpm
15.	Maximum Speed, full load	200 rpm
16.	Speed at Idle	750 rpm
17.	Speed at Fast Idle	1000 rpm

18. Engine Information/graphs to be attached with this form:

- Engine speed vs. road speed*
- Torque vs. engine speed*
- Horsepower vs. engine speed*
- Fuel consumption vs. engine speed.*
- Vehicle speed vs. time (both loaded and unloaded)*
- Vehicle speed vs. grade (both loaded and unloaded)*
- Acceleration vs. time*
- Change of acceleration vs. time.*

19. Optional Hybrid Drive System

- Allison ISE BAE OTHER _____

20. Optional Hybrid Drive Electricity Storage

- Nickel Metal Hydride Lithium Ion Ultracap OTHER _____

G. TRANSMISSION

- Allison B330R Allison B400R Allison B500R OTHER _____

1.	Manufacturer	Allison
2.	Model Number	H40EP
3.	Type	Electronic
4.	Speeds	n/a
5.	Gear Ratios	Forward n/a Reverse n/a
6.	Shift Speeds	
	a. 1st - 2nd	_____ mph
	b. 2nd - 3rd	_____ mph
	c. 3rd - 4th	_____ mph
	d. 4th - 5th (if applicable)	_____ mph
	e. 5th - 6th (if applicable)	_____ mph
7.	Fluid Capacity [Including heat exchanger and filter(s)]	

See Performance Scans in Sec 1.B of package 3.

H. VOLTAGE REGULATOR

- 1. Manufacturer Delco
- 2. Model Number 50-VR

I. VOLTAGE EQUALIZER

- 1. Manufacturer Vanner
- 2. Model Number 80 AMP

J. ALTERNATOR

- 1. Manufacturer EMP
- 2. Model Number Air Cooled
- 3. Type Power 450
- 4. Output at Idle 280 Amps
- 5. Output at Maximum Speed 455 Amps
- 6. Maximum Warranted Speed 6500 rpm
- 7. Speed at Idle 2000 rpm
- 8. Drive Type Belt

K. STARTER MOTOR

- 1. Manufacturer Delco Remy
- 2. Model Number 24 VDC
- 3. Type 42MDT

L. AIR COMPRESSOR

- 1. Manufacturer Wabco
- 2. Type Reciprocating
- 3. Rated Capacity 30.4 cfm
- 4. Capacity, at Idle 6.9 cfm
- 5. Capacity, at Maximum Speed 22.4 cfm
- 6. Maximum Warranted Speed 3000 rpm
- 7. Speed Idle 700 rpm
- 8. Drive Type Direct rpm
- 9. Governor
 - a) Cut-in Pressure 131 psi
 - b) Cut-Out Pressure 117 psi

M. AXLE, FRONT

MAN solid beam, non-driving

Or equal as listed below:

- 1. Manufacturer M.A.N.
- 2. Type VOK-07-F
- 3. Model Number Reverse Elliot cast beam, dropped centre, non-driven
- 4. Gross Axle Weight Rating 15873 lb.
- 5. Axle Load 12398 lb.

N. AXLE, REAR

MAN heavy duty

Or equal as listed below:

- 1. Manufacturer M.A.N.
- 2. Model Number HY-1350-F
- 3. Type Single Reduction
- 4. Gross Axle Weight Rating 28660 lb.
- 5. Axle Load 26052 lb.
- 6. Axle Ratio 4.56:1

O. SUSPENSION SYSTEM

1. Manufacturer	New Flyer
2. Type: Front	Pneumatic
Rear	Pneumatic
3. Springs: Front	Firestone
Rear	Firestone

P. WHEELS AND TIRES

1. Wheels	
a. Make	Alcoa
b. Size	22.5 x 8.25
c. Capacity	tbd lb.
d. Material	Aluminum

2. Tires	
a. Manufacturer	Michelin X InCity Z
b. Type	Low Profile
c. Size	305/70R22.5
d. Load Range/Air Press.	tbd lb./psi.

Q. STEERING, POWER

1. Pump	
a. Manufacturer	Ixetic (Luk)
b. Model Number	Ixetic (Luk)
c. Type	Powered off Engine accessory drive
d. Relief Pressure	2175 psi
2. Booster/Gear Box	
a. Manufacturer	Sheppard
b. Model Number	M110
c. Type	Recirculating Ball
d. Ratio	23:1
3. Power Steering Fluid Capacity	20 gal.
4. Maximum Effort at Steering Wheel (unloaded stationary coach on dry asphalt pavement)	9-10 deg lb.
5. Steering Wheel Diameter	20 in.

R. BRAKES

1. Make of Fundamental Brake System	Knorr
2. Brake Chambers Vendor's Size & Part No.	
a. Front	MGM / 1621705, 1621706
b. Rear	MGM/MJB2024ET752
3. Brake Operation Effort	70 lbs. -ft
4. Slack Adjuster's Vendor's Type & Part No.	
a. Front	
1) Right	N/A
2) Left	N/A
b. Rear	
1) Right	N/A
2) Left	N/A
c. Length	
1) Front Take-up	N/A in.
2) Rear Take-up	N/A in.

5.	Brake Drums/Discs			
	a.	Front		
		1)	Manufacturer	MAN
		2)	Part Number	81.50803.0040
		3)	Diameter	16.14 in.
	b.	Rear		
		1)	Manufacturer	M.A.N.
		2)	Part Number	81.50803.0041
		3)	Diameter	16.14 in.
6.	Brake Lining			
	a.	Front		
		1)	Manufacturer	Ferodo
		2)	Type	4567
	b.	Rear		
		1)	Manufacturer	Ferodo
		2)	Type	4567
7.	Brake Lining Identification			
	a.	Front		
		1)	Forward	81.50820.5104
		2)	Reverse	81.50820.5104
	b.	Rear		
		1)	Forward	81.50820.5104
		2)	Reverse	81.50820.5104
8.	Brake Linings Per shoe			
	a.	Front		2 pad/caliper, 4 pads per axle
	b.	Rear		2 pad/caliper, 4 pads per axle
9.	Brake Lining Widths			
	a.	Front		N/A in.
	b.	Rear		N/A in.
10.	Brake Lining Lengths			
	a.	Front		7.09 in.
	b.	Rear		7.09 in.
11.	Brake Lining Thickness			
	a.	Front		0.827 in.
	b.	Rear		0.827 in.
12.	Brake Lining Area Per Axle			
	a.	Front		30.38 sq. in.
	b.	Rear		30.38 sq. in.

S. COOLING SYSTEM

1.	Radiator/Charge Air Cooler			
	a.	Manufacturer	EMP	/ EMP
	b.	Model Number	MH5 GEN4	/ MH5 GEN4
	c.	Type	Electric	/ Bar-Plate
	d.	Number of Tubes	37 rows	/ 15 rows
	e.	Tubes Outer Diameter	0.098 in./	0.098 in.
	f.	Fins Per in.	8.5 Fins/	8.5 Fins
	g.	Fin Thickness	0.003 in./	0.003 in.
2.	Total Cooling and Heating System Capacity		23	gal.
3.	Radiator Fan Speed Control		Electronic	Type
4.	Surge Tank, Capacity		20	qt.
5.	Engine Thermostat Temperature Setting			
	a.	Initial Opening	180	° F
	b.	Fully Closed	200	° F
6.	Overheat Alarm Temperature Sending Unit Setting		225	° F
7.	Shutdown Temperature Setting		235	° F

T. AIR RESERVOIR CAPACITY

1.	Supply Reservoir	800	cu. in.
2.	Primary Reservoir	1200	cu. in.
3.	Secondary Reservoir	2150	cu. in.
4.	Parking Reservoir	n/a	cu. in.
5.	Accessory Reservoir	1400	cu. in.
6.	Other Reservoir Type	2150	cu. in.

U. HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT

Thermo King T-Series Rear Mount with Screw Compressor

Or equal: Thermo King RLF rooftop A/C unit

1.	Heating System Capacity	105,000	BTU
2.	Air Conditioning Capacity	98,000	BTU
3.	Ventilating Capacity	2400	cfm
4.	Compressor	Thermo King RLF rooftop A/C unit	
	a. Manufacturer	S391 screw type compressor.	
	b. Model Number	n/a	
	c. No. of Cylinders	1.41:1	
	d. Drive Ratio	3000 rpm max rpm	
	e. Maximum Warranted Speed	rpm	
	f. Operating Speed	147 lb.	
	g. Weight	0.92 gal.	
	h. Oil Capacity	0.92 gal.	
	1) Dry	R-134a freon Type TBD lb.	
	2) Wet		
	i. Refrigerant		
5.	Condenser	Thermo King	
	a. Manufacturer	EBM	
	b. Model Number	3	
	c. No. of Rows	12	
	d. No. of Fins/in.	0.375 in.	
	e. O.D. of Tube	0.008 in.	
	f. Fin Thickness		
6.	Condenser Fan	Thermo King	
	a. Manufacturer	EBM	
	b. Model Number	12 in.	
	c. Fan Diameter	3300 rpm	
	d. Speed Maximum	7500 cfm	
	e. Flow Rate (maximum)		
7.	Receiver	Thermo King	
	a. Manufacturer	TBD	
	b. Model Number	4 lb.	
	c. Capacity		
8.	Condenser Fan Drive Motors	Thermo King / EBM	
	a. Manufacturer	EBM	
	b. Model Number	Cased Axial Flow Integral Motor	
	c. Type	0.03 HP	
	d. Horse Power	3300 MAX rpm	
	e. Operating Speed		
9.	Evaporator Fan Drive Motors	Thermo King / EBM	
	a. Manufacturer	EBM	
	b. Model Number	Forward Curve Single Inlet	
	c. Type	0.75 HP	
	d. Horse Power	1550 MAX rpm	
	e. Operating Speed		

10.	Evaporator(s)	
a.	Manufacturer	Thermo King
b.	Model Number	Thermo King
c.	Number of Rows	4
d.	No. of Fins/in.	10
e.	Outer Diameter of Tube	0.375 in.
f.	Fin Thickness	0.008 in.
g.	Number of Evaporator	2
11.	Expansion Valve	
a.	Manufacturer	Thermo King
b.	Model Number	Sporlan
12.	Filter-Drier	
a.	Manufacturer	Thermo King
b.	Model Number	TBD
13.	Heater Cores	
a.	Manufacturer	Thermo King
b.	Model Number	Thermo King
c.	Capacity	350 BTU
d.	Number of Rows	2
e.	Number of Fins/in.	9
f.	Outer Diameter of Tube	0.375 in.
g.	Fin Thickness	0.008 in.
h.	Number of Heater Cores	1
14.	Floor Heater Blowers	
a.	Heater Blower Motors	
1)	Manufacturer	EBM
2)	Model Number	EBM
3)	Horsepower	0.18 HP
4)	Speed(s)	3800 rpm
b.	Heater Blower Wheel	
1)	Manufacturer	
2)	Model Number	
3)	Capacity	cfm
c.	Cores	
1)	Manufacturer	
2)	Model Number	
3)	Capacity	BTU
4)	Number of Rows	
5)	Number of Fins/in.	Fins
6)	Outer Diameter of Tube	in.
7)	Fin Thickness	in.
8)	Number of Heater Cores	
15.	Controls	
a.	Manufacturer	Thermo King
b.	Model Number	Intelligaire III
c.	Type	Electronic
16.	Driver's Heat	
a.	Manufacturer	Mobile Climate Control
b.	Model Number	12-600070
c.	Capacity	56,800 BTU
17.	Ventilation System	
a.	Type	Recirculated Air
18.	Coolant Heater	
a.	Make	Spheros
b.	Model Number	Thermo 230
c.	Capacity(BTU)	80,000 BTU

V. INTERIOR LIGHTING

Dinex with Nichia or Philips LED's

Or equal as listed below:

1.	Manufacturer	<u>New Flyer (TCB)</u>
2.	Type	<u>LED</u>
3.	Number of Fixtures	<u>10</u>
4.	Size of Fixtures	<u>76 - 96 inc.</u>
5.	Power Pack	<u>TCB</u>

W. DOORS

Vapor Bus International Ameriview

Or equal as listed below:

1.	<u>Front</u>	
	a. Manufacturer of Operating Equipment	<u>VAPOR</u>
	b. Type of Door	<u>PNEUMATIC</u>
	c. Type of Operating Equipment	<u>SLIDE GLIDE</u>
2.	<u>Rear</u>	
	a. Manufacturer of Operating Equipment	<u>VAPOR</u>
	b. Type door	<u>PNEUMATIC</u>
	c. Type of Operating Equipment	<u>SLIDE GLIDE</u>

X. PASSENGER WINDOWS

1.	Manufacturer	<u>Arwon Global (Storm Tite)</u>
2.	Model Number	<u>Evolution Rapid Replacement</u>
3.	Type	<u>Non Flush bottom is fixed, top tip-in.</u>
4.	Number: (Side)	<u>13 including drivers side</u>
	(Rear)	<u>n/a</u>
5.	Sizes:	<u>40.83 inc. 43.62 inc. 62.28 inch</u>
6.	Glazing:	
	a. Type	<u>tempered</u>
	b. Thickness	<u>6mm</u>
	c. Color of Tint	<u>Gray and Green</u>
	d. Light Transmission	<u>78% & 72 %</u>

Y. MIRRORS

	Size	Type	Manufacturer	Mfg. Part #	Model No.	
1.	Right Side Exterior	8x15	2/1	Hadley	tbd	tbd
2.	Left Side Exterior	8x15	2/1	Hadley	tbd	tbd
3.	Left Side Exterior	8x15	2/1	Hadley	tbd	tbd
4.	Center Rearview	8x15	Convex	Lucerix	tbd	tbd
5.	Front Entrance Area	6"	Flat	Lucerix	tbd	tbd
6.	Upper-Right Hand Corner	n/a	n/a	n/a	n/a	n/a
7.	Rear Exit Area	12"	Convex	Lucerix	tbd	tbd

Z. SEATS

1. 30', 35' & 40' Bus Passenger Front Section Seats

American Seating Model 6466

Or equal as listed below:

a.	Manufacturer	<u>American Seating</u>
b.	Model Number	<u>Insight</u>

2. 30', 35' & 40' Bus Passenger Rear Section Seats

American Seating Model 6468

Or equal as listed below:

a.	Manufacturer	<u>American Seating</u>
b.	Model Number	<u>Insight</u>

3. Bus Operator Seat
 Recaro Ergo M (3-pt) (Fluorescent Color Belt)
 Or equal as listed below:
 a. Manufacturer
 b. Model Number

AA. PAINT

1. Manufacturer
 2. Type
 3. Minimum Total Paint Thickness

Axalta
 Elite
 tbd

BB. WHEELCHAIR RAMP/LIFT EQUIPMENT

1. Manufacturer
 2. Model Number
 3. Type
 4. Capacity
 5. Dimensions
 a. Width of Platform
 b. Length of Platform
 6. System Fluid Capacity
 7. Type Fluid Used
 8. Operating Hydraulic Pressure
 9. Hydraulic Cylinders
 a. Size
 b. Number

New Flyer
 NFIL
 HYDRAULIC
 660 lb.
 32 in.
 47.5 in.
 1 qt.
 atf
 tbd
 1200-1400 psi
 1.4 x 4" stroke
 1

CC. WHEELCHAIR SECUREMENT EQUIPMENT

- American Seating ARM & Dual Auto-Lok System
 Or equal as listed below:
 1. Manufacturer
 2. Model Number

DD. DESTINATION SIGNS

- Twin Vision all LED
 Or equal:

1. Type
 2. Character Length
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route
 3. Character Height
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route
 4. Number of Characters
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route
 5. Message Width
 a. Front Destination
 b. Front Run Number
 c. Side Destination
 d. Rear Route

160 rows in.
 n/a in.
 96 col in.
 n/a in.
 16 rows in.
 n/a in.
 8 rows in.
 n/a in.
 Varies with font in.
 n/a in.
 Varies with font in.
 n/a in.
 62.99 in.
 n/a in.
 37.4 in.
 n/a in.

EE. ELECTRICAL

- 1. Multiplex System
 - a. Manufacturer Vansco
 - b. Model Number VMM 1615
- 2. Batteries
 - a. Manufacturer Odyssey
 - b. Model Number _____
 - c. Type group 31

FF. P.A. SYSTEM (If Required)

- Clever Devices Speakeasy II Microphone with Minneapolis Speakers model EN5WI-6WB
- Or equal as listed below:

	<u>Manufacturer</u>	<u>Model No.</u>
1. Amplifier	_____	_____
2. Microphone	_____	_____
3. Int. Speakers	_____	_____ (number _____)
4. Ext. Speaker	_____	_____ (number _____)

GG. VIDEO SECURITY SYSTEM

- Seon Explorer DX
- Or equal as listed below:
 - 1. Manufacturer _____
 - 2. Model Number _____
 - 3. Description _____

HH. BICYCLE RACK

- Sportworks DL2 S/S with Ten Second Bracket
- Or equal as listed below:
 - 1. Manufacturer _____
 - 2. Model Number _____

II. ENGINE FIRE SUPPRESSION SYSTEM

- Amerex ABC Model V(H)30
- Or equal as listed below:
 - 1. Manufacturer _____
 - 2. Model Number _____
 - 3. Description _____

JJ. TRANSMISSION FLUID

- Castro Transynd.synthetic
- Or equal as listed below:
 - 1. Manufacturer _____
 - 2. Brand Name _____
 - 3. Description _____

KK. ENGINE BYPASS CENTRIFUGAL NON-DISPOSABLE FILTER (If Required)

- Spinner II Model 976
- Or equal as listed below:
 - 1. Manufacturer _____
 - 2. Model Number _____
 - 3. Description _____

LL. FUEL FILLER

Emco Wheaton

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

MM. AUXILIARY BUS AIR SYSTEM CONNECTION

Lincoln Air Quick Disconnect #11659

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

NN. BUS SUBFLOOR

Spaceage Synthetics Thermo-Lite Composite

Or equal as listed below:

- 1. Manufacturer Milwaukee composite flooring.
- 2. Brand Milwaukee
- 3. Description fiberglass composite for step and floor to the rear wheelhouses and Milwaukee composite flooring to the rear.

OO. INTERMEDIATE PLATFORM RIBBED YELLOW FLOOR COVERING

Hypalon

Or equal as listed below:

- 1. Manufacturer Specialty Products & Gerflor
- 2. Brand FMJ & Apollo
- 3. Description Yellow Full Metal Jacket spray on flooring for step edges and risers. Step tread surface is covered in Gerflor rubber flooring.

PP. EXTERNAL REFLECTIVE GRAPHICS STRIPING

3M Cast Vinyl

Or equal as listed below:

- 1. Manufacturer _____
- 2. Brand _____
- 3. Description _____

QQ. INTERNAL SIDE TRIM PANELS

Arborite Vogue P-925-S

Or equal as listed below:

- 1. Manufacturer Arborite
- 2. Model Number P-290-CA
- 3. Description Berry Blue Linolite. NOTE** Color Vogue P-925-S is discontinued and no longer available

RR. BUS FLOORING

Gerflor Apollo NT Self-adhesive

Or equal as listed below:

- 1. Manufacturer _____
- 2. Model Number _____
- 3. Description _____

SS. PASSENGER SEAT FABRIC

Holdsworth 5621/6094/3267

Or equal as listed below:

- 1. Manufacturer Holdsworth
- 2. Model Number BHD480, BQV285 and BXE051 with defender treatment
- 3. Description _____

TT. PASSENGER NOTICE SIGN FRAMES

Transit Information Products MC TAB HOR

or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Plas Tech Inc.

TBD

Two clear polycarbonate ad frames, 17" W x 11" H x 0.25" thick.

UU. SCHEDULE HOLDER

Transit Information Products OBIC-WW8-P

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

VV. SUPERCAPACITOR ENGINE START AID N/A FOR HYBRID

KAPower KBI EC501.2

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

WW. RADIO HANDSET AND CRADLE Part of AVA/AVL Systems

Audiosears Corp. 1001A00AEMJLUC-QHC

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

XX. COVERT EMERGENCY ALARM BUTTON

Square D #9001KR2U Push Button

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Recaro

TBD

YY. ITS SYSTEM

Trapeze TransitMaster

Or equal as listed below:

1. Manufacturer
2. Model Number
3. Description

Continued on Next Page

WEIGHT OF BUS (Estimated)

XDE40	No. of People		MAN Front Axle			MAN Rear Axle			Total bus
			Left	Right	Total	Left	Right	Total	
Empty Bus Full Fuel	0		4,909	4,851	9,760	10,355	10,565	20,920	30,680
Fully Seated and Full Fuel	36	+ Driver	5,654	5,586	11,240	12,370	12,620	24,990	36,230
Fully Loaded Standee and Fully Seated Full Fuel	72	+ Driver	7,078	6,994	14,072	13,641	13,917	27,558	41,630
Crush Load (1.5xFull Y Loaded)	108	+ Driver	8,370	8,270	16,640	15,043	15,347	30,390	47,030
GVWR			7,078	6,994	14,072	13,641	13,917	27,558	41,630
GAWR			7,984	7,889	15,873	14,187	14,473	28,660	44,533

Please note that this estimate does not include any component weights which will be installed by property after bus delivery and other options offered.
 This weight estimate is subject to +/- 1% range.

New Flyer

EXHIBIT A.3

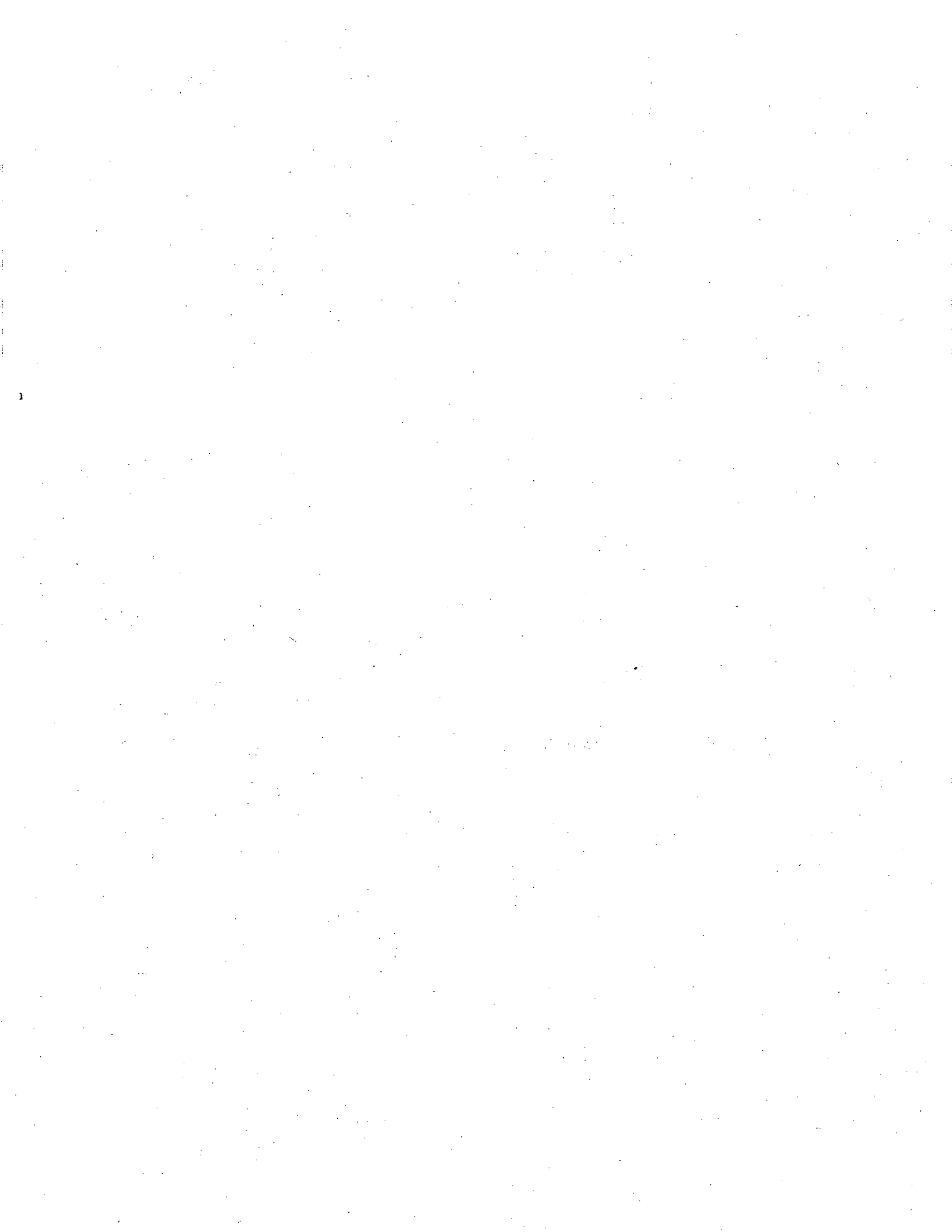
FEDERAL TRANSIT ADMINISTRATION (FTA)
FEDERALLY REQUIRED CONTRACT CLAUSES

Exhibit A.3

FEDERAL TRANSIT ADMINISTRATION (FTA)
Federally Required Contract Clauses

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2. BUY AMERICA REQUIREMENTS

49 U.S.C. 5323(j)

49 C.F.R. Part 661

Buy America - The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. Part 661, which provide that Federal funds may not be obligated unless steel, iron, and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. 661.7, and include final assembly in the United States for 15 passenger vans and 15 passenger wagons produced by Chrysler Corporation, and microcomputer equipment and software. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11. Rolling stock must be assembled in the United States and have a 60 percent domestic content.

A bidder or offeror must submit to the FTA recipient the appropriate Buy America certification (below) with all bids or offers on FTA-funded contracts, except those subject to a general waiver. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as nonresponsive. This requirement does not apply to lower tier subcontractors.

Buy America Certification

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 CFR Part 661.5.

Date _____

Signature _____

Company Name _____

Title _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

Certification requirement for procurement of buses, other rolling stock and associated equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date _____

Signature _____

Company Name _____

Title _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

3. [RESERVED]

4. CARGO PREFERENCE REQUIREMENTS

46 U.S.C. 1241

46 CFR Part 381

Cargo Preference - Use of United States-Flag Vessels

The Contractor agrees:

- a. to use privately owned United States-Flag commercial vessels to ship at least fifty (50) percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels;
- b. to furnish within twenty (20) working days following the date of loading for shipments originating within the United States or within thirty (30) working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA recipient (through the contractor in the case of a subcontractor's bill-of-lading.)
- c. to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

5. [RESERVED]

6. ENERGY CONSERVATION REQUIREMENTS

42 U.S.C. 6321 et seq.

49 CFR Part 18

Energy Conservation - The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

7. CLEAN WATER REQUIREMENTS

33 U.S.C. 1251

Clean Water –

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

(2) The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

8. BUS TESTING
49 U.S.C. 5318(e)
49 CFR Part 665

Bus Testing - The Contractor [Manufacturer] agrees to comply with 49 U.S.C. A 5318(c) and FTA's implementing regulation at 49 CFR Part 665 and shall perform the following:

1) A Manufacturer of a new bus model or a bus produced with a major change in components or configuration shall provide a copy of the final test report to the recipient at a point in the procurement process specified by the recipient which will be prior to the recipient's final acceptance of the first vehicle.

2) A Manufacturer who releases a report under Paragraph 1 above shall provide notice to the operator of the testing facility that the report is available to the public.

3) If the Manufacturer represents that the vehicle was previously tested, the vehicle being sold should have the identical configuration and major components as the vehicle in the test report, which must be provided to the recipient prior to recipient's final acceptance of the first vehicle. If the configuration or components are not identical, the Manufacturer shall provide a description of the change and the Manufacturer's basis for concluding that it is not a major change requiring additional testing.

4) If the Manufacturer represents that the vehicle is "grandfathered" (has been used in mass transit service in the United States before October 1, 1988, and is currently being produced without a major change in configuration or components), the Manufacturer shall provide the name and address of the recipient of such a vehicle and the details of that vehicle's configuration and major components.

CERTIFICATION OF COMPLIANCE WITH FTA'S BUS TESTING REQUIREMENTS

The undersigned [Contractor/Manufacturer] certifies that the vehicle offered in this procurement complies with 49 U.S.C. A 5318(e) and FTA's implementing regulation at 49 CFR Part 665.

The undersigned understands that misrepresenting the testing status of a vehicle acquired with Federal financial assistance may subject the undersigned to civil penalties as outlined in the Department of Transportation's regulation on Program Fraud Civil Remedies, 49 CFR Part 31. In addition, the undersigned understands that FTA may suspend or debar a Manufacturer under the procedures in 49 CFR Part 29.

Date: _____

Signature: _____

Company Name: _____

Title: _____

9. PRE-AWARD AND POST DELIVERY AUDITS REQUIREMENTS

49 U.S.C. 5323

49 CFR Part 663

Pre-Award and Post-Delivery Audit Requirements - The Contractor agrees to comply with 49 U.S.C. § 5323(l) and FTA's implementing regulation at 49 C.F.R. Part 663 and to submit the following certifications:

(1) **Buy America Requirements:** The Contractor shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. If the Proposer certifies compliance with Buy America, it shall submit documentation which lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly.

(2) **Solicitation Specification Requirements:** The Contractor shall submit evidence that it will be capable of meeting the bid specifications.

(3) **Federal Motor Vehicle Safety Standards (FMVSS):** The Contractor shall submit 1) manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS or 2) manufacturer's certified statement that the contracted buses will not be subject to FMVSS regulations.

BUY AMERICA CERTIFICATE OF COMPLIANCE WITH FTA REQUIREMENTS FOR BUSES, OTHER ROLLING STOCK, OR ASSOCIATED EQUIPMENT

(To be submitted with a bid or offer exceeding the small purchase threshold for Federal assistance programs, currently set at \$100,000.)

Certificate of Compliance

The Proposer hereby certifies that it will comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C), Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, and the regulations of 49 C.F.R. 661.11:

Date: _____

Signature: _____

Company Name: _____

Title: _____

Submit documentation with your Proposal that lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly (attach a separate sheet).

Certificate of Non-Compliance

The Proposer hereby certifies that it cannot comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C) and Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, but may qualify for an exception to the requirements consistent with 49 U.S.C. Sections 5323(j)(2)(B) or (j)(2)(D), Sections 165(b)(2) or (b)(4) of the Surface Transportation Assistance Act, as amended, and regulations in 49 C.F.R. 661.7.

Date: _____

Signature: _____

Company Name: _____

Title: _____

10. LOBBYING
31 U.S.C. 1352
49 CFR Part 19
49 CFR Part 20

Byrd Anti-Lobbying Amendment, 31 U.S.C. 1352, as amended by the Lobbying Disclosure Act of 1995, P.L. 104-65 [to be codified at 2 U.S.C. § 1601, et seq.] - Contractors who apply or bid for an award of \$100,000 or more shall file the certification required by 49 CFR part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to the recipient.

APPENDIX A, 49 CFR PART 20--CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements
(To be submitted with each bid or offer exceeding \$100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq.*)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.]

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.*, apply to this certification and disclosure, if any.

Signature of Contractor's Authorized Official

Name and Title of Contractor's Authorized Official

Date

11. ACCESS TO RECORDS AND REPORTS

49 U.S.C. 5325

18 CFR 18.36 (i)

49 CFR 633.17

Access to Records - The following access to records requirements apply to this Contract:

1. Where the Purchaser is not a State but a local government and is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 C.F.R. 18.36(i), the Contractor agrees to provide the Purchaser, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions. Contractor also agrees, pursuant to 49 C.F.R. 633.17 to provide the FTA Administrator or his authorized representatives including any PMO Contractor access to Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311.
2. Where the Purchaser is a State and is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 C.F.R. 633.17, Contractor agrees to provide the Purchaser, the FTA Administrator or his authorized representatives, including any PMO Contractor, access to the Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)1, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311. By definition, a major capital project excludes contracts of less than the simplified acquisition threshold currently set at \$100,000.
3. Where the Purchaser enters into a negotiated contract for other than a small purchase or under the simplified acquisition threshold and is an institution of higher education, a hospital or other non-profit organization and is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 C.F.R. 19.48, Contractor agrees to provide the Purchaser, FTA Administrator, the Comptroller General of the United States or any of their duly authorized representatives with access to any books, documents, papers and record of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions.
4. Where any Purchaser which is the FTA Recipient or a subgrantee of the FTA Recipient in accordance with 49 U.S.C. 5325(a) enters into a contract for a capital project or improvement (defined at 49 U.S.C. 5302(a)1) through other than competitive bidding, the Contractor shall make available records related to the contract to the Purchaser, the Secretary of Transportation and the Comptroller General or any authorized officer or employee of any of them for the purposes of conducting an audit and inspection.
5. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.
6. The Contractor agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case Contractor agrees to maintain same until the Purchaser, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 CFR 18.39(i)(11).
7. FTA does not require the inclusion of these requirements in subcontracts.

Requirements for Access to Records and Reports by Types of Contract

Contract Characteristics	Contract	Operational Service Contract	Turnkey	Construction	Architectural Engineering	Acquisition of Rolling Stock	Professional Services
i. State Grantees	a. Contracts below SAT (\$100,000)	None	Those imposed on state pass thru to Contractor	None	None	None	None
	b. Contracts above \$100,000/Capital Projects	None unless ¹ non-competitive award	Those imposed on state pass thru to Contractor	Yes, if non-competitive award or if funded thru ² 5307/5309/5311	None unless non-competitive award	None unless non-competitive award	None unless non-competitive award
ii. Non State Grantees	a. Contracts below SAT (\$100,000)	Yes ³	Those imposed on non-state Grantee pass thru to Contractor	Yes	Yes	Yes	Yes
	b. Contracts above \$100,000/Capital Projects	Yes ³	Those imposed on non-state Grantee pass thru to Contractor	Yes	Yes	Yes	Yes

Sources of Authority

1. 49 USC 5325 (a)
2. 49 CFR 633.17
3. 18 CFR 18.36 (i)

12. FEDERAL CHANGES
49 CFR Part 18

Federal Changes - Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between Purchaser and FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

13. [RESERVED]

14. CLEAN AIR
42 U.S.C. 7401 et seq
40 CFR 15.61
49 CFR Part 18

Clean Air - (1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

(2) The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

15. RECYCLED PRODUCTS

42 U.S.C. 6962

40 CFR Part 247

Executive Order 12873

Recovered Materials - The contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

16. [RESERVED]

17. [RESERVED]

18. [RESERVED]

19. NO GOVERNMENT OBLIGATION TO THIRD PARTIES

No Obligation by the Federal Government.

(1) The Purchaser and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to the Purchaser, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

(2) The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

**20. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS
AND RELATED ACTS**
31 U.S.C. 3801 et seq.
49 CFR Part 31 18 U.S.C. 1001
49 U.S.C. 5307

Program Fraud and False or Fraudulent Statements or Related Acts.

(1) The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

(2) The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.

(3) The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

21. TERMINATION
49 U.S.C. Part 18
FTA Circular 4220.1E

SEE CONTRACT DOCUMENT (SP-50); SECTION 10. (TERMINATION)

22. GOVERNMENT-WIDE DEBARMENT AND SUSPENSION (NONPROCUREMENT)

Suspension and Debarment

This contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Contractor is required to verify that none of the Contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945.

The Contractor is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting its Proposal, Proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by CTDOT. If it is later determined that the Proposer knowingly rendered an erroneous certification, in addition to remedies available to CTDOT, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The Proposer agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The Proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

23. [RESERVED]

24. CIVIL RIGHTS REQUIREMENTS

29 U.S.C. § 623, 42 U.S.C. § 2000

42 U.S.C. § 6102, 42 U.S.C. § 12112

42 U.S.C. § 12132, 49 U.S.C. § 5332

29 CFR Part 1630, 41 CFR Parts 60 et seq.

Civil Rights - The following requirements apply to the underlying contract:

1. Nondiscrimination - In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.
2. Equal Employment Opportunity - The following equal employment opportunity requirements apply to the underlying contract:
 - (a) Race, Color, Creed, National Origin, Sex - In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
 - (b) Age - In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. §§ 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
 - (c) Disabilities - In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
3. The Contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

25. BREACHES AND DISPUTE RESOLUTION

49 CFR Part 18

FTA Circular 4220.1E

SEE CONTRACT DOCUMENT (SP-50); SECTION 12. (BREACH)

Disputes - Disputes arising in the performance of this Contract which are not resolved by agreement of the parties shall be decided in writing by the authorized representative of CTDOT's Representative. This decision shall be final and conclusive unless within ten (10) days from the date of receipt of its copy, the Contractor mails or otherwise furnishes a written appeal to the Representative. In connection with any such appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the Representative of CTDOT shall be binding upon the Contractor and the Contractor shall abide by the decision.

Performance During Dispute - Unless otherwise directed by CTDOT, Contractor shall continue performance under this Contract while matters in dispute are being resolved.

Claims for Damages - Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the party or of any of his employees, agents or others for whose acts he is legally liable, a claim for damages therefor shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

Remedies - Unless this contract provides otherwise, all claims, counterclaims, disputes and other matters in question between CTDOT and the Contractor arising out of or relating to this agreement or its breach will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which CTDOT is located.

Rights and Remedies - The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by CTDOT or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

26. [RESERVED]

27. [RESERVED]

28. DISADVANTAGED BUSINESS ENTERPRISE (DBE)
49 CFR Part 26

Disadvantaged Business Enterprises

- a. This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, *Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs*. The national goal for participation of Disadvantaged Business Enterprises (DBE) is 10%. The agency's overall goal for DBE participation is 11.2 %. A separate contract goal has not been established for this procurement.
- b. The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted contract. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as CTDOT deems appropriate. Each subcontract the Contractor signs with a subcontractor must include the assurance in this paragraph (see 49 CFR 26.13(b)).
- c. The successful Contractor will be required to report its DBE participation obtained through race-neutral means throughout the period of performance.
- d. The Contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than thirty (30) days after the Contractor's receipt of payment for that work from CTDOT. In addition, the Contractor is required to return any retainage payments to those subcontractors within thirty (30) days after the subcontractor's work related to this contract is satisfactorily completed.
- e. The contractor must promptly notify CTDOT, whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete its work, and must make good faith efforts to engage another DBE subcontractor to perform at least the same amount of work. The Contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of CTDOT.

29. [RESERVED]

**30. INCORPORATION OF FEDERAL TRANSIT ADMINISTRATION (FTA) TERMS
FTA Circular 4220.1E**

Incorporation of Federal Transit Administration (FTA) Terms - The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220.1E, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any CTDOT requests which would cause CTDOT to be in violation of the FTA terms and conditions.

31. [RESERVED]

New Flyer

EXHIBIT A.3

**FEDERAL TRANSIT ADMINISTRATION (FTA)
CERTIFICATIONS**



Built to
RELY ON.

STATE OF CONNECTICUT
30', 35' and 40' Low Floor Heavy Duty Clean Fuel Diesel and Hybrid Electric Buses

PACKAGE 1 – QUALIFICATIONS & PRICE PROPOSAL

Proposal Section	Title	Bid Submission Requirements
7.K	Certifications	Federal Certifications including: <ul style="list-style-type: none"> • Buy America Requirements Certification • Bus Testing • Pre-Award and Post Delivery Audit Requirements • Lobbying • Certification to Federal Government Required Clauses (FTA) • DBE Approval Certification • Disadvantaged Business Enterprise & Equal Employment Opportunity Certifications • Certification of Compliance with Federal Motor Vehicle Safety Standards (FMVSS) • Compliance with the Americans with Disabilities Act

Please see the attached certifications listed above.


Buy America Certification

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 CFR Part 661.5.

Date November 17, 2015

Signature 

Company Name New Flyer of America Inc.

Title Chief Financial Officer

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1) N/A

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

Certification requirement for procurement of buses, other rolling stock and associated equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date November 17, 2015

Signature 

Company Name New Flyer of America Inc.

Title Chief Financial Officer

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C) N/A

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

CERTIFICATION OF COMPLIANCE WITH FTA'S BUS TESTING REQUIREMENTS

The undersigned [Contractor/Manufacturer] certifies that the vehicle offered in this procurement complies with 49 U.S.C. A 5323(c) and FTA's implementing regulation at 49 CFR Part 665.

The undersigned understands that misrepresenting the testing status of a vehicle acquired with Federal financial assistance may subject the undersigned to civil penalties as outlined in the Department of Transportation's regulation on Program Fraud Civil Remedies, 49 CFR Part 31. In addition, the undersigned understands that FTA may suspend or debar a Manufacturer under the procedures in 49 CFR Part 29.

Date: November 17, 2015

Signature: 

Company Name: New Flyer of America Inc.

Title: Chief Financial Officer

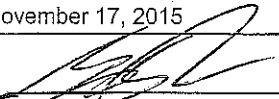
BUY AMERICA CERTIFICATE OF COMPLIANCE WITH FTA REQUIREMENTS FOR BUSES, OTHER ROLLING STOCK, OR ASSOCIATED EQUIPMENT

(To be submitted with a bid or offer exceeding the small purchase threshold for Federal assistance programs, currently set at \$100,000.)

Certificate of Compliance

The Proposer hereby certifies that it will comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C), Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, and the regulations of 49 C.F.R. 661.11:

Date: November 17, 2015

Signature: 

Company Name: New Flyer of America Inc.

Title: Chief Financial Officer

Submit documentation with your Proposal that lists 1) component and subcomponent parts of the rolling stock to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the rolling stock, including a description of the activities that will take place at the final assembly point and the cost of final assembly (attach a separate sheet).

Certificate of Non-Compliance

N/A

The Proposer hereby certifies that it cannot comply with the requirements of 49 U.S.C. Section 5323(j)(2)(C) and Section 165(b)(3) of the Surface Transportation Assistance Act of 1982, as amended, but may qualify for an exception to the requirements consistent with 49 U.S.C. Sections 5323(j)(2)(B) or (j)(2)(D), Sections 165(b)(2) or (b)(4) of the Surface Transportation Assistance Act, as amended, and regulations in 49 C.F.R. 661.7.

Date: _____

Signature: _____

Company Name: _____

Title: _____

APPENDIX A, 49 CFR PART 20--CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements
(To be submitted with each bid or offer exceeding \$100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq.*)]

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.]

The Contractor, New Flyer of America Inc., certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.*, apply to this certification and disclosure, if any.



Signature of Contractor's Authorized Official

Glenn Asham - Chief Financial Officer

Name and Title of Contractor's Authorized Official

November 17, 2015

Date

CERTIFICATION TO FEDERAL GOVERNMENT REQUIRED CLAUSES (FTA)

AFFIRMATION OF THE BIDDER'S AUTHORIZED REPRESENTATIVE

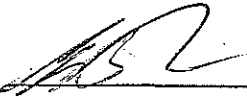
Name of Proposer: New Flyer of America Inc.

Name and Relationship of Authorized Representative: Glenn Asham, C.F.O

BY SIGNING BELOW, on behalf of the Proposer, I declare that the Proposer has duly authorized me to make this certification and bind the Proposer's compliance. Thus, the Proposer agrees to comply with all Federal statutes and regulations, and follow applicable Federal directives, and comply with the requirements of these clauses as indicated on the ensuing pages, Federal Government Required Clauses (FTA).


The Proposer affirms the truthfulness of this certification it has made, and acknowledges that the Program Fraud Civil Remedies Act of 1986, 31 U.S.C. 3801 *et seq.*, and implementing U.S. DOT regulations, "Program Fraud Civil Remedies," 49 CFR Part 31 apply to any certification, assurance or submission made to FTA. The criminal provisions of 18 U.S.C. 1001 apply to any certification, assurance, or submission made in connection with a Federal public transportation program authorized in 49 U.S.C. Chapter 53 or any other statute.

In signing this document, I declare that the foregoing certification and any other statements made by me on behalf of the Proposer are true and correct.

Signature: 

Date: 19 November 2015

Name (print) Glenn Asham, C.F.O
Authorized Representative of Applicant



(Signature of Notary

& SEAL) Christy L. Davidson

A Notary Public for the Province of Manitoba.

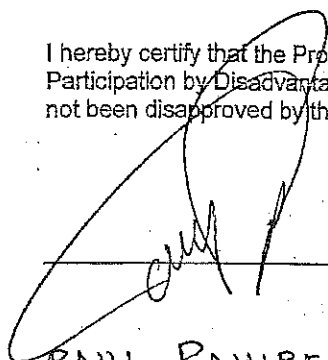
My Commission Expires: May 19, 2017

711 Kernaghan Avenue

Winnipeg, Manitoba R2C 3T4

DBE APPROVAL CERTIFICATION

I hereby certify that the Proposer has complied with the requirements of 49 CFR 26.49, Participation by Disadvantaged Business Enterprises in DOT Programs, and that our goals have not been disapproved by the Federal Transit Administration.



Signature of the Proposer's Authorized Official

RAUL RAMIREZ Name and Title of the Proposer's Authorized Official
Dir. Strategic Sourcing & DBE Liaison

November 17th, 2015 Date

**DISADVANTAGED BUSINESS ENTERPRISE &
EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATIONS**

(1) Transit Vehicle Manufacturer (TVM) Disadvantaged Business Enterprise

Pursuant to the provisions of Section 105(f) of the Surface Transportation Assistance Act of 1982, each Proposer for this contract must certify that it has complied with the requirements of 49 CFR Part 26.49; regarding the participation of disadvantaged business enterprises in FTA-assisted procurements of transit vehicles. Absent this certification, properly completed and signed, a Proposal shall be deemed non-responsive.

Certification: I hereby certify, for the Proposer named below, that it has complied with the provisions of 49 CFR Part 26.49 and that I am duly authorized by said Proposer to make this certification.

New Flyer Industries
Name of Proposer/Company Name

November 17th, 2015
(Date of Signature)


(Signature of Representative)

Christy L. Davidson RAUL RAMIREZ / Dir. Strategic Sourcing &
(Signature of Notary Public for the Province of Manitoba) (Type or Print Name & Title of that Representative) DBELIAISON
& SEAL My Commission Expires: May 19, 20 17

711 Kernaghan Avenue
Winnipeg, Manitoba R2C 3T4

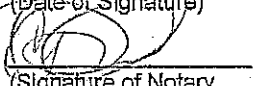
(2) Equal Employment Opportunity

The Proposer, and any and all subcontractors of the Proposer, are required to comply with Executive Order 11246, entitled "Equal Employment Opportunity", as amended by Executive Order 11375, and supplemented in U.S. Department of Labor regulation (41 CFR Part 60).

Certification: I hereby certify, for the Proposer named above, that it has complied with the provisions of Executive Order 11246, as amended by Executive Order 11375, and supplemented in U.S. Dept. of Labor Regulation (41 CFR Part 60) and that I am duly authorized by said Proposer to make this certification.

11/20/2015
(Date of Signature)


(Signature of Representative)


(Signature of Notary
& SEAL)

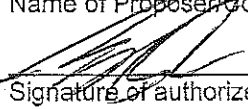
Brent Brockman Director HR
(Type or Print Name & Title of that Representative)

Christy L. Davidson
A Notary Public for the Province of Manitoba.
My Commission Expires: May 19, 20 17
711 Kernaghan Avenue
Winnipeg, Manitoba R2C 3T4


**CERTIFICATION OF COMPLIANCE WITH
FEDERAL MOTOR VEHICLE SAFETY STANDARDS (FMVSS)**

The Proposer hereby certifies that vehicles to be provided under the resultant contract award comply with all stipulated and relevant Federal Motor Vehicle Safety Standards (FMVSS). In accordance with the Federal Government Required Clauses (FTA) of this contract, the Proposer shall ensure that all vehicles will be affixed with a bus "manufacturer's FMVSS self-certification sticker information that the vehicle complies with relevant FMVSS".

New Flyer of America Inc.
Name of Proposer/Company Name


Signature of authorized representative

Glenn Asham - Chief Financial Officer
Type or print name

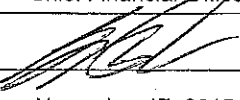

Christy L. Davidson
Notary Public for the Province of Manitoba.
My Commission Expires: May 19, 2017
711 Kernaghan Avenue
Winnipeg, Manitoba R2C 3T4

REGULATIONS:

The Proposer understands through this certification that all vehicles provided under this contract shall conform to Federal and State regulations in effect at time of vehicle delivery.

COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT

The undersigned [Contractor/Manufacturer] certifies that all vehicles manufactured and delivered to the State of Connecticut, Department of Transportation are in full compliance with the Americans With Disabilities Act. 49 CFR 38

Company Name:	New Flyer of America Inc.
Authorized Representative:	Glenn Asham
Title:	Chief Financial Officer
Signature	
Date:	November 17, 2015

New Flyer

EXHIBIT B

PRICE SCHEDULE

**STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
PURCHASING & MATERIALS MANAGEMENT**

ConnDOT Purchasing Contact:
Mary Matuszak
Fiscal Admin. Supervisor

Telephone Number:
(860) 594-2342
e-mail: mary.matuszak@ct.gov

<p><u>EXHIBIT B</u> PRICE SCHEDULE <u>Contract Award</u> For RFP No. 15DOT7002</p> <p align="center"><u>IMPORTANT!</u> <u>RETURN ORIGINAL AND THREE COPIES</u></p>	<p>PROPOSER NAME: NEW FLYER OF AMERICA INC.</p> <hr/> <p>SSN OR FEIN # 45-0414949</p>
---	---

Payment terms are net 45 days. Any deviation may result in RFP rejection.
RFP prices shall include all transportation charges FOB state agency.

DESCRIPTION OF COMMODITY AND/OR SERVICES	UNIT OF MEASURE	UNIT PRICE
<p>MAKE AND MODEL</p> <p align="center">DATE OF DELIVERY After Receipt of Order (ARO)</p>		
<u>DIESEL</u>		
1. 35' Low Floor: <u>Xcelsior – XD35</u>	<u>307</u> days ARO	each \$ <u>417,574.00</u>
2. 40' Low Floor: <u>Xcelsior – XD40</u>	<u>410</u> days ARO	each \$ <u>422,574.00</u>
<u>HYBRID Electric</u>		
3. 35' Low Floor: <u>Xcelsior – XDE35</u>	<u>307</u> days ARO	each \$ <u>604,949.00</u>
4. 40' Low Floor: <u>Xcelsior – XDE 40</u>	<u>410</u> days ARO	each \$ <u>609,949.00</u>
<p>EXPEDITED PAYMENT DISCOUNT: DISCOUNT SHALL BE LISTED BELOW AND MUST BE A MINIMUM OF TEN (10) DAYS. IF NONE, SO STATE: _____</p> <p>Discount Percentage: <u> </u>* <u> </u>% *See attached for options of progressive payments</p> <p>Discount Maximum Time Period: <u> 10 </u> Days</p> <p>Discount for optional reduced warranty provisions</p>		
	Per Bus	\$ (<u> N/A </u>)

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
PURCHASING & MATERIALS MANAGEMENT

EXHIBIT B

PRICE SCHEDULE
For RFP No. 15DOT17002

PROPOSER NAME:

New Flyer of America Inc.

SSN OR FEIN #

45-0414949

ComDOT Purchasing Contact:
Mary Matuszak
Fiscal Admin. Supervisor

Telephone Number:
(860) 594-2342
E-mail: mary.matuszak@ct.gov

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Page 2 OF 3

OPTIONAL SPARE PARTS AND EXTENDED WARRANTY PRICING

Item #	Quantity	Description of Item
1	(1 to 10)	Diesel Bus Engine with filters, turbocharger, air compressor, ECM and hose lines
2	(1 to 10)	Diesel Bus Transmission/Hybrid Drive
3	(1 to 5)	Rear Axle Assembly
4	(1 to 5)	Differential Assembly
5	(1 to 5)	Driver's Seat
6	(1 to 5)	Radiator Assembly
7	(1 to 5)	Diesel Particulate Filter/SCR
8	(1 to 3)	Air Compressor
9	(1 to 3)	Alternator and Starter
10	(1 to 3)	Electronic Destination Sign
11	(1 to 3)	Multiplex System
12	(1 to 3)	Complete Video Recording System
13	(1 to 1)	Electric Cooling Fans
14	(1 to 10)	Electric Cooling Fan Assembly

XD40

40 Bus Unit Price	Unit Price
\$	44,685.61
\$	19,435.13
\$	12,542.55
\$	7,491.73
\$	3,539.03
\$	7,222.50
\$	11,691.48
\$	4,176.44
\$	3,660.35
\$	6,978.45
\$	348.53***
\$	7,972.43
\$	N/A*
\$	N/A*

* = Included in the Radiator Assembly

*** = Includes component for Multiplex system only

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
PURCHASING & MATERIALS MANAGEMENT

EXHIBIT B
PRICE SCHEDULE
For RFP No. 15DOT7002

PROPOSER NAME:

ConnDOT Purchasing Contact:
Mary Matuszak
Fiscal Admin. Supervisor

Telephone Number:
(860) 594-2342
e-mail: mary.matuszak@ct.gov

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SSN OR FEIN #

Payment terms are net 45 days. Any deviation may result in RFP rejection.
RFP prices shall include all transportation charges FOB state agency.

OPTIONAL SPARE PARTS AND EXTENDED WARRANTY PRICING

Item #	Quantity	Description of Item
15	(1 to 10)	Air Conditioner Compressor
16	(1 to 10)	Air Conditioner Evaporator
17	(1 to 1)	Air Conditioner Evaporator Fan Motor
18	(1 to 10)	Air Conditioner Condenser
19	(1 to 1)	Air Conditioner Condenser Fan Motor
20	(1 to 10)	Vanner HBA Hybrid Beltless Alternator
21	(1 to 10)	Hybrid Duel Power Inversion Module
22		Extended Engine Warranty (to five years)
23		Extended Transmission Warranty (to five years)
24		A spare tire on rim
25		One spare removable hard disk per bus

XD40

Item #	Unit Price
15	\$ 6,521.92
16	\$ 2,789.26
17	\$ 6,851.30**
18	\$ 1,510.82
19	\$ 871.32
20	\$ N/A
21	\$ N/A
22	\$ 7,492.50
23	\$ 3,546.45
24	\$ 834.60
25	\$ 2,112

**= Includes both streetside and curbside blowers

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
PURCHASING & MATERIALS MANAGEMENT

EXHIBIT B

PRICE SCHEDULE
For RFP No. 15DOT7002

PROPOSER NAME:

New Flyer of America Inc.

SSN OR FEIN #

45-0414949

ComDOT Purchasing Contact:
Mary Matuszak
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OPTIONAL SPARE PARTS AND EXTENDED WARRANTY PRICING

XDE40

XDE35

XD35

Item #	(Quantity) Description of Item	30 Bus Unit Price	35 Bus Unit Price	40 Bus Unit Price
1	(1 to 10) Diesel Bus Engine with filters, turbocharger, air compressor, ECM and hose lines	\$ 44,685.61	\$ 25,129.97	\$ 25,129.97
2	(1 to 10) Diesel Bus Transmission/Hybrid Drive	\$ 19,435.13	\$ 159,608.44	\$ 159,608.44
3	(1 to 5) Rear Axle Assembly	\$ 12,542.55	\$ 12,542.55	\$ 12,542.55
4	(1 to 5) Differential Assembly	\$ 7,329.42	\$ 7,491.73	\$ 7,491.73
5	(1 to 5) Driver's Seat	\$ 3,539.03	\$ 3,539.03	\$ 3,539.03
6	(1 to 5) Radiator Assembly	\$ 7,222.50	\$ 9,389.25	\$ 9,389.25
7	(1 to 5) Diesel Particulate Filter/SCR	\$ 11,691.48	\$ 11,691.48	\$ 11,691.48
8	(1 to 3) Air Compressor	\$ 4,064.33	\$ 3,329.49	\$ 3,329.49
9	(1 to 3) Alternator and Starter	\$ 3,660.35	\$ N/A	\$ N/A
10	(1 to 3) Electronic Destination Sign	\$ 6,978.45	\$ 6,978.45	\$ 6,978.45
11	(1 to 3) Multiplex System	\$ 348.53***	\$ 348.53***	\$ 348.53***
12	(1 to 3) Complete Video Recording System	\$ 7,972.43	\$ 7,972.43	\$ 7,972.43
13	(1 to 1) Electric Cooling Fans	\$ N/A	\$ N/A	\$ N/A
14	(1 to 10) Electric Cooling Fan Assembly	\$ N/A	\$ N/A	\$ N/A

*** = Includes component for Multiplex system only

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
PURCHASING & MATERIALS MANAGEMENT

EXHIBIT B

PRICE SCHEDULE
For RFP No. 15DOT7002

PROPOSER NAME:

New Flyer of America Inc.

Telephone Number:
(860) 594-2342

e-mail: mary.matuszak@ct.gov

IMPORTANT!

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SSN OR FEIN #

45-0414949

Payment terms are net 45 days. Any deviation may result in RFP rejection.
RFP prices shall include all transportation charges FOB state agency.

OPTIONAL SPARE PARTS AND EXTENDED WARRANTY PRICING

XD35 XDE35 XDE40

Item #	(Quantity) Description of Item	30' Bus Unit Price	35' Bus Unit Price	40' Bus Unit Price
15	(1 to 10) Air Conditioner Compressor	\$ 6,521.92	\$ 6,521.92	\$ 6,521.92
16	(1 to 10) Air Conditioner Evaporator	\$ 2,789.26	\$ 2,789.26	\$ 2,789.26
17	(1 to 1) Air Conditioner Evaporator Fan Motor	\$ 6,851.30**	\$ 6,851.30**	\$ 6,851.30**
18	(1 to 10) Air Conditioner Condenser	\$ 1,510.82	\$ 1,510.82	\$ 1,510.82
19	(1 to 1) Air Conditioner Condenser Fan Motor	\$ 808.09	\$ 871.32	\$ 871.32
20	(1 to 10) Vanner HBA Hybrid Beltless Alternator	\$ N/A	\$ 5,192.98	\$ 5,192.98
21	(1 to 10) Hybrid Duel Power Inversion Module	\$ N/A	\$ 68,396.05	\$ 68,396.05
22	Extended Engine Warranty (to five years)	\$ 7,492.50	\$ 6,345	\$ 6,345
23	Extended Transmission Warranty (to five years)	\$ 3,546.45	\$ 25,064.10	\$ 25,064.10
24	A spare tire on rim	\$ 834.60	\$ 834.60	\$ 834.60
25	One spare removable hard disk per bus	\$ 2,112	\$ 2,112	\$ 2,112

** = Includes both streetside and curbside blowers

Connecticut 2015 BID #15-083

		<u>MD30</u>	<u>XD40</u>	<u>XDE40</u>
Progressive payment options:	<u>Days to pay</u>	<u>Discount offer</u>	<u>Discount offer</u>	<u>Discount offer</u>
1. 80% Shipment	10			
20% Acceptance	10	\$1,000.00	\$1,180.00	\$1,700.00
2. 50% Propulsion system install	10			
30% off-line St. Cloud	10			
20% Acceptance	10	\$1,160.00	\$1,370.00	\$1,970.00
3. 30% Line Entry St. Cloud	10			
50% Propulsion system install	10			
0% Delivery	10			
20% Acceptance	10	\$1,260.00	\$1,480.00	\$2,140.00
4. 50% Line Entry St. Cloud	10			
0% Off-Line St. Cloud	10			
40% Delivery	10			
10% Acceptance	10	\$1,220.00	\$1,440.00	\$2,070.00

Original Items

SPEC PAGE REFERENCE	DESCRIPTION	US Price Difference from base 40 Hybrid	Comments
Section Technical Specifications Page 12 of 59	Fire Suppression - Kiddie	\$2,907.96	
Section Technical Specifications Page 12 of 59	Fire Suppression - Fogmaker	\$775.90	
Section Technical Specifications Page 20 of 59	All Electric HVAC from Thermo King	\$0.00	Part of Electric Accessories
Section Technical Specifications Page 50 of 59	PA System from REI (for those properties who don't get an ITS system)	\$296.24	
Section Technical Specifications Page 10 of 59	BAE Hybrid Transmission	-\$45,824.24	
Section Technical Specifications Page 10 of 59	APS 1	\$13,750.00	
Section Technical Specifications Page 10 of 59	APS 2	\$27,500.00	
Section Technical Specifications Page 51 of 59	Camera System - Safety Vision	-\$920.84	
Section Technical Specifications Page 51 of 59	Camera System - Apollo	\$5,564.99	
Section Technical Specifications Page 28 of 59	Passenger Seating - American Seating Vision	-\$506.79	
Section Technical Specifications Page 28 of 59	Passenger Seating - American Seating Metropolitan	-\$4,344.79	
Section Technical Specifications Page 28 of 59	Passenger Seating - USSC-Aries (stainless)	-\$1,208.79	
Section Technical Specifications Page 28 of 59	Passenger Seating - USSC Gemini	-\$4,271.79	
Section Technical Specifications Page 28 of 59	Passenger Seating - USSC Citipro	-\$3,278.79	
Section Technical Specifications Page 45 of 59	Driver's Seat - USSC ALX	-\$1,163.50	
Section Technical Specifications Page 45 of 59	Driver's Seat - USSC G2	-\$718.50	
Section Technical Specifications Page 45 of 59	Driver's Seat - USSC Q	-\$383.50	
Section Technical Specifications Page 36 of 59	Destination Signs - Luminator	\$580.68	

EXHIBIT C

SEEC FORM 11



Notice to Executive Branch State Contractors and Prospective State Contractors of Campaign Contribution and Solicitation Limitations

This notice is provided under the authority of Connecticut General Statutes §9-612(G)(2), as amended by P.A. 10-1, and is for the purpose of informing state contractors and prospective state contractors of the following law (italicized words are defined on the reverse side of this page).

CAMPAIGN CONTRIBUTION AND SOLICITATION LIMITATIONS

No *state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor*, with regard to a *state contract or state contract solicitation* with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee (which includes town committees).

In addition, no holder or principal of a holder of a valid prequalification certificate, shall make a contribution to (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of State senator or State representative, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

On and after January 1, 2011, no state contractor, prospective state contractor, principal of a state contractor or principal of a prospective state contractor, with regard to a state contract or state contract solicitation with or from a state agency in the executive branch or a quasi-public agency or a holder, or principal of a holder of a valid prequalification certificate, shall **knowingly solicit** contributions from the state contractor's or prospective state contractor's employees or from a *subcontractor or principals of the subcontractor* on behalf of (i) an exploratory committee or candidate committee established by a candidate for nomination or election to the office of Governor, Lieutenant Governor, Attorney General, State Comptroller, Secretary of the State or State Treasurer, (ii) a political committee authorized to make contributions or expenditures to or for the benefit of such candidates, or (iii) a party committee.

DUTY TO INFORM

State contractors and prospective state contractors are required to inform their principals of the above prohibitions, as applicable, and the possible penalties and other consequences of any violation thereof.

PENALTIES FOR VIOLATIONS

Contributions or solicitations of contributions made in violation of the above prohibitions may result in the following civil and criminal penalties:

Civil Penalties – Up to \$2,000 or twice the amount of the prohibited contribution, whichever is greater, against a principal or a contractor. Any state contractor or prospective state contractor which fails to make reasonable efforts to comply with the provisions requiring notice to its principals of these prohibitions and possible consequences of their violations may also be subject to civil penalties of up to \$2,000 or twice the amount of the prohibited contributions made by their principals.

Criminal penalties – Any knowing and willful violation of the prohibition is a Class D felony, which may subject the violator to imprisonment of not more than 5 years, or not more than \$5,000 in fines, or both.

CONTRACT CONSEQUENCES

In the case of a state contractor, contributions made or solicited in violation of the above prohibitions may result in the contract being voided.

In the case of a prospective state contractor, contributions made or solicited in violation of the above prohibitions shall result in the contract described in the state contract solicitation not being awarded to the prospective state contractor, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

The State shall not award any other state contract to anyone found in violation of the above prohibitions for a period of one year after the election for which such contribution is made or solicited, unless the State Elections Enforcement Commission determines that mitigating circumstances exist concerning such violation.

Additional information may be found on the website of the State Elections Enforcement Commission, www.ct.gov/seec. Click on the link to "Lobbyist/Contractor Limitations."



DEFINITIONS

"State contractor" means a person, business entity or nonprofit organization that enters into a state contract. Such person, business entity or nonprofit organization shall be deemed to be a state contractor until December thirty-first of the year in which such contract terminates. "State contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Prospective state contractor" means a person, business entity or nonprofit organization that (i) submits a response to a state contract solicitation by the state, a state agency or a quasi-public agency, or a proposal in response to a request for proposals by the state, a state agency or a quasi-public agency, until the contract has been entered into, or (ii) holds a valid prequalification certificate issued by the Commissioner of Administrative Services under section 4a-100. "Prospective state contractor" does not include a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a state contractor or prospective state contractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a state contractor or prospective state contractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a state contractor or prospective state contractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a state contractor or prospective state contractor, which is not a business entity, or if a state contractor or prospective state contractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any state contractor or prospective state contractor who has *managerial or discretionary responsibilities with respect to a state contract*, (v) the spouse or a *dependent child* who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the state contractor or prospective state contractor.

"State contract" means an agreement or contract with the state or any state agency or any quasi-public agency, let through a procurement process or otherwise, having a value of fifty thousand dollars or more, or a combination or series of such agreements or contracts having a value of one hundred thousand dollars or more in a calendar year, for (i) the rendition of services, (ii) the furnishing of any goods, material, supplies, equipment or any items of any kind, (iii) the construction, alteration or repair of any public building or public work, (iv) the acquisition, sale or lease of any land or building, (v) a licensing arrangement, or (vi) a grant, loan or loan guarantee. "State contract" does not include any agreement or contract with the state, any state agency or any quasi-public agency that is exclusively federally funded, an education loan, a loan to an individual for other than commercial purposes or any agreement or contract between the state or any state agency and the United States Department of the Navy or the United States Department of Defense.

"State contract solicitation" means a request by a state agency or quasi-public agency, in whatever form issued, including, but not limited to, an invitation to bid, request for proposals, request for information or request for quotes, inviting bids, quotes or other types of submittals, through a competitive procurement process or another process authorized by law waiving competitive procurement.

"Managerial or discretionary responsibilities with respect to a state contract" means having direct, extensive and substantive responsibilities with respect to the negotiation of the state contract and not peripheral, clerical or ministerial responsibilities.

"Dependent child" means a child residing in an individual's household who may legally be claimed as a dependent on the federal income tax of such individual.

"Solicit" means (A) requesting that a contribution be made, (B) participating in any fund-raising activities for a candidate committee, exploratory committee, political committee or party committee, including, but not limited to, forwarding tickets to potential contributors, receiving contributions for transmission to any such committee or bundling contributions, (C) serving as chairperson, treasurer or deputy treasurer of any such committee, or (D) establishing a political committee for the sole purpose of soliciting or receiving contributions for any committee. Solicit does not include: (i) making a contribution that is otherwise permitted by Chapter 155 of the Connecticut General Statutes; (ii) informing any person of a position taken by a candidate for public office or a public official, (iii) notifying the person of any activities of, or contact information for, any candidate for public office; or (iv) serving as a member in any party committee or as an officer of such committee that is not otherwise prohibited in this section.

"Subcontractor" means any person, business entity or nonprofit organization that contracts to perform part or all of the obligations of a state contractor's state contract. Such person, business entity or nonprofit organization shall be deemed to be a subcontractor until December thirty first of the year in which the subcontract terminates. "Subcontractor" does not include (i) a municipality or any other political subdivision of the state, including any entities or associations duly created by the municipality or political subdivision exclusively amongst themselves to further any purpose authorized by statute or charter, or (ii) an employee in the executive or legislative branch of state government or a quasi-public agency, whether in the classified or unclassified service and full or part-time, and only in such person's capacity as a state or quasi-public agency employee.

"Principal of a subcontractor" means (i) any individual who is a member of the board of directors of, or has an ownership interest of five per cent or more in, a subcontractor, which is a business entity, except for an individual who is a member of the board of directors of a nonprofit organization, (ii) an individual who is employed by a subcontractor, which is a business entity, as president, treasurer or executive vice president, (iii) an individual who is the chief executive officer of a subcontractor, which is not a business entity, or if a subcontractor has no such officer, then the officer who duly possesses comparable powers and duties, (iv) an officer or an employee of any subcontractor who has managerial or discretionary responsibilities with respect to a subcontract with a state contractor, (v) the spouse or a dependent child who is eighteen years of age or older of an individual described in this subparagraph, or (vi) a political committee established or controlled by an individual described in this subparagraph or the business entity or nonprofit organization that is the subcontractor.